# HP SOA Registry Foundation

Software Version: 6.63

Product Documentation

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# Contents

# 1 Read This First

Welcome to HP SOA Registry Foundation!

HP SOA Registry Foundation is the leading business service registry, providing discovery and publishing of SOA business services. With full support for version 3 of the UDDI (Universal Description, Discovery and Integration) standard, HP SOA Registry Foundation is a key component of a Service Oriented Architecture (SOA).

This product documentation contains the following sections:

**Read This First .** This book is recommended for all readers. It provides a product overview, release notes, product changes, the typographical conventions used throughout this guide.

**Installation and Deployment Guide .** This book guides you through installing HP SOA Registry Foundation, installing and setting up databases, and deploying HP SOA Registry Foundation to application servers.

**User's Guide .** This book describes how to manually maintain HP SOA Registry Foundation contents. All basic functions of the Registry Console are discussed here.

**Developer's Guide .** Introduces the basics of creating extensions and client programs in HP SOA Registry Foundation. The Developer's Guide also documents the HP SOA Registry Foundation demo suite.

**Administrator's Guide .** Explains HP SOA Registry Foundation's configuration and management, and introduces the tools and utilities you will need to perform these tasks.

## HP SOA Registry Foundation Features Overview

HP SOA Registry Foundation is the only fully V3-compliant implementation of UDDI (Universal Description, Discovery and Integration), and is a key component of a Service Oriented Architecture (SOA). HP SOA Registry Foundation is an easy-to-use, standards-based mechanism for publishing and discovering Web services and related resources like XML Schemas.

HP SOA Registry Foundation fully implements the OASIS UDDI V3 standard. HP SOA Registry Foundation can be deployed in almost any Java environment and works with all popular database systems. In addition, the registry has been designed specifically for enterprise deployment and includes many advanced features that make it easy to configure, deploy, manage and secure. HP SOA Registry Foundation is also easy to customize to support different enterprise user communities.

HP SOA Registry Foundation extends the core UDDI V3 standard with unique functionality designed for enterprise applications:

- **Advanced Security** allows for defining granular access control for registered components. Component publisher can specify find, get, modify and delete access permissions for every published object.
- **Data Accuracy & Quality enforcement** mechanisms ensure that component registrations are accurate and up-to-date. HP SOA Registry clearly defines responsibility for every registered component.
- **Subscription & Notification** for automatically notifying registry users about changes to components that they depend on.
- **Selective Replication** among multiple registries allow for automated propagation between different registries (for e.g. between internal and external registries).
- **Taxonomy Management** for enforcement of well-defined taxonomies.
- **Powerful Management** for granular control, logging and auditing of the publishing and discovery processes.
- **Performance & Scalability** UDDI provides maximum performance and scalability by efficient implementation of web services stack and database algorithms and by supporting of a load balancing and clustering mechanism.

HP SOA Registry Foundation is a platform-independent solution that can easy be deployed in a wide variety of settings. The registry can run either standalone or within an application server: Many application servers, ranging from Tomcat to BEA WebLogic, IBM Websphere or JBoss are supported. HP SOA Registry Foundation also unrivalled support for a broad set of database management systems for storing registrations (e.g. Oracle, MS SQL Server, Sybase, IBM DB/2, PostgreSQL and HSQL). Crucially, HP SOA Registry Foundation also integrates with both LDAP and Microsoft ActiveDirectory.

# Release Notes

## What's New

- The Configurations in Database feature enables the simple configuration of cluster deployment. The database can also hold a history of configuration files. The administration console enables you to display differences between current and past configurations and stored configuration collections.
- Replications are improved and more reliable.
- Client certificate authentication (Two Way SSL) is supported.
- IPv6 is supported except for literal addresses.

## Known Issues

### UDDI Version 3 Specification

The following parts of the UDDI Version 3 specification are not implemented:

- Inter-Node operation - this part of the specification is not implemented.
- Replication Specification - The Replication Specification describes the data replication process and the programming interface required to achieve complete replication between UDDI Operators in the UBR (Universal Business Registry ~ UDDI operator cloud). This part of the specification is mandatory for members of the UBR and is not implemented.
- Policy - The policy description is not defined.
- Exclusive XML Canonicalization [http://www.w3.org/2001/10/xml-exc-c14n#] is used for canonicalization of digital signatures. Schema-centric XML Canonicalization is not yet implemented.

### UDDI Version 2 Specification

The following parts of the UDDI Version 2 specification are not implemented:

- Operator Specification - This part of the specification is mandatory for members of the UBR and is implemented with the exceptions described in this section.

- Custody transfer from version 2 is not implemented.
- Replication Specification - The Replication Specification describes the data replication process and the programming interface required to achieve complete replication between UDDI Operators in the UBR. This part of the specification is mandatory for members of the UBR and is not implemented.

## Database

- Sybase ASE (Adaptive Server Enterprise) has a limit of 16 sub-selects for queries `(SELECT ... FROM ... WHERE EXISTS (SELECT...))`. Because of this limit, some more complex queries (such as find by category bag with more keyed references) do not work.
- There are the following caveats in data migration and backup:
  - Deletion history for subscriptions is not migrated and backed up.
  - Custody transfer requests are not migrated and backed up.
- We do not recommend installing HP SOA Registry Foundation with the HSQL database under IBM Java 1.4.x since the installation may time out.

## Other

- Use of `SubjectAlternativeName` in certificates is not yet supported. This has potential impact wherever SSL is used and the secure host has more than one hostname. See WSDL Publishing below. The result is a `java.net.ssl.SSLException` with a message that hostnames do not match.
- Installation fails if the installation path contains non-ASCII characters;
- Attempting to undeploy HP SOA Registry Foundation from an application server may appear to have been successful but can leave files locked until the application server and its JVM exit. This means than an attempt to redeploy HP SOA Registry Foundation to the application server will fail because these files exist and cannot be overwritten. A workaround is to restart the application server;
- Selective One-way Replication has the following caveats:
  - Checked taxonomies are replicated as unchecked. Taxonomy data replication and change of taxonomy to checked must be done manually.

    - Custody transfer requests are not replicated.
    - Publisher assertions are not replicated.

- LDAP
    - Dynamic groups in LDAP account backends are not processed.
    - The approximateMatch find qualifier is not supported in LDAP account backends. There is no wildcard that can represent any single character in the directory (LDAP or AD). `%` is mapped to `*`, it is not possible to map `_`.
    - Groups from disabled domains are visible in the Registry Console.

- Intranet identity association is not implemented; the system#intranet group is reserved for future use.
- Password structure and length checking, expiration, checking of repeated failed logins and IP mask restriction are not implemented.
- The Signer tool does not support the refresh operation. If you start the Signer and then modify a UDDI structure, you must restart the Signer Tool.
- The Setup tool throws an exception when you try to configure registry ports on HP SOA Registry Foundation that are not connected to a database. The exception does not affect the port configuration.
- WSDL Publishing:
    - Unable to unpublish unreachable WSDLs in Registry Console.
    - Publishing a WSDL at a URL that has `https` as protocol may fail because the server certificate uses `SubjectAlternativeName` to specify alternative hostnames. This is not yet supported as noted above. The result may be a `WSDLException` with fault code `INVALID_WSDL` but the underlying cause is in fact a `java.net.ssl.SSLException` with a message that hostnames do not match.

- If you change the HP SOA Registry Foundation configuration using the Setup tool, demo data is always imported the registry database.

## Change Log

### Systinet Registry 6.5

- Business Service Console:
  - The **Home** tab has been redesigned as a dashboard of the most frequently used features;
  - Context menus for Catalog tree - right click to display the set of operations allowed on the selected entity type;
  - The user interface now only displays links for actions that the user has permission to perform;
  - Quick search - the user can search all data structures by keyword;
  - The navigation panel on the left-hand side of the **Catalog** and **Reports** tabs can be hidden, with a mouse click or **Alt-Q**;
  - Duplicate scrollbars have been eliminated from the UI;
- Entities in the BSC:
  - When viewing entity details, a new **System Info** tab provides information about the owner, creation and modification dates and UDDI keys;
  - Custom Entity Types - an administrator can define a new entity type based on a UDDI entity type and a specific categorization. For example, a "Policy" can be a tModel (UDDI type) with a keyedReference to `uddi:schemas.xmlsoap.org:policytypes:2003_03` with "policy" as the keyValue. Custom types are added seamlessly to the Catalog tree and **Reports** tab;
  - References between entities - it is possible to create and browse references between entities. The user can view all references from the current entity to other entities and find all entities which refer to the current entity;
  - Configurable Searches - an administrator can configure the search dialog for an entity type by changing the appropriate categorization;

- Localization - the registry console and Business Service Console are prepared for localization to other languages;
- Publishing Services:
  - A user can publish a service from a WSDL document stored on a web server requiring HTTP Basic authentication;
  - The performance of WSDL to UDDI publishing has been improved;
- Server-Side Development:
  - Business Services Console Framework - enhancements to support customization and integration.

## Systinet Registry 6.0

- Business Service Console - The functionality of the Business Service Console has been extended in the following areas:
  - Approval Process - The approval process has been implemented in the Business Service Console for requestors and approvers. Requestors can create and submit requests, manage their requests, and clone requests to the request work area. Requestors can also send reminders to their approvers. Approvers can approve/reject requests and view approval histories.
  - Subscriptions and Notifications - The Business Service Console allows you to create and manage subscriptions for monitoring new, changed, and deleted entities. The following entities can be monitored: providers, services, interfaces, and endpoints, as well as resources (WSDL, XML, XSD and XSLT).
  - User Profiles - Systinet Registry contains a list of predefined user profiles which differ in which main menu tabs will be available to them. Each user profile also contains a definition of default formats for result views. The registry administrator can adjust these user profiles.
  - Reports are based on taxonomic classifications.
  - Paging and large results set support - The Business Service Console supports paging for displaying large result sets. The maximum number of pages and number or rows per page can be configured for each component.

    - Overall performance of the Business Service Console has been increased by Business Service Console framework optimization.

- Approval Process
    - Changed terminology from 5.5 - the *staging registry* has been renamed to *publication registry*; the *production registry* has been renamed to *discovery registry*.
    - New installation/configuration scenarios have been added. The approval process can be installed with multiple publication registries and the approval process can be performed in multiple steps.
- Backup functionality - Backup functionality allows you to save the Systinet Registry data and configuration to a filesystem directory. Later the backup data can serve for a full restore of HP SOA Registry data and configuration.
- Documentation
    - Introduction to HP SOA Registry Foundation
    - Accessing UDDI from Developer Tools

## Systinet Registry 5.5

- Business Service Console - Using the Business Service Console, developers, architects and business users can browse the various perspectives of the Systinet Business Services Registry including business-relevant classifications such as service and interface lifecycle, compliance or operational/readiness status. They can browse information through business-relevant abstractions of SOA information such as schemas, interface local names or namespaces. The Business Service Console also provides easy to use and customizable publication wizards.
- Advanced query capabilities - Range Queries - users can search for UDDI structures using >,< operators when searching by categories.
- Taxonomy management

    - Taxonomy management has been enhanced by drag and drop taxonomy structure editing. You can move a category item in the taxonomy hierarchy without de-associating it with current UDDI entities categorized with this item’s value.
    - Administrators can edit an enterprise taxonomy list. Users can edit their lists of favorite taxonomies.

- Mapping resources. New publishing wizards and APIs. The WSDL2UDDI publishing wizard and API have been enhanced. New wizards and APIs for publishing of resources have be been created.
    - Publish a WSDL document
    - Publish an XML document
    - Publish an XML schema document
    - Publish an XSL Transformation

## Systinet Registry 5.0

- *UDDI Multi-version Registry*
    - *UDDI Version 3 Registry* - Implementation of the UDDI Version 3 Specification - Committee Specification v3.0.1
    - *UDDI Version 2 Registry* - Implementation of the UDDI Version 2 Specifications - OASIS Standard
    - *UDDI Version 1 Registry* - Implementation of the UDDI Version 1 Specifications - contributed

- *WSDL Publishing* - Implementation of Using WSDL in a UDDI Registry, Version 2.0 [http://www.oasis-open.org/committees/uddi-spec/doc/tn/uddi-spec-tc-tn-wsdl-v200-20031104.htm] for UDDI Version 2 and Version 3
- *Access Control* - Allows definition of granular access control for registered components. Component publisher can specify find, get, modify, and delete access permissions for every published object.
- *Account and Group Management* - Allows management of user's account and groups.

- *External Accounts Integration* - Allows integration of the registry with custom account storages including three integration scenarios with LDAP.
- *Taxonomy Management and Validation* - Allows administrator to create, download, upload, browse and manage taxonomies.
- *Approval Process* - component promotion and approval mechanisms for promoting components between development, staging, and production environments.
- *Selective One-way Replication* - Replication based on subscription-notification mechanism. An asynchronous subscription listener listens to incoming subscription data from a master registry.
- *Registry Console* - User-friendly UI enables user to query and publish the registry, manage user's account and provide various administration tasks.
- *Administration Tools*
  - *GUI Setup and Administration Tool* - Allows administrator to set up, port, and configure the registry; create and drop the registry database; and migrate data from other registry databases.
  - *Web Administration Console* - Allows administrator to configure and manage registry permissions, data, and users; configure replications; and view registry access statistics.
- *Support for leading database engines* including Oracle, MS SQL 2000 or 2005, IBM DB2, PostgreSQL, Sybase, Hypersonic SQL. Systinet Registry contains both a bundled and a pre-configured Hypersonic SQL 1.7.1 database.
- *Support for application servers* - Systinet Registry supports BEA WebLogic and Apache Tomcat application servers.
- *Client Libraries* - This distribution includes UDDI Version 1,UDDI Version 2, and UDDI Version 3 account, groups, and permissions management, taxonomy management, approval, administration and configuration clients with generated javadocs.
- *Open Server-Side Architecture*

    - *Registry Integration and Embedding* - Developers can directly access instances of registry APIs, run custom classes inside the registry, create custom login modules, and write custom integration with external accounts and groups storages.
    - *Registry Extensions* - Developers can write their own extension services, create and use external and internal validation services, write custom interceptors to intercept registry messages, customize the approval process, and customize or create their own Registry Console using a supplied JSP Web Framework.

## WASP UDDI 4.6

- Evaluation License Enforcement Mechanism - evaluation version of WASP UDDI requires an evaluation license
- Integration with LDAP/MS Active Directory - WASP UDDI; accounts able to integrate with legacy systems using WASP Userstore
- Approval Process - staging-production pattern used to approve data stored in the registry;
- Direct access to back-end services - WASP UDDI services implementations are now directly accessible
- Administration
    - configuration is now transparent for clustered installations
    - selected elements in configuration file can be signed to avoid their changes
    - created registry privileged users - extended administrators
    - admin and superuser able to switch to different user identity
- Localization - support for easier localization.
- Wildcards - selected databases support wildcard queries.
- Demos - demos simplified and refactored.
- WSDL Best Practice - Using WSDL in a UDDI Registry, Version 2.0 Technical Note supported.

- UDDI Client
- Operation timeout can be set per request.
- Serialization of UDDI API structures from/to XML file, DOM, String.
- Distribution contains the new UDDI client to be used in future releases of WASP UDDI.

## WASP UDDI 4.5.2

- Bugfixes - Fixes of major bugs found after 4.5 and 4.5.1 releases
- New application servers - Sun ONE Application Server 7
- Taxonomies - Added possibility to configure all combinations of tModelKey and keyName, and keyValue (tModelKey and keyName; tModelKey and keyValue; and tModelKey, keyName, and keyValue) when searching for specific taxonomies by keyedReferences.
- Administration - Added cleaner for account audit and subscriptions

## WASP UDDI 4.5.1

- Runtime - Used WASP Server for Java, 4.5.1 runtime.
- Database schema - Database schemas changed to reflect optimizations.
- Performance optimizations - Improved performance for high load of data in database.
- New application servers - WebSphere 5.0, JBoss 3.0.4, BEA WebLogic 6.1 SP3, BEA WebLogic 7.0.
- Database installation - Added database installation to WASP UDDI installation.
- GUI database tool - New database tool for database creation, delete and migration.
- Security Enhancements - Security enhanced with:
    - password structure and length checking
    - password/account expiration

    - repeated failed logins checking
    - access to configuration access can be restricted by IP mask

- WASP Secure Identity - Integration with WASP Secure Identity is not supported any more.
- Web Interface look and feel - New web interface look and feel used.
- Support for NT service - WASP UDDI can be now run as NT service.

## WASP UDDI 4.5

- Hypersonic SQL - Embedded Hypersonic SQL 1.7.1 database. New demo database pre-configured for evaluation purposes.
- GUI Upgrade - New graphical upgrade of both registry and database.
- Taxonomy refactoring - Taxonomy publication and validation refactored.
    - Added new TaxonomyAdminApi for taxonomy administration.
    - Changed specification of taxonomy compatibility
    - Unified definition of validation services as specified in Providing a Taxonomy for Use in UDDI Version 2.
    - Created Validation Plug-ins to allow creation of custom taxonomy validators.
- Change UUID - UUIDs can be now changed for all UDDI basic data structures (businessEntity, businessService, bindingTemplate, tModel) using AdminToolApi
- Category dependencies - New tModel systinet-org:dependency introduced to allow specification of dependencies between UDDI entities.
- Other API Changes:
    - UDDIProxy - added save_wsdlTmodel methods

    - find_relatedServices extended with fromServiceKey and toServiceKey

- Demos - Created new demos structure.
- Database schema - Database schemas changed to reflect new features.
- GUI Installation - New graphical installation.
- Subscriptions - Allows client to subscribe for changes of any UDDI entities that occur in WASP UDDI. There are two basic ways how the subscription is used: asynchronous notification and synchronous pull subscription.
- WASP UDDI Interceptor API - The UDDI interceptor allows implementing customized handling of UDDI requests and responses.
- Selective One Way Replication - Replication based on subscription-notification mechanism. An asynchronous subscription listener listens to incoming subscription data from a master registry.
- UDDI Errata - Incorporated last errata from UDDI.org
    - UDDI Version 2.04 API
    - UDDI Version 2.03 Data Structure Reference
- API Extensions - Extended Inquiry Extensions merged with Access Control API and enhanced with:
    - new assertion related API calls
    - enhanced wsdl related API calls
    - added categoryBag into bindingTemplate and related API calls extended with categoryBag
- Administration - Configurable direct deletion of tModels.

### WASP UDDI 4.0

- InstallShield - Graphical installation tool, InstallShield added.

- PointBase - Support for PointBase 4.3 database added.
- Oracle 9i - Oracle 9i AS (OC4J) deployment added.
- Disabled Runtime Services - System services removed from WASP UDDI runtime.
- Extended installation - Installation extended with security providers configuration.
- Web interface design changed - Improved the look and feel of the web interface.
- JDK 1.4 Support - WASP UDDI now support Sun's implementation of JDK 1.4.
- Deployment - BEA WebLogic, IBM WebSphere, Orion, Tomcat deployment scripts and documentation included.
- Taxonomy and Validation - Additional Taxonomy and Validation services integrated into the web interface.

## Supported Platforms

HP SOA Registry Foundation 6.63 has been tested on the following platforms.

- Operating systems:
    - RedHat Enterprise 4.0 and 5.0 [http://www.redhat.com]
    - Solaris 10 [http://www.sun.com/software/solaris/]
    - Windows 2003 Server [http://www.microsoft.com/windows2003/]
    - Windows 2008 Server [http://www.microsoft.com/windowsserver2008]
    - AIX 5.3 [http://www-1.ibm.com/servers/aix/]
    - Suse Linux Enterprise Server 10 [http://www.suse.com/]
    - HPUX 11.23 and 11.31 (Itanium) [http://docs.hp.com/]
- JDKs:

- Sun 1.5.0 [http://java.sun.com/j2se/]
- BEA JRockit 1.5 (for BEA WebLogic deployment only)
- IBM Java 1.5 (for IBM WebSphere deployment only)
- HP JDK 1.5

- Databases:
  - Oracle 10g [http://www.oracle.com]
  - Microsoft SQL Server 2005 [http://www.microsoft.com/sql/default.asp]
  - DB2 9.1 [http://www.ibm.com/software/data/db2/]

- LDAP:
  - Sun One Directory Server 5.2 [http://www.sun.com]
  - Microsoft Active Directory (Windows 2003 Server) [http://www.microsoft.com]
  - Microsoft Active Directory (Windows 2008 Server) [http://www.microsoft.com]

- Application Servers:
  - BEAWebLogic 9.2, and 10.0 [http://www.bea.com]
  - IBM WebSphere 6.1 [http://www.ibm.com/software/info1/websphere/index.jsp]
  - Oracle Application Server 10.1.3.3 and 10.1.3.4 [http://www.oracle.com]
  - JBoss 4.2.2 and 4.3.0 [http://www.jboss.org]

- Browsers:
  - Microsoft Internet Explorer 6.0 and 7.0

- Firefox 2.0 and 3.0

## Specifications

HP SOA Registry Foundation conforms to the following specifications:

- UDDI Specifications [http://uddi.org/specification.html]
- UDDI Version 1 Specification [http://www.oasis-open.org/committees/uddi-spec/doc/contribs.htm#uddiv1]
- UDDI Version 2 Specification [http://www.oasis-open.org/committees/uddi-spec/doc/tcspecs.htm#uddiv2]
- UDDI Version 3 Specification [http://www.oasis-open.org/committees/uddi-spec/doc/tcspecs.htm#uddiv3]
- Technical Note Using WSDL in a UDDI Registry, Version 2.0 [http://www.oasis-open.org/committees/uddi-spec/doc/tn/uddi-spec-tc-tn-wsdl-v2.htm]

## Document Conventions

This document uses the following typographical conventions:

| | |
|---|---|
| **run.bat make** | Script name or other executable command plus mandatory arguments. |
| [--help] | Command-line option. |
| either \| or | Choice of arguments. |
| *`replace_value`* | Command-line argument that should be replaced with an actual value. |
| {arg1 \| arg2} | Choice between two command-line arguments where one or the other is mandatory. |
| `rmdir /S /Q System32` | User input. |
| `C:\System.ini` | Filenames, directory names, paths and package names. |
| `a.append(b);` | Program source code. |
| `server.Version` | Inline Java class name. |
| `getVersion()` | Inline Java method name. |
| **Shift+N** | Combination of keystrokes. |
| **Service View** | Label, word, or phrase in a GUI window, often clickable. |
| **OK** | Button in a user interface. |
| **New→Service** | Menu option. |

## Documentation Updates

This guide's title page contains the following identifying information:

- Software version number, which indicates the software version.
- Document release date, which changes each time the document is updated.
- Software release date, which indicates the release date of this version of the software.

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**http://h20230.www2.hp.com/selfsolve/manuals**

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**http://h20229.www2.hp.com/passport-registration.html**

Or click the **New users - please register** link on the HP Passport login page.

You will also receive updated or new editions if you subscribe to the appropriate product support service. Contact your HP sales representative for details.

## Support

You can visit the HP Software Support Web site at:

**http://www.hp.com/go/hpsoftwaresupport**

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- Manage support contracts
- Look up HP support contacts
- Review information about available services
- Enter into discussions with other software customers
- Research and register for software training

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**http://h20229.www2.hp.com/passport-registration.html**

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## The Apache XML License, Version 1.1

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### CUP Parser Generator

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## W3C Software Notice and License

## Xalan, Version 2.5.1

## XML Pull Parser for Java, 1.1.1

### Unix crypt(3C) utility

## Notices

### Legal Notices

*Warranty*

## Acknowledgements

This product includes software developed by the Apache Software Foundation (http://www.apache.org).

This product includes code licensed from RSA Data Security (http://www.rsasecurity.com).

This product includes software developed by jGuru.com (MageLang Institute) (http://www.jGuru.com).

This product includes Antlr (http://www.antlr.org).

This product contains components derived from software developed by the Indiana University Extreme! Lab (http://www.extreme.indiana.edu).

The Standard Version of the Jetty package is available from http://www.mortbay.com.

# 2 Installation Guide

HP SOA Registry Foundation may be installed using the following scenarios:

**Standalone Registry**

This is the default installation scenario; under it the HP SOA Registry Foundation server is installed on a local machine and connects to a local or external registry database. To perform a standalone installation, follow the instructions at Installation on page 40. For more configuration information, refer to Server Configuration on page 85 and Database Installation on page 91.

**Deployed to an Application Server**

The installed standalone HP SOA Registry Foundation server may be deployed to several application servers. To deploy HP SOA Registry Foundation to an application server, perform the standalone installation as described in Installation on page 40 and then follow the instructions in Deployment to an Application Server on page 147.

**Standalone registry with data migration**

In this case, a standalone installation is performed and data is migrated to it from a previous installation of HP SOA Registry Foundation. Follow the instructions in Migration on page 195.

**External Accounts Integration**

HP SOA Registry Foundation server may be optionally configured to use external accounts on an LDAP or other account store. It is possible to set up external accounts integration during database installation. For more information, please see Database Installation on page 91 and External Accounts Integration on page 114

**Registry cluster**

A UDDI cluster is a group of UDDI registries deployed on multiple servers possibly with a clustered database in the back-end. Load balancing is used to distribute requests amongst HP SOA Registry Foundation servers to get the optimal load distribution. Standalone Registry or registry deployed to an application server could be configured to cluster with instructions in Cluster Configuration on page 173

**Support for Windows NT service and Unix Daemon**

HP SOA Registry Foundation can be run as a service on Windows 2000/XP. Support for NT service installation is installed by default on Windows servers, see instructions in NT Service Support on page 210. Also, HP SOA Registry Foundation can be run as a system daemon on Unix machines, see instructions in Running in Linux on page 216.

## System Requirements

This section explains the requirements which must be met *before* you start installation. Supported Platforms on page 19 in Chapter 1, Read This First summarizes the software platform options for the current release. So you should:

1. Ensure the installation machine meets the requirements that follow in Hardware on page 38;
2. Decide which combination of supported platform components will be used;
3. Ensure each component is installed as described in this section.

Then you can proceed with installation.

### Hardware

Table 1 summarizes hardware requirements for the installation machine. The minimum specifications are suitable for experimental use of HP SOA Registry Foundation on a workstation. Although it may be possible to install the product on a machine with lower specifications, performance and reliability may be severely affected. The requirements of servers in a production environment are greater and depend on patterns of use. See Support in Read This First if you need assistance.

**Table 1. Minimum Hardware Specifications**

| Specification | Minimum | Notes |
|---|---|---|
| CPU | 1GHz | Actual requirements depend on the on patterns of use in the target environment. |
| RAM | 1GB | |
| Disk Space | 300MB | This is sufficient if the selected database system is installed on another machine.<br><br>The database server machine must have sufficient space for the selected database system. The requirements for registry data are quite modest. Each GB typically provides for registration of several thousand additional entities.<br><br>So disk performance is more significant. |

## Java™ Platform

A supported Java *Development Kit* is required on the installation machine. A Java Runtime Environment is not sufficient because it must be possible to compile JSP pages at runtime.

IBM JDK 1.4 and higher must contain a JCE provider. Bouncy Castle provider [http://www.bouncycastle.org/] is supported, and JCE Unlimited Strength Jurisdiction Policy Files [http://java.sun.com/products/jce/index-14.html] are required.

1. Copy the file `bcprov-jdk14-*.jar` from Bouncy Castle provider [http://www.bouncycastle.org/] to `IBMJava2/jre/lib/ext`;

2. Add the following line to the the file `java.security` located in `IBMJava2/jre/lib/security`:

```
security.provider.5=org.bouncycastle.jce.provider.BouncyCastleProvider
```

## Relational Database

Setting up a relational database during installation is optional - you can instead set it up after installation using the setup tool. See Database Installation on page 91. In both cases you can use the pre-configured HSQL database system that comes with HP SOA Registry Foundation.

The installation process allows you to setup a database using one of the other supported database systems, in which case the database server must be installed and running (not necessarily on the same machine). JDBC driver files must generally be available locally, but some drivers are distributed with HP SOA Registry Foundation.

## Installation

This section describes the standalone installation of HP SOA Registry Foundation and all settings.

To install the registry, type the following at a command prompt:

**java -jar hp-soa-registry-foundation-6.63.jar**

and follow the wizard panels. If you have associated `javaw` with `*.jar` files on Windows, just double-click the icon for the file `hp-soa-registry-foundation-6.63.jar`.

### Command-line Options

Installation may be launched with following optional arguments:
`java -jar hp-soa-registry-foundation-6.63.jar` [[--help] | [-h] | [--gui] | [-g]]
[[-u *`configfile`* ] | [--use-config *`configfile`* ]]
[[-s *`configfile`* ] | [--save-config *`configfile`* ]]
[--debug]

`-g | --gui` starts the installation in gui mode (default).

`-c | [--console]` runs command-line installation

`-h | [--help]` shows help messages

`-s` *`configfile`* `| --save-config` *`configfile`* saves the installation settings into the configuration file without actually installing the registry.

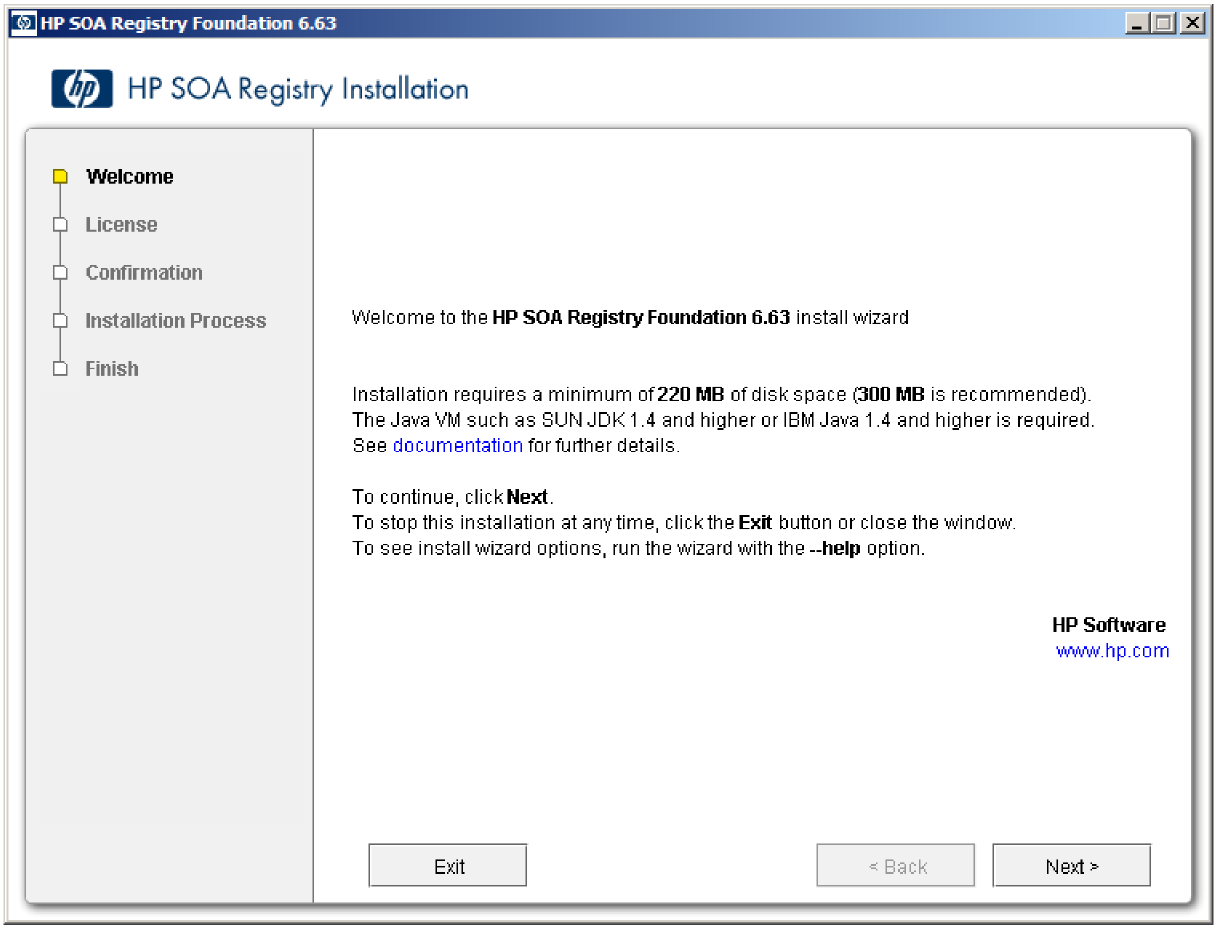
`-u` *`configfile`* `| --use-config` *`configfile`* installs the registry using the settings contained in the configuration file.

`--debug` the installation produces more information to localize problems or errors.

## Installation Panels

This section discusses the content of the installation wizard. It goes through installation panels using default settings.

### Figure 1. Welcome Panel



Welcome to the **HP SOA Registry Foundation 6.63** install wizard

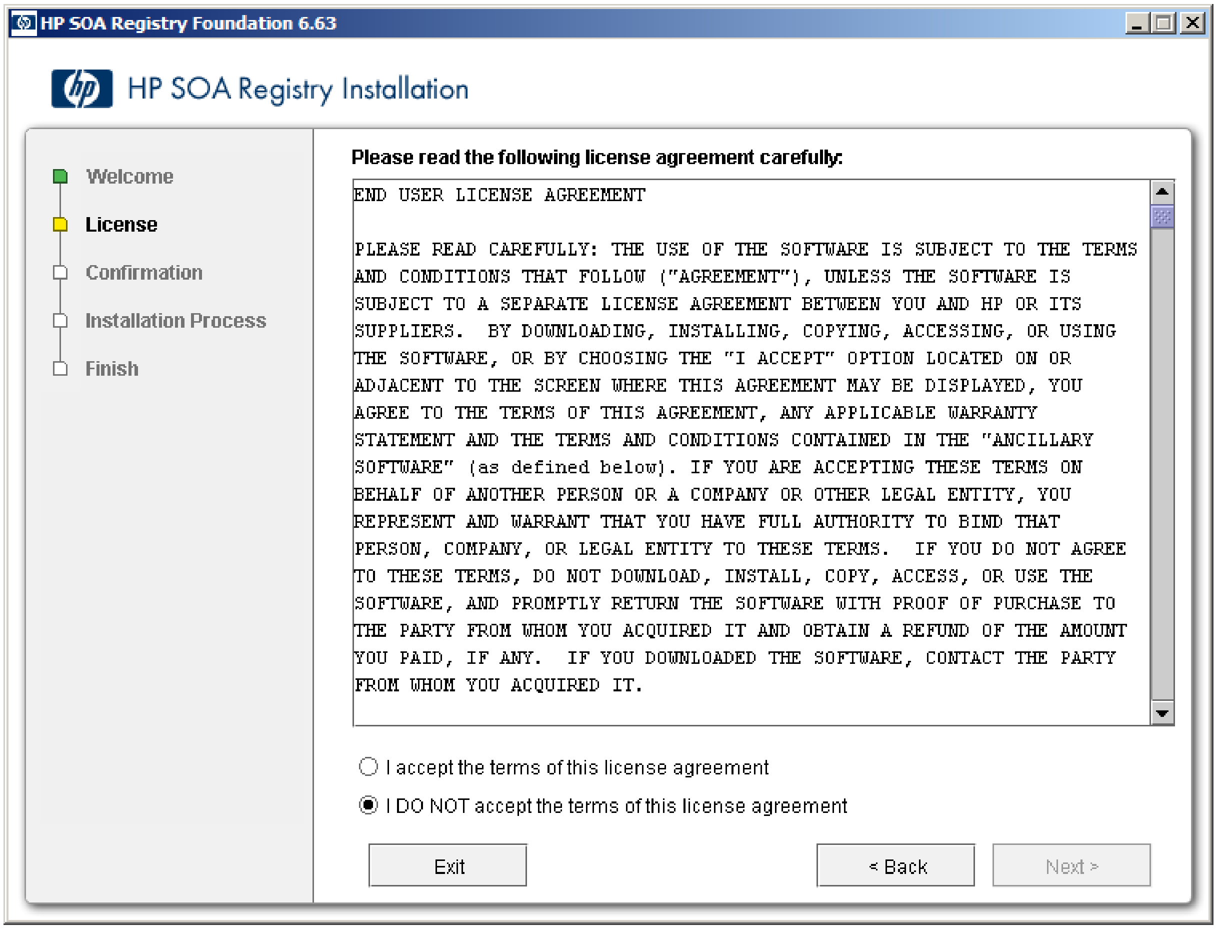
Installation requires a minimum of **220 MB** of disk space (**300 MB** is recommended).
The Java VM such as SUN JDK 1.4 and higher or IBM Java 1.4 and higher is required.
See documentation for further details.

To continue, click **Next**.
To stop this installation at any time, click the **Exit** button or close the window.
To see install wizard options, run the wizard with the --**help** option.

**HP Software**
www.hp.com

Figure 1 shows the first panel of the installation wizard. The installation wizard helps you to install HP SOA Registry Foundation on a local computer. To continue, click **Next**. To stop this installation at any time, click **Exit**. To return to a previous panel, click **Back**. This panel also contains links to HP SOA Registry Foundation documentation and to the Systinet Web site.

**Figure 2. License Panel**



Please read the following license agreement carefully:

```
END USER LICENSE AGREEMENT

PLEASE READ CAREFULLY: THE USE OF THE SOFTWARE IS SUBJECT TO THE TERMS
AND CONDITIONS THAT FOLLOW ("AGREEMENT"), UNLESS THE SOFTWARE IS
SUBJECT TO A SEPARATE LICENSE AGREEMENT BETWEEN YOU AND HP OR ITS
SUPPLIERS.  BY DOWNLOADING, INSTALLING, COPYING, ACCESSING, OR USING
THE SOFTWARE, OR BY CHOOSING THE "I ACCEPT" OPTION LOCATED ON OR
ADJACENT TO THE SCREEN WHERE THIS AGREEMENT MAY BE DISPLAYED, YOU
AGREE TO THE TERMS OF THIS AGREEMENT, ANY APPLICABLE WARRANTY
STATEMENT AND THE TERMS AND CONDITIONS CONTAINED IN THE "ANCILLARY
SOFTWARE" (as defined below). IF YOU ARE ACCEPTING THESE TERMS ON
BEHALF OF ANOTHER PERSON OR A COMPANY OR OTHER LEGAL ENTITY, YOU
REPRESENT AND WARRANT THAT YOU HAVE FULL AUTHORITY TO BIND THAT
PERSON, COMPANY, OR LEGAL ENTITY TO THESE TERMS.  IF YOU DO NOT AGREE
TO THESE TERMS, DO NOT DOWNLOAD, INSTALL, COPY, ACCESS, OR USE THE
SOFTWARE, AND PROMPTLY RETURN THE SOFTWARE WITH PROOF OF PURCHASE TO
THE PARTY FROM WHOM YOU ACQUIRED IT AND OBTAIN A REFUND OF THE AMOUNT
YOU PAID, IF ANY.  IF YOU DOWNLOADED THE SOFTWARE, CONTACT THE PARTY
FROM WHOM YOU ACQUIRED IT.
```

I accept the terms of this license agreement [✓ I DO NOT accept the terms of this license agreement]

Figure 2 shows the HP SOA Registry Foundation license. To continue with the installation of the registry, read the license agreement and agree to it. To accept the license agreement, select the radio button labeled **I accept the terms of the license agreement** and click **Next**.

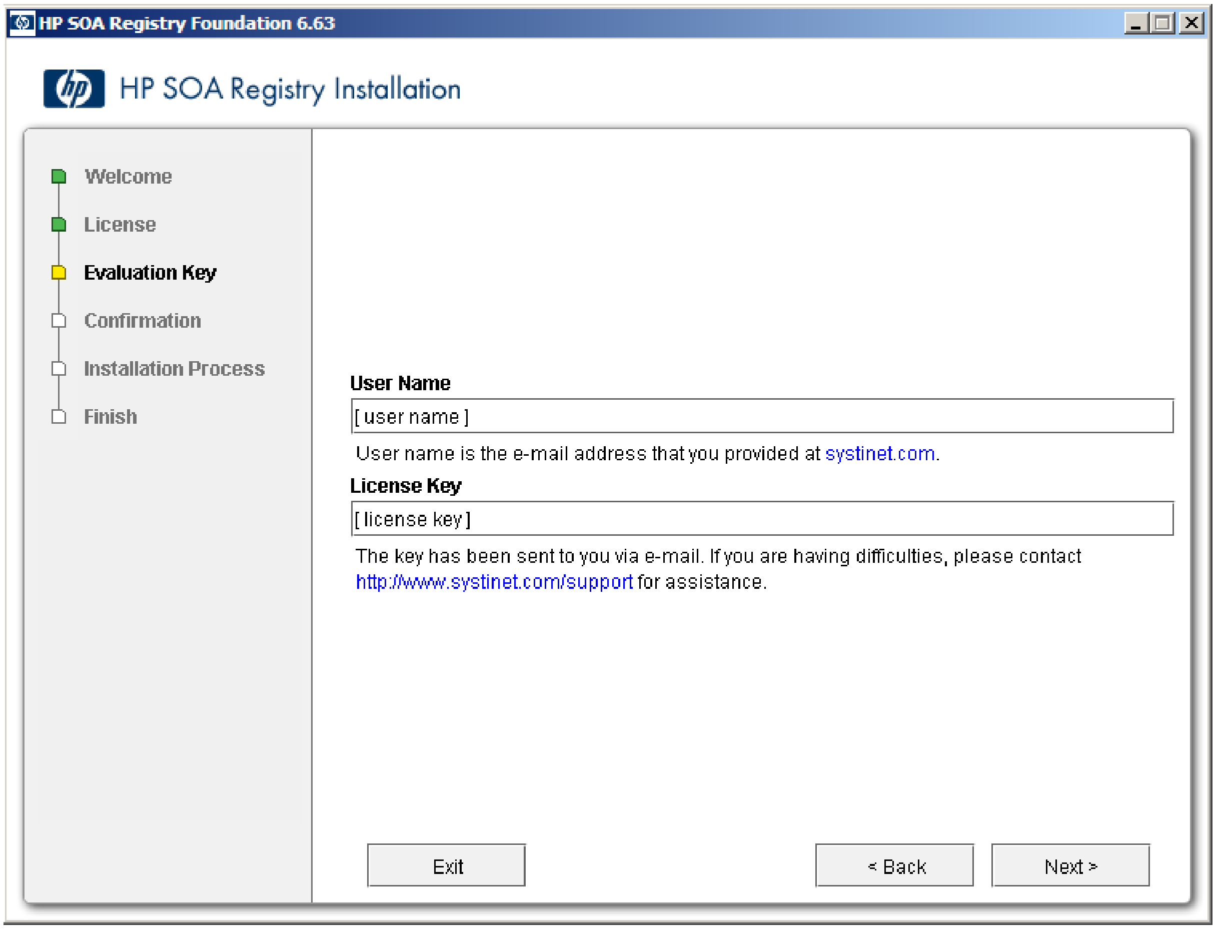
If you do not accept the terms of the license agreement, select the radio button labeled **I DO NOT accept the terms of the license agreement**, and click **Exit**.

Until you agree to the license, only the **Exit** button is enabled. You cannot proceed with the installation without agreeing to the license.

## Evaluation Key

If you are installing the evaluation version of HP SOA Registry Foundation, you must provide your user name and key. If you have the full version, skip to Installation Type on page 45.

**Figure 3. Evaluation Key**



User Name

[ user name ]

User name is the e-mail address that you provided at systinet.com.

License Key

[ license key ]

The key has been sent to you via e-mail. If you are having difficulties, please contact http://www.systinet.com/support for assistance.

**User name**

In this field use the e-mail address you provided at `www.systinet.com`.

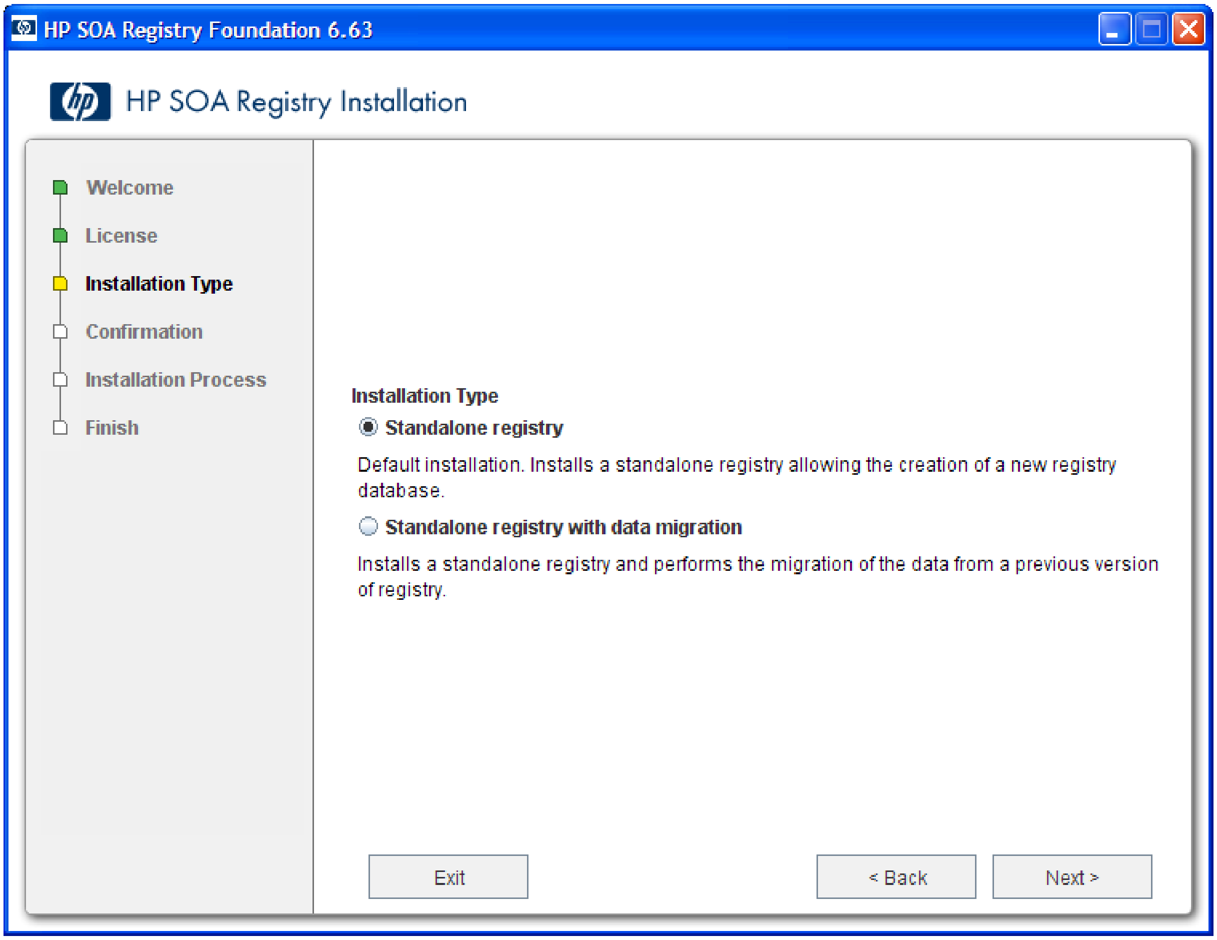
**License Key**

The key has been sent to you via e-mail. If you have difficulties, please contact http://www.systinet.com/support for assistance.

You must provide a valid user name and license key to continue the installation.

## Installation Type

**Figure 4. Installation Type**



Installation Type

[✓ Standalone registry]

Default installation. Installs a standalone registry allowing the creation of a new registry database.

Standalone registry with data migration

Installs a standalone registry and performs the migration of the data from a previous version of registry.

Figure 4 shows two installation scenarios. Select one.

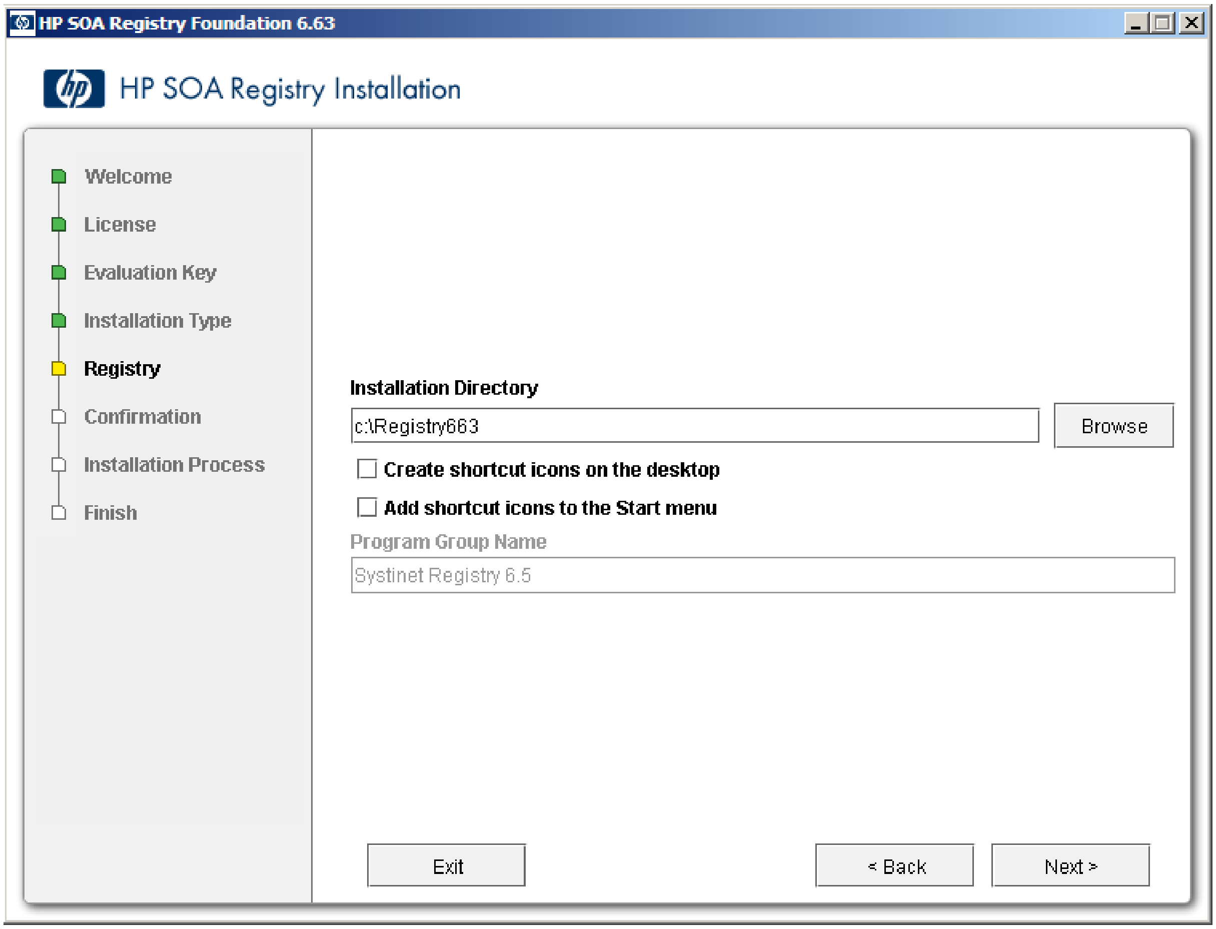
**Standalone registry**

Default installation. Installs a standalone registry and enables the creation of a new registry database.

**Standalone registry with data migration**

Installs standalone registry with migration of data from a previous installation of the registry. For more information, please see Migration on page 195.

## Figure 5. Installation Directory



Installation Directory

c:\Registry663

☐ Create shortcut icons on the desktop

☐ Add shortcut icons to the Start menu

Program Group Name

Systinet Registry 6.5

On the panel shown in Figure 5, type the path to the installation directory where HP SOA Registry Foundation will be installed. The default directory is the current working directory.

Installation directory can consist of ASCII characters. International characters in installation directory path are not supported.

If you are installing on a Windows platform you can selected from the following:

**Create shortcut icons on the desktop**

If selected, icons for accessing the Registry Console and for starting and stopping the registry will be created on the desktop.

**Add shortcut icons to the Start menu**

If selected, the icons noted above are added to the **Start** menu.

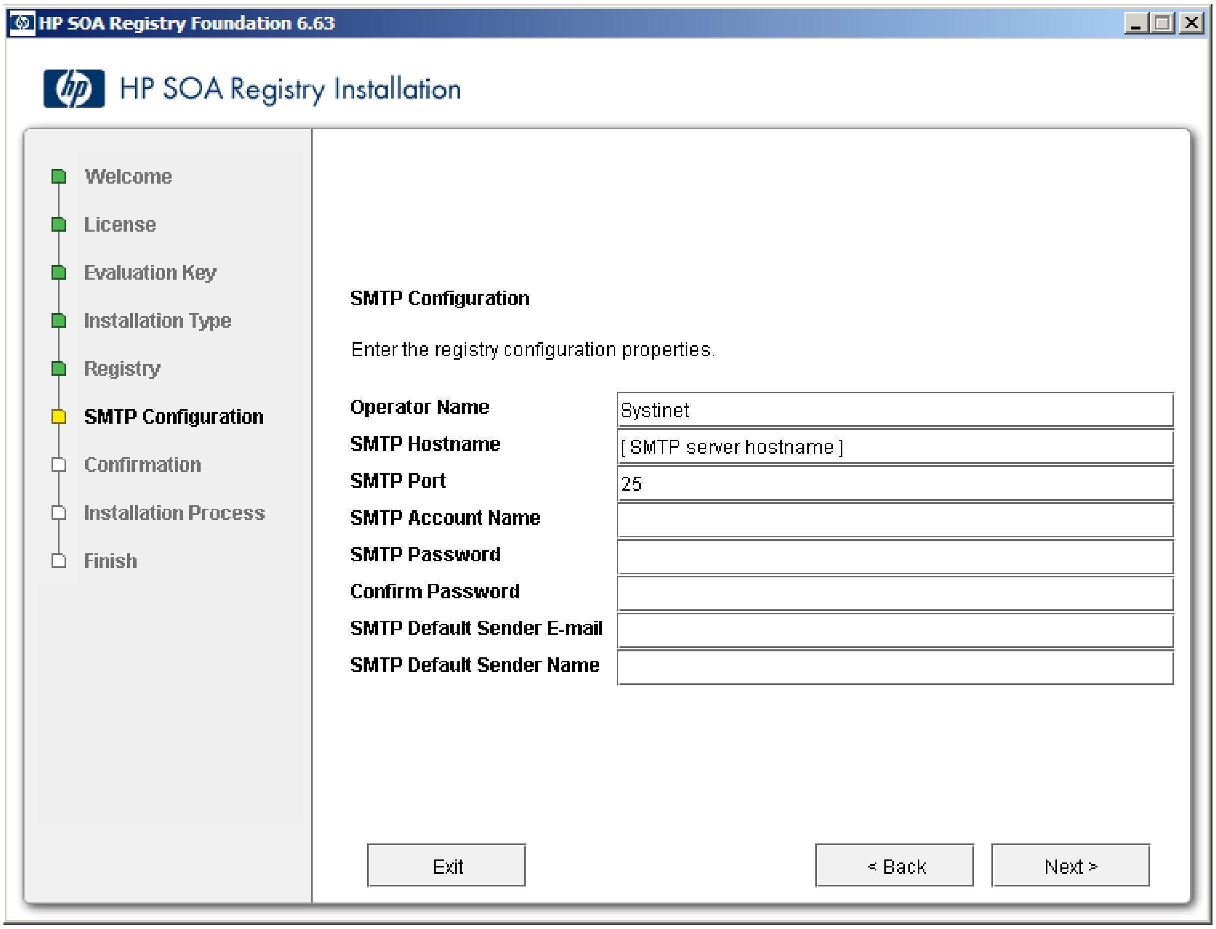
**Program group name**

Group name created in the **Start** menu where shortcut icons will be placed.

You must have read and write permissions on the installation directory.

## SMTP Configuration

**Figure 6. SMTP Configuration**



SMTP Configuration

Enter the registry configuration properties.

| | |
|---|---|
| Operator Name | Systinet |
| SMTP Hostname | [ SMTP server hostname ] |
| SMTP Port | 25 |
| SMTP Account Name | |
| SMTP Password | |
| Confirm Password | |
| SMTP Default Sender E-mail | |
| SMTP Default Sender Name | |

Figure 6 shows SMTP configuration. The SMTP configuration is important when users needs to receive email notification from subscriptions.

**SMTP Host Name**

Host name of the SMTP server associated with this installation of HP SOA Registry Foundation

**SMTP Port**

Port number for this SMTP server

**SMTP Password**

Self explanatory

**Confirm password**

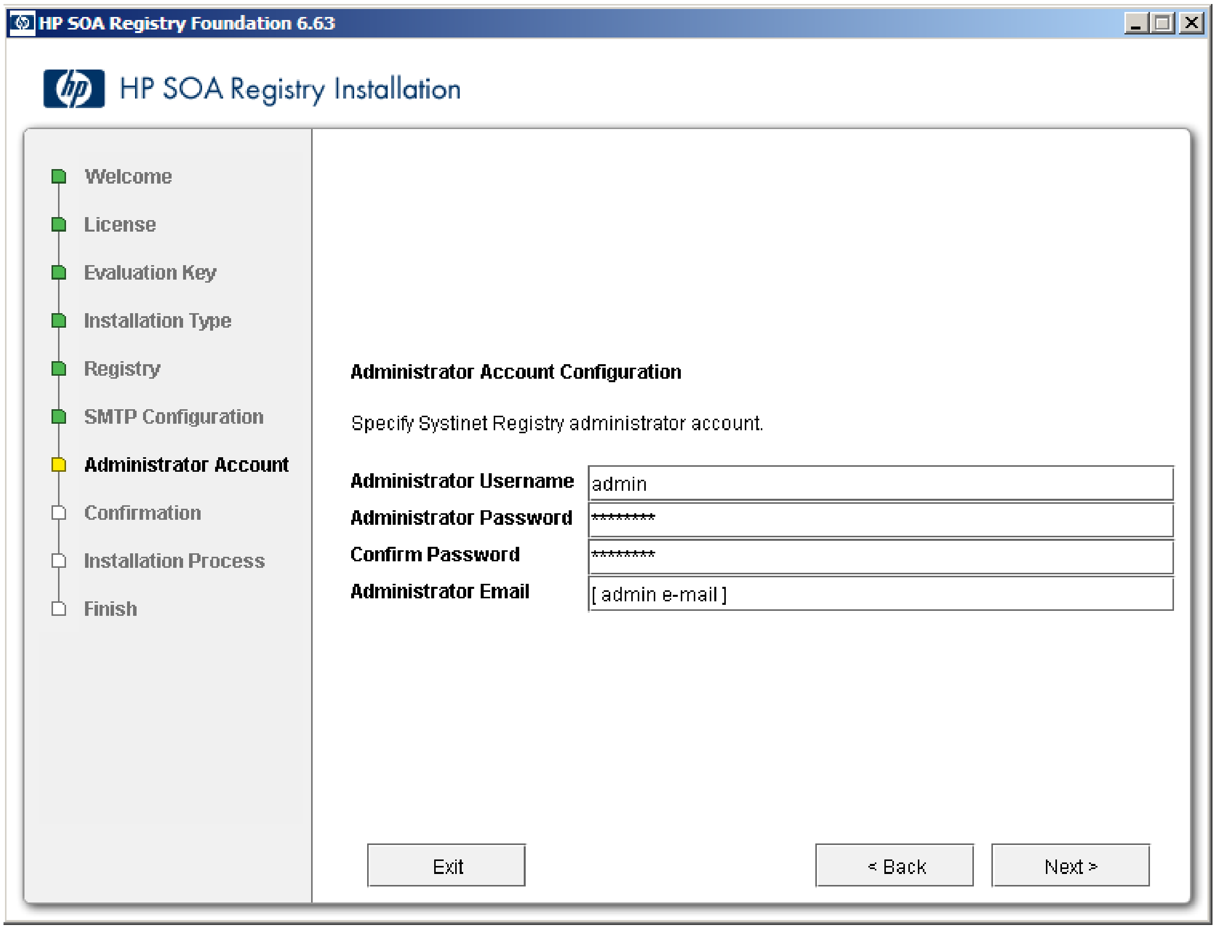
Retype the same password. Note that if it is not same as the password in the previous box, you cannot continue.

**SMTP Default Sender E-mail, Name**

HP SOA Registry Foundation will generate email messages with this identity.

## Setup Administrator Account

**Figure 7. Administrator Account**



**Administrator Account Configuration**

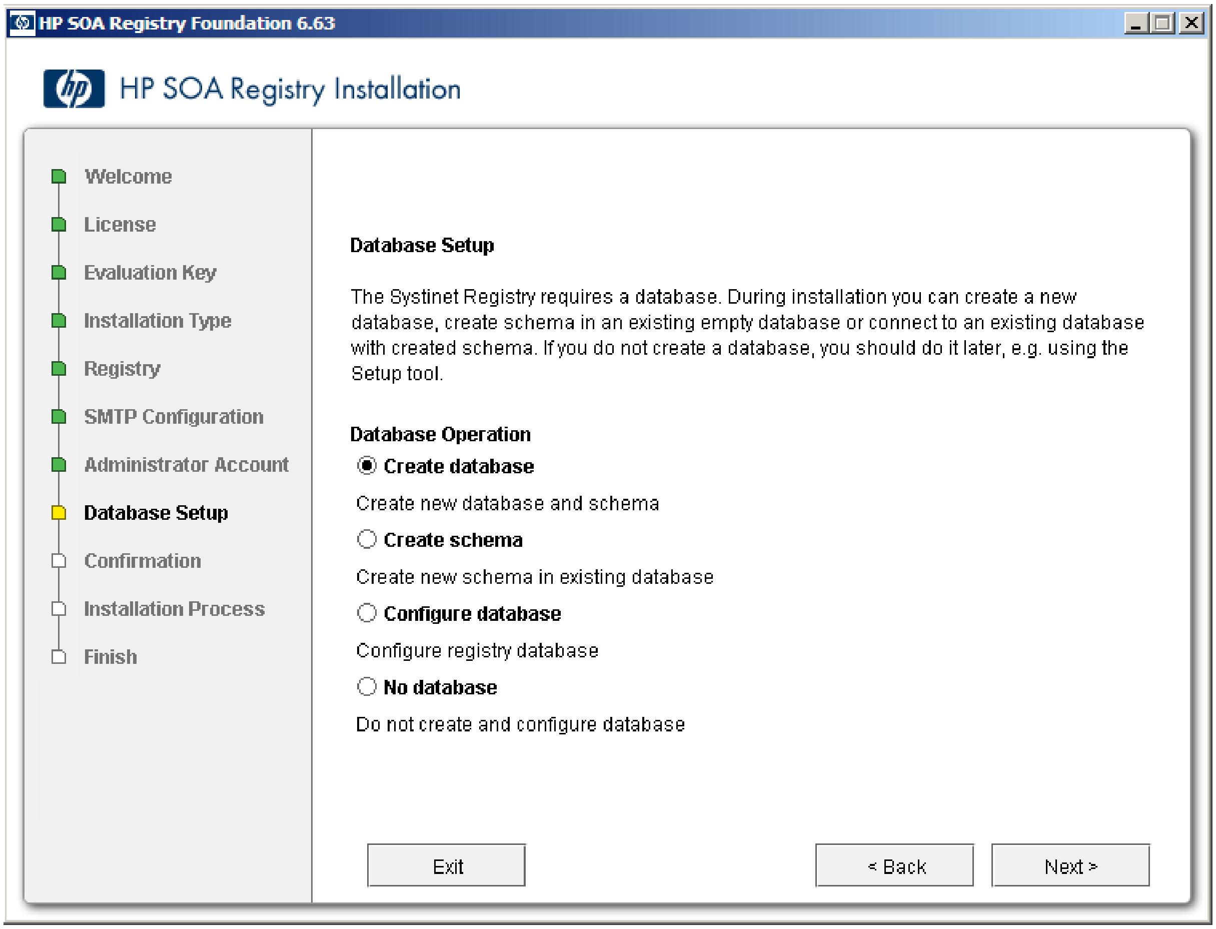
Specify Systinet Registry administrator account.

| | |
|---|---|
| Administrator Username | admin |
| Administrator Password | ********* |
| Confirm Password | ********* |
| Administrator Email | [ admin e-mail ] |

## Database Settings

The registry requires a database which may be created during installation. During installation you can create a new database, create schema in an existing empty database or connect to an existing database with created schema. Using the Setup tool, you can also drop the database or database schema. Select your database creation method on the following panel.

**Figure 8. Database Creation Method**



**Database Setup**

The Systinet Registry requires a database. During installation you can create a new database, create schema in an existing empty database or connect to an existing database with created schema. If you do not create a database, you should do it later, e.g. using the Setup tool.

**Database Operation**

[✓ **Create database**]
Create new database and schema

**Create schema**
Create new schema in existing database

**Configure database**
Configure registry database

**No database**
Do not create and configure database

**Create database**

Create new database/users/tablespaces (depending on the type of the database server) and database schema. This is the most comfortable way, but please note that you must know the credentials of the database administrator.

**Create schema**

Create a new schema in an existing database. Use this option if you have access to an existing empty database and the ability to create tables and indexes. This option is suitable when you do not know the administrator's credentials. We assume admin has already created a new database/users/tablespaces for this option.

➤ See Database Installation on page 91, for more information.

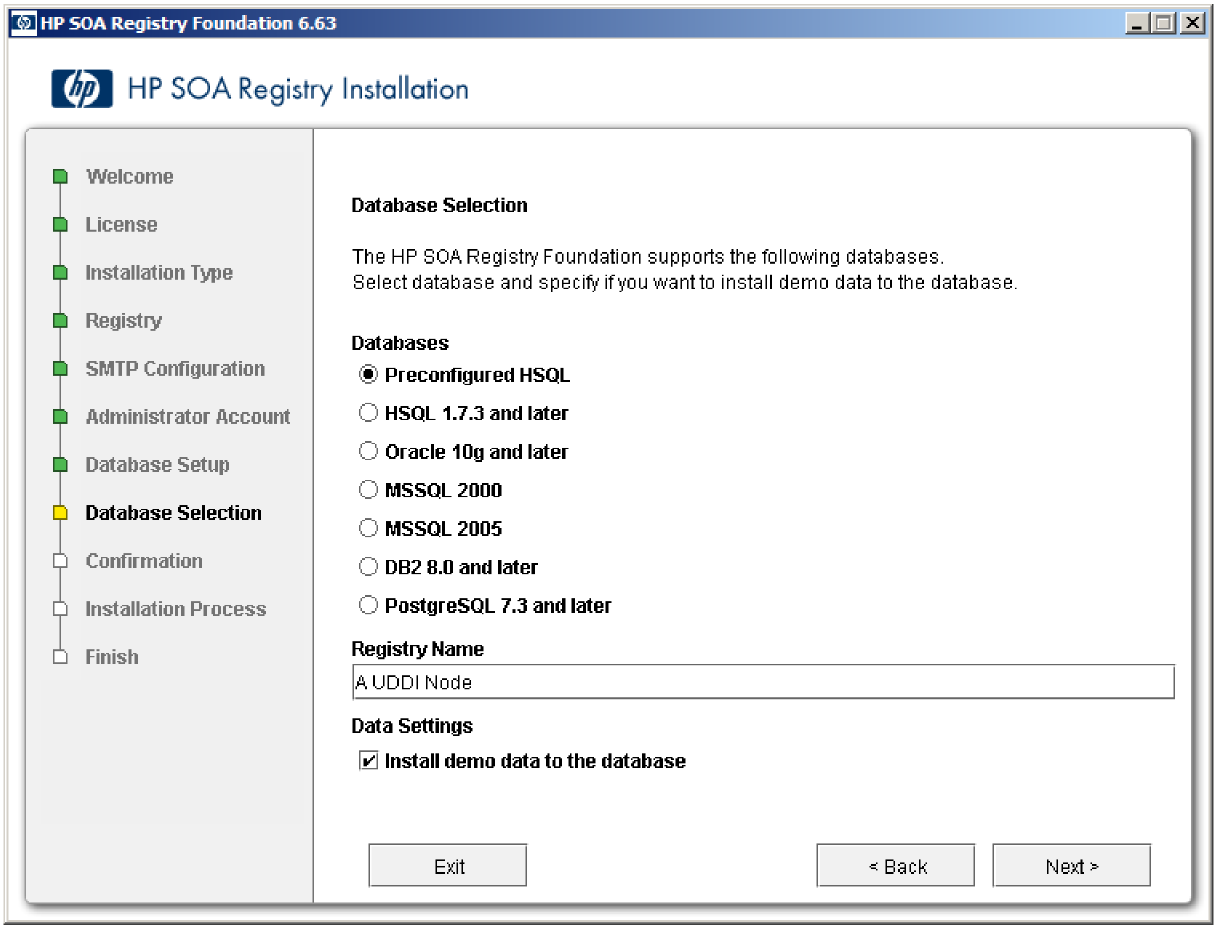
**Configure database**

Configure registry database. Use this option if the registry database already exists (For example, from a previous installation) and fill in only the connection parameters.

**No database**

Choose it if you intend to create a registry database later. Note that HP SOA Registry Foundation cannot be started without a database.

**Figure 9. Select Database**



Database Selection

The HP SOA Registry Foundation supports the following databases.
Select database and specify if you want to install demo data to the database.

Databases

- [✓ Preconfigured HSQL]
- HSQL 1.7.3 and later
- Oracle 10g and later
- MSSQL 2000
- MSSQL 2005
- DB2 8.0 and later
- PostgreSQL 7.3 and later

Registry Name: A UDDI Node

Data Settings

- [✓ Install demo data to the database]

Figure 9 shows the supported database engines that can be prepared for HP SOA Registry Foundation.

You can specify the name of HP SOA Registry Foundation installation. The name is saved to the operational business entity. The registry name appears in the upper right corner of Registry Console and Business Service Console.

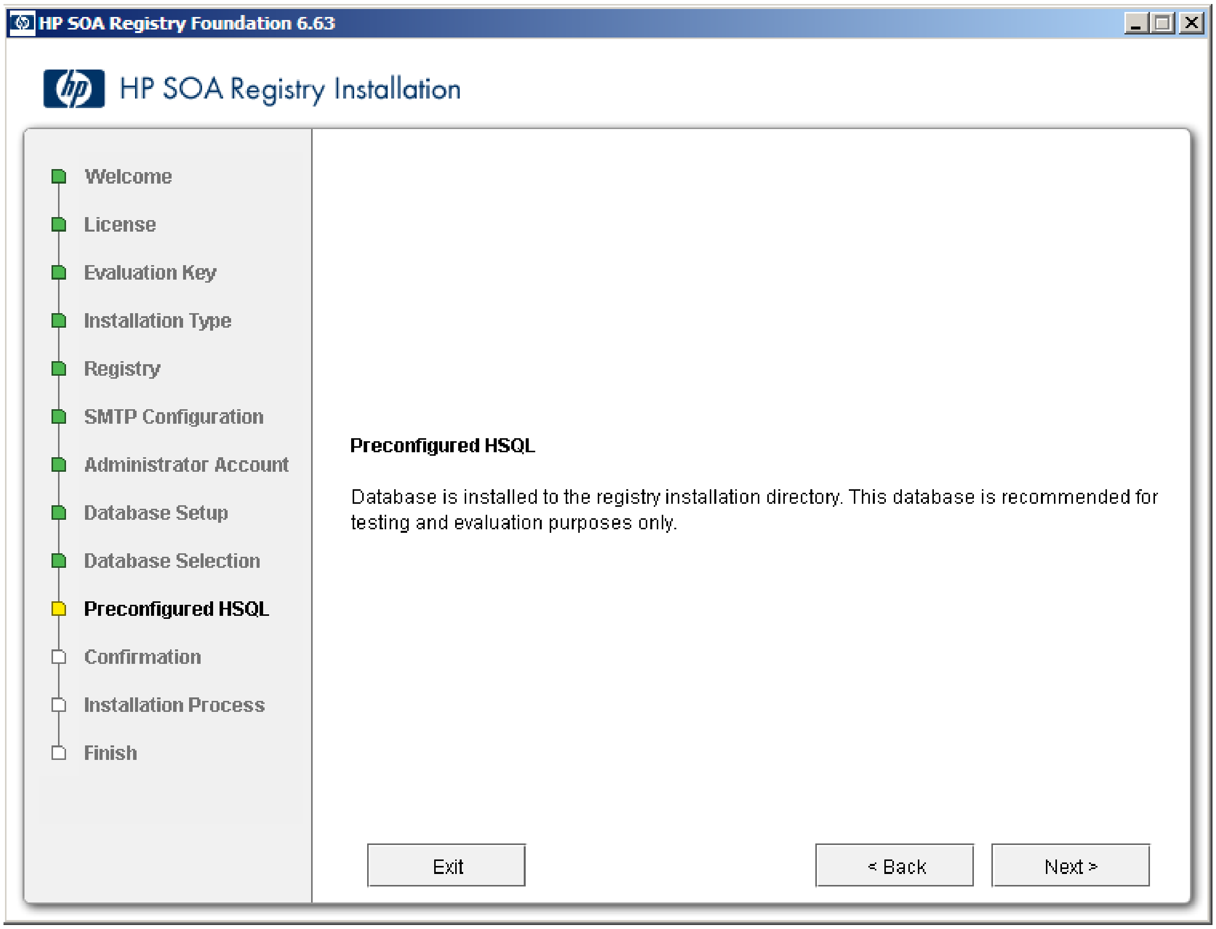
Select **Install demo data** if you want to evaluate the provided HP SOA Registry Foundation demos after installation.

The default database to create is the **Preconfigured HSQL** (HSQL). This database is recommended for evaluation purposes.

Note that it is possible to change the database after installation, using the Setup tool.

Please see Database Installation on page 91 for more information on database installation.

**Figure 10. Preconfigured HSQL**

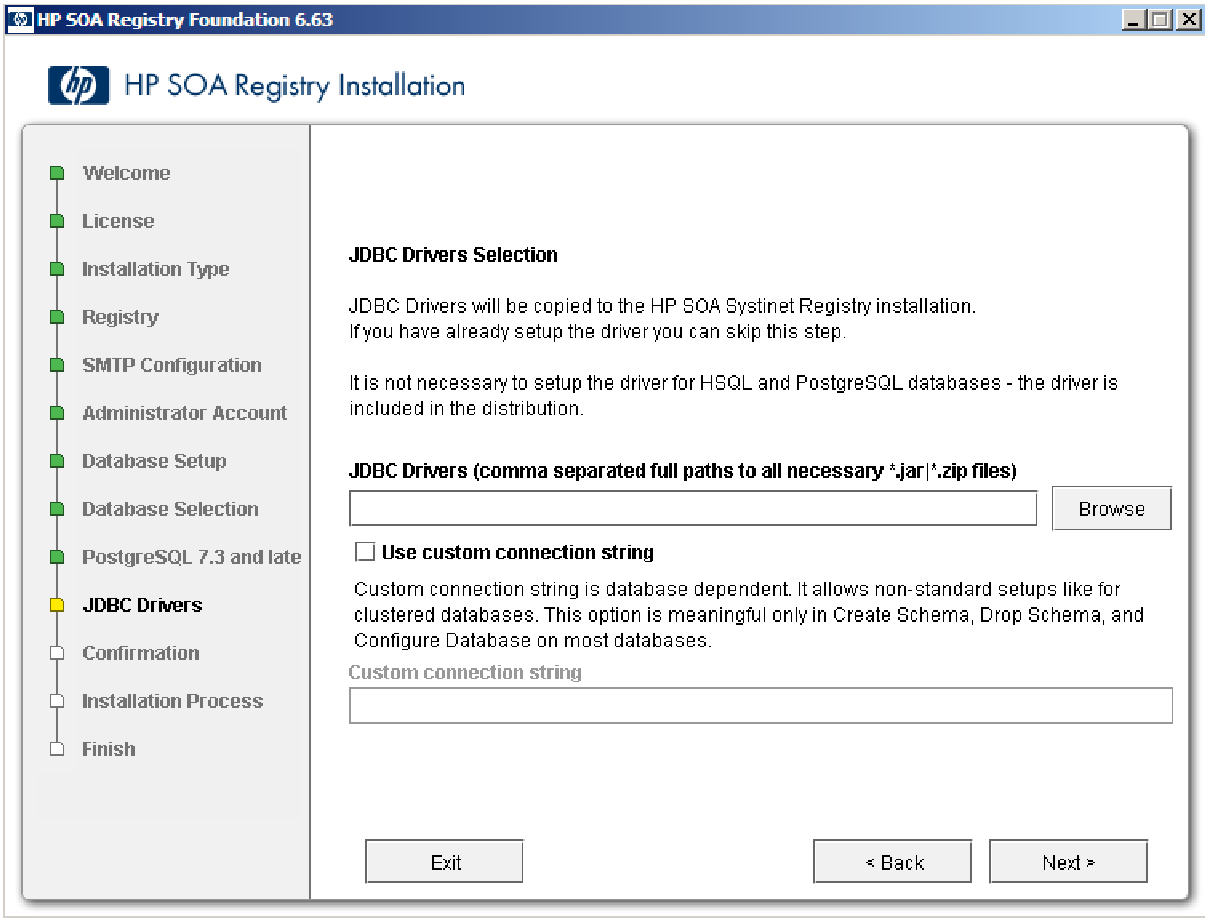


**Preconfigured HSQL**

Database is installed to the registry installation directory. This database is recommended for testing and evaluation purposes only.

On the panel displayed in Figure 7 you are only required to provide administrator account settings. The database files will be installed into the `REGISTRY_HOME/hsqldb/uddinode` directory. The database user is `uddiuser` and the password is `uddi`.

**Figure 11. Optional JDBC Driver**



JDBC Drivers Selection

JDBC Drivers will be copied to the HP SOA Systinet Registry installation.
If you have already setup the driver you can skip this step.

It is not necessary to setup the driver for HSQL and PostgreSQL databases - the driver is included in the distribution.

JDBC Drivers (comma separated full paths to all necessary *.jar|*.zip files)

☐ Use custom connection string

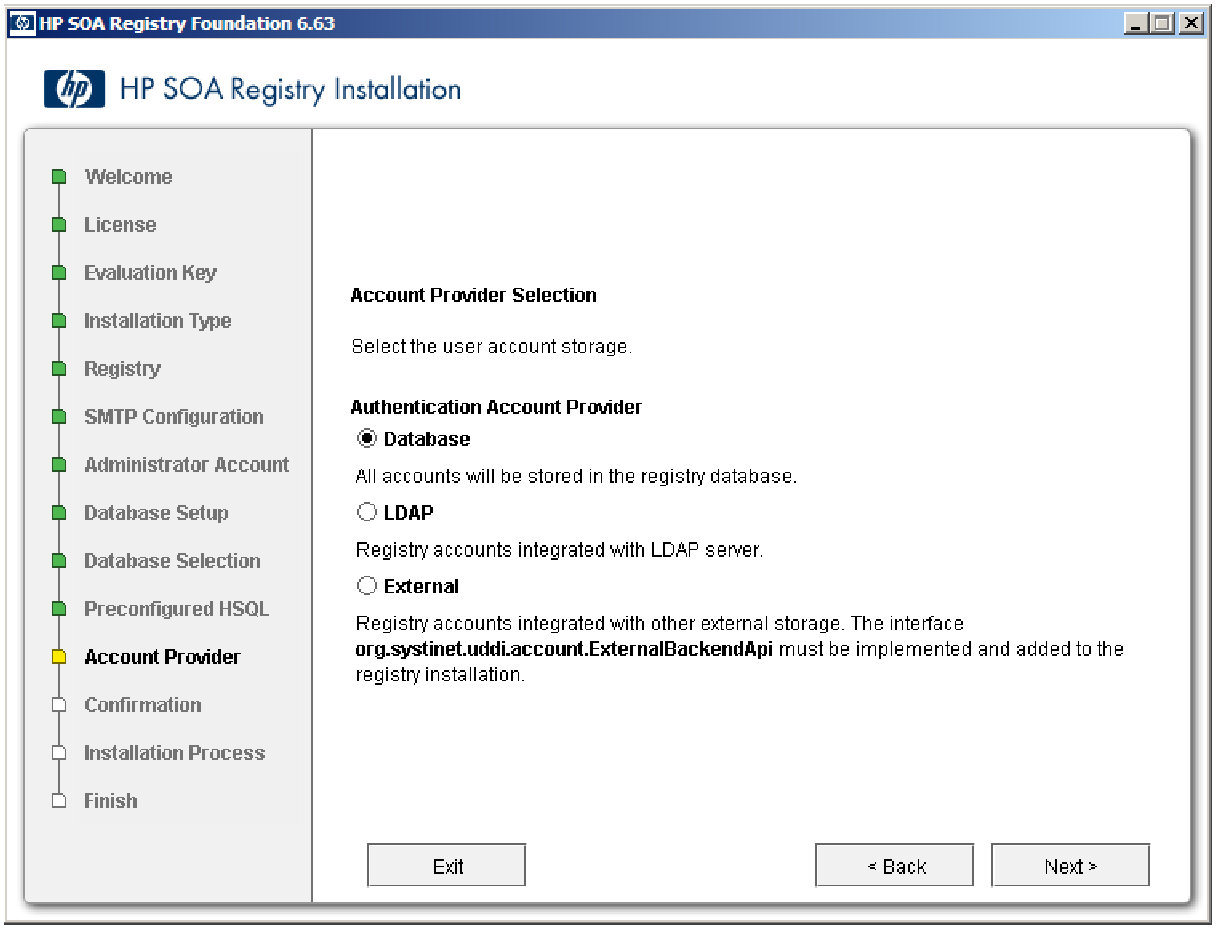
Custom connection string is database dependent. It allows non-standard setups like for clustered databases. This option is meaningful only in Create Schema, Drop Schema, and Configure Database on most databases.

Custom connection string

You can also specify custom JDBC connection string. Such string may be useful for special environments like database clusters where JDBC driver does load-balancing or failover. This setting is useful only in Create Schema, Drop Schema and Configure Database. We do not recommend to use this option unless there is special need to do so.

Enter path to JDBC Drivers on the panel shown in Figure 11. It is not necessary to configure this path for the HSQL and PostgreSQL databases as the JDBC drivers for these databases are installed in the distribution.

**Figure 12. Authentication Provider**



**Account Provider Selection**

Select the user account storage.

**Authentication Account Provider**

[✓ **Database**]

All accounts will be stored in the registry database.

**LDAP**

Registry accounts integrated with LDAP server.

**External**

Registry accounts integrated with other external storage. The interface **org.systinet.uddi.account.ExternalBackendApi** must be implemented and added to the registry installation.

Figure 12 allows you to select an authentication provider.

**Database**

All accounts will be stored in the registry database.

**LDAP**

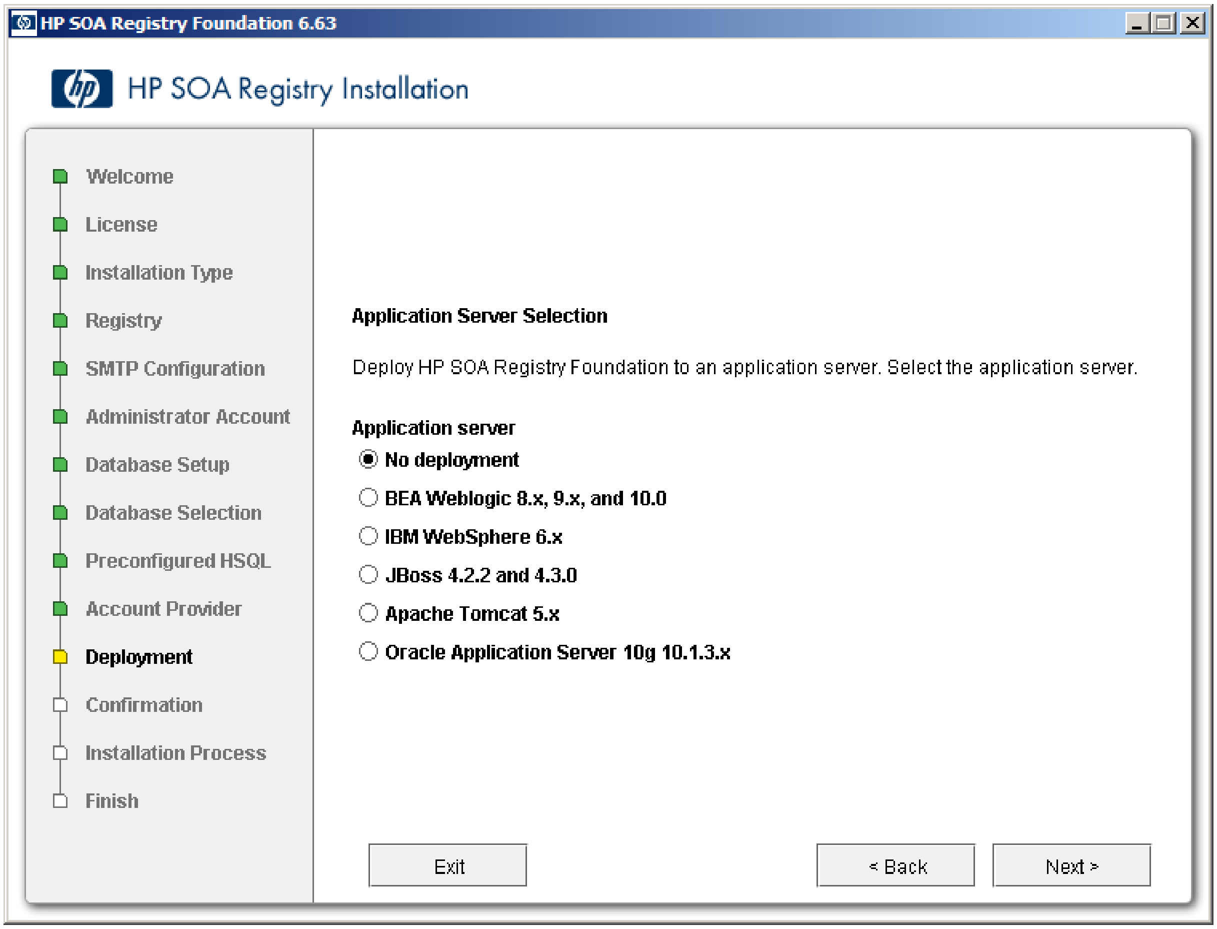
Registry accounts integrated with LDAP server.

**External**

Registry accounts integrated with other external storage. The the interface `com.systinet.uddi.account.ExternalBackendApi` must be implemented and added to the registry installation.

## Direct deployment

**Figure 13. Direct deployment**



**Application Server Selection**

Deploy HP SOA Registry Foundation to an application server. Select the application server.

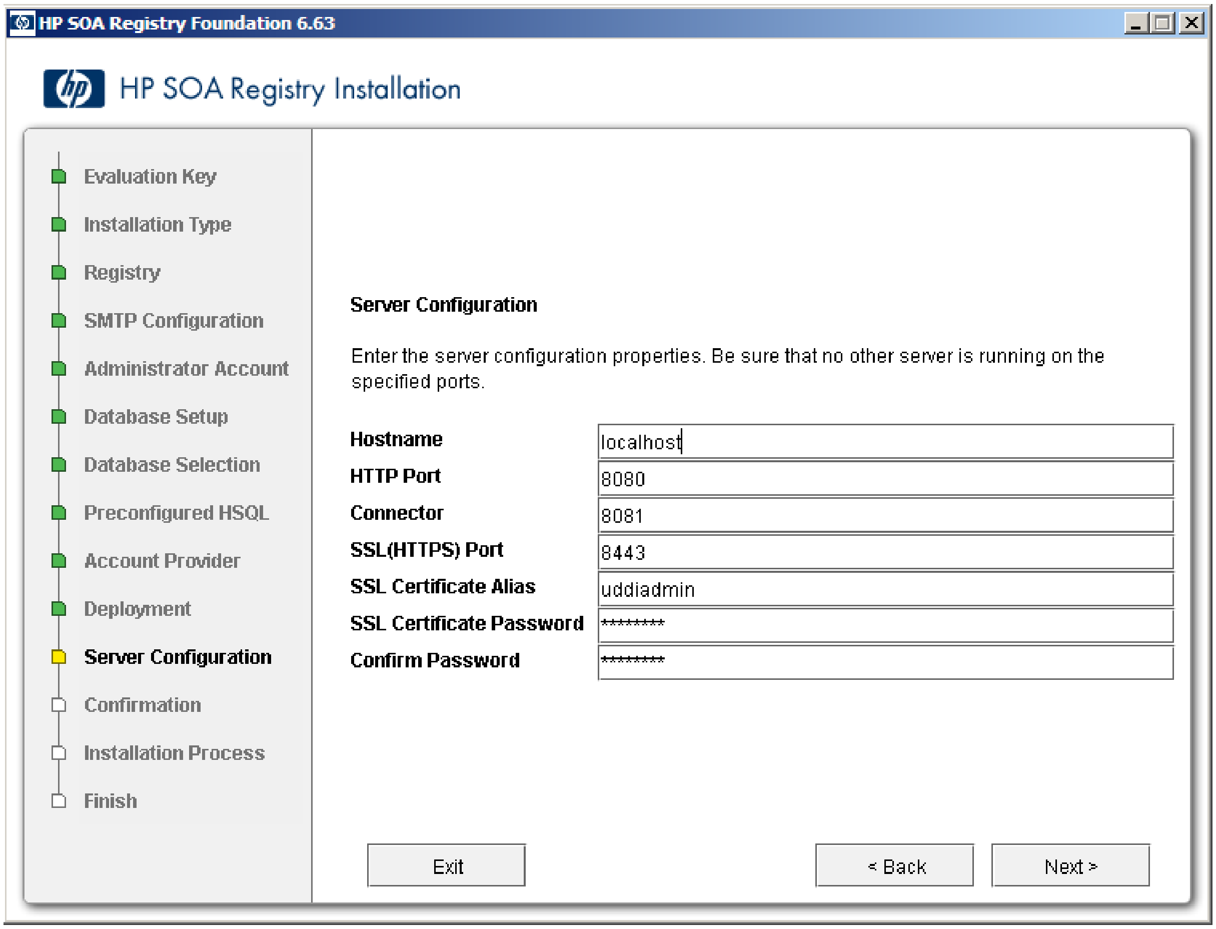
**Application server**

- [✓ No deployment]
- BEA Weblogic 8.x, 9.x, and 10.0
- IBM WebSphere 6.x
- JBoss 4.2.2 and 4.3.0
- Apache Tomcat 5.x
- Oracle Application Server 10g 10.1.3.x

Direct deployment allows to create EAR or WAR file for deployment in application server directly from installer. You can also deploy later with setup. See Creating a Web Application Archive (WAR,EAR) on page 148 for information on how to deploy from setup. Deployment from installer is similar.

## Server Settings

**Figure 14. Server Configuration**



**Server Configuration**

Enter the server configuration properties. Be sure that no other server is running on the specified ports.

| | |
|---|---|
| **Hostname** | localhost |
| **HTTP Port** | 8080 |
| **Connector** | 8081 |
| **SSL(HTTPS) Port** | 8443 |
| **SSL Certificate Alias** | uddiadmin |
| **SSL Certificate Password** | ******** |
| **Confirm Password** | ******** |

Figure 14 shows the server configuration settings. These settings will be used for the HTTP and HTTPS servers. The default recommended settings are filled in the text fields.

**Host name**

The host name of this computer; change the auto-completed entry if it is different.

**HTTP Port**

The nonsecure port for accessing the Registry Console (default value: `8080`)

**SSL (HTTPS) Port**

Secure port for accessing the Registry Console (default value: `8443`)

**Connector**

The connector port is used by standalone server to listen for control signals. Note that no other application may use this port (default value: `8081`).

**SSL Certificate Alias**

Alias used to identify the SSL private key in protected store management. For more information see PStore Tool on page 403. (default value: `uddiadmin`)

**SSL Certificate Password**

Password to encrypt SSL private key. (default value: `changeit`)

**Confirm Password**

Retype the same password. Note that if it is not same as previous, you cannot continue.

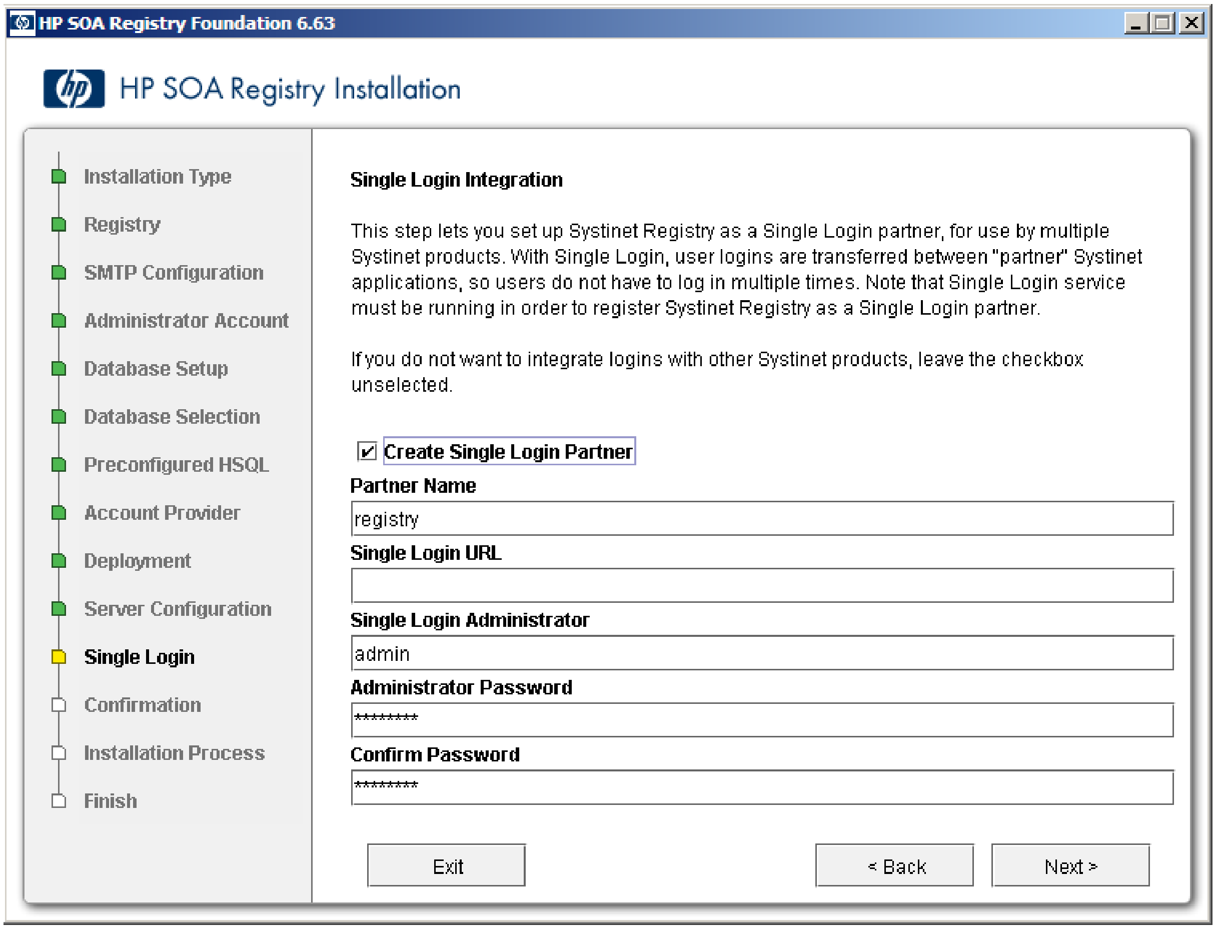
The host name, SSL Certificate Alias, and SSL password are used to create a new security identity in the local protected store. It creates a certificate and adds this certificate to `REGISTRY_HOME/conf/clientconf.xml`, `REGISTRY_HOME/conf/pstore.xml`, and also exports it to the certificate file `REGISTRY_HOME/doc/registry.crt`. See PStore Tool on page 403 for instructions in how to operate the protected security store.

➤ The server configuration may be changed after install. See Reconfiguring After Installation on page 72.

## Single Login

This panel allows you to set up HP SOA Registry Foundation as a HP *Single Login* partner. Users can be transferred between HP products that are installed as partners in the same *Single Login affiliation* without logging in more than once.

Figure 15. Single Login



**Single Login Integration**

This step lets you set up Systinet Registry as a Single Login partner, for use by multiple Systinet products. With Single Login, user logins are transferred between "partner" Systinet applications, so users do not have to log in multiple times. Note that Single Login service must be running in order to register Systinet Registry as a Single Login partner.

If you do not want to integrate logins with other Systinet products, leave the checkbox unselected.

[✓] Create Single Login Partner

Partner Name: registry

Single Login URL:

Single Login Administrator: admin

Administrator Password: ********

Confirm Password: ********

To set up registry as a Single Login partner:

1. Check the box provided;
2. Enter a unique **Partner Name**;

3 Enter the URL for Single login server, including context of its service. This URL might look like `http://host:8080/sso`;

4 Enter a user name for Single login administrator;

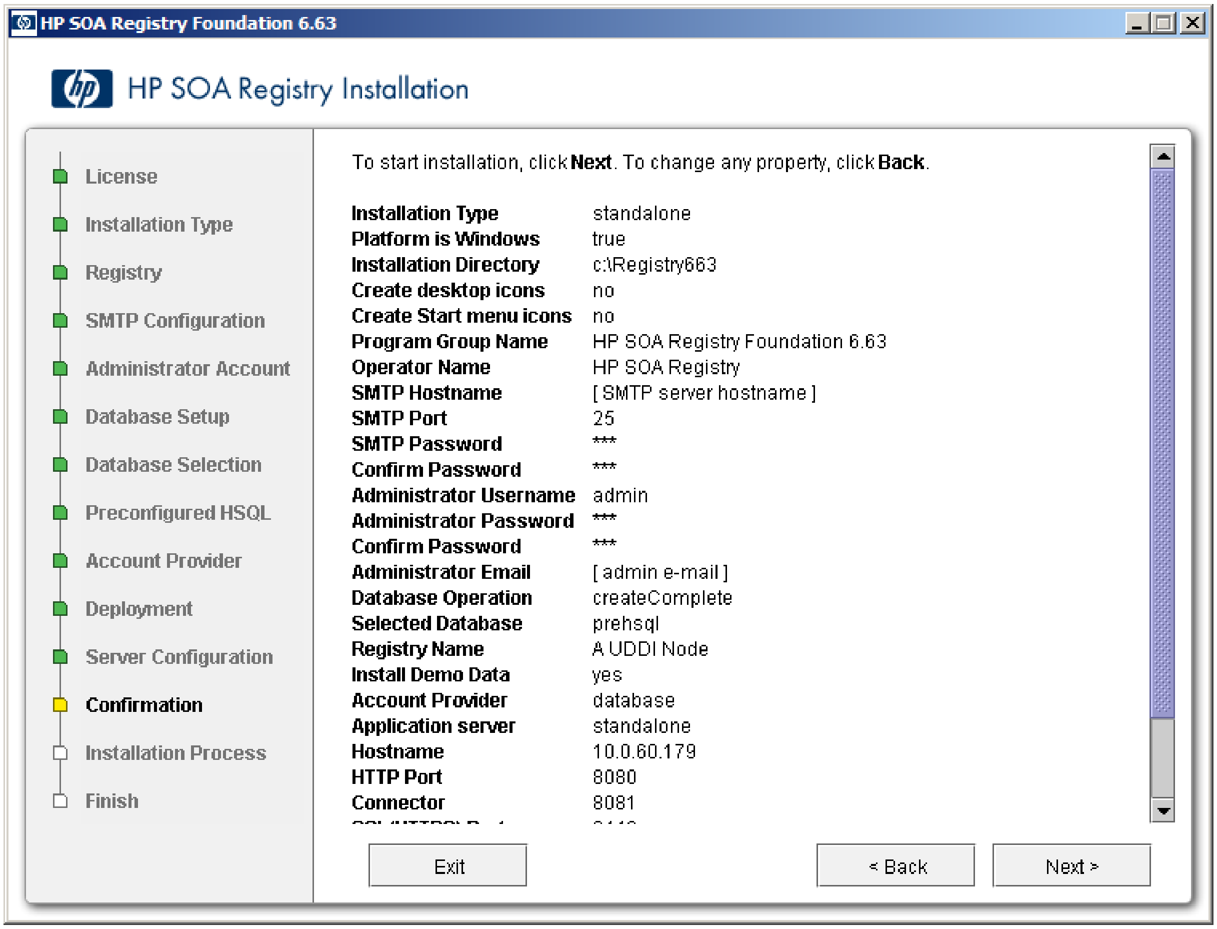
5 Enter a password and password confirmation for Single login administrator.

➤ The registry **should** also be configured to use the same account provider as the *identity provider* (and other partners). See Figure 12 in Database Settings on page 50. User groups defined at the side of*identity provider* are lost without keeping the same account provider.

➤ In fact the partner name must be unique amongst *Single Login entities*, which includes both partners and the *identity provider*. So it cannot be `ip`, since this is the name used by the identity provider.

## Confirmation and Installation Process

**Figure 16. Confirmation**

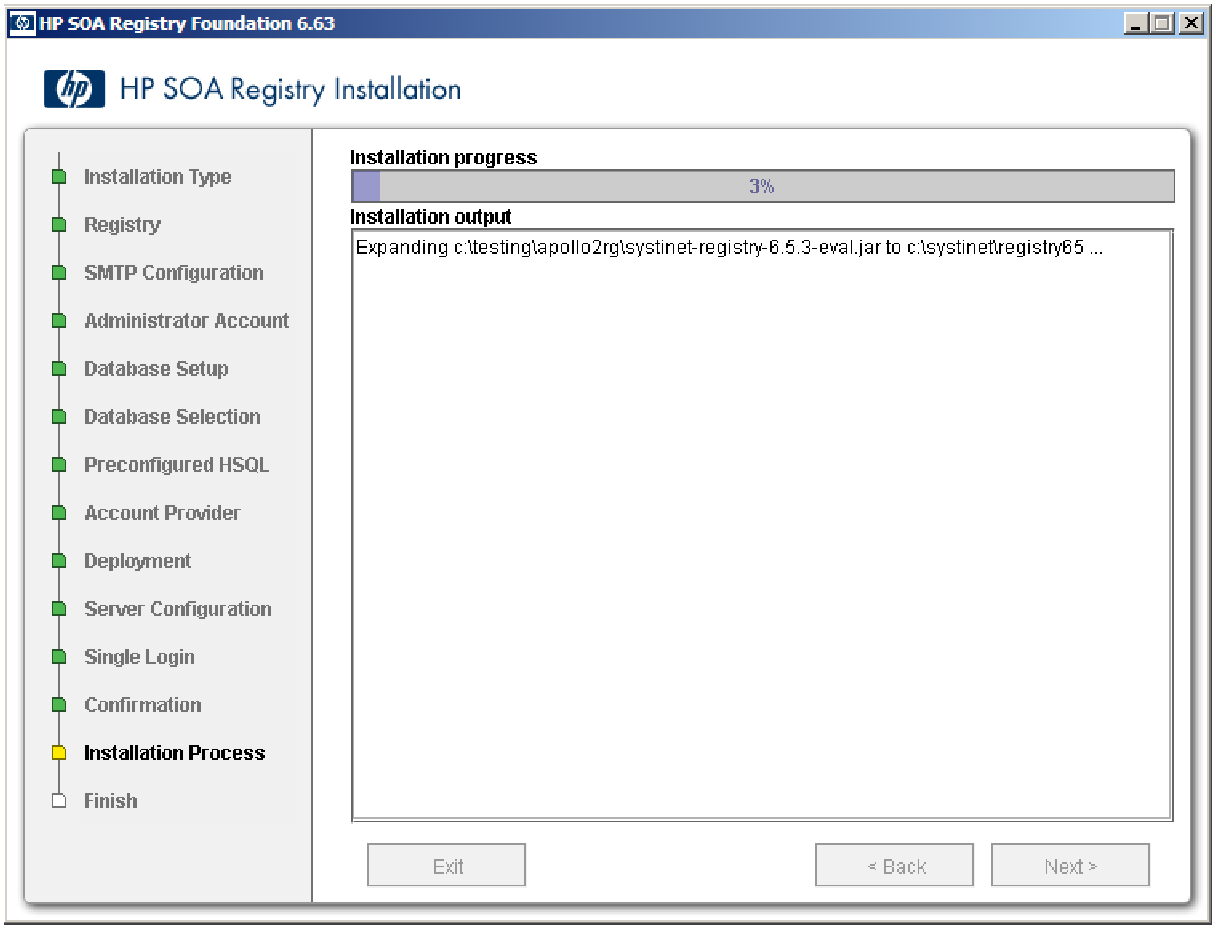


To start installation, click **Next**. To change any property, click **Back**.

| | |
|---|---|
| **Installation Type** | standalone |
| **Platform is Windows** | true |
| **Installation Directory** | c:\Registry663 |
| **Create desktop icons** | no |
| **Create Start menu icons** | no |
| **Program Group Name** | HP SOA Registry Foundation 6.63 |
| **Operator Name** | HP SOA Registry |
| **SMTP Hostname** | [ SMTP server hostname ] |
| **SMTP Port** | 25 |
| **SMTP Password** | *** |
| **Confirm Password** | *** |
| **Administrator Username** | admin |
| **Administrator Password** | *** |
| **Confirm Password** | *** |
| **Administrator Email** | [ admin e-mail ] |
| **Database Operation** | createComplete |
| **Selected Database** | prehsql |
| **Registry Name** | A UDDI Node |
| **Install Demo Data** | yes |
| **Account Provider** | database |
| **Application server** | standalone |
| **Hostname** | 10.0.60.179 |
| **HTTP Port** | 8080 |
| **Connector** | 8081 |

Figure 16 shows a summary of installation information. All required and optional properties are set. If you want to continue with the installation, click **Next** and the install process will start. If you want to change any property click **Back**.

**Figure 17. Installation Process**

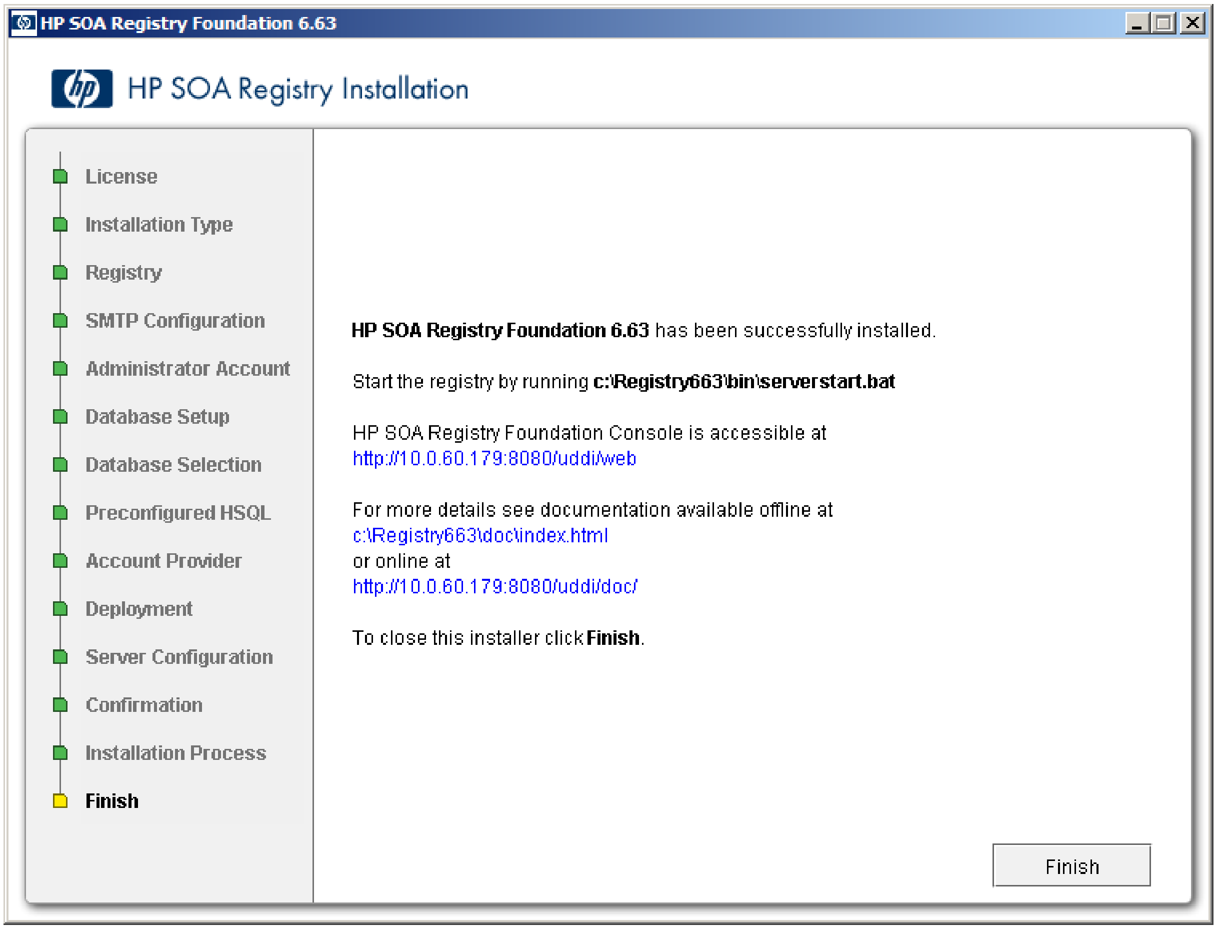


```
Expanding c:\testing\apollo2rg\systinet-registry-6.5.3-eval.jar to c:\systinet\registry65 ...
```

Figure 17 shows the installation output and progress. Installation consists of copying files, configuring the server, and installing the database. When the installation has completed successfully, the **Next** button is enabled. If there is a problem, an error message and **Recovery** button will appear on the screen.

For more information on recovery, see Troubleshooting on page 78

**Figure 18. Finish Panel**



**HP SOA Registry Foundation 6.63** has been successfully installed.

Start the registry by running **c:\Registry663\bin\serverstart.bat**

HP SOA Registry Foundation Console is accessible at
http://10.0.60.179:8080/uddi/web

For more details see documentation available offline at
c:\Registry663\doc\index.html
or online at
http://10.0.60.179:8080/uddi/doc/

To close this installer click **Finish**.

On this panel, click **Finish** to conclude the installation.

## Installation Summary

### Directory Structure

The installation directory structure contains the following directories:

**`app`**

Contains HP SOA Registry Foundation deployed as Web services in Systinet Server for Java.

**`bin`**

Contains command-line scripts for running HP SOA Registry Foundation. See Command-line Scripts on page 70.

**`conf`**

Contains the HP SOA Registry Foundation configuration files

**`demos`**

Contains demos of HP SOA Registry Foundation functionality. For more information, please see Chapter 6, Demos.

**`dist`**

Contains HP SOA Registry Foundation client packages.

**`doc`**

Contains the HP SOA Registry Foundation documentation.

**`etc`**

Contains additional data and scripts.

**`hsqldb`**

Contains the preconfigured HSQL database with registry data.

**`lib`**

Contains the HP SOA Registry Foundation libraries

**`log`**

Contains logs of installation, setup, and server output. See Logs on page 77.

**`work`**

This directory is available after the first launch of the server; it is a working image of the `app` directory.

## Registry Endpoints

HP SOA Registry Foundation is configured as follows. The <host name>, <http port> and <ssl port> are specified during installation. For more information, please see Server Settings in Server Settings on page 60. For each endpoint you can use either http or ssl port.

- Business Service Console home page: `http://<host name>:<http port>/uddi/bsc/web`
- Registry Console home page: `http://<host name>:<http port>/uddi/web`
- UDDI Inquiry API endpoint - `http://<host name>:<port>/uddi/inquiry`

  See Developer's Guide, UDDI Version 1 on page 433, UDDI Version 2 on page 433, UDDI Version 3 on page 434.
- UDDI Publishing API endpoint - `http://<host name>:<port>/uddi/publishing`

  See Developer's Guide, UDDI Version 1 on page 433, UDDI Version 2 on page 433, UDDI Version 3 on page 434.
- UDDI Security Policy v3 API endpoint - `http://<host name>:<port>/uddi/security`

  See Developer's Guide, UDDI Version 3 on page 434.
- UDDI Custody API endpoint - `http://<host name>:<port>/uddi/custody`

  See Developer's Guide, UDDI Version 3 on page 434.
- UDDI Subscription API endpoint - `http://<host name>:<port>/uddi/subscription`

  See Developer's Guide, UDDI Version 3 on page 434.
- Taxonomy API endpoint - `http://<host name>:<port>/uddi/taxonomy`

  See Developer's Guide, Taxonomy on page 446.
- Category API endpoint - `http://<host name>:<port>/uddi/category`

  See Developer's Guide, Category on page 460.

- Administration Utilities API endpoint - `http://<host name>:<port>/uddi/administrationUtils`

  See Developer's Guide, Administration Utilities on page 467.

- Replication API endpoint - `http://<host name>:<port>/uddi/replication`

  See Developer's Guide, Replication on page 473.

- Statistics API endpoint - `http://<host name>:<port>/uddi/statistics`

  See Developer's Guide, Statistics on page 474.

- WSDL2UDDI API endpoint - `http://<host name>:<port>/uddi/wsdl2uddi`

  See Developer's Guide, WSDL Publishing on page 479.

- XSD2UDDI API endpoint - `http://<host name>:<port>/uddi/xsd2uddi`

  See Developer's Guide, XSD Publishing on page 494.

- Extended Inquiry API endpoint - `http://<host name>:<port>/uddi/inquiryExt`
- Extended Publishing API endpoint - `http://<host name>:<port>/uddi/publishingExt`
- Configurator API endpoint - `http://<host name>:<port>/uddi/configurator`
- Account API endpoint - `http://<host name>:<port>/uddi/account`

  See Developer's Guide, Account on page 515.

- Group API endpoint - `http://<host name>:<port>/uddi/group`

  See Developer's Guide, Group on page 524.

- Permission API endpoint - `http://<host name>:<port>/uddi/permission`

  See Developer's Guide, Permission on page 533.

## Pre-installed Data

HP SOA Registry Foundation contains the following data:

- Operational business - This entity holds miscellaneous nodes' registry settings such as the validation service configuration.
- Built in tModels - tModels required by the UDDI specification.
- Demo data - Data required by the HP SOA Registry Foundation demos. For more information, please see Chapter 6, Demos.

## Command-line Scripts

The `bin` subdirectory contains scripts, including those for launching the server, installing Windows services, and changing configuration.

### serverstart

| | |
|---|---|
| Windows: | serverstart.bat |
| UNIX: | ./serverstart.sh |

Starts the standalone registry server.

### serverstop

| | |
|---|---|
| Windows: | serverstop.bat |
| UNIX: | ./serverstop.sh |

Stops the standalone registry server.

### server

| | |
|---|---|
| Windows: | server.bat |
| UNIX: | ./server.sh |

Helper script to manipulate the standalone HP SOA Registry Foundation server. To start and stop the registry, use `serverstart` or `serverstop` without parameters instead of `server` with parameters. For more information, please see Server Properties on page 74.

## Setup

| | |
|---|---|
| Windows: | setup.bat |
| UNIX: | ./setup.sh |

Setup may be launched with the following optional arguments:
`setup.sh (.bat)` [[--help] | [-h] | [--gui] | [-g] | [-u *`file`* ] | [--use-config *`file`* ]] [[-s *`file`* ] | [--save-config *`file`* ]] [--debug]

`-h | --help` shows help message

`-g | --gui` starts the setup wizard. The wizard is the default mode.

`-u | --use-config` *`file`* starts setup in non-interactive mode; it reads all properties from the specified `file`.

`-s | --save-config` *`file`* starts the setup wizard. All configuration will be saved into specified file instead of execute configuration. The file may be used later in a non-interactive installation.

`--debug` the setup produces more information to localize problems or errors.

To change the HP SOA Registry Foundation configuration after installation follow Reconfiguring After Installation on page 72.

## Signer

| | |
|---|---|
| Windows: | signer.bat |
| UNIX: | ./signer.sh |

The Signer is a graphical application that can be used to add, remove, and verify the signatures of UDDI structures you have published. Follow Signer Tool on page 325.

## register

| | |
|---|---|
| Windows: | register.bat |
| UNIX: | ./register.sh |

Registers evaluation version of HP SOA Registry Foundation. Follow Licensing and Evaluation on page 80.

### SoapSpy

| | |
|---|---|
| Windows: | SoapSpy.bat |
| UNIX: | ./SoapSpy.sh |

Debugging tool to control low level soap communication. Follow How to Debug on page 608.

### PStoreTool

| | |
|---|---|
| Windows: | PStoreTool.bat |
| UNIX: | ./PStoreTool.sh |

Protected security storage manipulation tool. See PStore Tool on page 403.

### env

| | |
|---|---|
| Windows: | env.bat |
| UNIX: | ./env.sh |

Helper script to set system variables. We recommend not to use it directly.

## Reconfiguring After Installation

All settings may be changed after installation using the Setup tool.

The Setup tool also facilitates other functions such as deploying to an application server (described in Deployment to an Application Server on page 147) and data migration from previous installation (described in Migration on page 195).

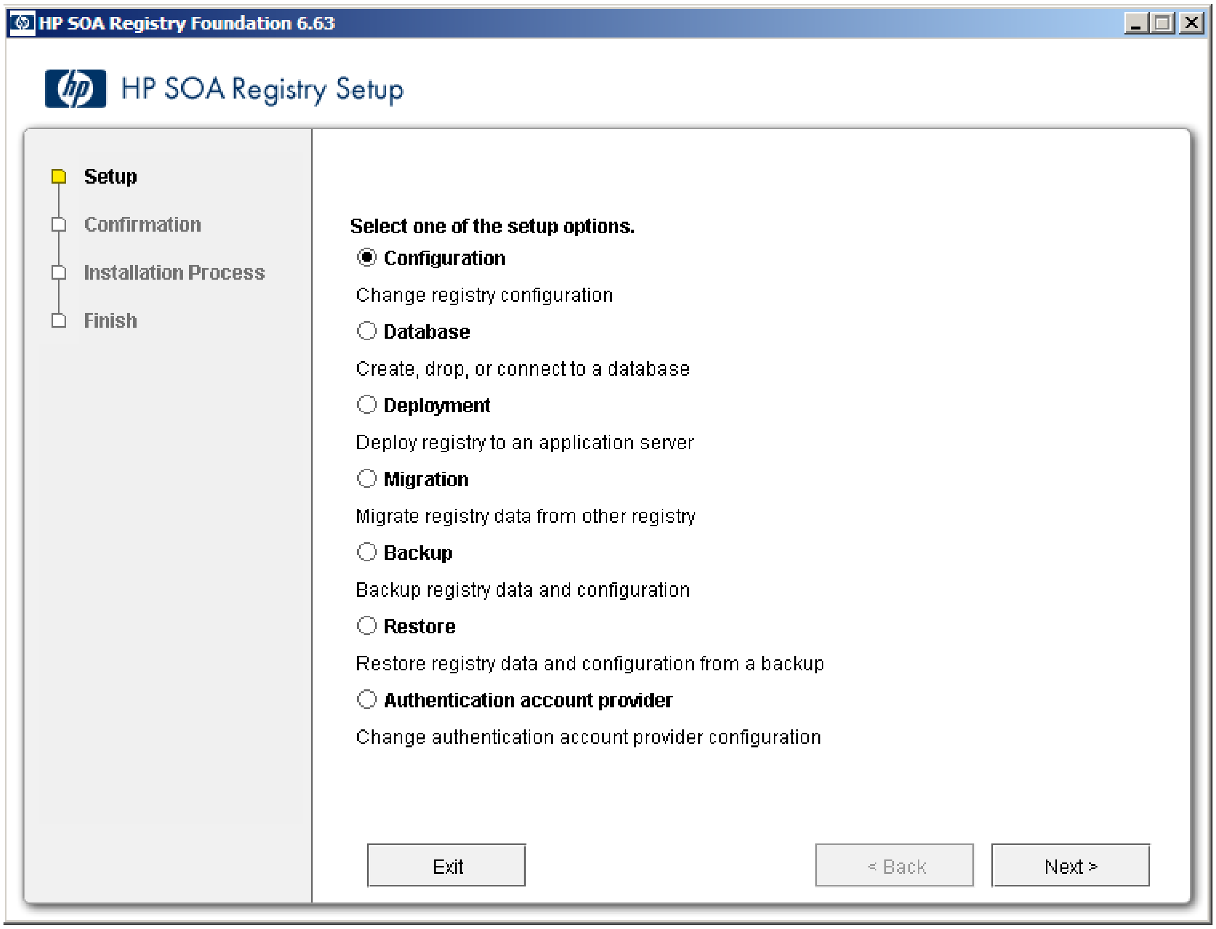
The Setup tool contains similar panels to those in the installation tool. To run this tool, execute the following script from the `bin` subdirectory of your installation:

| | |
|---|---|
| Windows: | setup.bat |

| | |
|---|---|
| UNIX: | ./setup.sh |

See command-line parameters in Setup on page 71.

By default setup starts in wizard mode as shown here:



Select one of the setup options.

(●) Configuration

Change registry configuration

( ) Database

Create, drop, or connect to a database

( ) Deployment

Deploy registry to an application server

( ) Migration

Migrate registry data from other registry

( ) Backup

Backup registry data and configuration

( ) Restore

Restore registry data and configuration from a backup

( ) Authentication account provider

Change authentication account provider configuration

The following topics may be configured:

**Configuration**

Change server and registry configuration. Follow Server Configuration on page 85.

**Database**

Create, drop, or connect to a database. Follow Database Installation on page 91.

**Deployment**

Deploy registry to an application server. Follow Deployment to an Application Server on page 147.

**Migration**

Migrate registry data from other registry. Follow Migration on page 195.

**Backup and Restore**

Backup and restore HP SOA Registry Foundation. Follow Backup on page 201

**Authentication account provider**

Change account backend configuration. Follow External Accounts Integration on page 114.

## Server Properties

System properties are the main means of configuring HP SOA Registry Foundation as deployed into Systinet Server for Java. Default values for these properties are in the resource `META-INF/wasp.properties`, which is located in `lib/runner.jar`.

There are two ways to alter system properties, for the two different types of HP SOA Registry Foundation installation:

- *Standalone Installation*: Set the property from the command line when starting the server from either the `REGISTRY_HOME/bin/server.bat` or `server.sh` script. The syntax is:
  `server(.sh)` [-D*`name of property`*=*`value`* ] { start | stop }

  For example:

  ```
  server -Didoox.debug.level=4 start
  ```

- *HP SOA Registry Foundation deployed to an application server*: Default property values can be overridden in the `init-param` elements in the web application deployment descriptor, `web.xml`.

The following properties are checked when HP SOA Registry Foundation is initialized:

| **Property** | **Description** |
|---|---|
| `wasp.location` | This property is mandatory for running a HP SOA Registry Foundation server. It must point to the directory in which HP SOA Registry Foundation is installed. |
| `wasp.config.location` | This is an absolute or `wasp.location`-relative path pointing to the registry configuration file. Setting this property is optional; the default value is `conf/clientconf.xml`. |
| `wasp.config.include` | Comma-separated list of additional config paths to include. These paths can be either absolute or relative to the working directory. This property is optional. |
| `wasp.impl.classpath` | Sets a classpath for the registry implementation. This property is optional; if it is not set, registry interfaces and implementation are loaded in the same classloader. |
| `wasp.shutdownhook` | Set to `true` if HP SOA Registry Foundation should be automatically destroyed just before JVM is destroyed. Set to `false` if you want to manage the shutdown process yourself. The default setting is `true`. |

| Property | Description |
|---|---|
| `idoox.debug.level` | Determines the number of debugging messages produced by HP SOA Registry Foundation:<br>• 0: none<br>• 1: errors<br>• 2: warnings<br>• 3: infos<br>• 4: debugs<br>This property is optional; the default value is 2 for the client and 3 for the server. The debug level is available in the non-stripped distribution only.<br>The logging level specified by the `idoox.debug.level` property overrides the level specified in the configuration file determined by the `log4j.configuration` property |
| `idoox.debug.logger` | Specifies which logging system is used, `waspLogger` or `log4j`. Default is `log4j`. Setting the value of this property to waspLogger uses this logger, instead. |
| `log4j.configuration` | Specifies the location of the configuration (properties file) for log4j. This property can contain a relative (`conf/log4j.config`) or absolute (`/home/waspuser/log4j.config`) path to the configuration file.<br>If it is not set, the default configuration (`ConsoleAppender` with the pattern `%p: %c{2} - %m\n`) will be used.<br>An example configuration file for log4j, `log4j.config`, is located in the `conf` subdirectory of the HP SOA Registry Foundation installation directory. |

## Windows Services

Use the following scripts to install, uninstall, start, and stop HP SOA Registry Foundation as a Windows service:

**InstallService**

**InstallService.bat**

Installs HP SOA Registry Foundation into system services

**UnInstallService**

**UnInstallService.bat**

Uninstalls HP SOA Registry Foundation from system services.

**StartService**

**StartService.bat**

Starts the already installed HP SOA Registry Foundation service.

**StopService**

**StopService.bat**

Stops the started HP SOA Registry Foundation service.

Follow NT Service Support on page 210.

## Logs

There are four log files in `REGISTRY_HOME/log` directory.

These two log files are produced by the Installation and Setup processes:

**`install.log`**

This log contains installation output information including all properties set during installation, and output from the installation process. If an error occurs during installation, see this log for details.

`setup.log`

The log of the Setup tool. Any execution of the Setup tool writes the set properties and output from setup processes here. Errors occurring during setup are written to this log.

The default server logs are:

`logEvents.log`

The standard server output contains informative events which occur on the HP SOA Registry Foundation server.

`errorEvents.log`

This file contains detailed logs of error events which occur on the HP SOA Registry Foundation server.

**replicationEvents.log**

Replication process logs can be found in the `REGISTRY_HOME/log/replicationEvents.log` file.

**configuratorEvents.log**

Cluster configuration events are logged in the `REGISTRY_HOME/log/configuratorEvents.log` file

**wasp_NTService.log**

Events of the server are written into the REGISTRY_HOME\log\wasp_NTService.log file.

The server logs may be configured by one of two logging systems, the in-house `waspLogger` and `log4j`. By default, `log4j` is used. The default log4j configuration file is located in `REGISTRY_HOME/conf/log4j.config`.

➤ An explanation of using `log4j` is outside the scope of this documentation; please see the Apache log4j documentation [http://logging.apache.org/log4j/docs/index.html] for more information.

## Troubleshooting

If errors occur during the installation process, the installer displays a message and a **Recovery** button.

Execution of Task fails. You can click **Recovery** and correct erroneous selections or click **Exit** to exit the installation.

If you click **Recovery**, the installation returns to the step that should be corrected. For example, if the installation fails during copying files, it will return to the installation type panel. If the process fails during configuring database it will return to the database panels.

If errors occur when using the Setup tool, only the error message is displayed, you can continue by clicking **Next**.

The following general problems may occur:

**Installation backend timeout**

If the task does not respond for a long time, a timeout error is thrown and the task is stopped. The default timeout is 30 minutes. If you have a slow machine, try to redefine the `timeout` system property for a greater value in minutes at a java command line.

For 60 minutes, run installation by following command: **java -Dtimeout=60 -jar hp-soa-registry-foundation-6.63.jar**

For 60 minutes, edit the `setup.sh` (`setup.bat`) file; add the `-Dtimeout=60` option into the java command line so it looks like:

| | |
|---|---|
| Windows: | "%JAVA_CMD%" -Dtimeout=60 |
| UNIX: | "$JAVA_CMD" -Dtimeout=60 |

**Cannot find JDBC driver**
**java.lang.ClassNotFoundException**

Some external classes cannot be found. Usually the path to JDBC driver does not contain the needed `*.jar` or `*.zip` files. Another reason this error may be thrown is that the JDBC driver is not supported by HP SOA Registry Foundation. See Database Installation on page 91 for more information about supported databases.

**Cannot access database**
**java.sql.SQLException**

This usually happens during the creation of database which already exists. To resolve this error, try to connect or drop this database first.

This error is also thrown when trying to drop a database which is currently in use, or does not exist. Note that some set properties must exist on the database engine and some of them are optional. Please see Database Installation on page 91 for more information about supported databases.

**Couldn't create or access important files. Wrong path**

This error is displayed when the installation directory specified is bad or the user does not have read and write permissions for it. Try to install to another directory or reset the read and write permissions.

## Licensing and Evaluation

When you download the evaluation version of HP SOA Registry Foundation from Systinet, the license key is provided via email. This license is valid for 30 days. At the end of this period, you may request an extension of the evaluation license key. (If you wish to continue using HP SOA Registry Foundation after the expiration of the extended license key, you must purchase it. For information on purchasing HP SOA Registry Foundation, visit the Systinet Purchase Page [http://systinet.com/products/buy].)

You will be prompted for your User name and License key during installation.

### Obtaining an Evaluation License Key

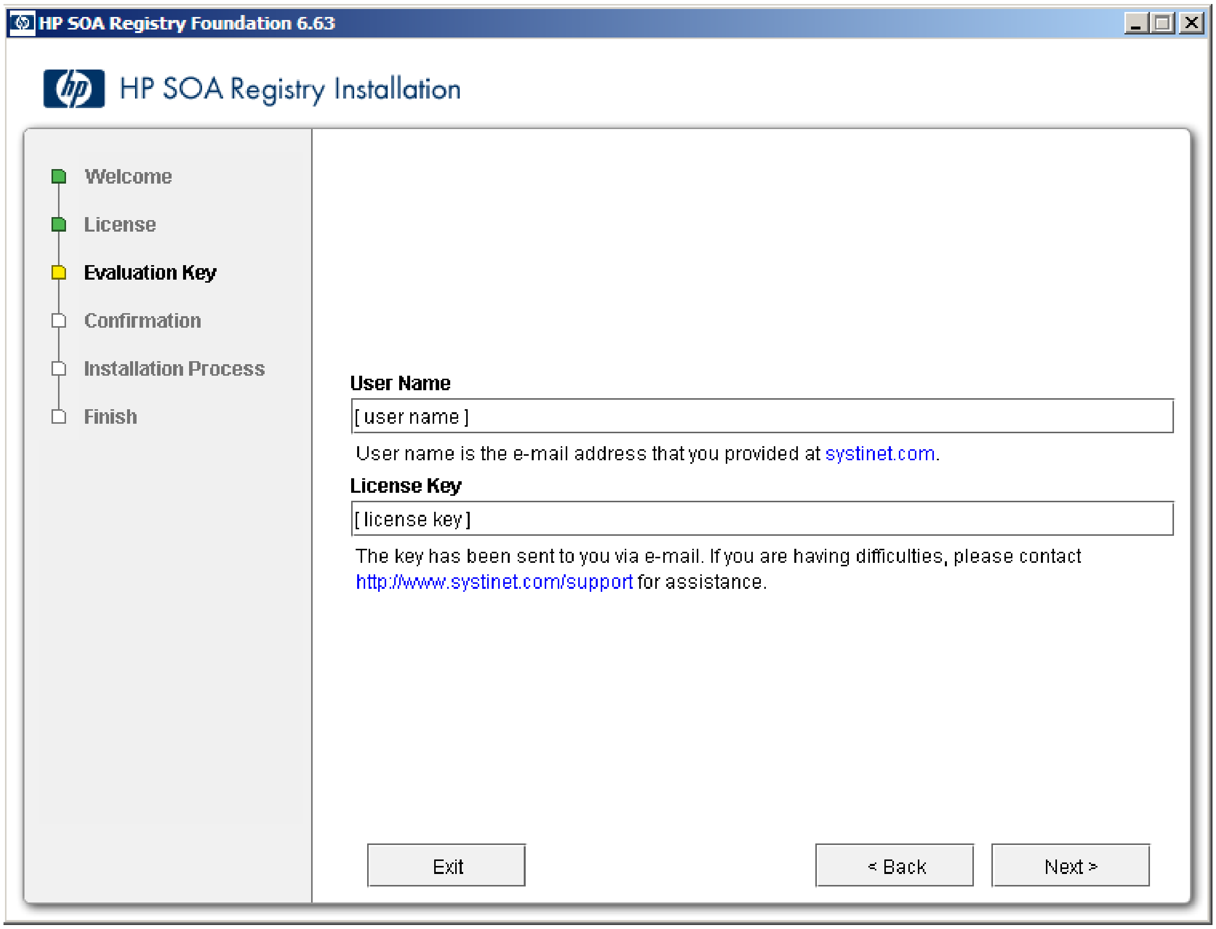
When you download HP SOA Registry Foundation from Systinet [http://www.systinet.com/products/download_center], a license key is sent to the email address you provided at registration.

Save this email. It contains a link to the page on which you request an extension of your evaluation license.

### Entering the License Key

Enter the valid license key during installation of the evaluation version.

**Figure 19. Evaluation Key**



User Name

[ user name ]

User name is the e-mail address that you provided at systinet.com.

License Key

[ license key ]

The key has been sent to you via e-mail. If you are having difficulties, please contact http://www.systinet.com/support for assistance.

**User name**

User name is the e-mail address that you provided at `www.systinet.com`.

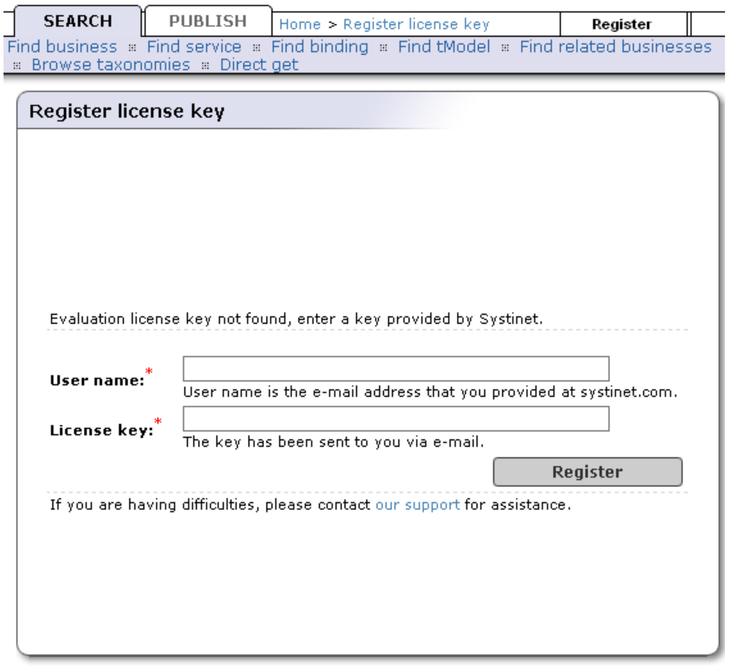
**License Key**

The key has been sent to you via e-mail. If you have difficulties, please contact http://www.systinet.com/support for assistance.

You must provide valid user name and license key otherwise you cannot continue with installation. Continue installation the installation as described in Installation Type on page 45

## Extending the Evaluation Period

When the license period expires, the Registry Console displays a page indicating that your key is no longer valid as shown below:



Register license key

Evaluation license key not found, enter a key provided by Systinet.

User name:*
User name is the e-mail address that you provided at systinet.com.

License key:*
The key has been sent to you via e-mail.

If you are having difficulties, please contact our support for assistance.

To acquire an extension of the evaluation license:

1 Follow the link in the email containing your initial license key.

2 Provide your user name and password, and the reason for your extension request.

3 If approved, you will receive a reply via email with a new key.

4 When you receive your new license key, enter it as described in Obtaining an Evaluation Key above.

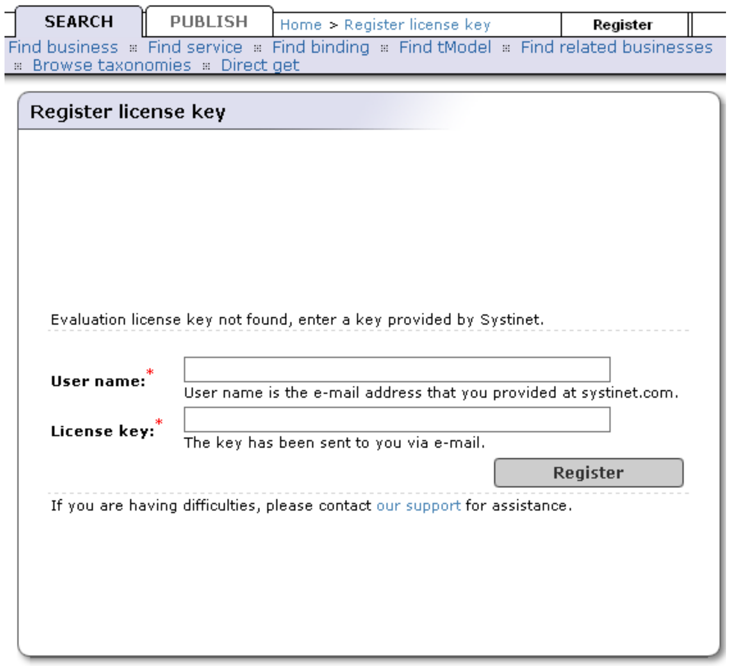
## GUI Version

After expiration you can enter a new license key via the Registry Console:

1 Point a browser at the HP SOA Registry Foundation registration URL, `http://<host name>:8080/uddi/web` (assuming that registry runs on `<host name>` using the default port).

2 Type the email address associated with this download in the box labeled **User name**.

3 Copy the key from the email and paste it into the box labeled **License key and click Register**.



Evaluation license key not found, enter a key provided by Systinet.

User name:*
User name is the e-mail address that you provided at systinet.com.

License key:*
The key has been sent to you via e-mail.

If you are having difficulties, please contact our support for assistance.

4 A valid key returns the message "License key was accepted."

### Command-line Version

If you do not wish to launch the HP SOA Registry Foundation user interface, you can also enter the license key from a command line.

To provide your license key via console:

1. Change your working directory to the `bin` subdirectory of your installation, and type the following:

   **register --licenseKey <license key> --userName <email address>**

2. Replace **<license key>** with the key provided in your email and replace **<email address>** with the email address used to register with Systinet. For example, if your license key is W1116-7IYU4-RDCNE-GC777-HHVVV and your email address is `crunch@breakfast.com`, you would type:

   **register --licenseKey W1116-7IYU4-RDCNE-GC777-HHVVV --userName crunch@breakfast.com**

3. A valid license key will return the message "License key was accepted."

## Evaluation Limitations

The following limitations are put on HP SOA Registry Foundation installations under evaluation licenses:

1. User is not allowed change the system clock back to extend the evaluation period. If the system clock is altered in this way, the validation of the license key fails.

2. User cannot use HP SOA Registry Foundation without a valid, non-expired license key. HP SOA Registry Foundation is rendered inaccessible until a valid key is entered using one of the methods described above.

3. The registry's database is not accessible without a valid, non-expired license key; the database is accessible only from a registry using same license key or its extension keys.

4. The database export/import/migrate tools take the license into account. You cannot transfer data between databases containing different licenses. In other words, if you download a new evaluation version of HP SOA Registry Foundation, you will not be able to transfer the database to it using these tools.

## Server Configuration

The server configuration may be set during installation or by using the Setup tool after installation. Both of these scenarios use the same set of GUI panels for server configuration shown in this section.

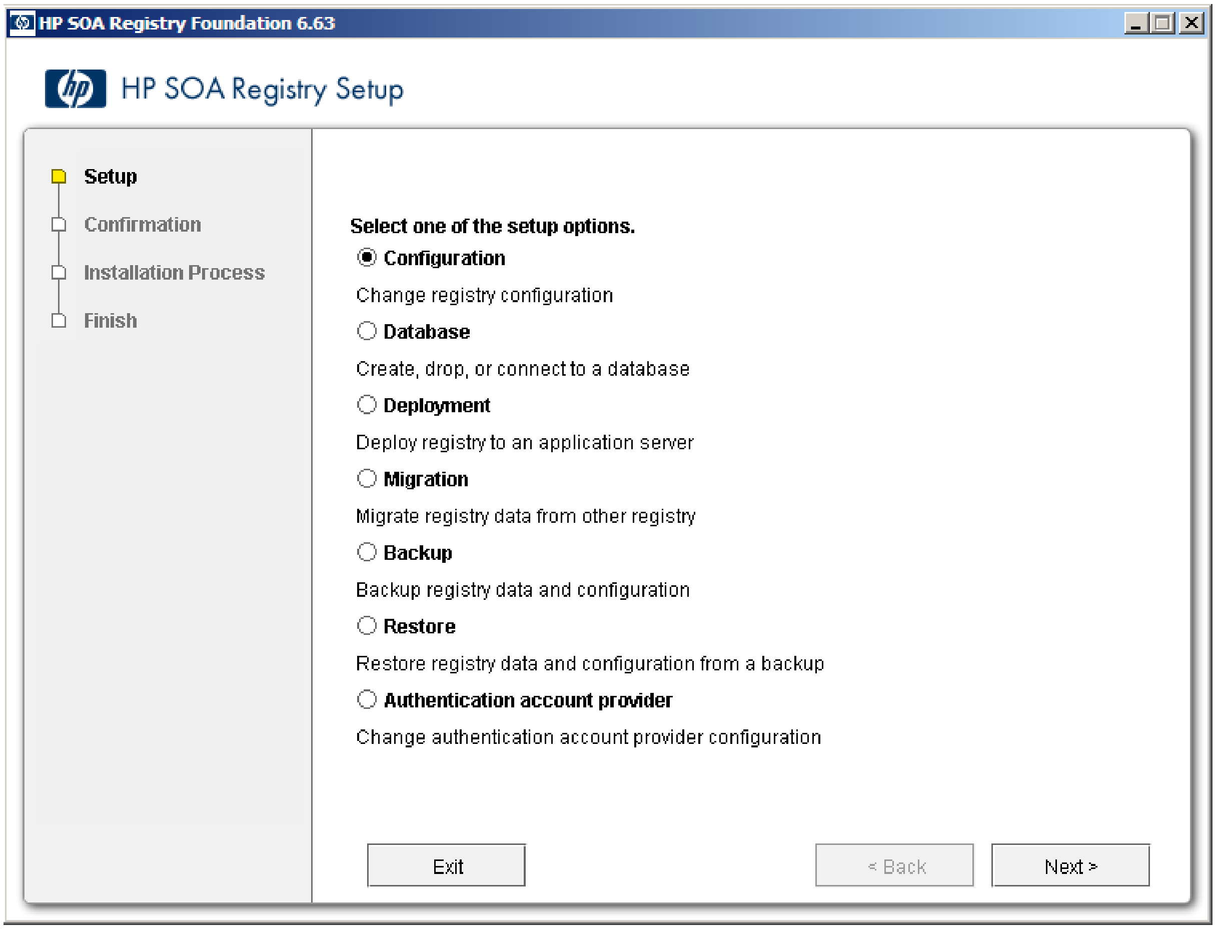
To run the Setup tool, execute the following script from the `bin` subdirectory of your installation:

| | |
|---|---|
| Windows: | setup.bat |
| UNIX: | ./setup.sh |

See command-line parameters in Setup on page 71.

Select **Configuration** on the first panel.

**Figure 20. Setup**



Select one of the setup options.

[✓ Configuration]

Change registry configuration

Database

Create, drop, or connect to a database

Deployment

Deploy registry to an application server

Migration

Migrate registry data from other registry

Backup

Backup registry data and configuration

Restore

Restore registry data and configuration from a backup

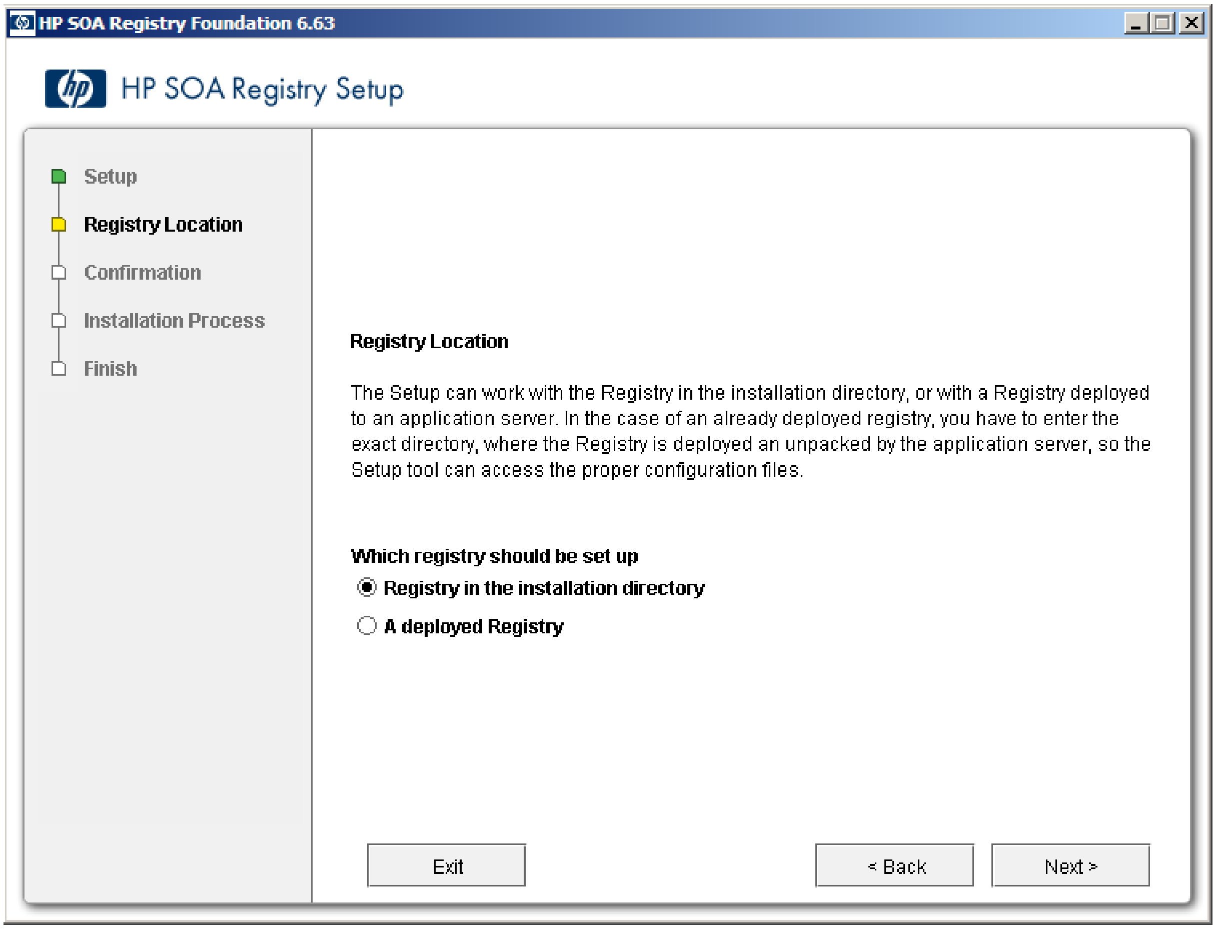
Authentication account provider

Change authentication account provider configuration

For more information on the Setup tool, please see Reconfiguring After Installation on page 72.

Select whether you want to setup HP SOA Registry Foundation that has been deployed (second choice) or not (first choice).

**Figure 21. Setup**



Registry Location

The Setup can work with the Registry in the installation directory, or with a Registry deployed to an application server. In the case of an already deployed registry, you have to enter the exact directory, where the Registry is deployed an unpacked by the application server, so the Setup tool can access the proper configuration files.

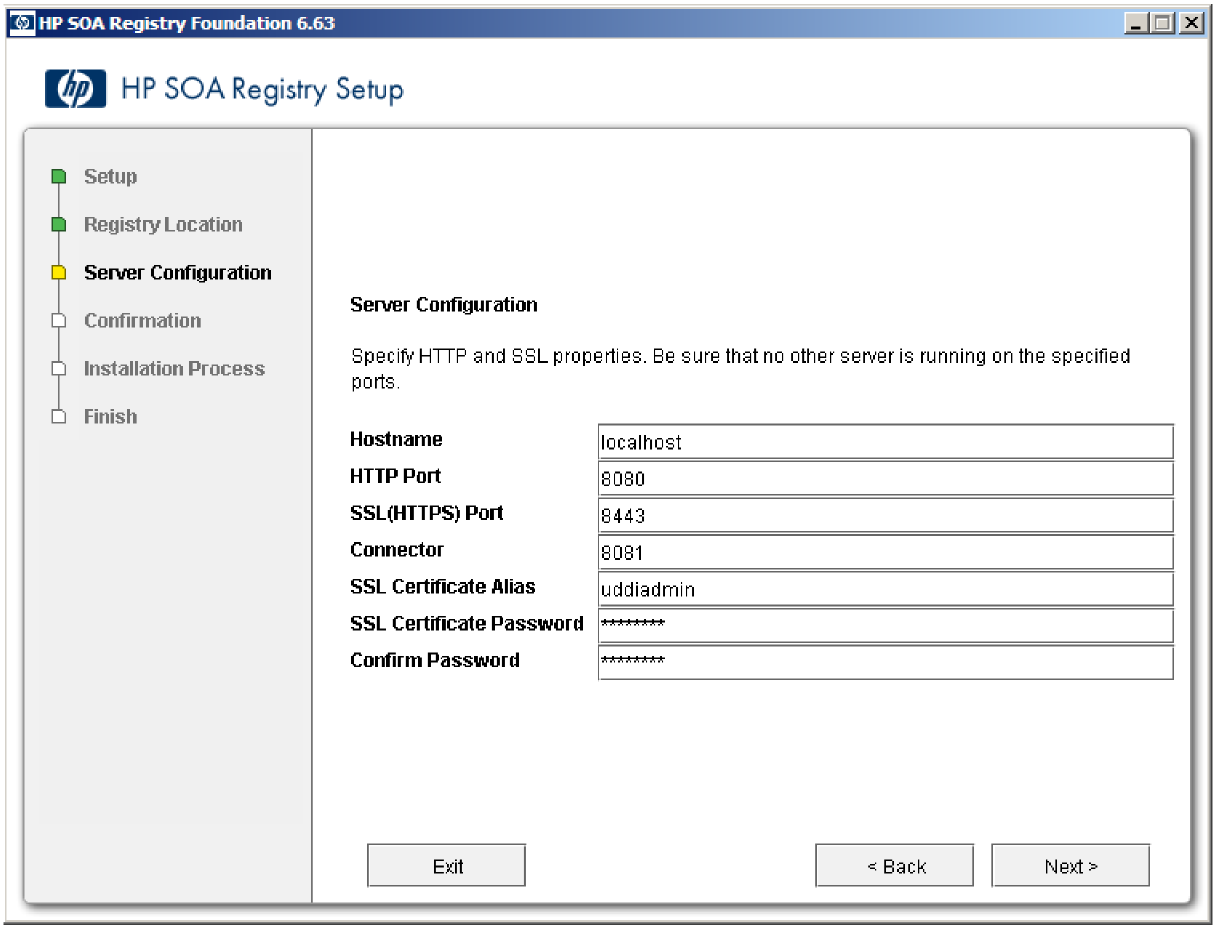
Which registry should be set up

● Registry in the installation directory

○ A deployed Registry

## Server Configuration

**Figure 22. Server Configuration**



**Server Configuration**

Specify HTTP and SSL properties. Be sure that no other server is running on the specified ports.

| | |
|---|---|
| **Hostname** | localhost |
| **HTTP Port** | 8080 |
| **SSL(HTTPS) Port** | 8443 |
| **Connector** | 8081 |
| **SSL Certificate Alias** | uddiadmin |
| **SSL Certificate Password** | ********* |
| **Confirm Password** | ********* |

Figure 22 shows server configuration settings. These settings are used for the HTTP and HTTPS servers.

**Host name**

Host name of the computer on which HP SOA Registry Foundation is installed; change the auto-completed entry if it is different.

**HTTP Port**

The non-secure port for accessing the Registry Console (default value: `8080`)

**SSL (HTTPS) Port**

Secure port for accessing the Registry Console (default value: `8443`)

**Connector**

Connector port is used by standalone server to listen for control signals. No other application could use this port (default value: `8081`)

**SSL Certificate Alias**

Alias used for identify SSL private key in protected store management. For more information see PStore Tool on page 403. (default value: `uddiadmin`)

**SSL Certificate password**

Password to encrypt SSL private key.(default value: `changeit`)

**Confirm password**

Retype the same password. Note that if it is not same as previous, you cannot continue.

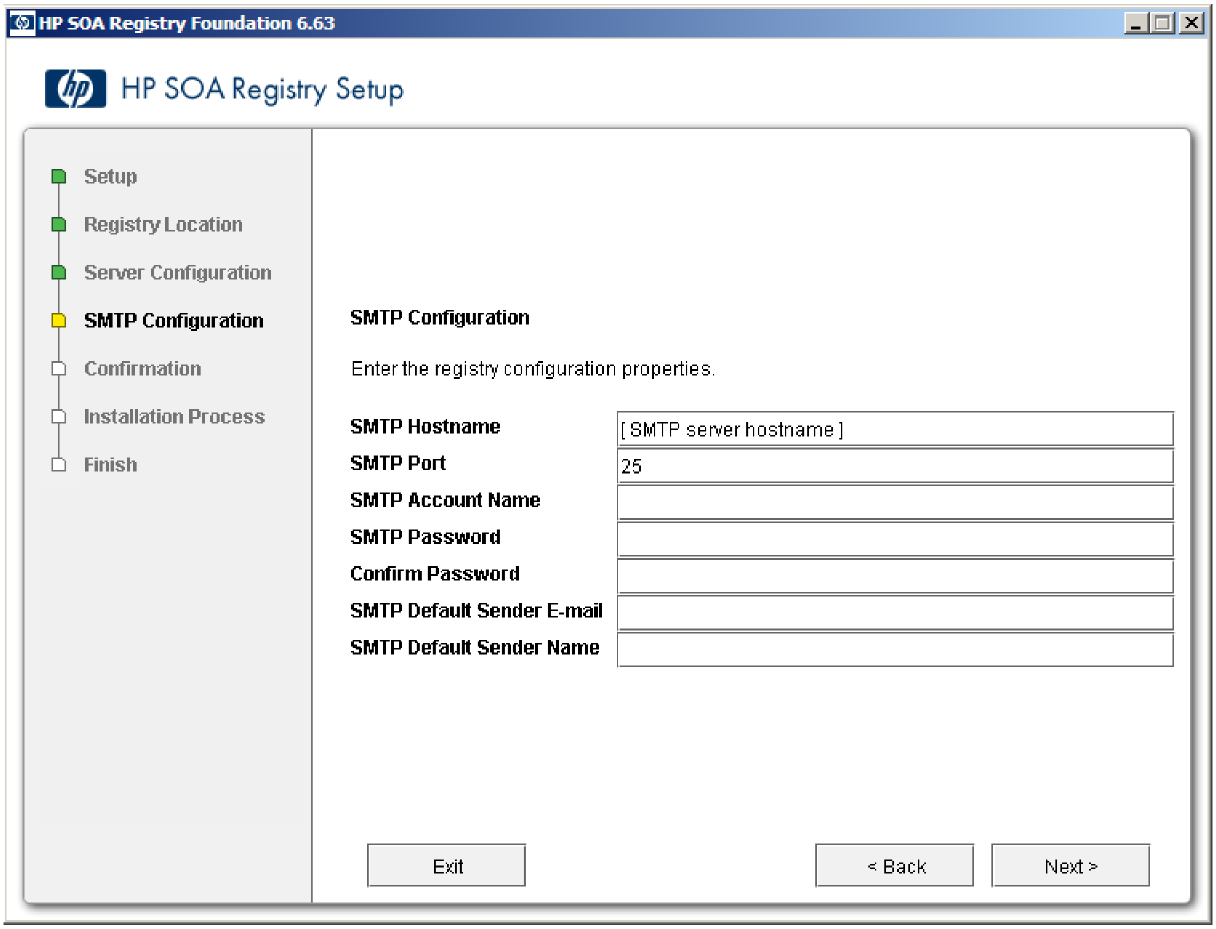
The host name, SSL Certificate Alias, and SSL password are used to create a new security identity in the local protected store. It creates a certificate and adds this certificate to `REGISTRY_HOME/conf/clientconf.xml`, `REGISTRY_HOME/conf/pstore.xml`, and also exports it to the certificate file `REGISTRY_HOME/doc/registry.crt`. See PStore Tool on page 403 for instructions in how to operate the protected security store.

➤ The certificate generated by Registry is signed by our Demo Certification Authority. This enables HP SOA Systinet 3.00 to access HP SOA Registry Foundation without additional trust setup when deployed to JBoss. Using the generated certificate for production is not recommended.

After setting these properties, the server will be available at `http://[host name]:[HTTP Port]/[Context of URL]`. For example, in Figure 22, the server is available at `http://mydomain.mycompany.com:8080/uddi` and at `https://mydomain.mycompany.com:8443/uddi`. Note that the communication could be spied by SoapSpy tool, see How to Debug on page 608

## SMTP Configuration

**Figure 23. SMTP Configuration**



SMTP Configuration

Enter the registry configuration properties.

| | |
|---|---|
| SMTP Hostname | [ SMTP server hostname ] |
| SMTP Port | 25 |
| SMTP Account Name | |
| SMTP Password | |
| Confirm Password | |
| SMTP Default Sender E-mail | |
| SMTP Default Sender Name | |

Figure 23 allows you to configure SMTP. The SMTP configuration is important when users needs to receive email notification from subscriptions.

**SMTP Host Name**

Host name of the SMTP server, through which all e-mail alerts and notification are sent to administrator and users.

**SMTP Port**

Port number for this SMTP server

**SMTP Password**

Password to access SMTP server

**Confirm password**

Retype the same password. Note that if it is not same as the password in the previous box, you cannot continue.

**SMTP Default Sender E-mail, Name**

HP SOA Registry Foundation will generate email messages with this identity.

## Database Installation

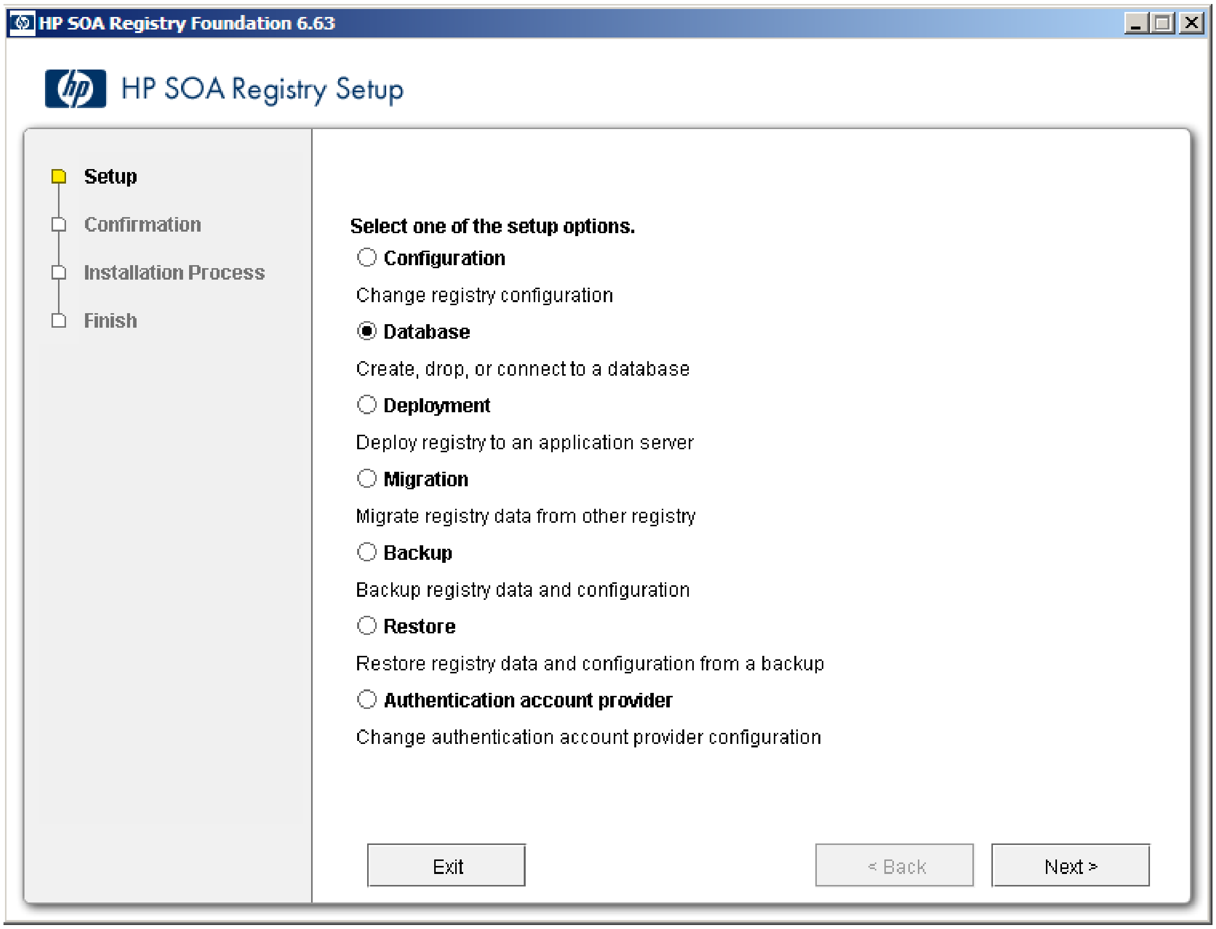
The database may be set up during installation or by using the Setup tool after installation. Both of these scenarios use the same set of GUI panels shown in this section.

To run the Setup tool, execute the following script from the `bin` subdirectory of your installation:

| | |
|---|---|
| Windows: | setup.bat |
| UNIX: | ./setup.sh |

See command-line parameters in Setup on page 71.

**Figure 24. Setup Select Database**



Select one of the setup options.

( ) Configuration

Change registry configuration

(●) Database

Create, drop, or connect to a database

( ) Deployment

Deploy registry to an application server

( ) Migration

Migrate registry data from other registry

( ) Backup

Backup registry data and configuration

( ) Restore

Restore registry data and configuration from a backup

( ) Authentication account provider

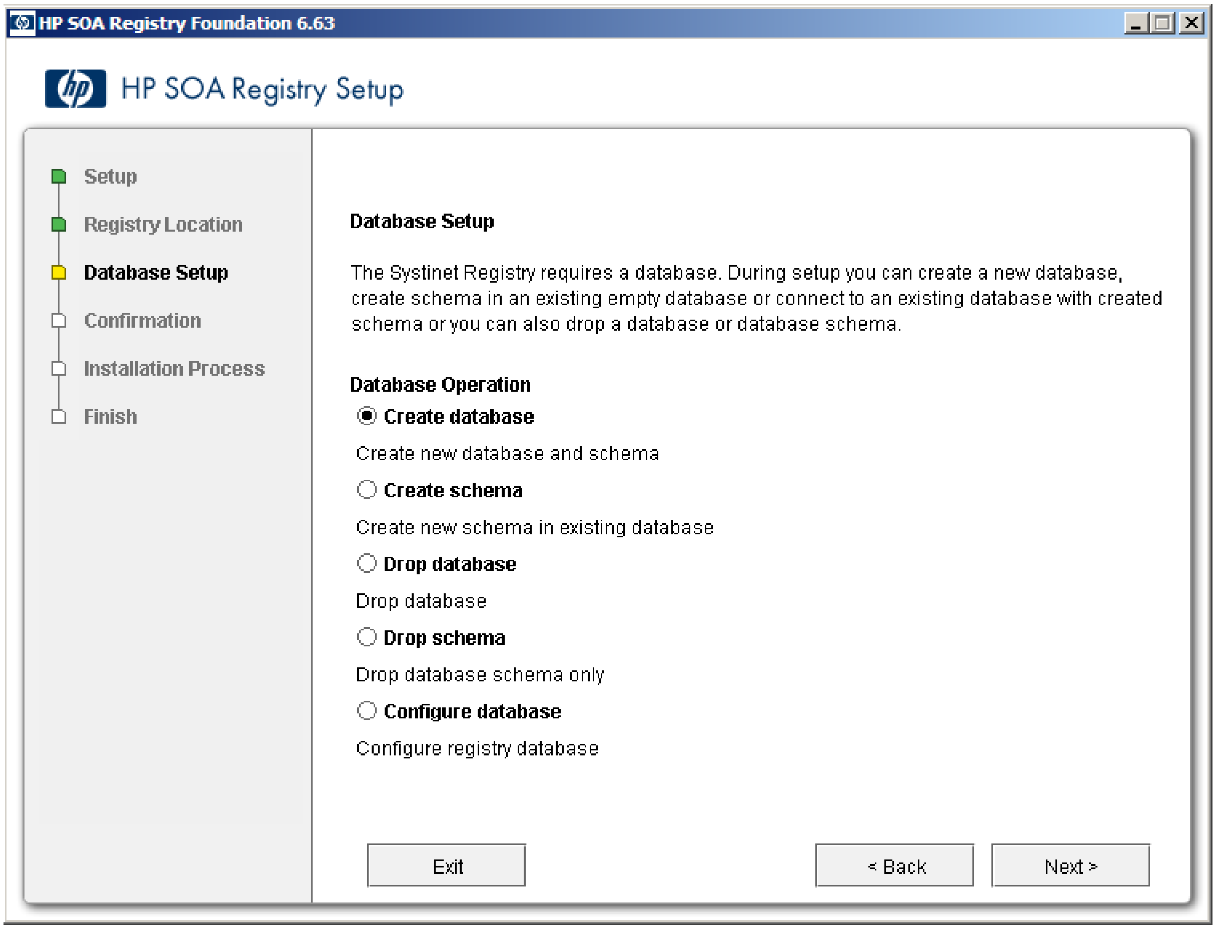
Change authentication account provider configuration

Select your database. For more information on the Setup tool, please see Reconfiguring After Installation on page 72.

## Database Creation Method

The registry requires a database. During installation you can create a new database, create schema in an existing empty database or connect to an existing database with created schema. Using the Setup tool, you can also drop a database or database schema. Select your database operation on the following panel:

**Figure 25. Database Creation Method**



Database Setup

The Systinet Registry requires a database. During setup you can create a new database, create schema in an existing empty database or connect to an existing database with created schema or you can also drop a database or database schema.

Database Operation

[✓ Create database]
Create new database and schema
Create schema
Create new schema in existing database
Drop database
Drop database
Drop schema
Drop database schema only
Configure database
Configure registry database

Select a method from those shown in Figure 25.

**Create database**

Create new database/users/tablespaces (depending on the type of database server) and database schema. This is the easiest way to attach the required database to HP SOA Registry Foundation. Note that you must have the credentials of the database administrator.

**Create schema**

Create a new schema in existing database. Select this method if you have access to an existing empty database with the ability to create tables and indexes. This option is suitable when you does not know the administrator's credentials. We assume the administrator has already created a new database/users/tablespaces for this option.

**Drop database**

Drops the whole database/users/tablespaces. Note that this option depends on the type of database server.

**Drop schema**

Drops all tables in the database but leave the empty database.

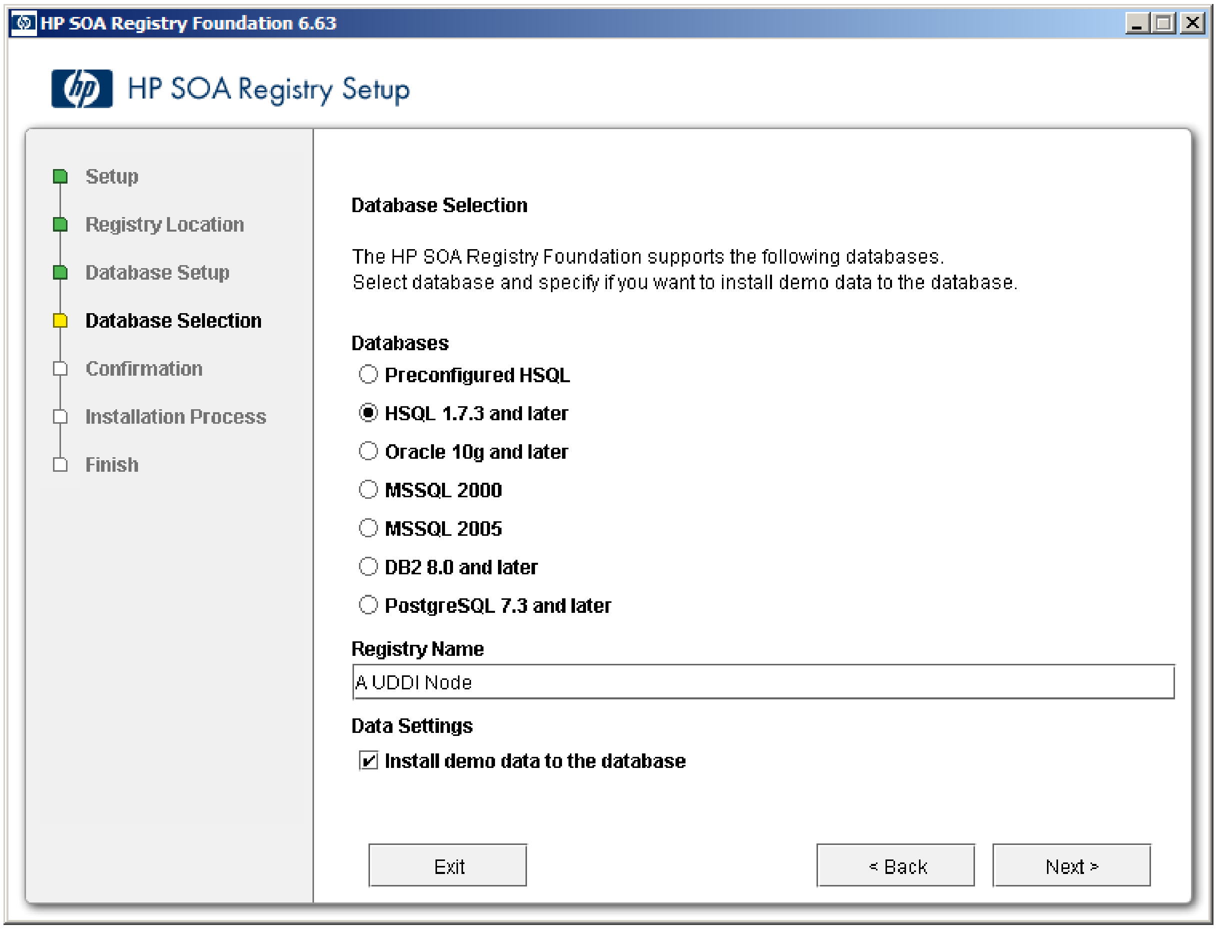
**Configure database**

Configure registry database. Use this method if the registry database already exists, for example, from a previous HP SOA Registry Foundation installation of the same release number, and fill in only the connection parameters.

## Select Database Type

Figure 26 shows the supported database engines that can be prepared for HP SOA Registry Foundation. The panel may differ if another method was selected in the previous step.

**Figure 26. Select Database Type**



Database Selection

The HP SOA Registry Foundation supports the following databases.
Select database and specify if you want to install demo data to the database.

Databases

- ○ Preconfigured HSQL
- ● HSQL 1.7.3 and later
- ○ Oracle 10g and later
- ○ MSSQL 2000
- ○ MSSQL 2005
- ○ DB2 8.0 and later
- ○ PostgreSQL 7.3 and later

Registry Name: A UDDI Node

Data Settings

- ✓ Install demo data to the database

Follow these links for selected database.

- Preconfigured HSQL on page 96
- HSQL on page 106

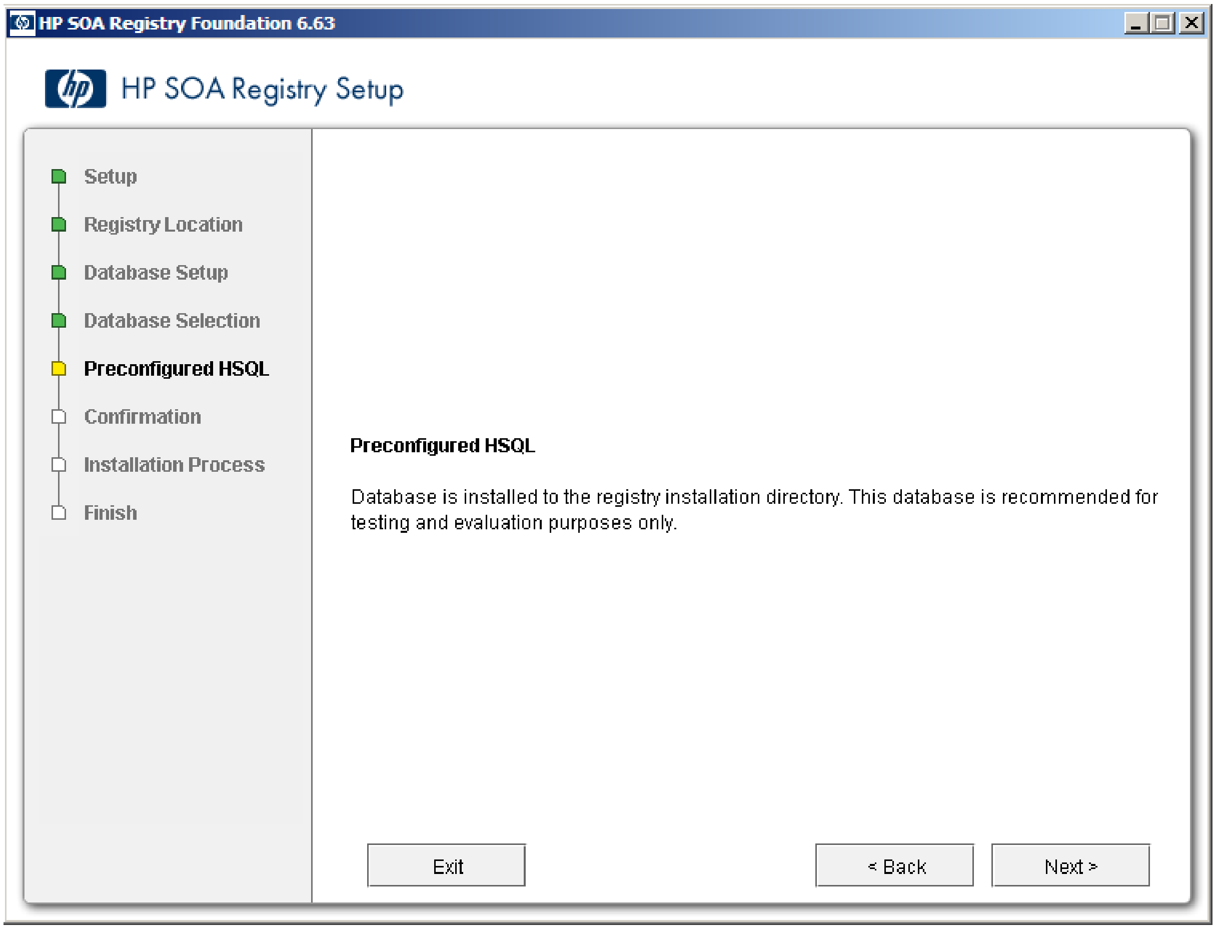
- Oracle on page 97
- MSSQL 2000 or 2005 on page 99
- DB2 on page 102

## Preconfigured HSQL

The default database is the preconfigured HSQL. The installer or Setup tool creates database named `REGISTRY_HOME/hsqldb/uddinode` and the user account `uddiuser` with the password `uddi` in the database. Note that all database files can be found in `REGISTRY_HOME/hsqldb` directory.

This database is recommended for evaluation and testing purposes only.

If you use HSQL then user credentials are stored in the HSQL database files in plain text. So you must protect these files from unauthorized reading using appropriate filesystem access rights. The files are located in the directory `REGISTRY_HOME/hsqldb/` by default.

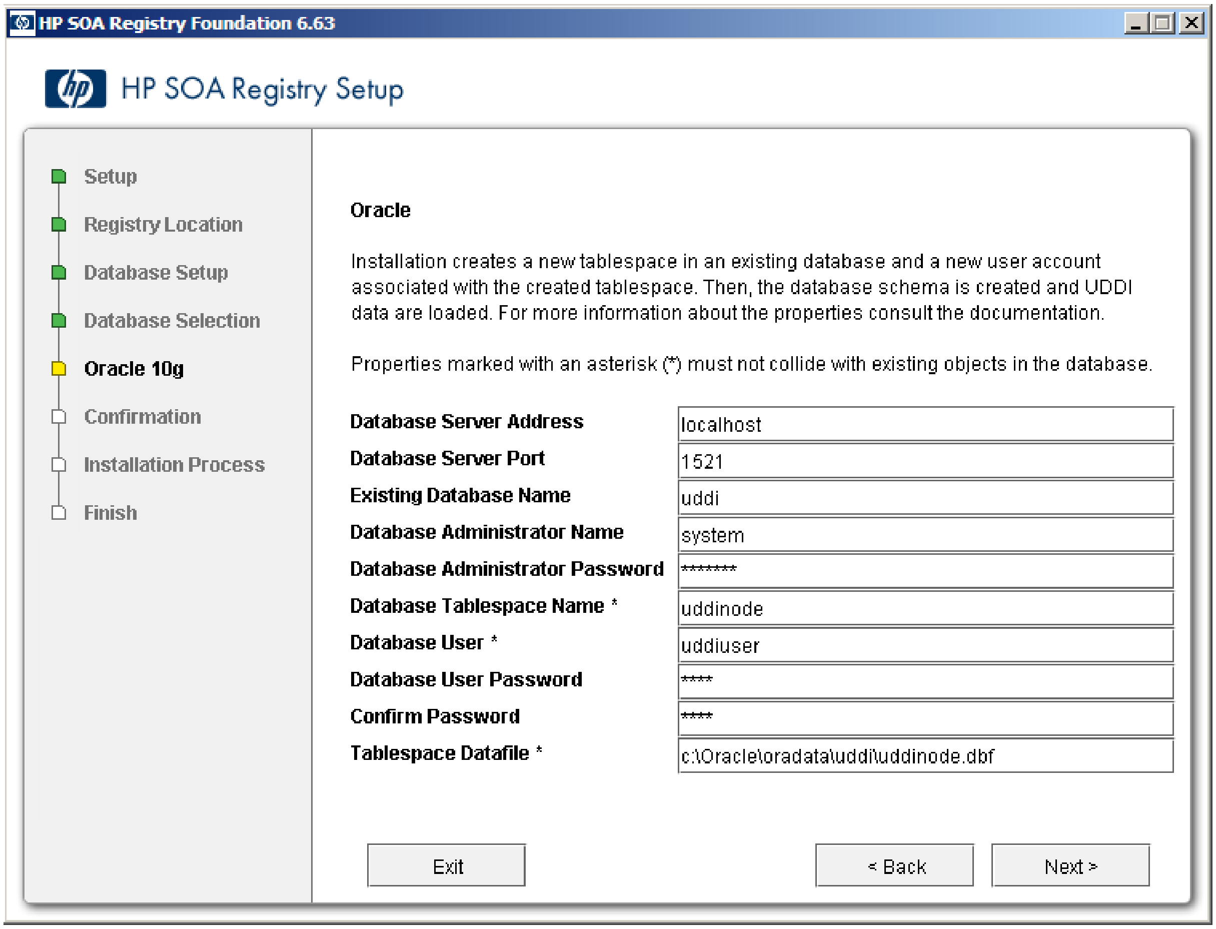


**Preconfigured HSQL**

Database is installed to the registry installation directory. This database is recommended for testing and evaluation purposes only.

## Oracle

The **Create database** option on the installer/Setup tool does not mean to create a new physical database. The installation process only creates a new tablespace in an existing database and a new user of the default tablespace is set up on the created one. Then a database schema is created and UDDI data are loaded. Because relational tables are created in the schema of the specified user, if you want to create more UDDI databases, you must create UDDI databases with different database users.



Oracle

Installation creates a new tablespace in an existing database and a new user account associated with the created tablespace. Then, the database schema is created and UDDI data are loaded. For more information about the properties consult the documentation.

Properties marked with an asterisk (*) must not collide with existing objects in the database.

| | |
|---|---|
| Database Server Address | localhost |
| Database Server Port | 1521 |
| Existing Database Name | uddi |
| Database Administrator Name | system |
| Database Administrator Password | ******* |
| Database Tablespace Name * | uddinode |
| Database User * | uddiuser |
| Database User Password | **** |
| Confirm Password | **** |
| Tablespace Datafile * | c:\Oracle\oradata\uddi\uddinode.dbf |

Oracle database creation requires the following properties. To connect or create a schema requires a subset of these properties. Please note that properties marked with an asterisk (*) must not collide with existing objects in the database.

**Database Server Address**

Usually the host name or IP address of the computer where the database server is accessible.

**Database Server Port**

Port on which the database listens for a connection

**Existing Database Name**

Name of a database that already exists into which the HP SOA Registry Foundation tablespace will be created.

**Database Administrator Name**

User name of the administrator of the database; required to create a new tablespace on the existing database

**Database Administrator Password**

Password for the administrator account specified in the previous text box.

**Database Tablespace Name ***

Name of the tablespace to be created in the existing database and which will store UDDI data structures.

**Database User ***

A new user account which will be created to connect to the tablespace.

**Database User Password**

Password for the user account specified in the previous text box.

**Confirm password**

Again, if it is not the same as in the previous text box, you cannot continue.

**Tablespace Datafile ***

Enter the path to the tablespace data file.

Continue with JDBC Driver on page 107.

## MSSQL 2000 or 2005

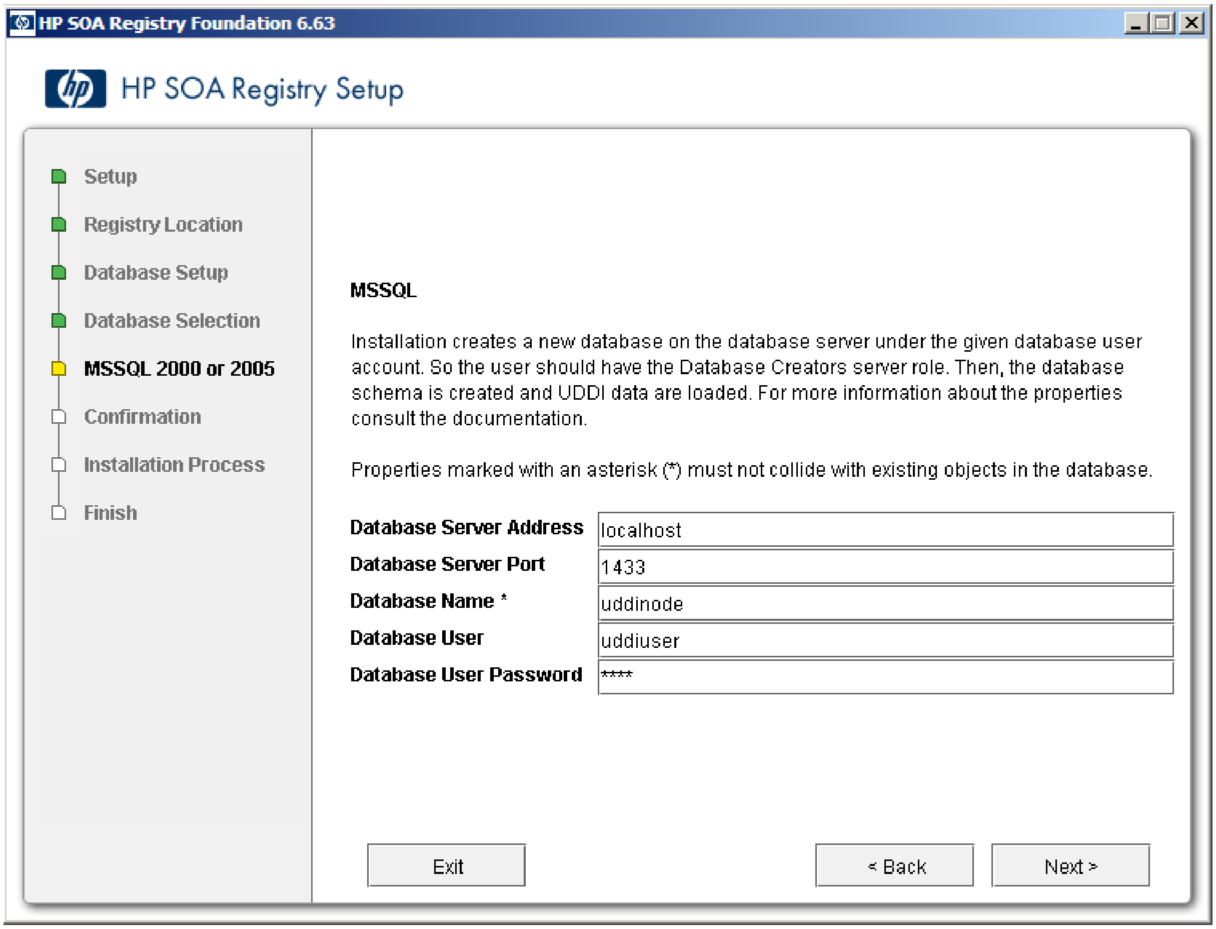
You have to select right version of MSSQL. Either MSSQL 2000 or MSSQL 2005 can be selected in panel shown on Figure 26. The options that follow are same for both but the versions differ in connection string and JDBC class name so that the selected version must match the version of database.

The installation process creates a new database on the database server under the given user name. The database schema is created and UDDI data are loaded. This user should have the Database Creators server role.

Make sure your database server has case-sensitive collation, otherwise all comparisons will be case insensitive, even if the caseSensitiveMatch findQualifier is set. Alternatively, you can create a database with case-sensitive collation manually and use the **create schema** option.

If you selected the option **Create database** in the installation/Setup panel shown in Figure 25, you need a database user account with the `Database creators` server role. To create such account, you can use the `SQL Server Enterprise Manager`:

1. Select the **Console Root** > **Microsoft SQL Servers** > **SQL Server Group** > *server name* > **Security** > **Logins**.
2. Right-click on **Logins** and select the **New Login** from the context menu.
3. Enter the account name, click on the **SQL Server Authentication** option and fill in the password.
4. Select **Server Roles** tab, mark the **Database Creators**, click **OK**, and retype the password.



MSSQL

Installation creates a new database on the database server under the given database user account. So the user should have the Database Creators server role. Then, the database schema is created and UDDI data are loaded. For more information about the properties consult the documentation.

Properties marked with an asterisk (*) must not collide with existing objects in the database.

| | |
|---|---|
| Database Server Address | localhost |
| Database Server Port | 1433 |
| Database Name * | uddinode |
| Database User | uddiuser |
| Database User Password | **** |

MSSQL database creation requires the following properties. To connect or create schema requires a subset of these properties. Please note that properties marked with an asterisk (*) must not collide with existing objects in the database.

**Database Server Address**

Usually the host name or IP address where the database server is accessible.

**Database Server Port**

Port on which the database listens for a connection.

**Database name ***

Name of the database that will hold UDDI data structures.

**Database user**

User name of a user who is able to create a new database.

**Database User Password ***

Password for the user specified above.

Continue with JDBC Driver on page 107.

## DB2

The **Create database** option from the installer/Setup tool does not create a new database physically. The installation process creates a new tablespace in an existing database with the given (existing) bufferpool and associates the tablespace with the given file. Permission to use the tablespace is given to the specified user. Then, a database schema is created and UDDI data are loaded.

➤ Because relational tables are created in the implicit schema, if you want to create more UDDI databases, you must create UDDI databases with different database users.

➤ The **Create database** option requires a bufferpool with 8k page size and an database user account, that can use a temporary tablespace with such bufferpool.

- To create such a bufferpool using the `DB2 Control Center`:

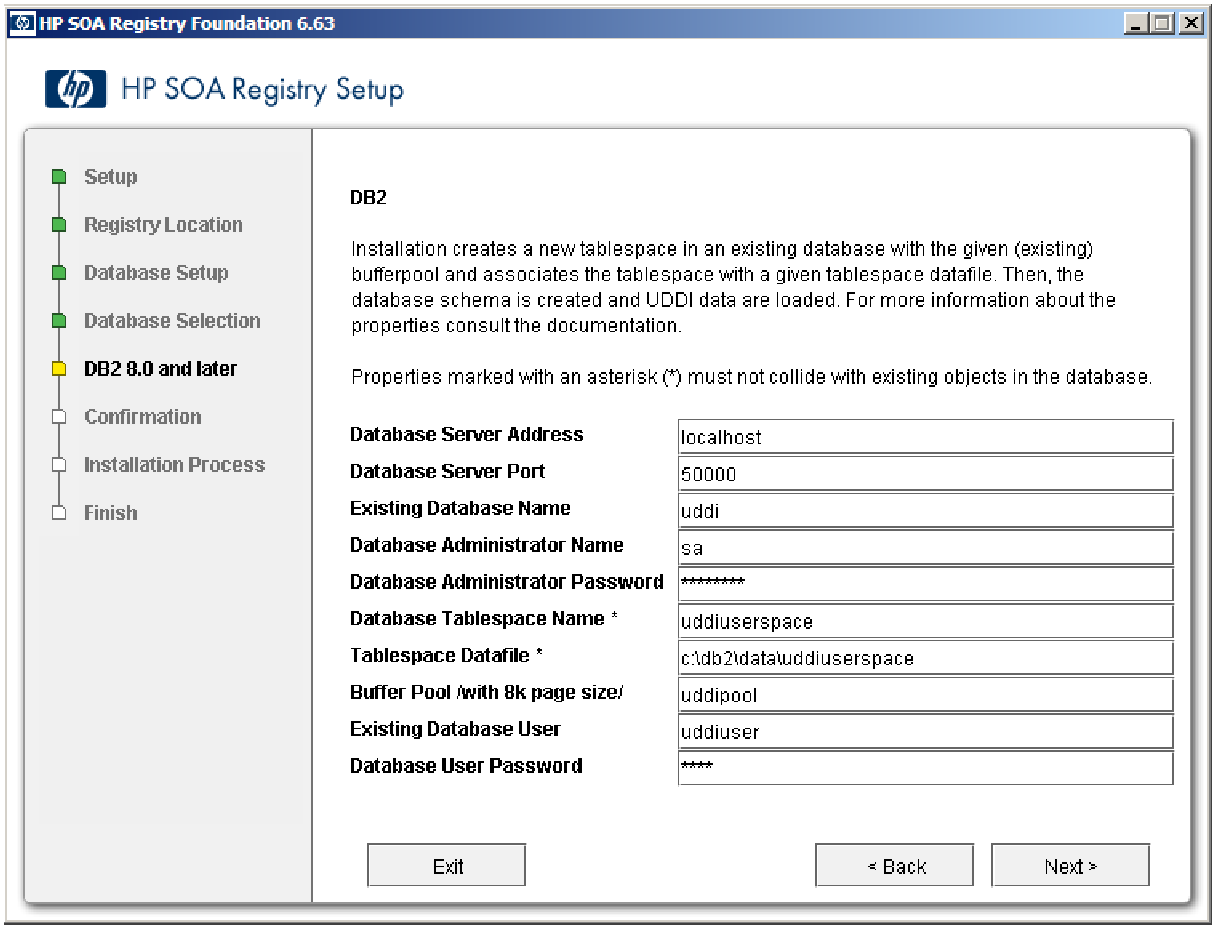
  1. Select **Control Center** > **All Databases** > *database* > **Buffer Pools** from the left side tree.
  2. Right-click on **Buffer Pools**, and select the **Create...** option from the context menu.
  3. Fill in a **Buffer pool name**, such as "uddipool" and select **8k page size**.

- To create such a temporary tablespace using the `DB2 Control Center`:

  1. Select **Control Center** > **All Databases** > *database* > **Table Spaces** from the left side tree.
  2. Right-click on **Table Spaces** and select the **Create...** option from the context menu.
  3. Fill a tablespace name such as "udditempspace" and click **Next**.
  4. Select the **user temporary** option, and click **Next**.
  5. Select the **uddipool** buffer pool and click **Next** twice.
  6. Select the location where data are physically stored such as `C:\Db2\data\udditempspace`, click **Next** 3 times and then click **Finish**.

- To create the database user that can use the temporary tablespace using `DB2 Control Center`:

  1. Select **Control Center** > **All Databases** > *database* > **User and Group Objects** > **DBUsers** from the left side tree.
  2. Right-click on **DBUsers** and select the **Add...** option from the context menu.
  3. Select the username, check **Connect to database**, **Create tables** and **Create schemas implicitly**.
  4. Click on the **Table Space** tab, the **Add Tablespace...** button, select the **udditempspace** and click **OK**.
  5. Select the **udditempspace** and select the **Yes** option from the **Privileges** drop down list .
  6. Click **OK** to save the account.



DB2

Installation creates a new tablespace in an existing database with the given (existing) bufferpool and associates the tablespace with a given tablespace datafile. Then, the database schema is created and UDDI data are loaded. For more information about the properties consult the documentation.

Properties marked with an asterisk (*) must not collide with existing objects in the database.

| | |
|---|---|
| Database Server Address | localhost |
| Database Server Port | 50000 |
| Existing Database Name | uddi |
| Database Administrator Name | sa |
| Database Administrator Password | ********* |
| Database Tablespace Name * | uddiuserspace |
| Tablespace Datafile * | c:\db2\data\uddiuserspace |
| Buffer Pool /with 8k page size/ | uddipool |
| Existing Database User | uddiuser |
| Database User Password | **** |

DB2 database creation requires the following properties. To connect or create schema requires a subset of these properties. Please note that properties marked with an asterisk (*) must not collide with existing objects in the database.

**Database Server Address**

Usually the host name or IP address where the database server is accessible.

**Database Server Port**

Port on which the database listens for connection.

**Existing Database Name**

Name of a database that already exists. The UDDI tablespace will be created in this database.

**Database Administrator Name**

User name of the administrator of the database; this is required to create a new tablespace on the existing database.

**Database Administrator Password**

Password for the user specified in the previous text box.

**Database Tablespace Name ***

Name of tablespace to be created in the existing database and which will store UDDI data structures

**Tablespace Datafile ***

Full path of the host machine where the tablespace files will be stored

➤ You must have read and write permissions to this directory.

**Buffer pool with 8k page size**

Buffer pool for database; it must have pages with a size of 8k.

**Existing Database User**

User name of a user having the following authorities: `connect database`, `create table` and `create schema implicitly`.

➤ The user also must have access to a temporary tablespace with the associated 8k-length bufferpool to use for temporary tables.

**Database User Password**

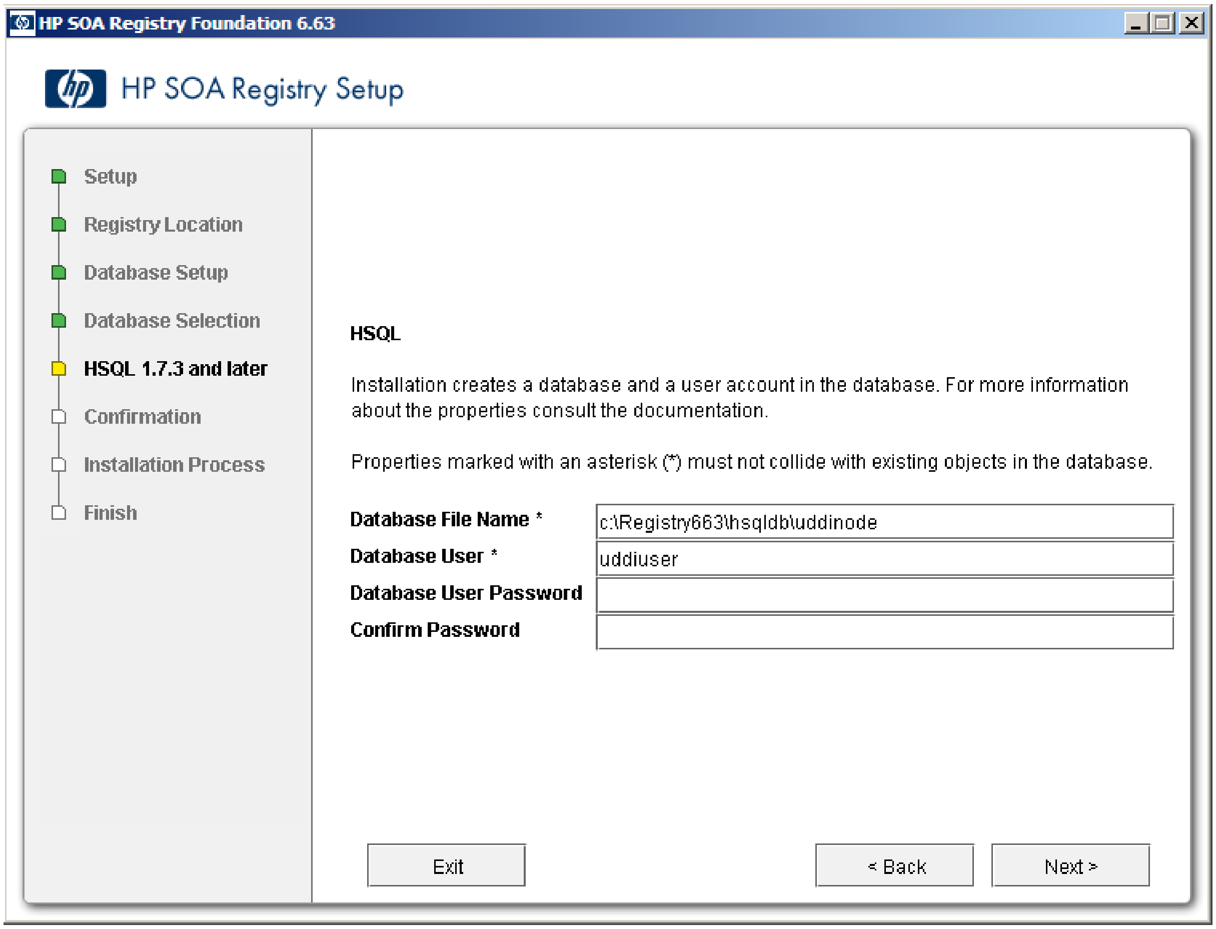
Password for the user specified in the previous text box.

Specify the HP SOA Registry Foundation Administrator account which will be created in the database. (If **configure database** is selected, this administrator account must correspond to one existing in the database.)

- Increase transaction log size (parameter `logfilsiz`) from default value 250 to 1000. You can use the `Control Center` tool to make this change.

Continue with JDBC Driver on page 107.

## HSQL



HSQL

Installation creates a database and a user account in the database. For more information about the properties consult the documentation.

Properties marked with an asterisk (*) must not collide with existing objects in the database.

| | |
|---|---|
| Database File Name * | c:\Registry663\hsqldb\uddinode |
| Database User * | uddiuser |
| Database User Password | |
| Confirm Password | |

The installation process creates a new database and a user who is able to create schema/tables.

The HSQL database requires the following properties.

**Database File Name**

Full path to the file which will hold data structures.

**Database User**

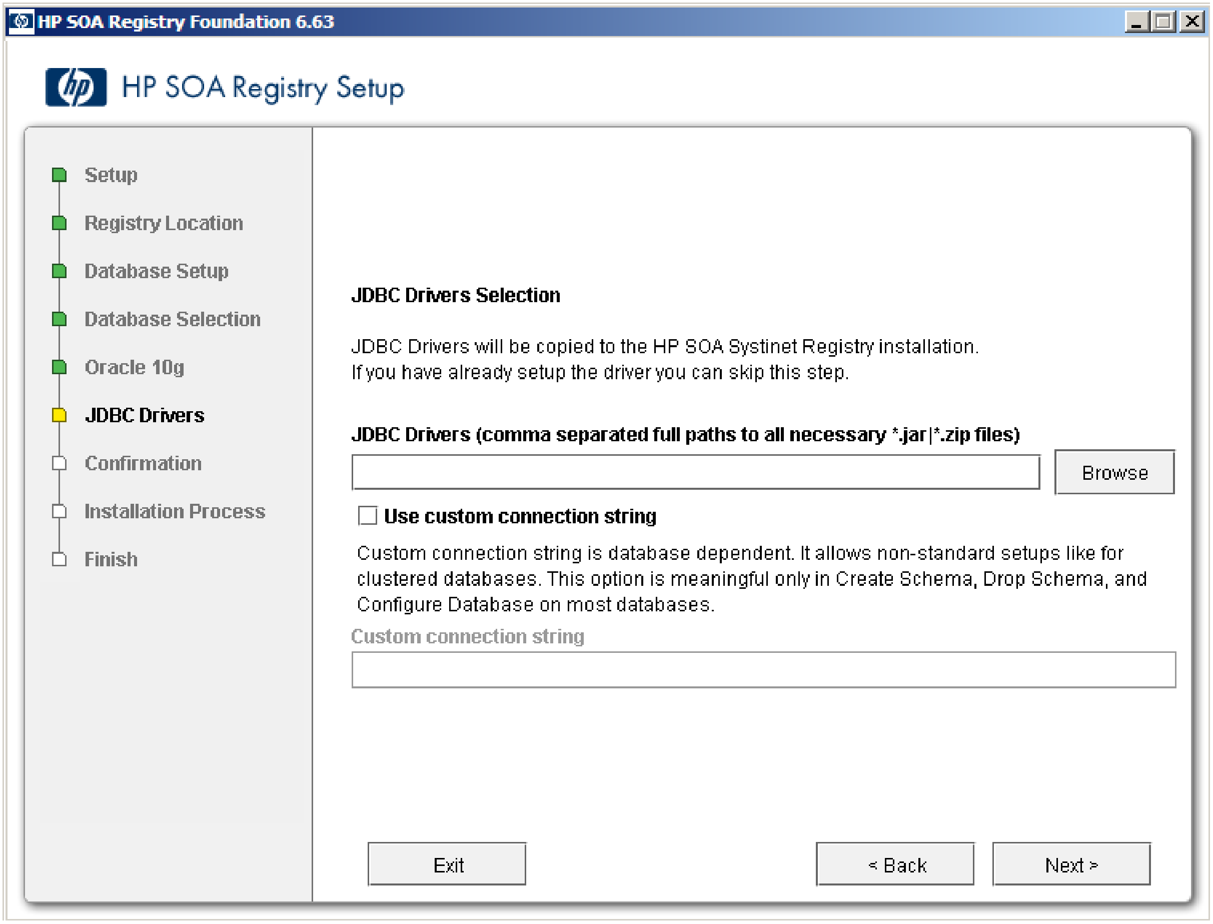
User name for one account authorized to access this database

If you use HSQL then user credentials are stored in the HSQL database files in plain text. So you must protect these files from unauthorized reading using appropriate filesystem access rights. The files are located in the directory `REGISTRY_HOME/hsqldb/` by default.

## JDBC Driver

Select the JDBC Driver as shown in Figure 11. It is not necessary to configure this path for the HSQL database as the JDBC drivers for this database are installed in the distribution. It is also not necessary if you have already configured this path previously for the selected database. The JDBC drivers are usually supplied by database vendors.

**Figure 27. Optional JDBC Driver**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HP SOA Registry Setup

**JDBC Drivers Selection**

JDBC Drivers will be copied to the HP SOA Systinet Registry installation.
If you have already setup the driver you can skip this step.

**JDBC Drivers (comma separated full paths to all necessary *.jar|*.zip files)**

☐ **Use custom connection string**

Custom connection string is database dependent. It allows non-standard setups like for clustered databases. This option is meaningful only in Create Schema, Drop Schema, and Configure Database on most databases.

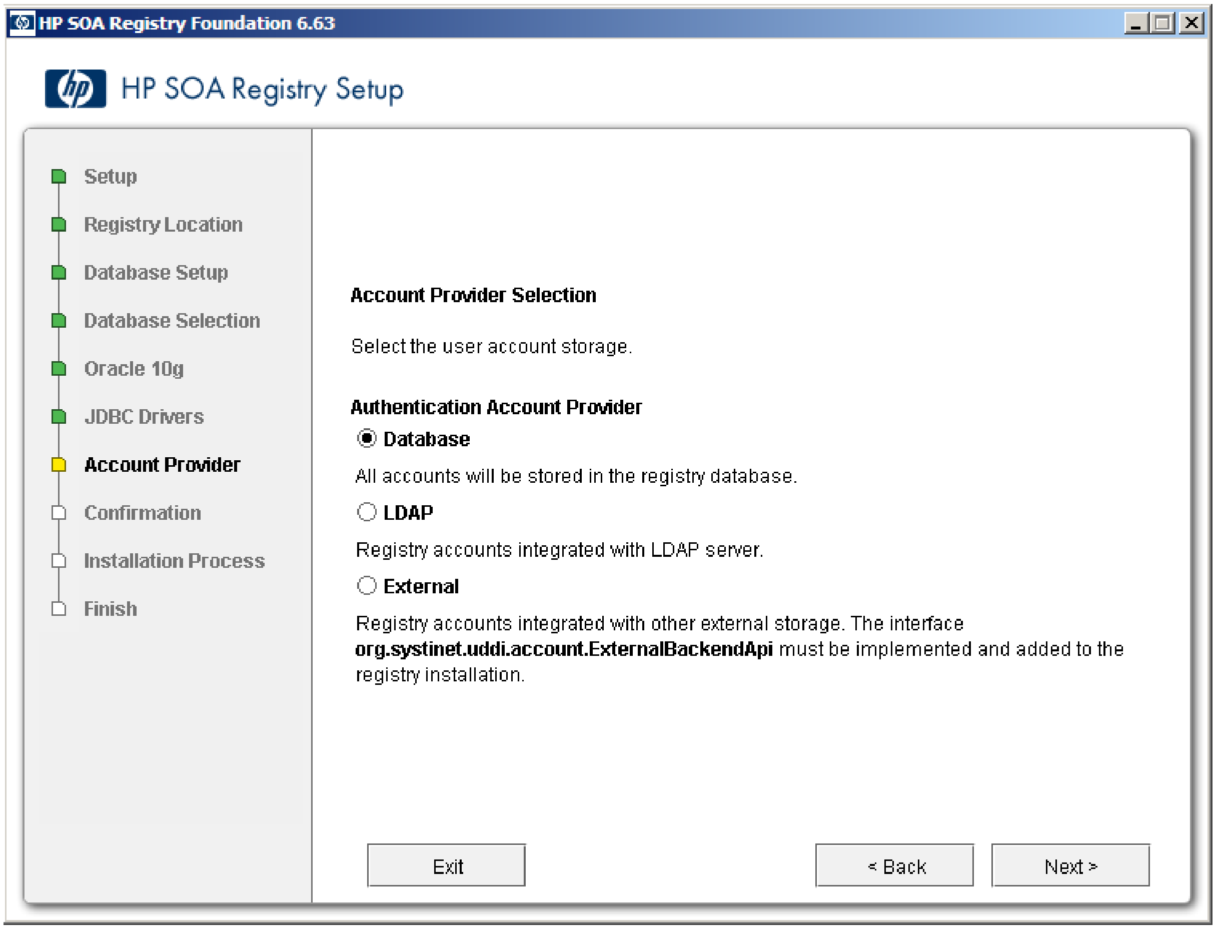
Custom connection string

You can also specify custom JDBC connection string. Such string may be useful for special environments like database clusters where JDBC driver does load-balancing or failover. This setting is useful only in Create Schema, Drop Schema and Configure Database. We do not recommend to use this option unless there is special need to do so.

## Account Backend

If you created a database or schema, you can configure an authentication account provider.

**Figure 28. Authentication Account Provider**



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HP SOA Registry Setup

**Account Provider Selection**

Select the user account storage.

**Authentication Account Provider**

[✓ Database]

All accounts will be stored in the registry database.

LDAP

Registry accounts integrated with LDAP server.

External

Registry accounts integrated with other external storage. The interface **org.systinet.uddi.account.ExternalBackendApi** must be implemented and added to the registry installation.

Figure 12 allows you to select the authentication account provider.

**Database**

All accounts will be stored in the registry database. This is the recommended backend.

**LDAP**

Registry accounts integrated with LDAP server.

**External**

Registry accounts integrated with other external storage. To integrate HP SOA Registry Foundation, with an external backend, you must implement the interface `com.systinet.uddi.account.ExternalBackendApi` and add it to the registry installation.

For more information about LDAP and External account backends, please see External Accounts Integration on page 114

## Multilingual Data

This section describes how HP SOA Registry Foundation supports the storage of UDDI structures in the multilingual data format.

There are two types of text fields in UDDI structures: Unicode fields and ASCII fields.

**Unicode fields**

are intended for human readable information, the field length is measured in number of characters as follows:

| **Field Name** | **Max Length (in chars)** |
|---|---:|
| name of businessEntity and businessService | 255 |
| keyName | 255 |
| keyValue | 255 |
| useType | 255 |
| description | 255 |
| addressLine | 80 |
| personName | 255 |

**ASCII fields**

are intended for machine processing, such as URIs. The length is measured in bytes. ASCII fields can typically hold multilingual data. Its length is limited by the number of bytes of its serialized form in UTF-8 encoding. For example, the name of a tModel can carry 85 Japanese characters, because Japanese characters are encoded into three bytes each under UTF-8 encoding (255/3=85).

| **Field Name** | **Max Length (in bytes)** |
|---|---:|
| name of tModel | 255 |
| overviewURL | 4096 |
| discoveryURL | 4096 |
| sortCode | 10 |
| email | 255 |
| phone | 50 |
| accessPoint | 4096 |
| instanceParms | 8192 |

### HSQL

HSQL supports Unicode characters in both types (Unicode and ASCII) of fields.

### MSSQL

MSSQL supports Unicode characters only in Unicode fields. Unicode characters are stored successfully to ASCII fields only if they match with the server collation, otherwise are converted to question marks (?). For example, Japanese characters are stored correctly if the Japanese_Unicode_Cl_AS collation is default to the server. If the English collation is set up, Japanese characters are converted to ? characters.

### Oracle

Oracle database supports Unicode characters in both types (Unicode and ASCII) of fields.

### DB2

The DB2 database supports Unicode characters in both types of fields. Maximal length of a field is measured in bytes in the default database schema despite it being a Unicode field. You can use any Unicode characters, but allowed string length is not guarantied. For example, the name of a tModel can carry 85 Japanese characters, because Japanese characters are encoded into three bytes each under UTF-8 encoding (255/3=85).

Note that longer strings produce a database exception. The restriction is made because the cumulative length of indexed columns is limited to 800 bytes. The default schema prefers performance to multiple language support.

If you want to use Unicode fields with longer byte-length you must enlarge appropriate database columns. However indexes with cumulative length longer than 800 bytes must be removed as these can harm performance. Follow these steps:

1. Install HP SOA Registry Foundation with the no database option.
2. Modify the database schema file `REGISTRY_HOME/etc/db/db2/schema_core.sql`
   a. Increase column lengths for names and keyValues.
   b. Remove appropriate indexes.
3. Use the Setup tool to create the database.

## JDBC Drivers

HP SOA Registry Foundation requires by default the following classes for connection to the database. Please ensure that your downloaded JDBC JAR(s) includes them:

| Database | Driver class |
|---|---|
| DB2 | `com.ibm.db2.jcc.DB2Driver` |
| HSQL | `org.hsqldb.jdbcDriver` |
| MSSQL | `com.microsoft.jdbc.sqlserver.SQLServerDriver` |
| Oracle | `oracle.jdbc.driver.OracleDriver` |

### Alternative JDBC Drivers

This section describes the use JDBC drivers other than the default drivers mentioned above. Suppose you downloaded `FooJDBC.jar`, where the driver class is `foo.jdbc.Driver` and the connection string is `jdbc:foo:...`.

If you want to use an alternative JDBC driver while you already installed the registry and set up database with the default JDBC driver, edit the file `REGISTRY_HOME/app/uddi/conf/database.xml` as follows:

1. Add

   ```
   <universalDriver name="fooDriver">
       <JDBC_driver>foo.jdbc.Driver</JDBC_driver>
       <URI_pattern>jdbc:foo:...</URI_pattern>
   </universalDriver>
   ```

   at the end of <databaseMappings/> element

   You can use following parameters in the <URI_pattern> element

   - `${hostname}` - hostname or IP address of the database server
   - `${port}` - Port where the database server listens for requests
   - `${dbName}` - Name of the database
   - `${userName}` - Name of database account
   - `${userPassword}` - Password of the account

   Replace the parameters with corresponding values using the Setup tool or the Registry Console.

2. Replace the className attribute of the interfaceMapping element with `fooDriver` value for your database. Determine the right `databaseMapping` element by value of `type` attribute.)

If you want to create a database with the alternative JDBC driver (without needing to use the default driver):

1. Install the HP SOA Registry Foundation without the database.
2. Modify `REGISTRY_HOME/app/uddi/conf/database.xml` as described above.
3. Replace the driver class and connection string in the installation scripts in `REGISTRY_HOME/etc/db/<database_type>/installXXX.xml`
4. Run the Setup tool to create database.

# External Accounts Integration

During database installation or by employing the Setup tool, you may choose to use accounts from external repositories. This chapter describes how to integrate accounts from an LDAP server and from non-LDAP user stores into HP SOA Registry Foundation.

An LDAP server can be integrated with HP SOA Registry Foundation with these scenarios:

- LDAP with a single search base - The scenario is very simple. There is only one LDAP server in this scenario. All identities are stored under a single search base.
- LDAP with multiple search bases - In this scenario there is also only one LDAP server, but it has multiple search bases mapped to a domain. The domain is a specified part of the user's login name (that is, `DOMAIN/USERNAME`). All users must specify the domain name in the login dialog. When managing accounts or groups, we recommend using the `DOMAIN/USERNAME` format for performance reasons. If no domain is set, searches are performed across all domains.
- Multiple LDAP services - More than one LDAP service is used in this scenario. The correct LDAP service is chosen via DNS. As in the previous scenario, users must specify a domain name during login. When managing accounts or groups, users have to set domain name. If the domain name is not specified, then no domain is processed.

This chapter also contains the following configuration examples:

- Sun One with a single search base
- Sun One with multiple search bases
- Active Directory with a single search base

HP SOA Registry Foundation treats external stores as read-only. User account properties stored in these external stores cannot be modified by HP SOA Registry Foundation.

The Administrator account must not be stored in the LDAP. We strongly recommend that users stored in `account_list.xml` (by default, only administrator) should not be in the LDAP. If you really need to have users from LDAP in the file `account_list.xml`, delete password items from the file and change of all the accounts' properties according to the LDAP. The `account_list.xml` file contains a list of users that can be logged into a registry without connection to the database.

Sometimes HP SOA Registry Foundation displays various warnings into logs. We recommend to edit file `directory.xml` and file `group_core.xml` manually in order to suppress warnings related to account / group integration - LDAP (set true for attribute *suppressWarnings*).

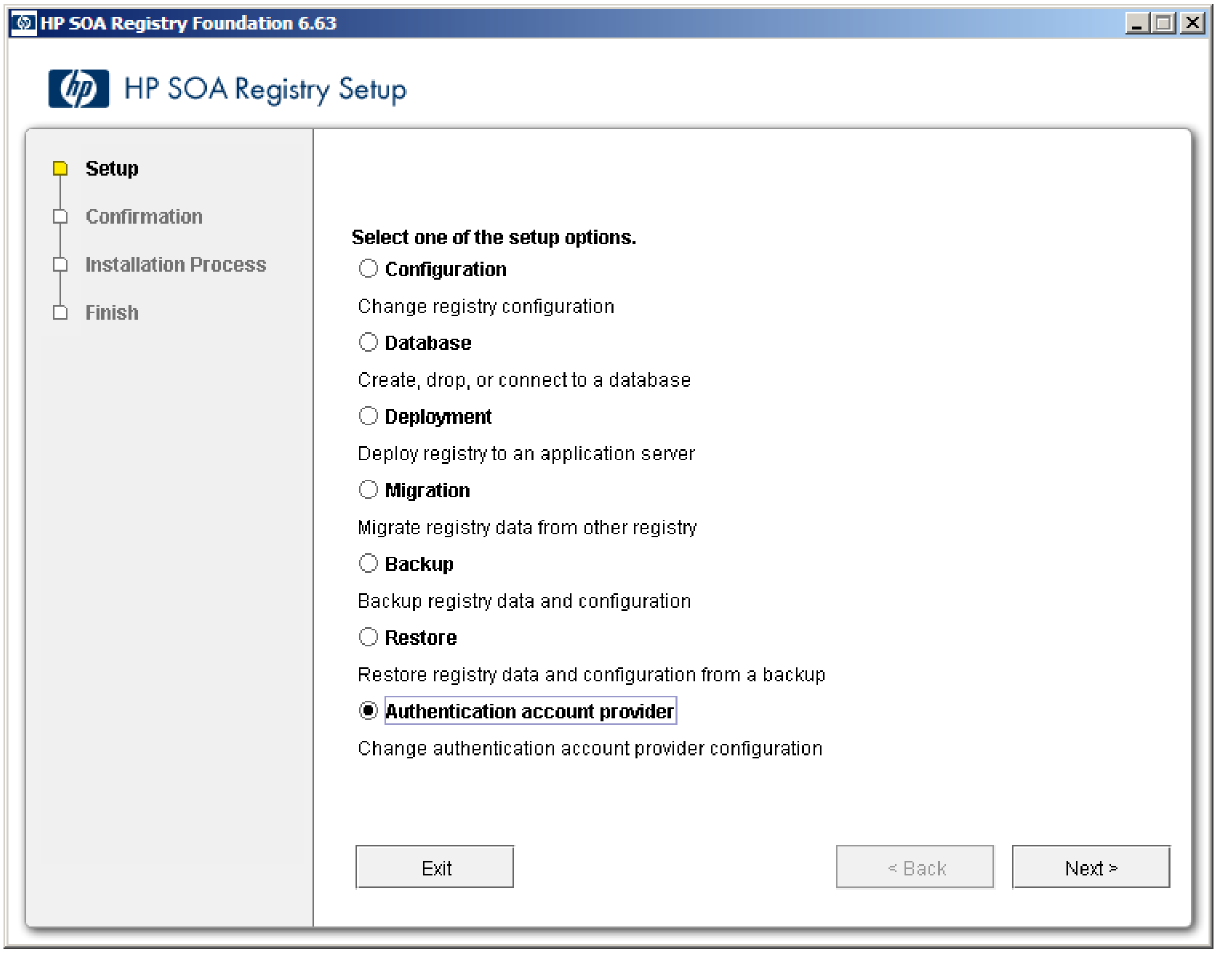
To integrate external accounts from another repository, either:

- Create a database or create a new schema on the connected database by following the instructions in Database Settings on page 50, or
- Use the Setup tool and choose **Authentication provider**. To run the Setup tool, execute the following script from the `bin` subdirectory of your installation:

| | |
|---|---|
| Windows: | setup.bat |
| UNIX: | ./setup.sh |

See command-line parameters in Setup on page 71.

**Figure 29. Setup Select Authentication Account Provider**



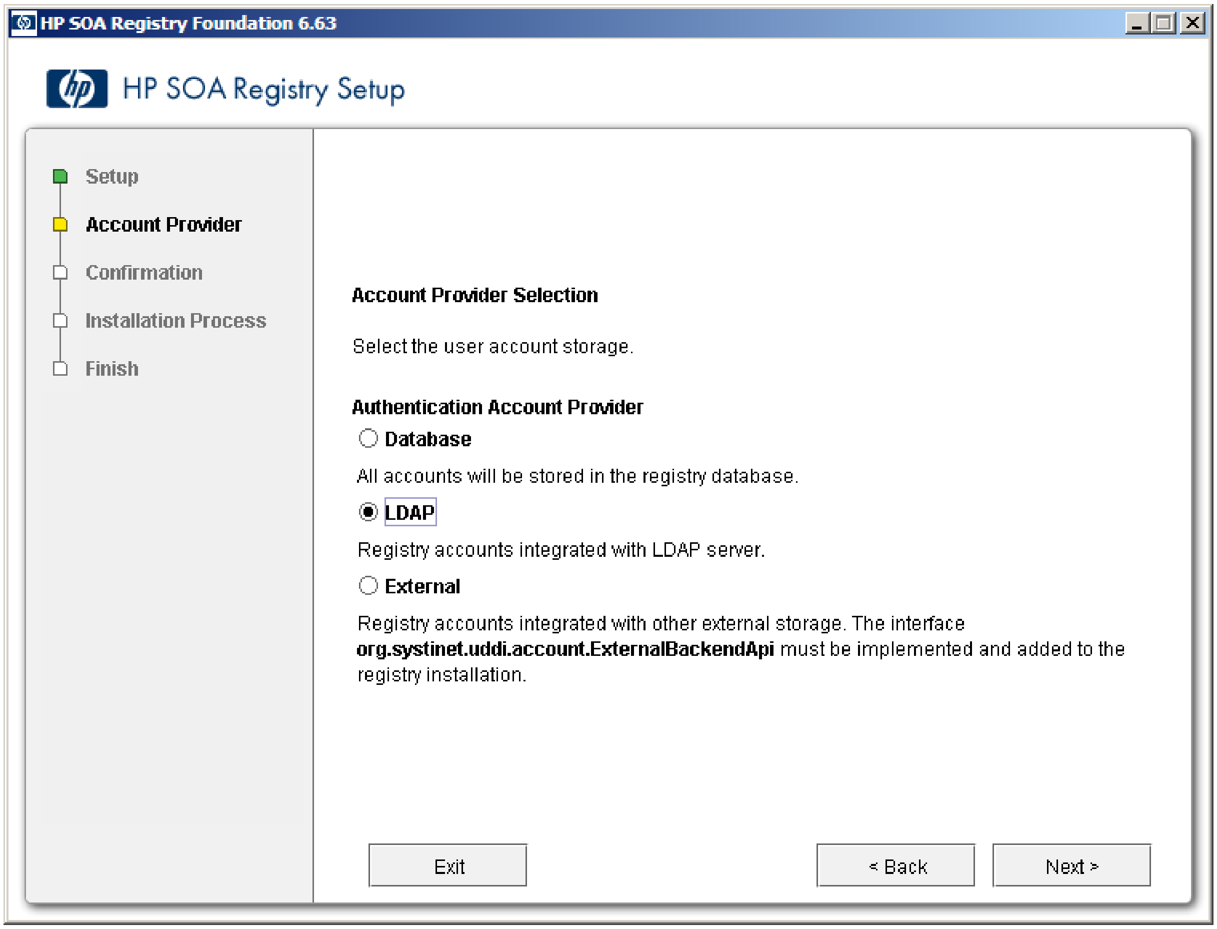
Select one of the setup options.

- ○ **Configuration** – Change registry configuration
- ○ **Database** – Create, drop, or connect to a database
- ○ **Deployment** – Deploy registry to an application server
- ○ **Migration** – Migrate registry data from other registry
- ○ **Backup** – Backup registry data and configuration
- ○ **Restore** – Restore registry data and configuration from a backup
- ● **Authentication account provider** – Change authentication account provider configuration

For more information on the Setup tool, please see Reconfiguring After Installation on page 72.

## LDAP

Select **LDAP** on the **Account Provider** panel.



**Account Provider Selection**

Select the user account storage.

**Authentication Account Provider**

◯ **Database**

All accounts will be stored in the registry database.

● **LDAP**

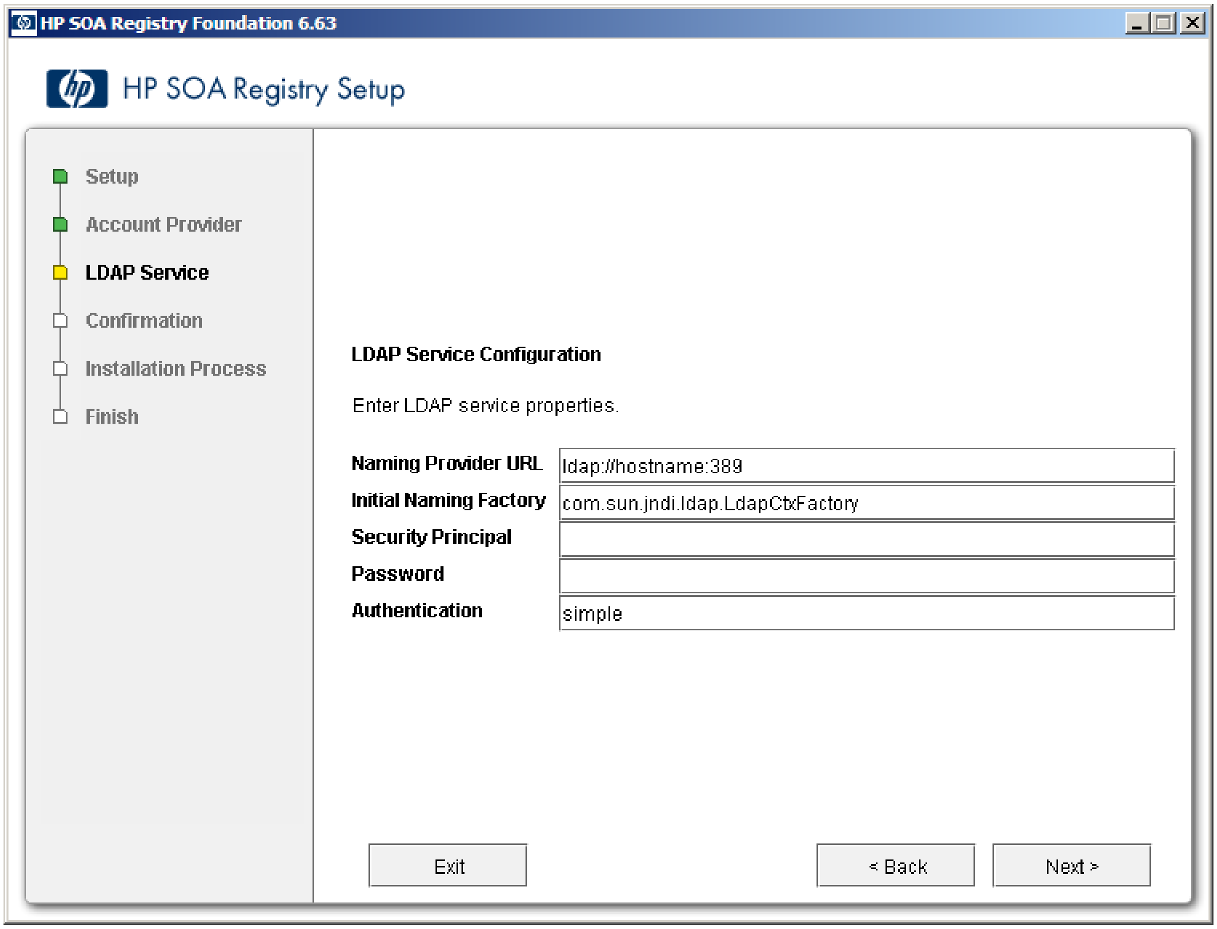
Registry accounts integrated with LDAP server.

◯ **External**

Registry accounts integrated with other external storage. The interface **org.systinet.uddi.account.ExternalBackendApi** must be implemented and added to the registry installation.

Enter the following settings:

**Figure 30. LDAP Service**



LDAP Service Configuration

Enter LDAP service properties.

| | |
|---|---|
| Naming Provider URL | ldap://hostname:389 |
| Initial Naming Factory | com.sun.jndi.ldap.LdapCtxFactory |
| Security Principal | |
| Password | |
| Authentication | simple |

HP SOA Registry Foundation uses a JNDI interface to connect to LDAP servers. The following JNDI properties must be known to the server. (The default properties are noted in parentheses.)

**Java naming provider URL**

A URL string for configuring the service provider specified by the "Java naming factory initial" property. (`ldap://hostname:389`).

**Initial Naming Factory**

Class name of the initial naming factory. (`com.sun.jndi.ldap.LdapCtxFactory`).

**Security Principal**

The name of the principal for anonymous read access to the directory service.

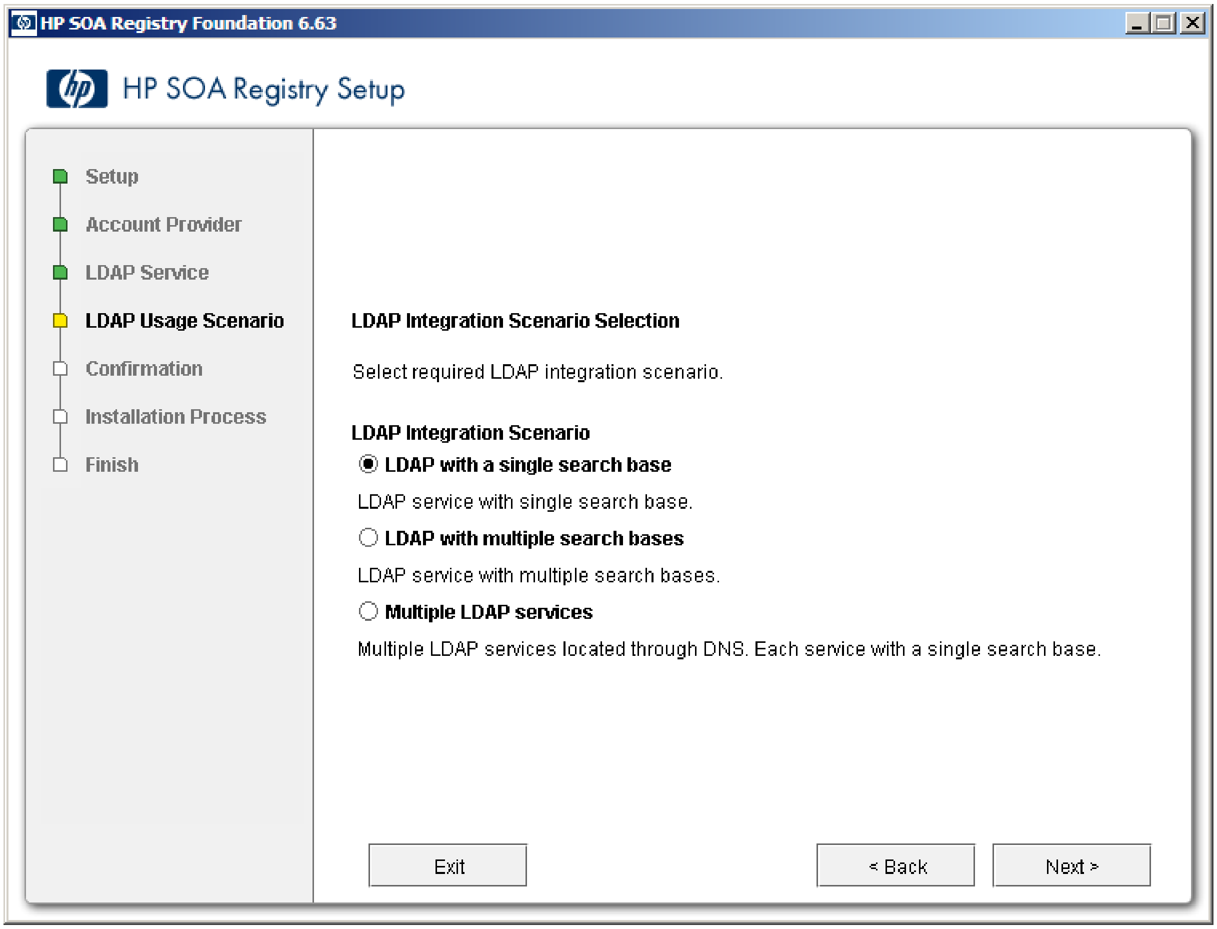
**Password**

Password of security principal.

**Authentication**

Security level. (simple)

**Figure 31. LDAP Usage Scenarios**



LDAP Integration Scenario Selection

Select required LDAP integration scenario.

LDAP Integration Scenario

[✓ LDAP with a single search base]
LDAP service with single search base.

LDAP with multiple search bases
LDAP service with multiple search bases.

Multiple LDAP services
Multiple LDAP services located through DNS. Each service with a single search base.

You can select the following LDAP usage scenarios:

**LDAP with a single search base**

The scenario is very simple. There is only one LDAP server in this scenario. All identities are stored under a single search base.

**LDAP with multiple search bases**

In this scenario there is also only one LDAP server, but it has multiple search bases mapped to a domain. The domain is a specified part of user's login name (that is, `DOMAIN/USERNAME`). All users must specify the domain name in the login dialog. During the managing with accounts or groups it is recommended to use `DOMAIN/USERNAME` because of performance. If no domain is set then search is performed across all domains.

Domains can be specified dynamically or statically. For dynamic settings it is necessary to specify, for example, a domain prefix or postfix. Static domains are set during the installation directly and so they must be known in time of installation.

**Multiple LDAP services**

More than one LDAP service are used in this scenario. The correct LDAP service is chosen via DNS. As in the previous scenario, users must specify a domain name during login. When managing accounts or groups users have to set domain name. If domain name is not specified then no domain is processed.

Automatic discovery of the LDAP service using the URL's distinguished name is supported only in Java 2 SDK, versions 1.4.1 and later, so be sure of the Java version you are using.

The automatic discovery of LDAP servers allows you not to hardwire the URL and port of the LDAP server. For example, you can use `ldap:///o=JNDITutorial,dc=example,dc=com` as a URL and the real URL will be deduced from the distinguished name `o=JNDITutorial,dc=example,dc=com`.

HP SOA Registry Foundation integration with LDAP uses the JNDI API. For more information, see http://java.sun.com/products/jndi/tutorial/ldap/connect/create.html and http://java.sun.com/j2se/1.-4.2/docs/guide/jndi/jndi-dns.html#URL

## LDAP with a Single Search Base

The installation consists of the following steps:

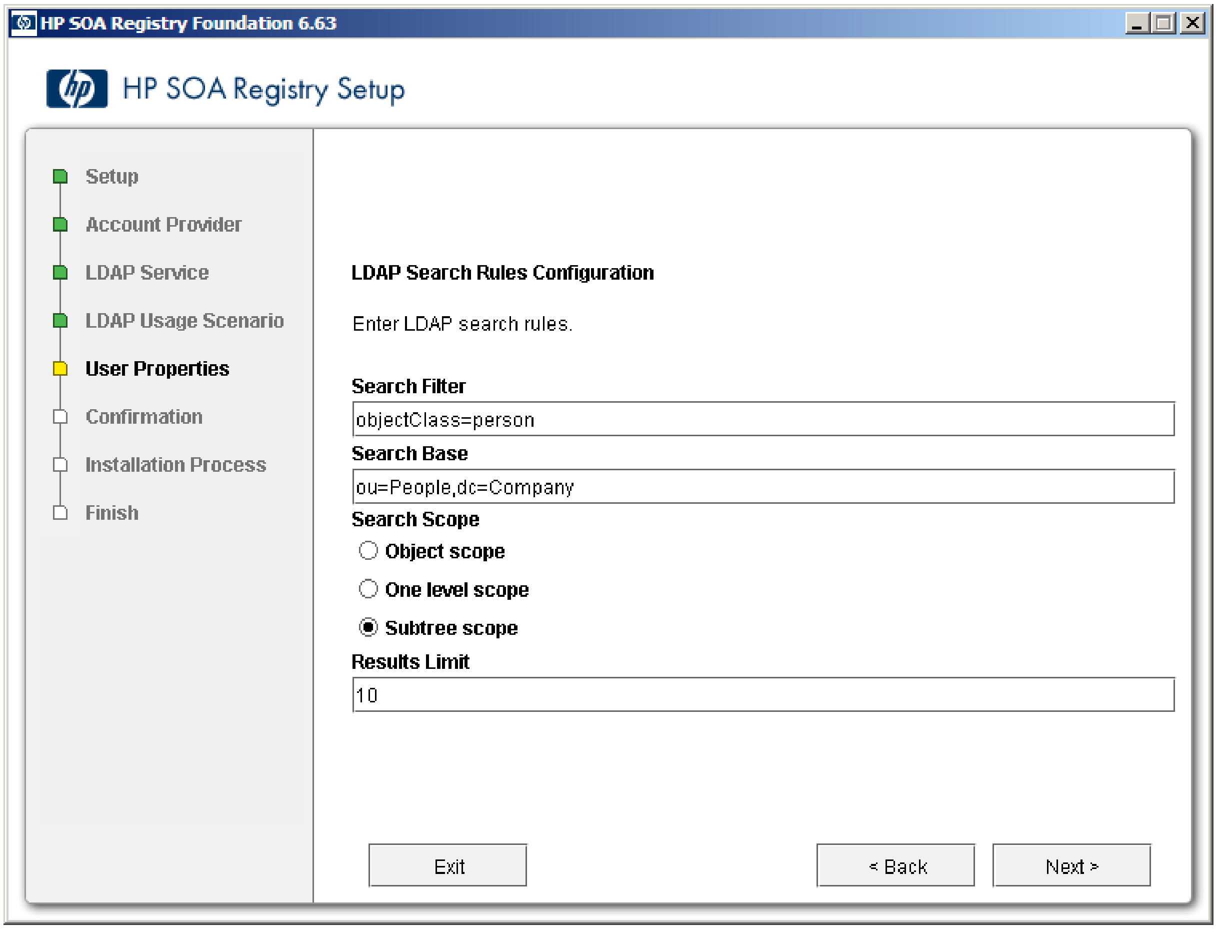
1. Specify user/account search properties as shown in Figure 32.

2. Map Registry user properties to LDAP properties as shown in Figure 33.

3. Specify group search properties as shown in Figure 34.

4 Map Registry group properties to LDAP properties as shown in Figure 35.

**Figure 32. User Search Properties**



**LDAP Search Rules Configuration**

Enter LDAP search rules.

Search Filter: objectClass=person

Search Base: ou=People,dc=Company

Search Scope: Object scope / One level scope / [✓ Subtree scope]

Results Limit: 10

Field description:

**Search Filter**

The notation of the search filter conforms to the LDAP search notation. You can specify the LDAP node property that matches the user account.

**Search Base**

LDAP will be searched from this base including the current LDAP node and all possible child nodes.

**Search Scope**

Here you can specify how deep the LDAP tree structure's data will be searched.

- *Object Scope* - Only the search base node will be searched.
- *One-level Scope* - Only direct sub-nodes of the search base (entries one level below the search base) will be searched. The base entry is not included in the scope.
- *Subtree Scope* - Search base and all its sub-nodes will be searched.

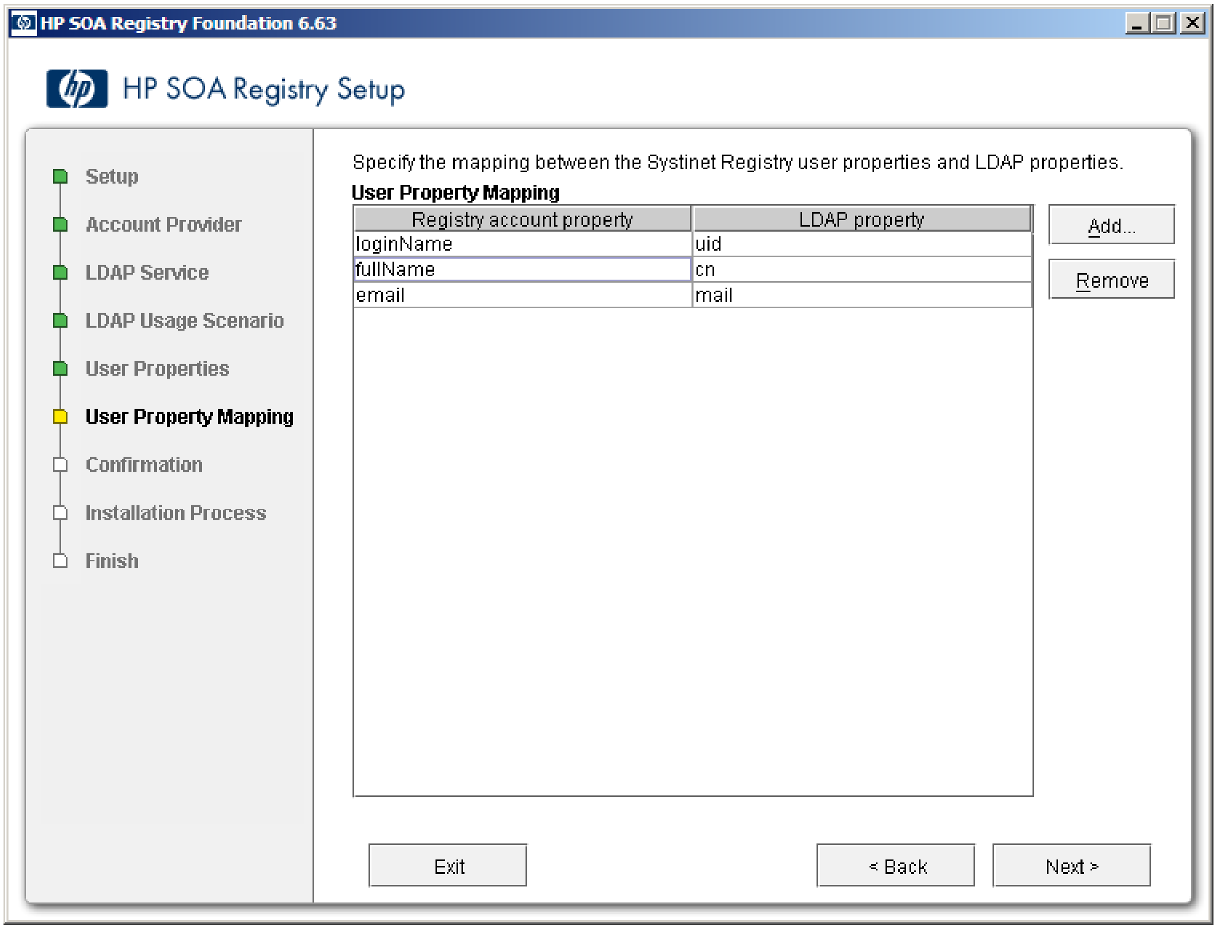
**Results Limit**

Number of items returned when searching LDAP.

If an LDAP search returns more results than the limit then the following warning is returned:

```
WARN: ldap.LdapBackendImpl - The result of LDAP query
                            (searchbase: 'dc=in,dc=idoox,dc=com', filter:
'(&(uid=*)(objectClass=person))')
                            is truncated by using the count limit search control which is set to
'100'.
                            The query produced too many answers and so please narrow your search
filter or increase default limit count.
                            Read the documentation in order to suppress the warning.
```

**Figure 33. User Properties Mapping**



Specify the mapping between the Systinet Registry user properties and LDAP properties.

**User Property Mapping**

| Registry account property | LDAP property |
|---|---|
| loginName | uid |
| fullName | cn |
| email | mail |

You can specify mapping between HP SOA Registry Foundation user account properties and LDAP properties. You can add rows by clicking **Add**. To edit an entry, double click on the value you wish to edit.

The following user account properties can be mapped from an LDAP server:

```
java.lang.String loginName
java.lang.String email
java.lang.String fullName
java.lang.String languageCode
java.lang.String password
java.lang.String description
java.lang.String businessName
java.lang.String phone
java.lang.String alternatePhone
java.lang.String address
java.lang.String city
java.lang.String stateProvince
java.lang.String country
java.lang.String zip
java.util.Date expiration
java.lang.Boolean expires
java.lang.Boolean external
java.lang.Boolean blocked
java.lang.Integer businessesLimit
java.lang.Integer servicesLimit
java.lang.Integer bindingsLimit
java.lang.Integer tModelsLimit
java.lang.Integer assertionsLimit
java.lang.Integer subscriptionsLimit
```

The Registry account property **dn** specifies the LDAP distinguished name. The value depends on the LDAP vendor.

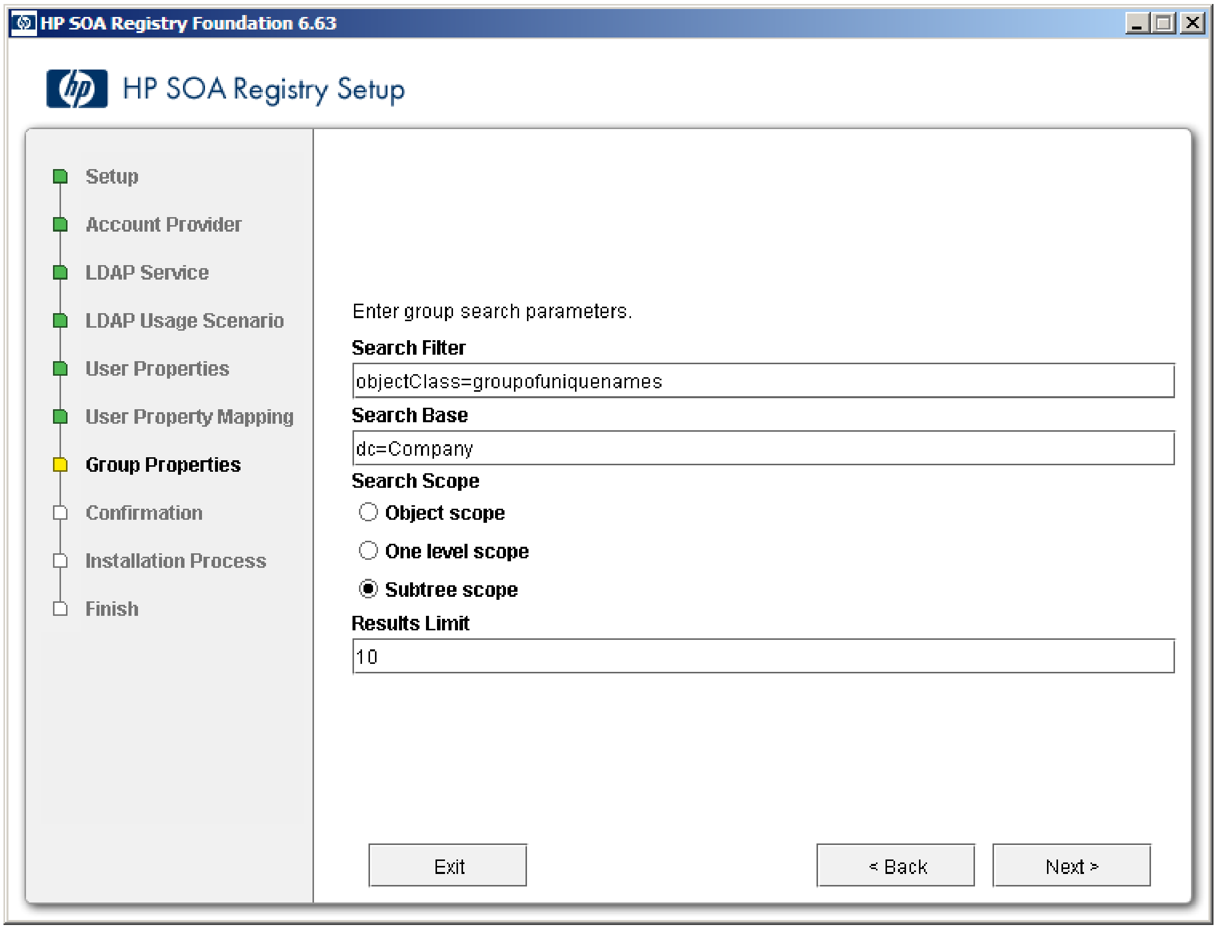
- On the Sun ONE Directory Server, the value is **entryDN**
- On Microsoft Active Directory, the value is **distinguishedName**

If an optional property (such as email) does not exist in the LDAP, then the property's value is set according to the default account. The default account is specified in the config file whose name is `account_core.xml`.

User account properties that you specify at the Figure 33 will be treated as read-only from Registry Console and registry APIs.

For more information, please see Developer's Guide, userAccount data structure .

**Figure 34. Group Search Properties**



Enter group search parameters.

Search Filter: objectClass=groupofuniquenames

Search Base: dc=Company

Search Scope: Object scope [ ] One level scope [ ] [✓ Subtree scope]

Results Limit: 10

Field description:

**Search Filter**

The notation of the search filter conforms to LDAP search notation. You can specify the LDAP node property that matches the group.

**Search Base**

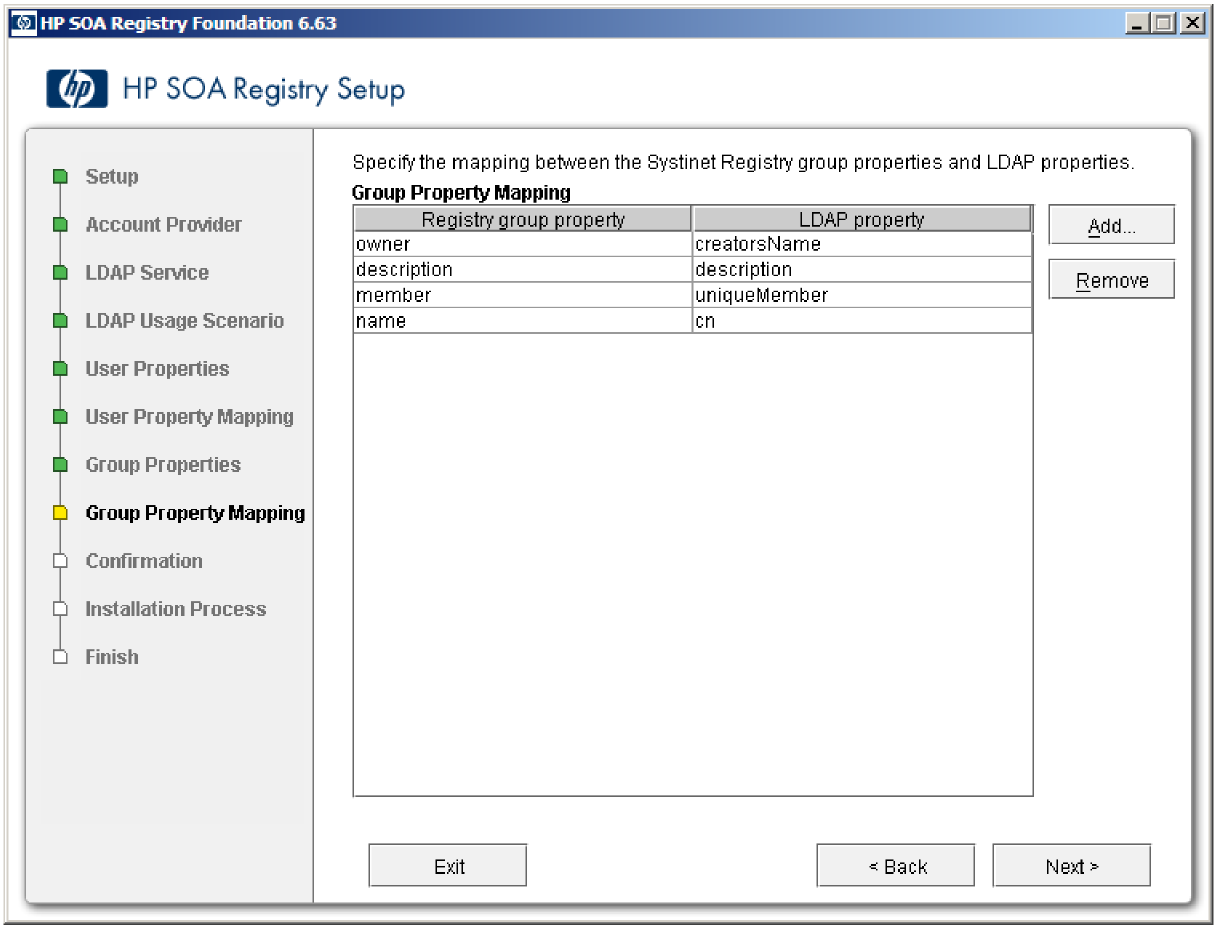
LDAP, including the current LDAP node and possible all child nodes, will be searched from this base.

**Search Scope**

Here you can specify how deep the LDAP tree structure data will be searched.

- *Object Scope* - Only the search base node will be searched.
- *One-level Scope* - Search base and its direct sub-nodes will be searched.
- *Subtree Scope* - Search base and all its sub-nodes will be searched.

**Figure 35. Group Properties Mapping**



Specify the mapping between the Systinet Registry group properties and LDAP properties.

Group Property Mapping

| Registry group property | LDAP property |
|---|---|
| owner | creatorsName |
| description | description |
| member | uniqueMember |
| name | cn |

You can specify mapping between HP SOA Registry Foundation group properties and LDAP properties. You can add rows by clicking **Add**. To edit an entry, double click on the value you wish to edit.

If a property (such as description) does not exist in the LDAP then property value is set according to the default group. The default group (groupInfo) is specified in the config file whose name is `group.xml`.

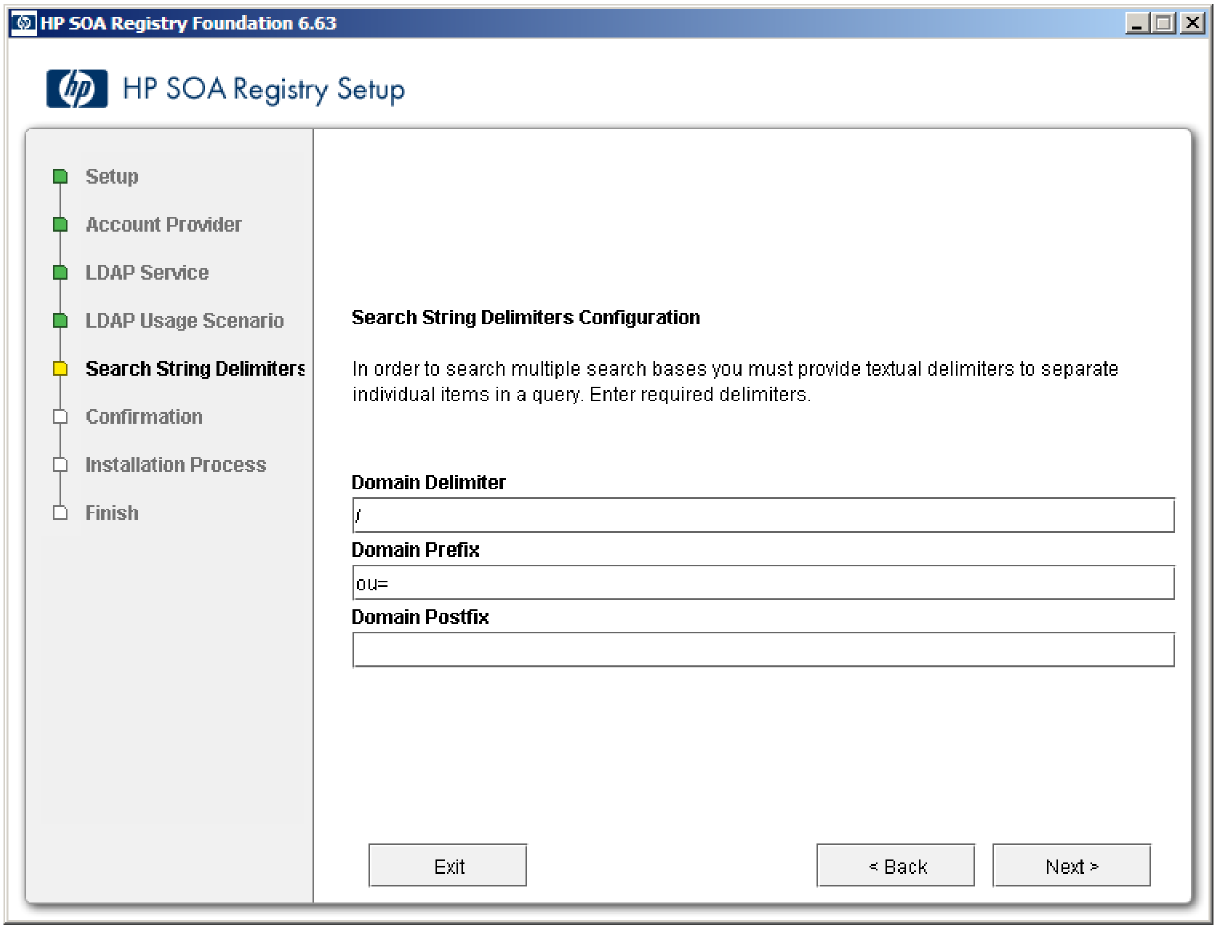
For more information, please see Developer's Guide, group data structure

## LDAP with Multiple Search Bases

The installation consists of the following steps:

1. Specify the domain delimiter, domain prefix and postfix as shown in Figure 36.
2. Enable/Disable domains as shown in Figure 37.
3. Specify User Search properties as shown in Figure 32.
4. Map Registry user properties to LDAP properties as shown in Figure 33.
5. Specify group search properties as shown in Figure 34.
6. Map Registry group properties to LDAP properties as shown in Figure 35

**Figure 36. Domain Delimiter**



**Search String Delimiters Configuration**

In order to search multiple search bases you must provide textual delimiters to separate individual items in a query. Enter required delimiters.

**Domain Delimiter**

/

**Domain Prefix**

ou=

**Domain Postfix**

Field descriptions:

**Domain Delimiter**

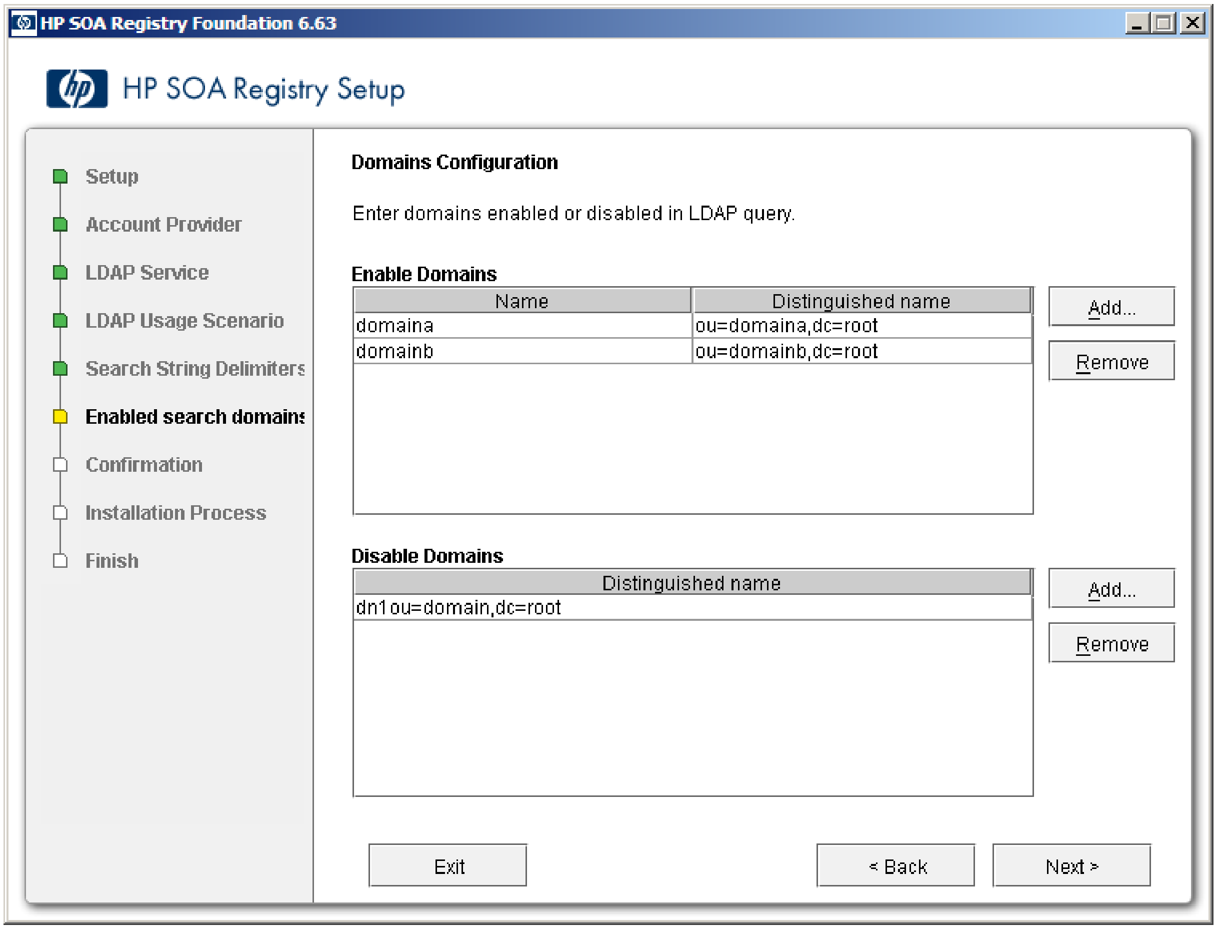
Specifies the character that delimits domain and user name. When left empty, users are searched from all domains.

**Domain Prefix, Domain Postfix**

Domains are searched using the following pattern: `{domain prefix}domain_name{domain postfix}{search base}`

where {domain prefix} is value of property whose name is domain prefix, {domain postfix} is value of property whose name is domain postfix and {searchbase} is value of property whose name is searchbase.

**Figure 37. Enable/Disable Domains**



**Domains Configuration**

Enter domains enabled or disabled in LDAP query.

**Enable Domains**

| Name | Distinguished name |
|---|---|
| domaina | ou=domaina,dc=root |
| domainb | ou=domainb,dc=root |

**Disable Domains**

| Distinguished name |
|---|
| dn1ou=domain,dc=root |

**Enable Domains**

Left column: domain name that users will be using during login. Right column: distinguished domain name.

**Disable Domains**

Enter distinguished domain name of domains you wish to disable.

### Multiple LDAP Services

The correct LDAP service is chosen via DNS. The installation consists of the following steps:

1. Specify user/account search properties as shown in Figure 32.
2. Map Registry user properties to LDAP properties as shown in Figure 33.
3. Specify group search properties as shown in Figure 34.
4. Map Registry group properties to LDAP properties as shown in Figure 35.

### LDAP over SSL/TLS

It is only a matter of configuration to setup LDAP over *SSL* (or *TLS*) with a directory server of your choice. We recommend that you first install HP SOA Registry Foundation with a connection to LDAP that does not use SSL. You can then verify the configuration by logging in as a user defined in this directory before configuring use of SSL.

The configuration procedure assumes that you have already installed HP SOA Registry Foundation with an LDAP account provider. HP SOA Registry Foundation must not be running.

### LDAP over SSL Without Client Authentication

In this case only LDAP server authentication is required. This is usually the case.

Edit the REGISTRY_HOME/app/uddi/conf/directory.xml file in one of the following ways depending on the version of Java used to run HP SOA Registry Foundation:

- If HP SOA Registry Foundation will always be running with Java 1.4.2 or later:
    1. Change the `java.naming.provider.url` property to use the `ldaps` protocol and the port on which the directory server accepts SSL/TLS connections. For example `ldaps://sranka.in.idoox.com:636`;
- Otherwise, if HP SOA Registry Foundation may be run with a Java version less than 1.4.2:
    1. Change the `java.naming.provider.url` property to the appropriate URL using the `ldap` protocol. For example `ldap://sranka.in.idoox.com:636`;

2 Add a new property, after the `java.naming.provider.url` property, with name `java.naming.security.protocol` and value `ssl`;

This is shown in the following example:

**Example 1: Directory configuration**

```
<config name="directory" savingPeriod="5000">
  <directory>
    <!-- LDAP over (SSL/TLS) unprotected connection -->
    <!--
    <property name="java.naming.provider.url" value="ldap://hostname:47361"/>
    -->
    <!-- LDAP over SSL/TLS for Java 1.4.2 and later -->
    <!--
    <property name="java.naming.provider.url" value="ldaps://hostname:636"/>
    -->
    <!-- LDAP over SSL/TLS for Java where LDAP over SSL is supported -->
    <property name="java.naming.provider.url" value="ldap://hostname:636"/>
    <property name="java.naming.security.protocol" value="ssl"/>
    ...
    ...
    ...
  </directory>
</config>
```

In both cases, be sure that the hostname specified in the `java.naming.provider.url` property matches the name that is in the directory server certificate's subject common name (CN part of certificate's Subject). Otherwise you will get an exception during startup of HP SOA Registry Foundation. It will inform you of a hostname verification error. The stacktrace contains the hostname that you must use.

## LDAP over SSL With Mutual Authentication

HP SOA Registry Foundation can be configured to communicate with LDAP server over 2 way SSL. In this case HP SOA Registry Foundation has to authenticates itself to LDAP server via client certificate.

To enable 2 way SSL communication with LDAP server:

- Specify the client certificate for HP SOA Registry Foundation via Java system properties.

| **Property** | **Description** |
|---|---|
| `javax.net.ssl.keyStore` | Absolute path to client keystore file. Keystore file must contain keyEntry that identifies the client. |
| `javax.net.ssl.keyStorePassword` | Password for the keystore file. |

- Ensure trust to LDAP server. For more information see section bellow. Briefly:
  - Get the certificate of LDAP server or the certificate of its CA.
  - Import the certificate to keystore file via keytool.
  - Add the following properties to Java system properties.

| **Property** | **Description** |
|---|---|
| `javax.net.ssl.trustStore` | Absolute path of your trust store file. |
| `javax.net.ssl.trustStorePassword` | Password for the trust store file. |

- Modify `REGISTRY_HOME/app/uddi/conf/directory.xml`
  - Change the `java.naming.provider.url` property to LDAPs URL or alternatively add `java.naming.security.protocol` (for Java version less 1.4.2). More details are described above.
  - Change the value of the `java.naming.security.authentication` from simple to EXTERNAL. In this case LDAP server does not use principal and his password so properties `java.naming.security.principal` and `java.naming.security.credentials` have no sense.

If LDAP server requires client authentication then it is necessary to set `uddi.ldap.clientCertificateAuthentication` to true. In this case HP SOA Registry Foundation must be installed in two way SSL mode, in order to check client identity properly.

## Ensuring Trust of the LDAP Server

The client that connects to the SSL/TLS server must trust the server certificate in order to establish communication with that server. The configuration of LDAPS explained above inherits the default rule for establishing trust from JSSE (the Java implementation of SSL/TLS). This is based on trust stores.

When a trust store is needed to verify a client/server certificate, it is searched for in the following locations in order:

1. The file specified by the `javax.net.ssl.trustStore` system property, if defined;
2. Otherwise the file `JAVA_HOME\jre\lib\security\jssecacerts` if it exists;
3. Otherwise the file JAVA_HOME`\jre\lib\security\cacerts` if it exists;

It is recommended to use the first option to define a trust store specifically for the application you are running. In this case, you have to change the command that starts the registry (or the JVM environment of the deployed registry) to define the following Java system properties:

| **Property** | **Description** |
|---|---|
| `javax.net.ssl.trustStore` | Absolute path of your trust store file. |
| `javax.net.ssl.trustStorePassword` | Password for the trust store file. |

To ensure that the server certificate is trusted, you have to:

1. Contact the administrator of the LDAP server and get the certificate of the server or the certificate of the authority that signed it;
2. Import the certificate into the trust store of your choice using the Java keytool:

   ```
   keytool -import -trustcacerts -alias alias -file file -keystore keystore -storepass storepass
   ```

   where the parameters are as follows:

   ***alias***

   A mandatory, unique alias for the certificate in the trust store;

   The file containing the certificate (usually with .crt extension);

The keystore file of your choice;

A password designed to protect the keystore file from tampering. Java level keystores (cacerts and jssecacerts) usually require the password `changeit`;

***file***

The file containing the certificate (usually with .crt extension);

The keystore file of your choice;

A password designed to protect the keystore file from tampering. Java level keystores (cacerts and jssecacerts) usually require the password `changeit`;

***keystore***

The keystore file of your choice;

A password designed to protect the keystore file from tampering. Java level keystores (cacerts and jssecacerts) usually require the password `changeit`;

***storepass***

A password designed to protect the keystore file from tampering. Java level keystores (cacerts and jssecacerts) usually require the password `changeit`;

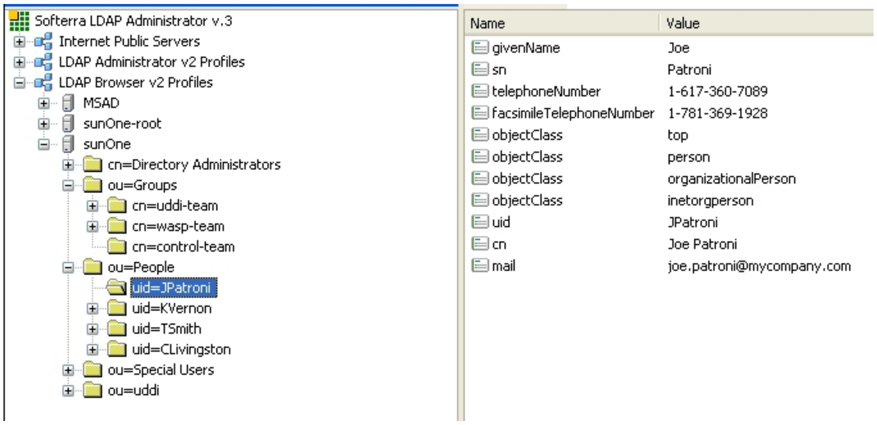
## LDAP Configuration Examples

### SUN One with Single Search Base

In this example, we show how to configure a Sun One Directory Server 5.2 under the LDAP Single Search Base scenario.

SUN One with Single Search Base on page 137 shows user properties that are stored in the LDAP server.

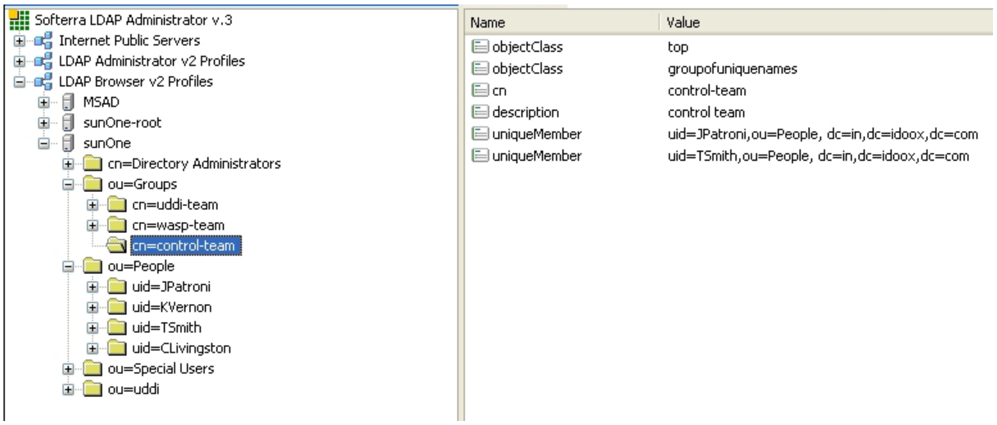
## Figure 38. User Properties in LDAP



| Name | Value |
|---|---|
| givenName | Joe |
| sn | Patroni |
| telephoneNumber | 1-617-360-7089 |
| facsimileTelephoneNumber | 1-781-369-1928 |
| objectClass | top |
| objectClass | person |
| objectClass | organizationalPerson |
| objectClass | inetorgperson |
| uid | JPatroni |
| cn | Joe Patroni |
| mail | joe.patroni@mycompany.com |

SUN One with Single Search Base on page 137 shows group properties that are stored in the LDAP server.

## Figure 39. Group Properties in LDAP



| Name | Value |
|---|---|
| objectClass | top |
| objectClass | groupofuniquenames |
| cn | control-team |
| description | control team |
| uniqueMember | uid=JPatroni,ou=People, dc=in,dc=idoox,dc=com |
| uniqueMember | uid=TSmith,ou=People, dc=in,dc=idoox,dc=com |

The following table shows how to configure HP SOA Registry Foundation using this scenario.

| **Config Property** | **Config Value** | **See** |
|---|---|---|
| Java naming provider URL | ldap://localhost:389 | Figure 30 |
| Initial Naming Factory | com.sun.jndi.ldap.LdapCtxFactory | Figure 30 |
| Security Principal | uid=JPatroni,ou=people,dc=in,dc=idoox,dc=com | Figure 30 |
| Security Protocol | simple | Figure 30 |
| **User Properties** | | |
| Search Filter | objectClass=person | Figure 32 |
| Search Base | ou=people,dc=in,dc=idoox,dc=com | Figure 32 |
| Search Scope | Subtree Scope | Figure 32 |
| Result Limit | 100 | Figure 32 |
| telephoneNumber | phone | Figure 33 |
| uid | loginName | Figure 33 |
| cn | fullName | Figure 33 |
| mail | email | Figure 33 |
| **Group Properties** | | |
| Search Filter | objectClass=groupofuniquenames | Figure 34 |
| Search Base | ou=groups,dc=in,dc=idoox,dc=com | Figure 34 |
| Search Scope | Subtree Scope | Figure 34 |
| Result Limit | 100 | Figure 34 |
| creatorsName | owner | Figure 35 |
| description | description | Figure 35 |
| uniqueMember | member | Figure 35 |
| cn | name | Figure 35 |

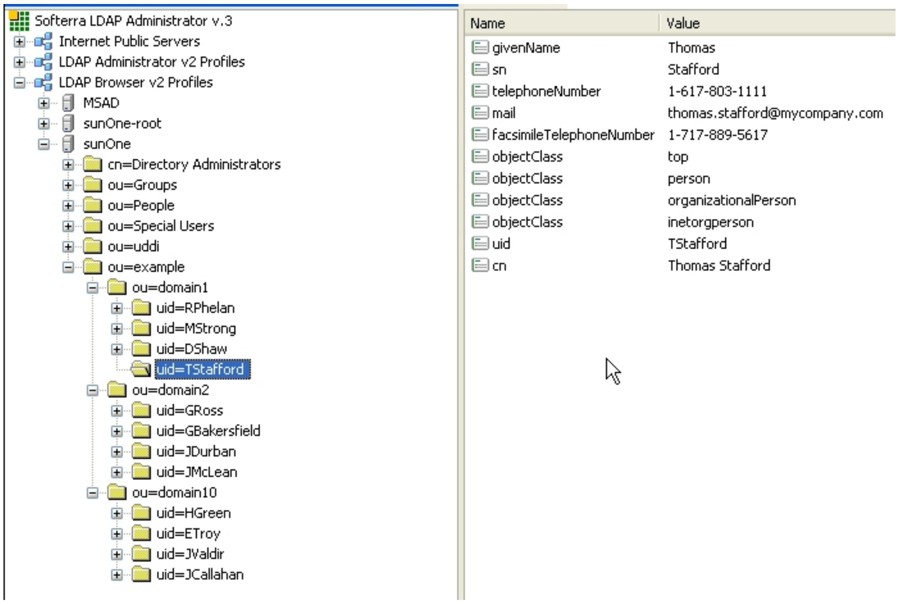
### Sun One with Multiple Search Bases

In this example, we show how to configure Sun One Directory Server 5.2 with multiple search bases. In Figure 41, you can see users and domains that are stored on the LDAP server. We want to configure the LDAP integration with HP SOA Registry Foundation in this way:

- Only users from `domain1` and `domain10` can log into HP SOA Registry Foundation. LDAP `domain2` will be disabled.
- LDAP `domain10` will be mapped to the `domain3` user group in HP SOA Registry Foundation.

Figure 41 shows how users from LDAP are mapped to HP SOA Registry Foundation

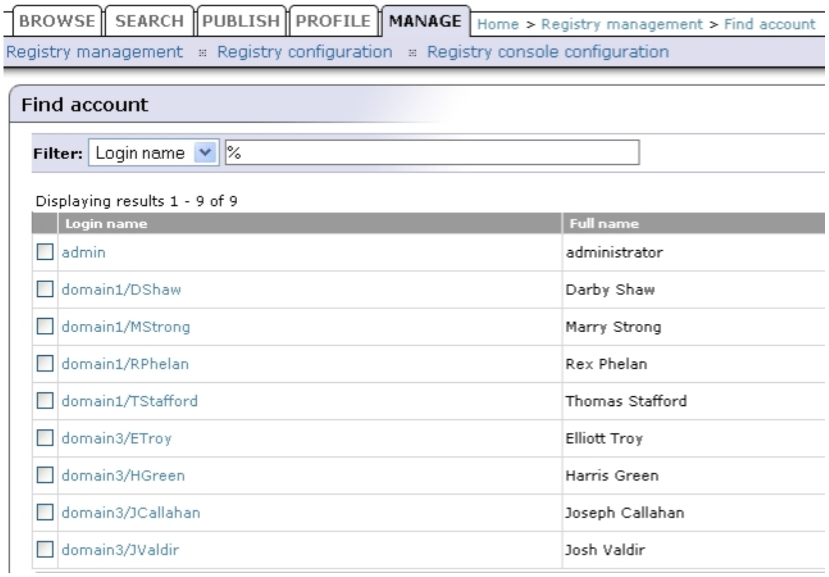
**Figure 40. LDAP Users and Groups**



```
Softerra LDAP Administrator v.3
+ Internet Public Servers
+ LDAP Administrator v2 Profiles
- LDAP Browser v2 Profiles
    + MSAD
    + sunOne-root
    - sunOne
        + cn=Directory Administrators
        + ou=Groups
        + ou=People
        + ou=Special Users
        + ou=uddi
        - ou=example
            - ou=domain1
                + uid=RPhelan
                + uid=MStrong
                + uid=DShaw
                  uid=TStafford
            - ou=domain2
                + uid=GRoss
                + uid=GBakersfield
                + uid=JDurban
                + uid=JMcLean
            - ou=domain10
                + uid=HGreen
                + uid=ETroy
                + uid=JValdir
                + uid=JCallahan
```

| Name | Value |
|---|---|
| givenName | Thomas |
| sn | Stafford |
| telephoneNumber | 1-617-803-1111 |
| mail | thomas.stafford@mycompany.com |
| facsimileTelephoneNumber | 1-717-889-5617 |
| objectClass | top |
| objectClass | person |
| objectClass | organizationalPerson |
| objectClass | inetorgperson |
| uid | TStafford |
| cn | Thomas Stafford |

**Figure 41. Registry Users**



Find account

Filter: Login name %

Displaying results 1 - 9 of 9

| Login name | Full name |
|---|---|
| admin | administrator |
| domain1/DShaw | Darby Shaw |
| domain1/MStrong | Marry Strong |
| domain1/RPhelan | Rex Phelan |
| domain1/TStafford | Thomas Stafford |
| domain3/ETroy | Elliott Troy |
| domain3/HGreen | Harris Green |
| domain3/JCallahan | Joseph Callahan |
| domain3/JValdir | Josh Valdir |

The following table shows how to configure HP SOA Registry Foundation using this scenario.

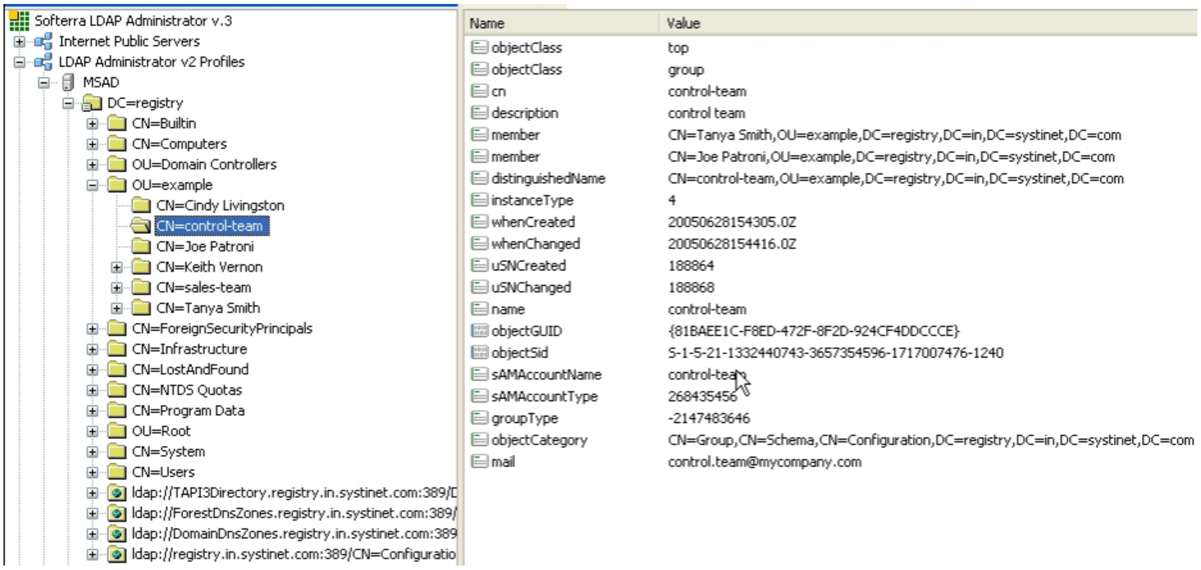
| **Config Property** | **Config value** | **See** |
|---|---|---|
| Java naming provider URL | ldap://localhost:1000 | Figure 30 |
| Initial Naming Factory | com.sun.jndi.ldap.LdapCtxFactory | Figure 30 |
| Security Principal | uid=JPatroni,ou=people,dc=in,dc=idoox,dc=com | Figure 30 |
| Security Protocol | simple | Figure 30 |
| uddi.ldap.domain.delimiter | / | Figure 36 |
| uddi.ldap.domain.prefix | ou= | Figure 36 |
| uddi.ldap.domain.postfix | leave empty | Figure 36 |
| **Enable domains** | | |
| domain name | domain3 | Figure 37 |
| Distinguished name | ou=domain10,ou=example,dc=in,dc=idoox,dc=com | Figure 37 |

| Config Property | Config value | See |
|---|---|---|
| **Disable domains** | | |
| Distinguished name | ou=domain2,ou=example,dc=in,dc=idoox,dc=com | Figure 37 |
| **User Properties** | | |
| Search Filter | objectClass=person | Figure 32 |
| Search Base | ou=people,dc=in,dc=idoox,dc=com | Figure 32 |
| Search Scope | Subtree Scope | Figure 32 |
| Result Limit | 100 | Figure 32 |
| telephoneNumber | phone | Figure 33 |
| uid | loginName | Figure 33 |
| cn | fullName | Figure 33 |
| mail | email | Figure 33 |
| **Group Properties** | | |
| Search Filter | objectClass=groupofuniquenames | Figure 34 |
| Search Base | ou=groups,dc=in,dc=idoox,dc=com | Figure 34 |
| Search Scope | Subtree Scope | Figure 34 |
| Result Limit | 100 | Figure 34 |
| creatorsName | owner | Figure 35 |
| description | description | Figure 35 |
| uniqueMember | member | Figure 35 |
| cn | name | Figure 35 |

## Active Directory with Single Search Base

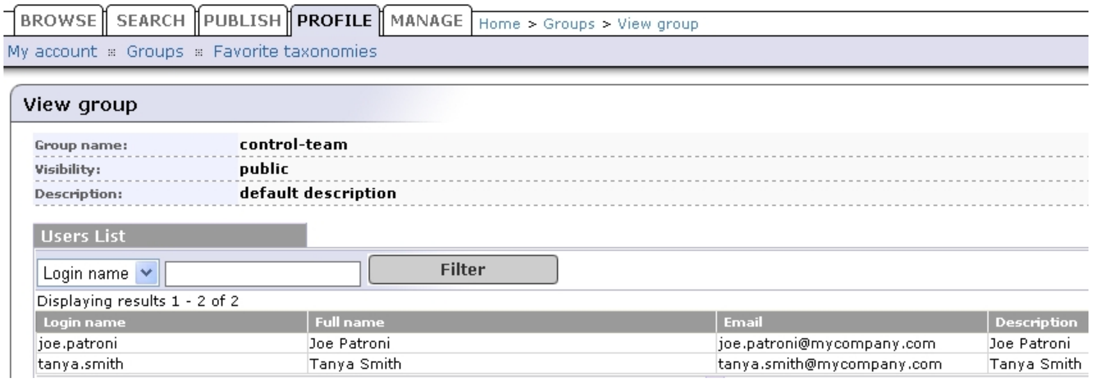
In this example, we show how to configure an Active Directory with a single search base. Figure 42 shows group properties that are stored in the Active Directory. These group properties will be mapped to HP SOA Registry Foundation as shown in Figure 43.

**Figure 42. LDAP User Group**


```
Softerra LDAP Administrator v.3
  Internet Public Servers
  LDAP Administrator v2 Profiles
    MSAD
      DC=registry
        CN=Builtin
        CN=Computers
        OU=Domain Controllers
        OU=example
          CN=Cindy Livingston
          CN=control-team
          CN=Joe Patroni
          CN=Keith Vernon
          CN=sales-team
          CN=Tanya Smith
        CN=ForeignSecurityPrincipals
        CN=Infrastructure
        CN=LostAndFound
        CN=NTDS Quotas
        CN=Program Data
        OU=Root
        CN=System
        CN=Users
        ldap://TAPI3Directory.registry.in.systinet.com:389/D
        ldap://ForestDnsZones.registry.in.systinet.com:389/
        ldap://DomainDnsZones.registry.in.systinet.com:389
        ldap://registry.in.systinet.com:389/CN=Configuratio
```

| Name | Value |
|---|---|
| objectClass | top |
| objectClass | group |
| cn | control-team |
| description | control team |
| member | CN=Tanya Smith,OU=example,DC=registry,DC=in,DC=systinet,DC=com |
| member | CN=Joe Patroni,OU=example,DC=registry,DC=in,DC=systinet,DC=com |
| distinguishedName | CN=control-team,OU=example,DC=registry,DC=in,DC=systinet,DC=com |
| instanceType | 4 |
| whenCreated | 20050628154305.0Z |
| whenChanged | 20050628154416.0Z |
| uSNCreated | 188864 |
| uSNChanged | 188868 |
| name | control-team |
| objectGUID | {81BAEE1C-F8ED-472F-8F2D-924CF4DDCCCE} |
| objectSid | S-1-5-21-1332440743-3657354596-1717007476-1240 |
| sAMAccountName | control-team |
| sAMAccountType | 268435456 |
| groupType | -2147483646 |
| objectCategory | CN=Group,CN=Schema,CN=Configuration,DC=registry,DC=in,DC=systinet,DC=com |
| mail | control.team@mycompany.com |

**Figure 43. User Group in HP SOA Registry Foundation**



View group

| | |
|---|---|
| Group name: | control-team |
| Visibility: | public |
| Description: | default description |

Users List

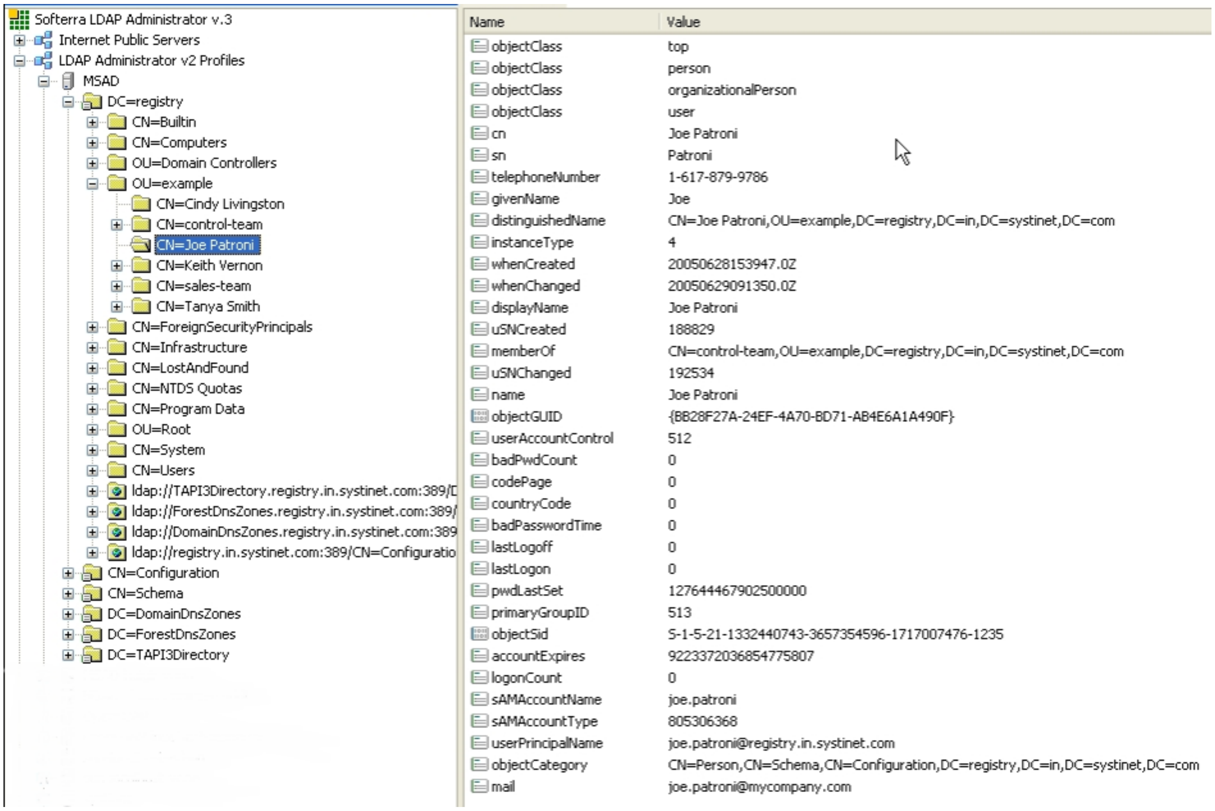
Login name

Displaying results 1 - 2 of 2

| Login name | Full name | Email | Description |
|---|---|---|---|
| joe.patroni | Joe Patroni | joe.patroni@mycompany.com | Joe Patroni |
| tanya.smith | Tanya Smith | tanya.smith@mycompany.com | Tanya Smith |

Figure 44 shows user properties that are stored in the Active Directory. These user properties will be mapped to HP SOA Registry Foundation as shown in Figure 43.

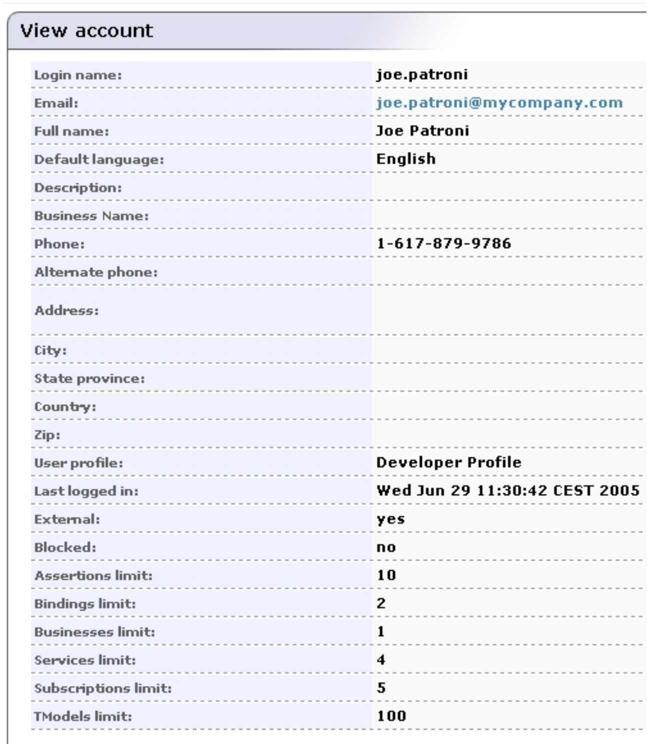
## Figure 44. LDAP User Properties



```
Softerra LDAP Administrator v.3
  Internet Public Servers
  LDAP Administrator v2 Profiles
    MSAD
      DC=registry
        CN=Builtin
        CN=Computers
        OU=Domain Controllers
        OU=example
          CN=Cindy Livingston
          CN=control-team
          CN=Joe Patroni
          CN=Keith Vernon
          CN=sales-team
          CN=Tanya Smith
        CN=ForeignSecurityPrincipals
        CN=Infrastructure
        CN=LostAndFound
        CN=NTDS Quotas
        CN=Program Data
        OU=Root
        CN=System
        CN=Users
        ldap://TAPI3Directory.registry.in.systinet.com:389/D
        ldap://ForestDnsZones.registry.in.systinet.com:389/
        ldap://DomainDnsZones.registry.in.systinet.com:389
        ldap://registry.in.systinet.com:389/CN=Configuratio
      CN=Configuration
      CN=Schema
      DC=DomainDnsZones
      DC=ForestDnsZones
      DC=TAPI3Directory
```

| Name | Value |
|---|---|
| objectClass | top |
| objectClass | person |
| objectClass | organizationalPerson |
| objectClass | user |
| cn | Joe Patroni |
| sn | Patroni |
| telephoneNumber | 1-617-879-9786 |
| givenName | Joe |
| distinguishedName | CN=Joe Patroni,OU=example,DC=registry,DC=in,DC=systinet,DC=com |
| instanceType | 4 |
| whenCreated | 20050628153947.0Z |
| whenChanged | 20050629091350.0Z |
| displayName | Joe Patroni |
| uSNCreated | 188829 |
| memberOf | CN=control-team,OU=example,DC=registry,DC=in,DC=systinet,DC=com |
| uSNChanged | 192534 |
| name | Joe Patroni |
| objectGUID | {BB28F27A-24EF-4A70-BD71-AB4E6A1A490F} |
| userAccountControl | 512 |
| badPwdCount | 0 |
| codePage | 0 |
| countryCode | 0 |
| badPasswordTime | 0 |
| lastLogoff | 0 |
| lastLogon | 0 |
| pwdLastSet | 127644467902500000 |
| primaryGroupID | 513 |
| objectSid | S-1-5-21-1332440743-3657354596-1717007476-1235 |
| accountExpires | 9223372036854775807 |
| logonCount | 0 |
| sAMAccountName | joe.patroni |
| sAMAccountType | 805306368 |
| userPrincipalName | joe.patroni@registry.in.systinet.com |
| objectCategory | CN=Person,CN=Schema,CN=Configuration,DC=registry,DC=in,DC=systinet,DC=com |
| mail | joe.patroni@mycompany.com |

**Figure 45. User Properties in HP SOA Registry Foundation**


View account

| | |
|---|---|
| Login name: | joe.patroni |
| Email: | joe.patroni@mycompany.com |
| Full name: | Joe Patroni |
| Default language: | English |
| Description: | |
| Business Name: | |
| Phone: | 1-617-879-9786 |
| Alternate phone: | |
| Address: | |
| City: | |
| State province: | |
| Country: | |
| Zip: | |
| User profile: | Developer Profile |
| Last logged in: | Wed Jun 29 11:30:42 CEST 2005 |
| External: | yes |
| Blocked: | no |
| Assertions limit: | 10 |
| Bindings limit: | 2 |
| Businesses limit: | 1 |
| Services limit: | 4 |
| Subscriptions limit: | 5 |
| TModels limit: | 100 |

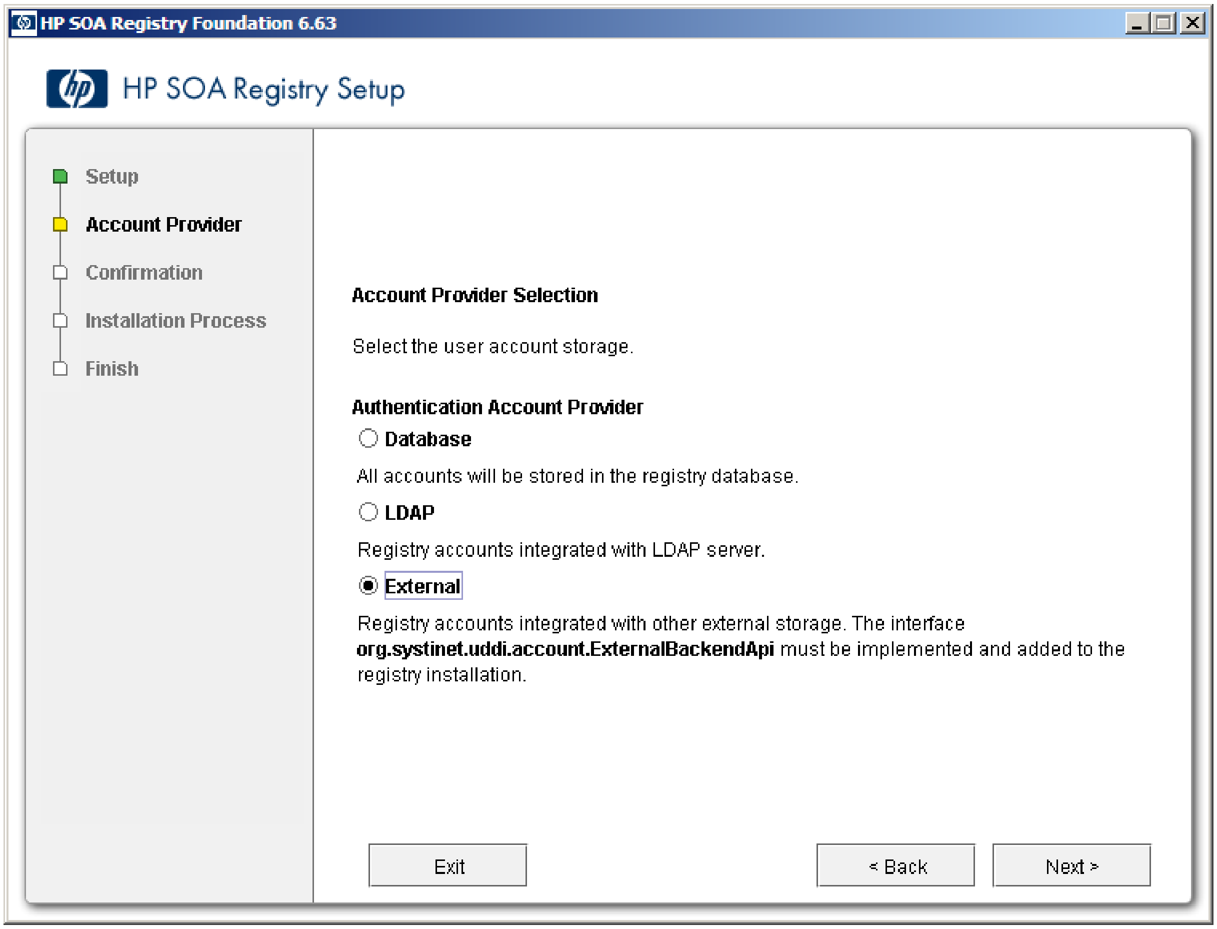
The following table shows how to configure HP SOA Registry Foundation using this scenario.

| **Config Property** | **Config value** | **See** |
|---|---|---|
| Java naming provider URL | ldap://localhost:389 | Figure 30 |
| Initial Naming Factory | com.sun.jndi.ldap.LdapCtxFactory | Figure 30 |
| Security Principal | CN=sx, OU=org, DC=systinet, DC=mycompany, DC=com | Figure 30 |
| Security Protocol | DIGEST-MD5 | Figure 30 |
| **User Properties** | | |
| Search Filter | objectClass=person | Figure 32 |

| Config Property | Config value | See |
|---|---|---|
| Search Base | ou=example,dc=registry,dc=in,dc=mycompany,dc=com | Figure 32 |
| Search Scope | Subtree Scope | Figure 32 |
| Result Limit | 100 | Figure 32 |
| sAMAccountName | loginName | Figure 33 |
| cn | fullName | Figure 33 |
| mail | email | Figure 33 |
| telephoneNumber | phone | Figure 33 |
| **Group Properties** | | |
| Search Filter | objectClass=group | Figure 34 |
| Search Base | ou=example,dc=registry,dc=in,dc=mycompany,dc=com | Figure 34 |
| Search Scope | Subtree Scope | Figure 34 |
| Result Limit | 100 | Figure 34 |
| member | member | Figure 35 |
| cn | name | Figure 35 |
| uniqueMember | member | Figure 35 |
| cn | name | Figure 35 |

## Custom (Non-LDAP)

Select **External** on the **Advanced Account Settings** panel.



**Account Provider Selection**

Select the user account storage.

**Authentication Account Provider**

Database [✓ External] LDAP

All accounts will be stored in the registry database.

Registry accounts integrated with LDAP server.

Registry accounts integrated with other external storage. The interface **org.systinet.uddi.account.ExternalBackendApi** must be implemented and added to the registry installation.

External accounts require implementation of the interface `org.systinet.uddi.account.ExternalBackendApi`.

## Deployment to an Application Server

To deploy HP SOA Registry Foundation to any application server, it must be installed as standalone server, as described Installation on page 40. After installation, use the Setup tool as described in Creating a Web

Application Archive (WAR,EAR) on page 148 to create Web application archive (WAR,EAR) for the specific application server.

The WAR file or EAR file is then prepared for deployment to the application server. You must deploy it into the application server manually, according to your specific application server's instructions:

➤ If you are going to use the HSQL (despite the fact it is recommended only for demo/testing purposes) and deploying the `wasp.war` on a different machine, do not forget to copy the database files from the `REGISTRY_HOME/hsqldb` directory to the host where the application server is running. Then, change the database configuration accordingly after the first start of HP SOA Registry Foundation.

## Creating a Web Application Archive (WAR,EAR)

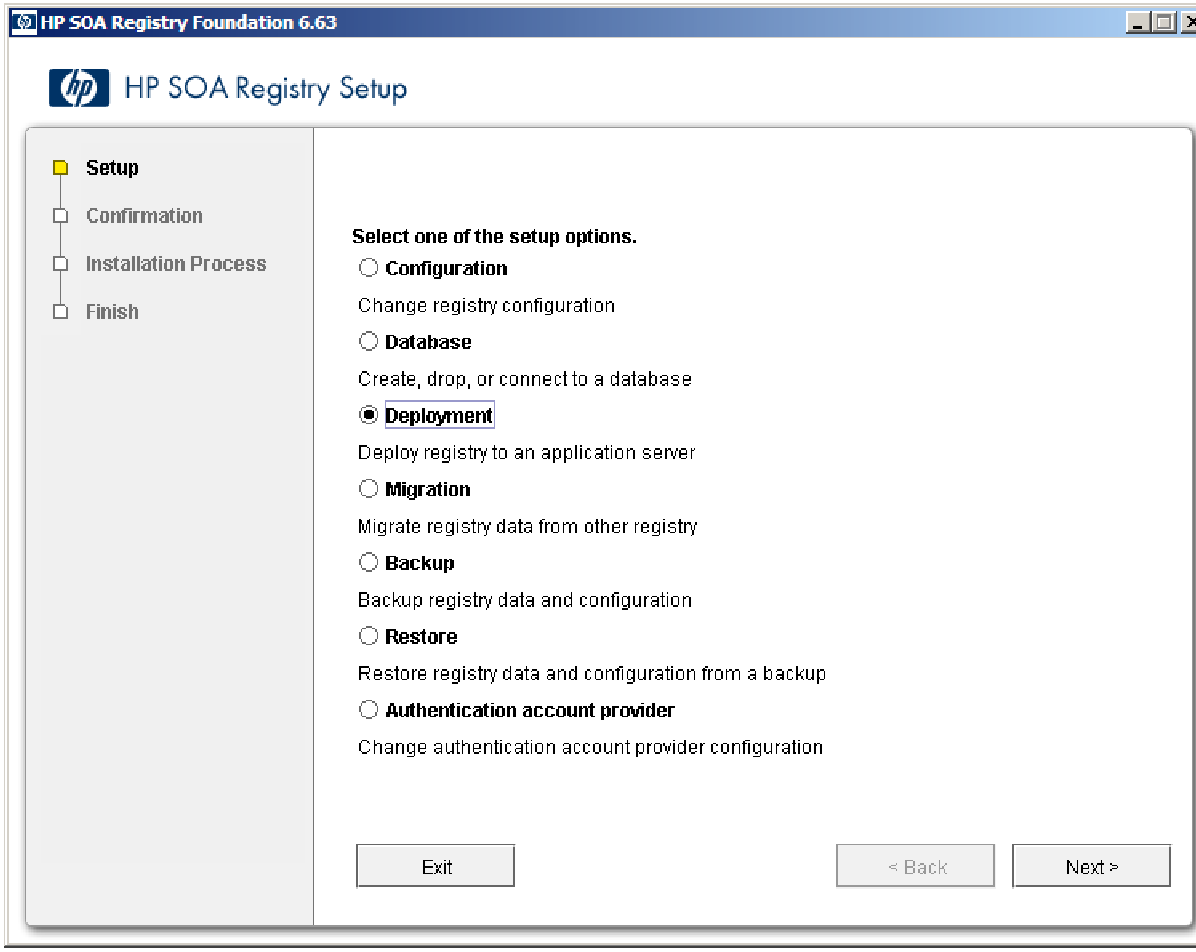
To create a Web application archive:

1 Briefly, launch the Setup tool by executing the following command from the `bin` directory of your installation:

| | |
|---|---|
| Windows: | setup.bat |
| UNIX: | ./setup.sh |

See command-line parameters in Setup on page 71.

2 Select **Deployment** on the first panel:


HP SOA Registry Foundation 6.63

HP SOA Registry Setup

- Setup
- Confirmation
- Installation Process
- Finish

Select one of the setup options.

○ **Configuration**

Change registry configuration

○ **Database**

Create, drop, or connect to a database

[✓ **Deployment**]

Deploy registry to an application server

○ **Migration**

Migrate registry data from other registry

○ **Backup**

Backup registry data and configuration

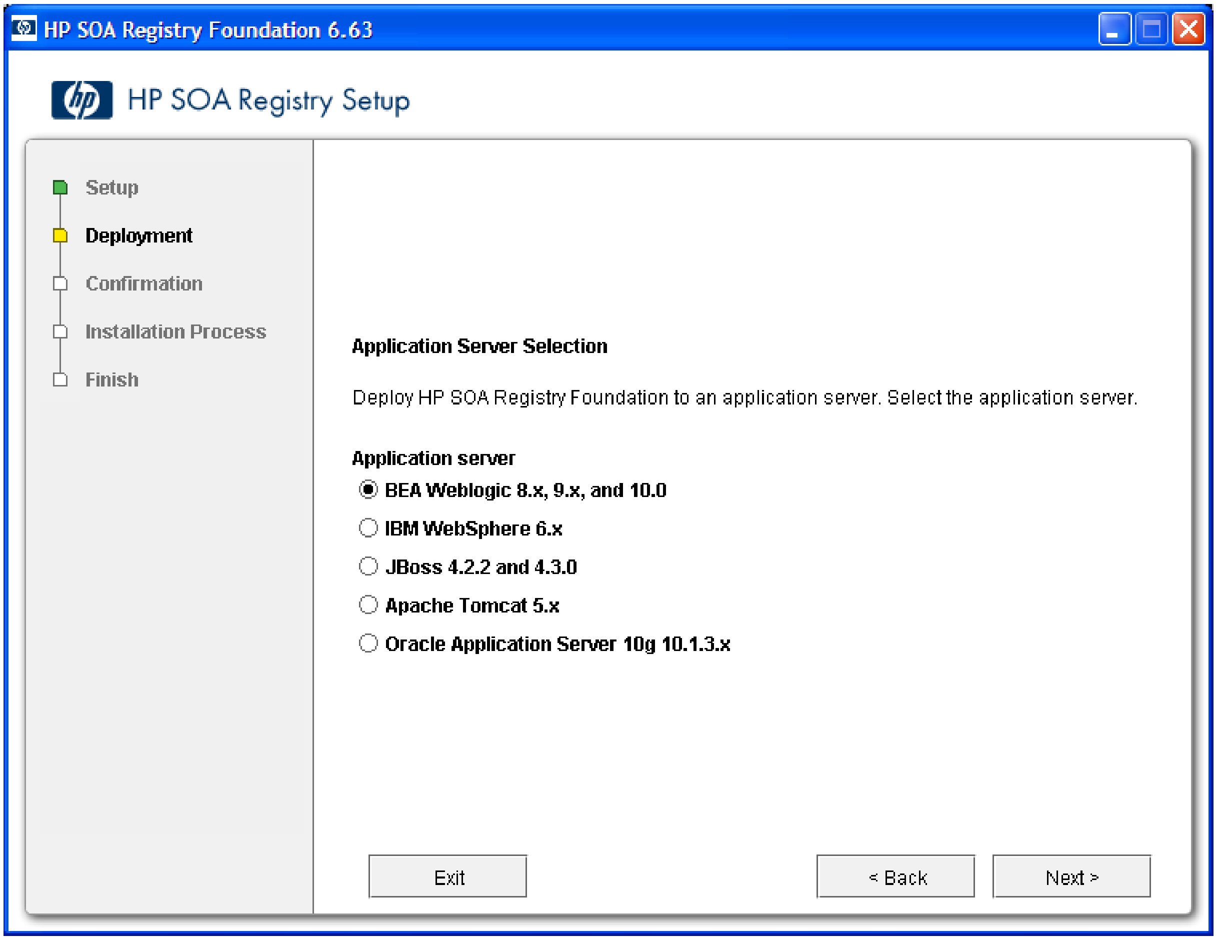
○ **Restore**

Restore registry data and configuration from a backup

○ **Authentication account provider**

Change authentication account provider configuration

3 Select the application server on the next panel.



Application Server Selection

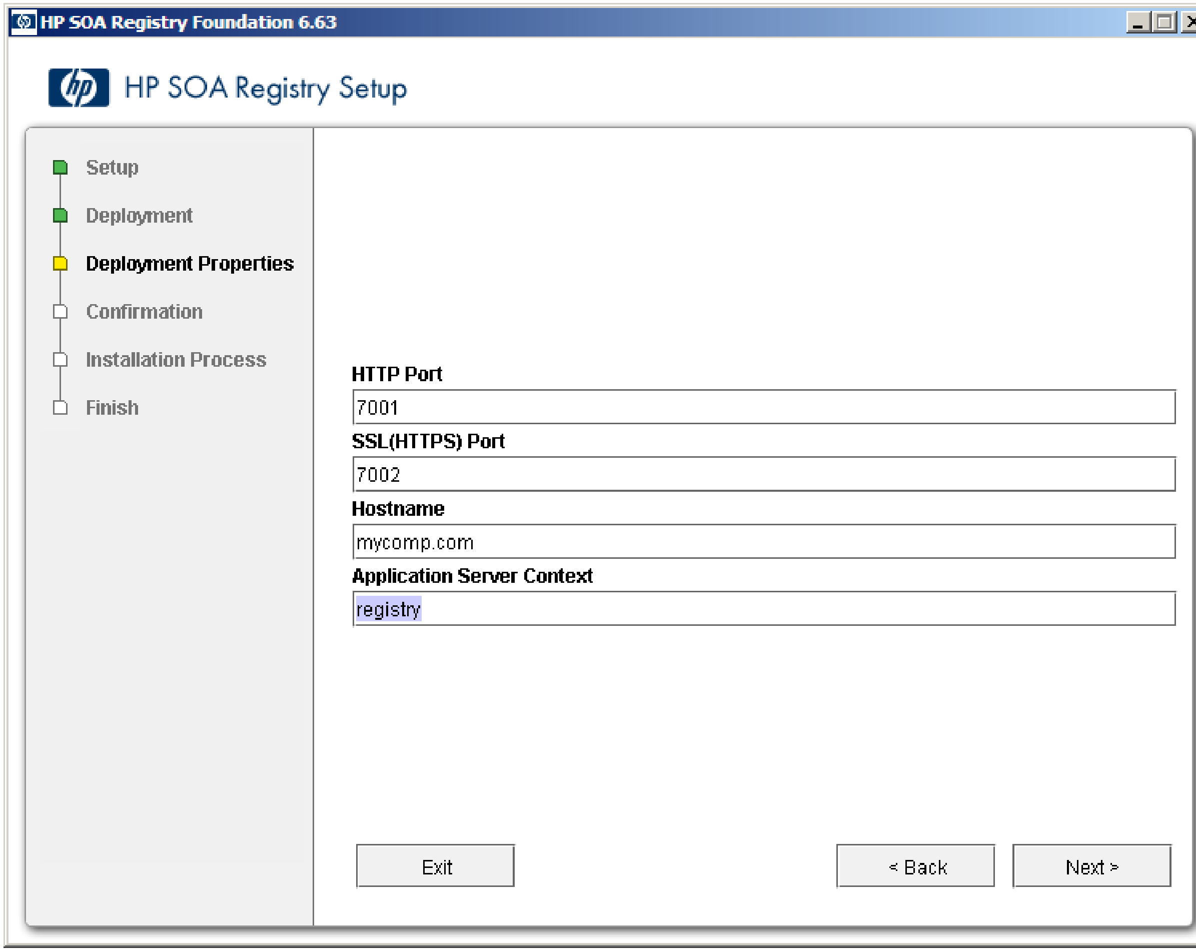
Deploy HP SOA Registry Foundation to an application server. Select the application server.

Application server

- [✓ BEA Weblogic 8.x, 9.x, and 10.0]
- IBM WebSphere 6.x
- JBoss 4.2.2 and 4.3.0
- Apache Tomcat 5.x
- Oracle Application Server 10g 10.1.3.x

**Select the application server to which you want to deploy HP SOA Registry Foundation .**

4 The next panel shows deployment settings on the application server.



HTTP Port
7001
SSL(HTTPS) Port
7002
Hostname
mycomp.com
Application Server Context
registry

**HTTP Port**

HTTP port of the application server

**SSL(HTTPS) Port**

HTTPS port of the application server

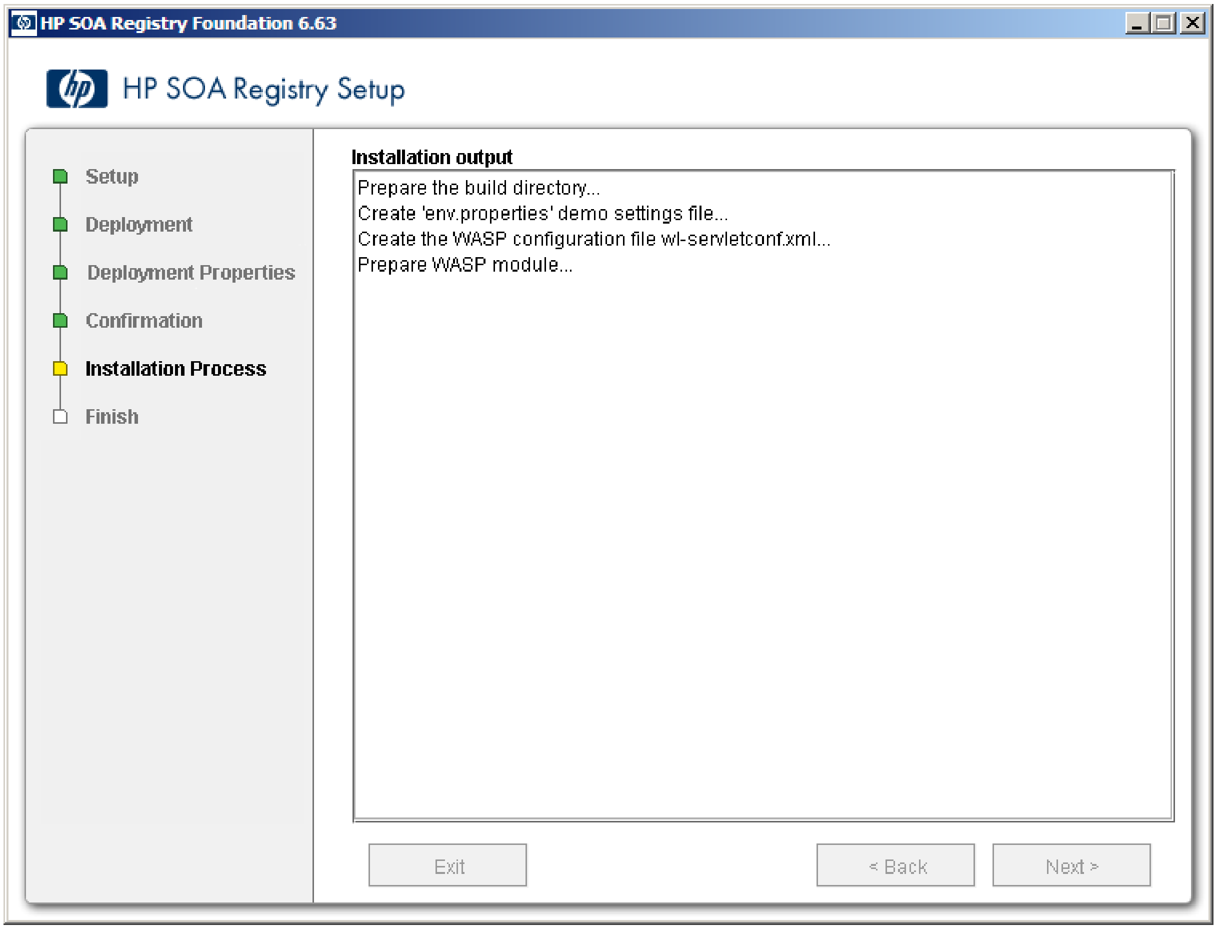
**Host name**

Host name of the application server

**Application Server Context**

Use the context you will use to deploy on the application server. (default: wasp)

**Figure 46. Deployment Process After Confirmation of Settings**



```
Prepare the build directory...
Create 'env.properties' demo settings file...
Create the WASP configuration file wl-servletconf.xml...
Prepare WASP module...
```

To continue the deployment process, follow the instruction in the log window. For further details, see the instructions in the individual sections below dedicated to the individual application servers.

- WebLogic on page 153
- WebSphere on page 154
- JBoss on page 162
- Oracle on page 170

## WebLogic

The BEA WebLogic 8.x, 9.x and 10 are supported.

`WL_HOME` refers to the directory where WebLogic is installed.

`REGISTRY_HOME` refers to the directory in which the HP SOA Registry Foundation distribution is installed.

The `REGISTRY_HOME/conf/porting/weblogic/build/[context_name].war` file is ready for deployment. Please follow these steps to complete the integration:

1 Deploy the package using WebLogic's administration console.

2 Modify the BEA WebLogic server launch script which is:

   - `WL_HOME/user_projects/domains/DOMAIN_NAME/startWebLogic.sh or startWebLogic.cmd`
   - Add the following property to the Java command line for starting the WebLogic server:

     ```
     -Djava.security.auth.login.config=REGISTRY_HOME/conf/jaas.config
     ```

3 Import the SSL certificate of the WebLogic server to the HP SOA Registry Foundation configuration.

   Obtain the WebLogic SSL certificate. There are two methods:

a. You can get certificate using Internet Explorer 6.0 web browser connected to WebLogic via HTTPS. Select "Properties" in context menu of the page, button "Certificates", tab "Details", button "Copy to file", and then export certificate in Base 64 encoded X.509 .cer format.

b. You can also use `REGISTRY_HOME/bin/sslTool.sh` or `REGISTRY_HOME\bin\sslTool.bat` to get certificate. Run command:

   ```
   sslTool serverInfo --url https://HOST:9043 --certFile weblogic.cer
   ```

   This command will connect to specified host and port using HTTPS and it will store server certificate into specified file.

To import this certificate use

**PStoreTool located in [registry_home]/bin PStoreTool.sh add -config [registry_home]/conf/clientconf.xml -certFile [weblogic.cer]**

4. Enable SSL in WebLogic if not yet enabled and (re)start the BEA WebLogic server.

Deployment should now be complete. The HP SOA Registry Foundation URL is `http://[hostname]:[http_port]/[context]/uddi/web`

➤ WebLogic 8.x: When "Segmentation fault" problems occur during WebLogic startup on RedHat Enterprise Linux, you have to set environment variable LD_ASSUME_KERNEL to value 2.4.1. Add this line to WebLogic startup script: `export LD_ASSUME_KERNEL="2.4.1"`

## WebSphere

This process has been tested on WebSphere 6.0 and 6.1

➤ `REGISTRY_HOME` refers to the directory in which the HP SOA Registry Foundation distribution is installed.

`WEBSPHERE_HOME` refers to the directory in which IBM WebSphere is installed.

`PORTING_CONTEXT` refers to context under which the HP SOA Registry Foundation is deployed.

The `REGISTRY_HOME/conf/porting/websphere/6.x/build/PORTING_CONTEXT.ear` file is ready for deployment. Please follow these steps to complete the integration:

1. The IBM WebSphere server uses IBM java, which is installed in the `WEBSPHERE_HOME/java` directory. You must set up the security for this IBM JVM. To do so, follow the java security section in System Requirements on page 38.

   You should not download and replace the following security jars: `US_ExportPolicy.jar` and `local_policy.jar`

2. Modify the file `WEBSPHERE_HOME/profiles/default/config/cells/DOMAIN_NAME/security.xml` (for version 6.0) by adding the following lines between the tags `<applicationLoginConfig>` and `</applicationLoginConfig>`:

## Example 2: WebSphere Configuration

```
                    <entries xmi:id="WaspCredentials" alias="Credentials">
  <loginModules xmi:id="Credentials"
        moduleClassName="com.ibm.ws.security.common.auth.module.proxy.WSLoginModuleProxy"
        authenticationStrategy="REQUIRED">
    <options xmi:id="debug_property_1" name="debug" value="true"/>
    <options xmi:id="delegate_property_1" name="delegate"
       value="com.idoox.security.jaas.GSSLoginModule"/>
  </loginModules>
</entries>
<entries xmi:id="WaspReceivedCredentials" alias="ReceivedCredentials">
  <loginModules xmi:id="ReceivedCredentials"
        moduleClassName="com.ibm.ws.security.common.auth.module.proxy.WSLoginModuleProxy"
        authenticationStrategy="REQUIRED">
    <options xmi:id="debug_property_2" name="debug" value="true"/>
    <options xmi:id="delegate_property_2" name="delegate"
       value="com.idoox.security.jaas.GSSLoginModuleNoAuth"/>
  </loginModules>
</entries>
<entries xmi:id="WaspHttpCredentials" alias="HttpCredentials">
  <loginModules xmi:id="HttpCredentials"
        moduleClassName="com.ibm.ws.security.common.auth.module.proxy.WSLoginModuleProxy"
        authenticationStrategy="REQUIRED">
    <options xmi:id="debug_property_3" name="debug" value="true"/>
    <options xmi:id="delegate_property_3" name="delegate"
       value="com.idoox.security.jaas.HttpLoginModule"/>
  </loginModules>
</entries>
<entries xmi:id="WaspKrbCredentials" alias="KrbCredentials">
  <loginModules xmi:id="KrbCredentials"
        moduleClassName="com.ibm.ws.security.common.auth.module.proxy.WSLoginModuleProxy"
        authenticationStrategy="REQUIRED">
    <options xmi:id="debug_property_4" name="debug" value="false"/>
    <options xmi:id="krb_property_1" name="storeKey" value="true"/>
    <options xmi:id="delegate_property_4" name="delegate"
       value="com.sun.security.auth.module.Krb5LoginModule"/>
  </loginModules>
</entries>
<entries xmi:id="WaspCachedKrbCredentials" alias="CachedKrbCredentials">
  <loginModules xmi:id="CachedKrbCredentials"
        moduleClassName="com.ibm.ws.security.common.auth.module.proxy.WSLoginModuleProxy"
        authenticationStrategy="REQUIRED">
    <options xmi:id="debug_property_5" name="debug" value="false"/>
    <options xmi:id="krb_property_2" name="useTicketCache" value="true"/>
    <options xmi:id="delegate_property_5" name="delegate"
       value="com.sun.security.auth.module.Krb5LoginModule"/>
  </loginModules>
</entries>
<entries xmi:id="WaspNamePasswordNoAN" alias="NamePasswordNoAN">
  <loginModules xmi:id="NamePasswordNoAN"
        moduleClassName="com.ibm.ws.security.common.auth.module.proxy.WSLoginModuleProxy"
        authenticationStrategy="REQUIRED">
    <options xmi:id="debug_property_6" name="debug" value="true"/>
    <options xmi:id="delegate_property_6" name="delegate"
       value="com.idoox.security.jaas.NamePasswordLoginModuleNoAuth"/>
  </loginModules>
</entries>
<entries xmi:id="UDDINamePasswordAN" alias="NamePasswordAN">
  <loginModules xmi:id="NamePasswordAN"
        moduleClassName="com.ibm.ws.security.common.auth.module.proxy.WSLoginModuleProxy"
        authenticationStrategy="REQUIRED">
    <options xmi:id="debug_property_7" name="debug" value="true"/>
    <options xmi:id="delegate_property_7" name="delegate"
       value="com.systinet.uddi.security.jaas.NamePasswordLoginModule"/>
  </loginModules>
</entries>
<entries xmi:id="UDDIAuthTokenAN" alias="AuthTokenAN">
  <loginModules xmi:id="AuthTokenAN"
        moduleClassName="com.ibm.ws.security.common.auth.module.proxy.WSLoginModuleProxy"
        authenticationStrategy="REQUIRED">
    <options xmi:id="debug_property_8" name="debug" value="true"/>
    <options xmi:id="delegate_property_8" name="delegate"
       value="com.systinet.uddi.security.jaas.AuthTokenLoginModule"/>
  </loginModules>
</entries>
<entries xmi:id="WaspNameDigestAN" alias="NameDigestAN">
  <loginModules xmi:id="NameDigestAN"
        moduleClassName="com.ibm.ws.security.common.auth.module.proxy.WSLoginModuleProxy"
        authenticationStrategy="REQUIRED">
    <options xmi:id="debug_property_9" name="debug" value="true"/>
    <options xmi:id="delegate_property_9" name="delegate"
value="com.idoox.security.jaas.NameDigestLoginModule"/>
  </loginModules>
</entries>
<entries xmi:id="WaspNameMapping" alias="NameMapping">
  <loginModules xmi:id="NameMapping"
        moduleClassName="com.ibm.ws.security.common.auth.module.proxy.WSLoginModuleProxy"
        authenticationStrategy="REQUIRED">
    <options xmi:id="debug_property_10" name="debug" value="true"/>
    <options xmi:id="delegate_property_10" name="delegate"
```

```
       value="com.idoox.security.jaas.NameLoginModuleNoAuth"/>
  </loginModules>
</entries>
<entries xmi:id="WaspCertsMapping" alias="CertsMapping">
  <loginModules xmi:id="CertsMapping"
        moduleClassName="com.ibm.ws.security.common.auth.module.proxy.WSLoginModuleProxy"
        authenticationStrategy="REQUIRED">
    <options xmi:id="debug_property_11" name="debug" value="true"/>
    <options xmi:id="delegate_property_11" name="delegate"
       value="com.idoox.security.jaas.CertsLoginModule"/>
  </loginModules>
</entries>
<entries xmi:id="HttpRequestMapping" alias="HttpRequest">
  <loginModules xmi:id="HttpRequest"
        moduleClassName="com.ibm.ws.security.common.auth.module.proxy.WSLoginModuleProxy"
        authenticationStrategy="REQUIRED">
    <options xmi:id="debug_property_12" name="debug" value="true"/>
    <options xmi:id="delegate_property_12" name="delegate"
       value="com.systinet.uddi.security.jaas.SmLoginModule"/>
  </loginModules>
</entries>
<entries xmi:id="RegistryIdentityAsserter" alias="IdentityAsserter">
      <loginModules xmi:id="IdentityAsserter"
            moduleClassName="com.ibm.ws.security.common.auth.module.proxy.WSLoginModuleProxy"
            authenticationStrategy="REQUIRED">
        <options xmi:id="debug_property_13" name="debug" value="true"/>
        <options xmi:id="delegate_property_13" name="delegate"
           value="com.systinet.uddi.security.jaas.IdentityAsserterLoginModule"/>
      </loginModules>
</entries>
```

3 Deploy the file `REGISTRY_HOME/conf/porting/websphere/6.x/build/PORTING_CONTEXT.ear` file using the IBM WebSphere admin console, leaving all the options set at their default values.

4 After you finish the deployment, use WebSphere's admin console to set following properties. They are in "Class loading and update detection" section inside of enterprise application properties (in WebSphere 6.1).

- mode of the WASP Application's classloader to 'PARENT_LAST' or "Classes loaded with application class loader first" option

- WAR Classloader Policy to 'Application' or "Single class loader for application" option

5. Import the SSL certificate of the Websphere server to the HP SOA Registry configuration. Follow these steps:

   a. Obtain the WebSphere SSL certificate. There are two methods:

      i. You can get certificate using Internet Explorer 6.0 web browser connected to WebSphere via HTTPS. Select "Properties" in context menu of the page, button "Certificates", tab "Details", button "Copy to file", and then export certificate in Base 64 encoded X.509 .cer format.

      ii. You can also use `REGISTRY_HOME/bin/sslTool.sh` or `REGISTRY_HOME\bin\sslTool.bat` to get certificate. Run command:

      ```
      sslTool serverInfo --url https://HOST:9043 --certFile websphere.cer
      ```

      This command will connect to specified host and port using HTTPS and it will store server certificate into specified file.

   b. Import this certificate using the PStoreTool located in `REGISTRY_HOME/bin`. The command follows (replace variables with real values):

   ```
   PStoreTool add -config REGISTRY_HOME/conf/clientconf.xml -certFile websphere.cer
   ```

HP SOA Registry Foundation is now running on `http://<hostname>:9080/wasp/uddi/web`.

- The lines added to `login-config.xml` are an analogy of `jaas.config` expressed in XML.
- The `PARENT_LAST` option and `Application` ClassLoader policy need to be set because there is a conflict between our implementations of the `saaj`, `jaxm`, `jaxrpc` and `wsdl` interfaces. `PARENT_LAST` assures that the servlet classloader is the first to be asked for the definition of classes.

## Tomcat

Tested on Tomcat 5.0.28

> `REGISTRY_HOME` refers to the directory in which HP SOA Registry Foundation is installed.
>
> `TOMCAT_HOME` refers to the directory in which Tomcat is installed

The file `REGISTRY_HOME/conf/porting/tomcat/build/[context_name].war` is ready for deployment. Please follow these steps to complete the integration:

1. Copy this file into the directory `TOMCAT_HOME/webapps`
2. Adjust the Tomcat launch script:
   - Add the following jars to the beginning of the Tomcat classpath:

     `REGISTRY_HOME/lib/xercesImpl.jar`

     `REGISTRY_HOME/lib/xmlParserAPIs.jar`

     `REGISSTRY_HOME/lib/xalan.jar`

     > Some version of Tomcat needs xercesImpl.jar (or xerces.jar) to be removed from TOMCAT_HOME/common subdirectory.

   - Add the following jars to the end of the Tomcat classpath:

     `REGISTRY_HOME/lib/xml-apis.jar`

     `REGISTRY_HOME/lib/security-ng.jar`

     `REGISTRY_HOME/conf/porting/dist/security3-ng.jar`

   - Set the following Java VM property:

**-Djava.security.auth.login.config=REGISTRY_HOME/conf/jaas.config**

- Increase maximum size of Java VM memory allocation pool to at least 300M, set the following Java VM properties:

  **-Xmx300m -Xms128m**

3 Copy `REGISTRY_HOME/lib/activation.jar` to `TOMCAT_HOME/common/lib`.

4 Enable HTTPS for Tomcat

a If not yet done, enable SSL in Tomcat. Briefly:

- Uncomment the HTTPS connector in `TOMCAT_HOME/conf/server.xml`. It should look like:

**Example 3: Enable HTTPS Connector - Tomcat**

```
                                <Connector port="8443"
maxThreads="150" minSpareThreads="25" maxSpareThreads="75"
enableLookups="false" disableUploadTimeout="true"
acceptCount="100" debug="0" scheme="https" secure="true"
clientAuth="false" sslProtocol="TLS"/>
```

- Create the SSL keystore.

  **keytool -genkey -alias tomcat -keyalg RSA -storepass changeit**

  By default the keystore will be placed in your home directory and named `.keystore` (note the leading dot). To change the location of the keystore use keytool's **-keystore** flag. Note that if you locate the keystore outside of the home directory of the user under which Tomcat runs, you must modify the HTTPS `connector` element in the `TOMCAT_HOME/conf/server.xml` file and add the `keystoreFile` attribute as documented in the SSL HOW-TO [http://jakarta.apache.org/tomcat/tomcat-4.1-doc/ssl-howto.html].

b Export the certificate from your SSL keystore and import it into HP SOA Registry Foundation:

- Export the certificate:

  **keytool -export -file tomcat.crt -alias tomcat -storepass changeit**

- Import the certificate into the Registry:

  **REGISTRY_HOME/bin/PStoreTool.bat (.sh) add -certFile tomcat.crt -alias tomcat -config REGISTRY_HOME/conf/clientconf.xml**

  See Tomcat's original documentation for details.

5 Restart Tomcat.

The HP SOA Registry Foundation URL = `http://localhost:8080/[context]/uddi/web`

## JBoss

Tested on JBoss 4.2.2 and 4.3.0

`REGISTRY_HOME` refers to the directory in which the HP SOA Registry Foundation distribution is installed.

`JBOSS_HOME` refers to the directory in which JBoss is installed.

`REGISTRY_HOME/conf/porting/jboss/build/[context_name].war` is now ready for deployment. Please follow these steps to complete the integration:

1. Unpack the created file into the [context_name].war subdirectory of the JBoss deployment directory, which is usually `JBOSS_HOME/server/[jboss_configuration]/deploy`.
2. Modify the JBoss launch script (usually in JBOSS_HOME/bin/run.sh) as follows:
   - Add the following jars to the beginning of the JBoss classpath:

     `REGISTRY_HOME/lib/security-ng.jar`

     `REGISTRY_HOME/conf/porting/dist/security3-ng.jar`

3 Enable security: Add the following lines to the file `JBOSS_HOME/server/[jboss_configuration]/conf/login-config.xml` between the tags <policy>...</policy>:

## Example 4: Enabling Security - JBoss

```
                    <application-policy name="Credentials">
    <authentication>
        <login-module code="com.idoox.security.jaas.GSSLoginModule"
            flag="required">
        <module-option name = "debug">true</module-option>
        </login-module>
    </authentication>
</application-policy>

<application-policy name="ReceivedCredentials">
    <authentication>
        <login-module code="com.idoox.security.jaas.GSSLoginModuleNoAuth"
            flag="required">
        <module-option name = "debug">true</module-option>
        </login-module>
    </authentication>
</application-policy>
<application-policy name="HttpCredentials">
    <authentication>
        <login-module code="com.idoox.security.jaas.HttpLoginModule"
            flag="required">
        <module-option name = "debug">true</module-option>
        </login-module>
    </authentication>
</application-policy>

<application-policy name="NamePasswordNoAN">
    <authentication>
        <login-module code="com.idoox.security.jaas.NamePasswordLoginModuleNoAuth"
            flag="required">
        <module-option name = "debug">true</module-option>
        </login-module>
    </authentication>
</application-policy>

<application-policy name="NamePasswordAN">
    <authentication>
        <login-module code="com.systinet.uddi.security.jaas.NamePasswordLoginModule"
            flag="required">
        <module-option name = "debug">true</module-option>
        </login-module>
    </authentication>
```

```
</application-policy>

<application-policy name="NameDigestAN">
    <authentication>
        <login-module code="com.idoox.security.jaas.NameDigestLoginModule"
            flag="required">
        <module-option name = "debug">true</module-option>
        </login-module>
    </authentication>
</application-policy>

<application-policy name="NameMapping">
    <authentication>
        <login-module code="com.idoox.security.jaas.NameLoginModuleNoAuth"
            flag="required">
        <module-option name = "debug">true</module-option>
        </login-module>
    </authentication>
</application-policy>

<application-policy name="CertsMapping">
    <authentication>
        <login-module code="com.idoox.security.jaas.CertsLoginModule"
            flag="required">
        <module-option name = "debug">true</module-option>
        </login-module>
    </authentication>
</application-policy>

<application-policy name="AuthTokenAN">
    <authentication>
        <login-module code="com.systinet.uddi.security.jaas.AuthTokenLoginModule"
            flag="required">
        <module-option name = "debug">true</module-option>
        </login-module>
    </authentication>
</application-policy>

<application-policy name="HttpRequest">
    <authentication>
        <login-module code="com.systinet.uddi.security.jaas.SmLoginModule"
            flag="required">
        <module-option name = "debug">true</module-option>
        </login-module>
    </authentication>
</application-policy>
```

```
<application-policy name="IdentityAsserter">
    <authentication>
        <login-module code="com.systinet.uddi.security.jaas.IdentityAsserterLoginModule"
            flag="required">
        <module-option name = "debug">true</module-option>
        </login-module>
    </authentication>
</application-policy>
```

4 Configure log4j for HP SOA Registry: Add the following lines to the file `JBOSS_HOME/server/[jboss_configuration]/conf/jboss-log4j.xml` after the last tag </appender>:

## Example 5: Log4j Configuration - JBoss

```
                    <!-- Registry log4j appenders -->
<appender name="sr_eventLog" class="org.apache.log4j.RollingFileAppender">
  <errorHandler class="org.jboss.logging.util.OnlyOnceErrorHandler"/>
  <param name="File"
     value="${jboss.server.home.dir}/log/HPSOARegistry_logEvents.log"/>
  <param name="MaxFileSize" value="10000KB"/>
  <param name="MaxBackupIndex" value="10"/>
  <layout class="org.apache.log4j.PatternLayout">
     <param name="ConversionPattern" value="(%d) - %m%n"/>
  </layout>
</appender>
<appender name="sr_errorLog" class="org.apache.log4j.RollingFileAppender">
  <errorHandler class="org.jboss.logging.util.OnlyOnceErrorHandler"/>
  <param name="File"
     value="${jboss.server.home.dir}/log/HPSOARegistry_errorEvents.log"/>
  <param name="MaxFileSize" value="10000KB"/>
  <param name="MaxBackupIndex" value="10"/>
  <layout class="org.apache.log4j.PatternLayout">
     <param name="ConversionPattern" value="(%d) - %m%n"/>
  </layout>
</appender>
<appender name="sr_clusterLog" class="org.apache.log4j.RollingFileAppender">
  <errorHandler class="org.jboss.logging.util.OnlyOnceErrorHandler"/>
  <param name="File"
     value="${jboss.server.home.dir}/log/HPSOARegistry_configuratorEvents.log"/>
  <param name="MaxFileSize" value="10000KB"/>
  <param name="MaxBackupIndex" value="10"/>
  <layout class="org.apache.log4j.PatternLayout">
     <param name="ConversionPattern" value="(%d) - %m%n"/>
  </layout>
</appender>
<appender name="sr_replicationLog" class="org.apache.log4j.RollingFileAppender">
  <errorHandler class="org.jboss.logging.util.OnlyOnceErrorHandler"/>
  <param name="File"
     value="${jboss.server.home.dir}/log/HPSOARegistry_replicationEvents.log"/>
  <param name="MaxFileSize" value="10000KB"/>
  <param name="MaxBackupIndex" value="10"/>
  <layout class="org.apache.log4j.PatternLayout">
     <param name="ConversionPattern" value="(%d) - %m%n"/>
  </layout>
</appender>
<appender name="sr_notificationLog" class="org.apache.log4j.RollingFileAppender">
```

```
  <errorHandler class="org.jboss.logging.util.OnlyOnceErrorHandler"/>
  <param name="File"
     value="${jboss.server.home.dir}/log/HPSOARegistry_notificationEvents.log"/>
  <param name="MaxFileSize" value="10000KB"/>
  <param name="MaxBackupIndex" value="10"/>
  <layout class="org.apache.log4j.PatternLayout">
     <param name="ConversionPattern" value="(%d) - %m%n"/>
  </layout>
</appender>
<!-- Registry log4j categories -->
<category name="com.idoox.wasp.server.adaptor.RawAdaptor" additivity="false">
  <priority value="ERROR"/>
</category>
<category name="com.systinet.wasp.events" additivity="false">
  <priority value="INFO"/>
  <appender-ref ref="sr_eventLog"/>
</category>
<category name="com.systinet.wasp.errors" additivity="false">
  <priority value="ERROR"/>
  <appender-ref ref="sr_errorLog"/>
</category>
<category name="org.apache.xml.security" additivity="true">
  <priority value="ERROR"/>
</category>
<category
  name="configurator.com.systinet.uddi.configurator.cluster.ConfiguratorManagerApiImpl"
  additivity="false">
  <priority value="INFO"/>
  <appender-ref ref="sr_clusterLog"/>
</category>
<category name="replication_v3.com.systinet.uddi.replication.v3.ReplicatorTask"
  additivity="false">
  <priority value="DEBUG"/>
  <appender-ref ref="sr_replicationLog"/>
</category>
<category name="uddi_subscription_v3.com.systinet.uddi.subscription.v3"
  additivity="false">
  <priority value="DEBUG"/>
  <appender-ref ref="sr_notificationLog"/>
</category>
```

5 If you do not have SSL keys and certificate, generate them using the keytool from the JDK distribution as follows:

- Change the directory to the `bin` subdirectory of `JBOSS_HOME` and enter the following command:

  **keytool** *`-keystore JBOSS_HOME/server/[jboss_configuration]/conf/server.keystore -genkey -alias jboss -keyalg RSA -storepass changeit`*

- Change your directory to the `bin` subdirectory of `REGISTRY_HOME`.
- Export the certificate to a file using the following command:

  **keytool** *`-keystore JBOSS_HOME/server/[jboss_configuration]/conf/server.keystore -export -file jboss.crt -alias jboss -storepass changeit`*

- Import the certificate to `clientconf.xml` in the HP SOA Registry Foundation distribution using this command:

  **PStoreTool.sh (bat)** *`add -certFile jboss.crt -alias jboss -config REGISTRY_HOME/conf/clientconf.xml`*

6 Enable SSL in JBoss.

- Uncomment following lines in the file `JBOSS_HOME/server/[jboss_configuration]/deploy/jboss-web.deployer/server.xml`

```
<Connector port="8443" address="${jboss.bind.address}"
           maxThreads="100" strategy="ms" maxHttpHeaderSize="8192"
           emptySessionPath="true"
           scheme="https" secure="true" clientAuth="false"
           keystoreFile="${jboss.server.home.dir}/conf/server.keystore"
           keystorePass="123456" sslProtocol = "TLS" />
```

  Change the values of `keystoreFile` to `${jboss.server.home.dir}/conf/server.keystore` a `keystorePass` to `changeit`.

  Use the actual values you used when invoking the keytool utility if those values differ from the values shown here.

7 (Re)start the JBoss server

Installation should be complete. The HP SOA Registry Foundation URL is `http://hostname:8080/[context_name]/uddi/web`.

- The lines added to `login-config.xml` are an analogy of `jaas.config` expressed in XML.

## Oracle

The Oracle Application Server 10g 10.1.3.3 and 10.1.3.4 was tested.

REGISTRY_HOME refers to the directory in which HP SOA Registry Foundation is installed.

ORACLE_HOME refers to the directory in which Oracle Application Server is installed

The `REGISTRY_HOME/conf/porting/oracle/build` contains .ear file ready for deployment. Please follow these steps to complete the integration:

1. Stop Oracle Application Server (e.g. **ORACLE_HOME/opmn/bin/opmnctl** ***`stopall`***)
2. Adjust available memory for the Oracle Application Server as follows:
   - Open the configuration file `ORACLE_HOME/opmn/conf/opmn.xml`
   - Change start-parameters for OC4J as follows:
     - `-XX:MaxPermSize=128m -Xmx1024m -Doc4j.userThreads=true`
3. Configure JAAS login modules.
   - Open the file `ORACLE_HOME/j2ee/home/config/system-jazn-data.xml`
   - Locate jazn-loginconfig element.
   - Insert content of `REGISTRY_HOME/conf/porting/oracle/jaas.xml` or the following lines between jazn-loginconfig elements if registry login modules are not already presented.

## Example 6: Configure JAAS login modules

```
                            <application>
    <name>IdentityAsserter</name>
    <login-modules>
        <login-module>
            <class>com.systinet.uddi.security.jaas.IdentityAsserterLoginModule</class>
            <control-flag>required</control-flag>
            <options>
                <option>
                    <name>debug</name>
                    <value>true</value>
                </option>
            </options>
        </login-module>
    </login-modules>
</application>

<application>
    <name>NamePasswordAN</name>
    <login-modules>
        <login-module>
            <class>com.systinet.uddi.security.jaas.NamePasswordLoginModule</class>
            <control-flag>required</control-flag>
            <options>
                <option>
                    <name>debug</name>
                    <value>true</value>
                </option>
            </options>
        </login-module>
    </login-modules>
</application>

<application>
    <name>NamePasswordNoAN</name>
    <login-modules>
        <login-module>
            <class>com.idoox.security.jaas.NamePasswordLoginModuleNoAuth</class>
            <control-flag>required</control-flag>
            <options>
                <option>
                    <name>debug</name>
                    <value>true</value>
                </option>
            </options>
        </login-module>
    </login-modules>
</application>

<application>
    <name>HttpRequest</name>
    <login-modules>
        <login-module>
            <class>com.systinet.uddi.security.jaas.SmLoginModule</class>
            <control-flag>required</control-flag>
            <options>
                <option>
                    <name>debug</name>
                    <value>true</value>
                </option>
            </options>
        </login-module>
    </login-modules>
</application>
```

4. Enable SSL and HTTPS in SSL is not already enabled. Enable SSL in OHS (Oracle HTTP Server). Briefly as follows (for more details please see Oracle documentation):

   - generate real identity for OHS
   - setup OHS to use the created wallet file
   - import CA certificate to client's java

5. Start Oracle Application Server (e.g. **ORACLE_HOME/opmn/bin/opmnctl** ***`startall`***).
6. Use Oracle Application Server Control to deploy EAR file.

Installation should be completed. The HP SOA Registry Foundation URL = `http://localhost:80/[context_name]/uddi/web`.

Registry port numbers must match the Oracle HTTP port numbers in your existing OAS installation. These values can be found in `ORACLE_HOME/install/readme.txt`.

## Cluster Configuration

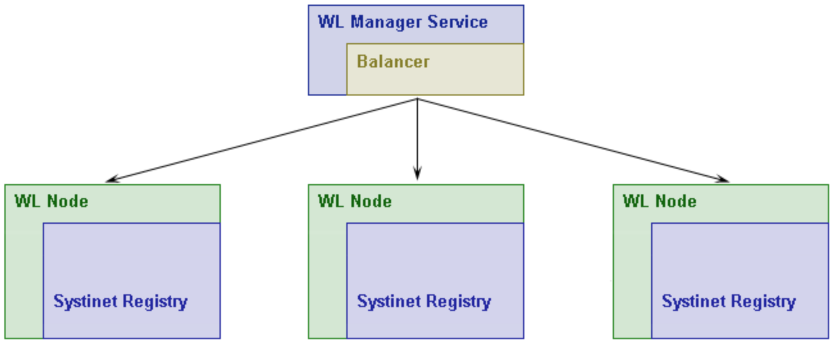
This chapter contains general notes about the synchronized configuration of a HP SOA Registry Foundation cluster and gives instructions on how to deploy HP SOA Registry Foundation to a WebLogic Cluster (WebLogic specific configuration for use with cluster on page 178).

### Cluster operation

Cluster operation is achieved by running multiple registries and joining their functionality with a load balancer (proxy).

Load balancing is used to distribute requests among registries to get the optimal load distribution. The load balancer should be configured to distribute requests among all physical endpoints of the registry nodes. If using an application server, refer to its documentation for details about configuring load balancing.

**Figure 47. HP SOA Registry Foundation in WebLogic Cluster**



Clients to HP SOA Registry Foundation access TCP ports on the balancer which forwards the connection to a running cluster node with an actual HP SOA Registry Foundation. Each HP SOA Registry Foundation has a connection to a common database so that each HP SOA Registry Foundation has access to the latest data. This connection also serves as a distribution point for changed configurations and inter-node events.

When a HP SOA Registry Foundation node fails (there are various reasons for this such as hardware problems, network conection problems or software failure), other nodes can work without it. The intelligent load balancer will detect this and further requests will not be directed there until the node starts to respond.

Every node has a Node ID - a string identifying the node. Each node should have a different ID. Breaking this rule will cause nodes with the same ID miss some configuration changes and synchronization events.

Node ID can be specified by the administrator in the REGISTRY_HOME\app\uddi\conf\nodeid.xml file. If it is not specified before the initial start of HP SOA Registry Foundation, it will be generated as a unique UUID string. It is possible to change it later, but node-local configurations under the old ID will be left in database. Ensure that EAR/WAR file generated for deployment have either:

1. Empty Node ID - so that each deployment of the file will generate unique Node ID on first run and retain it until deletition or redeployment of EAR/WAR. You can use such EAR/WAR to deploy on all nodes.
2. Specified Node ID - when you deploy that EAR/WAR to single node and generate another EAR/WAR for others. You can choose meaningful names for Node ID this way.

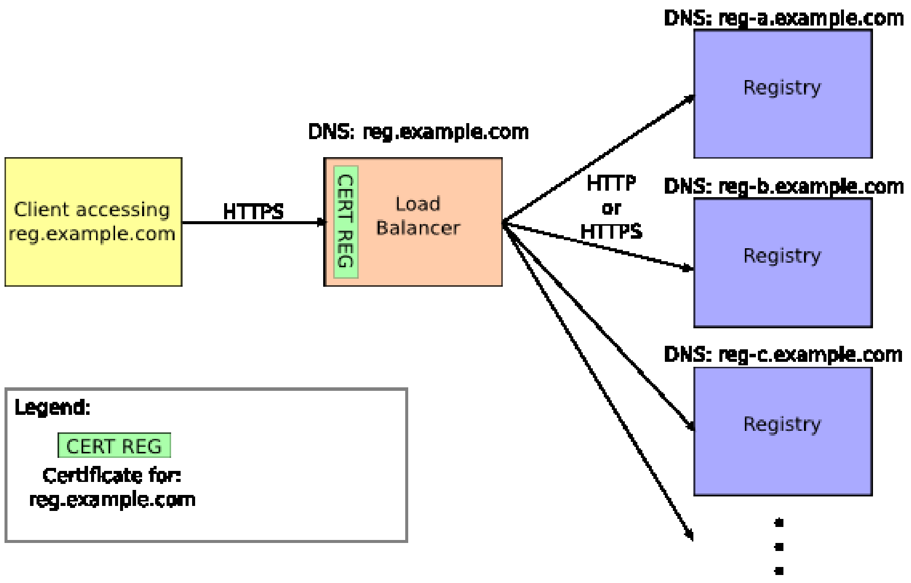
You can set the Node ID in the nodeid.xml file before starting setup to generate EAR/WAR. If you use generation of EAR/WAR file directly from installer the Node ID will be empty.

➤ Latest configurations are identified by internal index sequencing. Time stamps of configurations as displayed in configuration management UI are not relevant as they may be unreliable in case of clock skew on a cluster node.

Cluster operation is affected by the interaction of connection security (HTTPS) and the load balancer. For security reasons, client access is done using the HTTPS protocol. This protocol requires that there is a valid and matching security certificate on the server side (possibly on the client side too if client authentication is required). There are generally two methods how to achieve clustered operation via independent load balancer. If you use deploymeny with some application server it may provide integrated load balancer for you which may be easier to configure than independent load balancer.

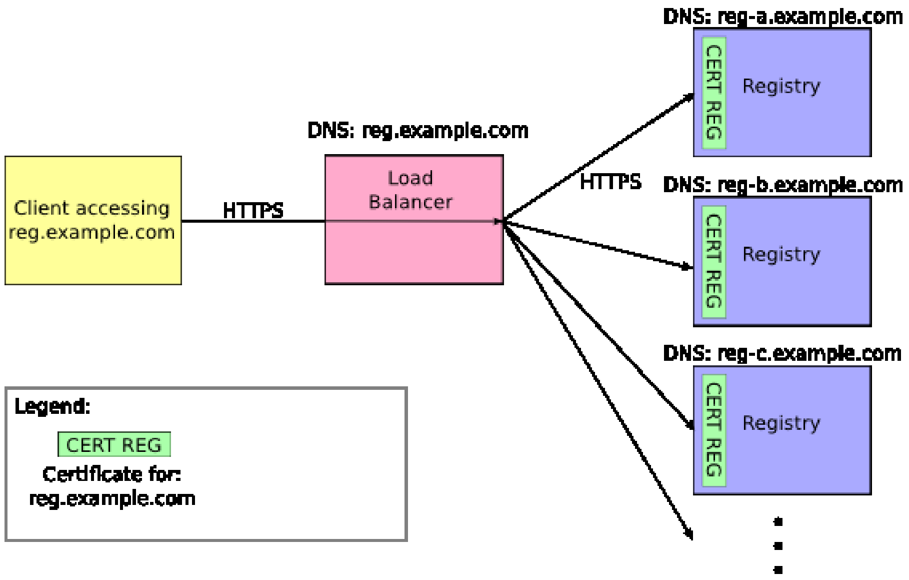
1 Secure connection can take a place between a client and the load balancer which would be the end point for the secure connection originated at the client. Load balancer will make independent connection to some of the HP SOA Registry Foundation nodes. This connection may be either in HTTP or HTTPS. The certificate which the client checks has to be placed at load balancer. A connection between load balancer and each HP SOA Registry Foundation can be protected by HTTPS in which case the load balancer and the registries should know each other certificates.

**Figure 48. Security in cluster, method 1.**



2 Secure connection can be passed by the load balancer and terminated at the cluster node. This case requires that the certificates on all the nodes have to be the same to provide the illusion of a single service. However the common name inside the certificate should specify the DNS name of the balancer.

**Figure 49. Security in cluster, method 2.**



➤ Load balancer is not part of HP SOA Registry Foundation product. You can use almost any HTTP/HTTPS load balancer that supports described configurations.

Most of the Client - HP SOA Registry Foundation interactions require an authentication token to be passed along the way. This token is encrypted by the HP SOA Registry Foundation certificate. Therefore each HP SOA Registry Foundation behind the balancer has to have the same certificate.

WEB interfaces of HP SOA Registry Foundation (both Registry Console and Business Service Console) need to know the absolute HTTP addresses of themselves. This address in the cluster is the address of the load balancer and the possible context under which it is deployed. This address can be changed during setup.

## Cluster installation

Cluster installation requires the setup of a load balancer and multiple registries. These steps are recommended on the HP SOA Registry Foundation side when an application server is used:

1. Install HP SOA Registry Foundation.
   - Fill-in the hostname and ports of the load balancer.
2. Port HP SOA Registry Foundation via the Deploy option in the HP SOA Registry Foundation Setup program (or directly in Installer program).
3. Deploy the generated WAR or EAR to all cluster nodes via the application server.

These steps are recommended on the HP SOA Registry Foundation side where multiple standalone instances of HP SOA Registry Foundation are used:

1. Install the first HP SOA Registry Foundation.
   - Fill-in the hostname and ports of the load balancer.
2. Setup SSL certificates as required in the first HP SOA Registry Foundation.
3. Install other Registries.
   - Do not create new databases, just connect to database of first HP SOA Registry Foundation.
   - Copy `REGISTRY_HOME\conf\pstore.xml` from the first registry to each HP SOA Registry Foundation. This assures that each HP SOA Registry Foundation will have same identity with respect to authentication tokens.
   - Copy the configuration files in the `REGISTRY_HOME\app\uddi\conf\` directory from the first HP SOA Registry Foundation. This is requireded because some fields in the configuration files are coded by key specified in application_core.xml. Failure to do so may result in error messages during startup and inconsistent configuration data in database.
4. Run the first installed HP SOA Registry Foundation first so that its configuration files are stored in database first. Next time you can run the Registries in any order (including the first one).

## Setting Up Security

If using a cluster of standalone registries, they must share the same private key for validating authentication tokens.

### Sharing Token Key

If HP SOA Registry Foundation is installed as a cluster of standalone registries, you must ensure that all cluster nodes share the same private key for checking authentication token validity. (By a standalone registry, we mean HP SOA Registry Foundation that is not deployed to an application server. You do not need to do this if HP SOA Registry Foundation is deployed to an application server). To set this up, choose one of the cluster nodes and copy its private key to all other nodes in the cluster by entering this command at a command prompt:

**PStoreTool copy -alias authTokenIdentity -keyPassword SSL_CERTIFICATE_PASSWORD -config REGISTRY_HOME\conf\pstore.xml -config2 TARGET_REGISTRY_HOME\conf\pstore.xml**

`SSL_CERTIFICATE_PASSWORD` is a ssl certificate password entered during the installation

`TARGET_REGISTRY_HOME` is the directory where a cluster node is installed.

## WebLogic specific configuration for use with cluster

This section will guide you through an example setup of clustering with a WebLogic application server.

To deploy HP SOA Registry Foundation to a WebLogic cluster follow these steps:

1. Install WebLogic, then configure it by adding machines to the cluster. In our case, the cluster is named `cluster`, and the configuration manager, named `myserver`, is running on `10.0.0.79`. The nodes in the WebLogic cluster are named:

   - `kila` (10.0.0.79), running on `kila.mycompany.com`, with an http port of 7101 and https port of 7102

   - `fido` (10.0.0.134), running on `fido.mycompany.com`, with an http port of 7101 and https port of 7102

2. Generate the certificates of all cluster nodes: Let's create proper certificates for our two nodes. It will be done via the CertGen tool provided by WebLogic. Go to the directory

%WEB_LOGIC_HOME%\weblogic81\server\lib. CertGen is located in weblogic.jar's utils package. Invoke it with the command:

**java -cp weblogic.jar utils.CertGen changeit kilacert kilakey export kila.mycompany.com**

The output resembles the following:

```
kilacert kilakey export kila.mycompany.com
        ...... Will generate certificate signed by CA from CertGenCA.der file
        ...... With Export Key Strength
        ...... Common Name will have Host name kila.mycompany.com
        ...... Issuer CA name is
        CN=CertGenCAB,OU=FOR TESTING ONLY,O=MyOrganization,L=MyTown,ST=MyState,C=US
```

Use the password changeit for starting the UDDI node servers. The output file with the certificate is kilacert, and kilakey is the output file containing the private key. Generate certificates for all remaining nodes from their CertGen tools. (In our case, the other node is fido.mycompany.com.)

3 Once you have certificates from all nodes (in our case files kilacert.der and fidocert.der), import them to pstore.xml using the PstoreTool. Also include CertGenCA.der (from the directory %WEB_LOGIC_HOME%\weblogic81\server\lib). The pstore.xml file is now ready. For more info about WebLogic certificates and SSL settings, please see Configuring SSL [http://e-docs.bea.com/wls/docs81/secmanage/ssl.html#1185171] in BEA's WebLogic product documentation.

4 Prepare a registry deployment package (REGISTRY_HOME\conf\porting\weblogic\wasp.war) as described in Deployment to an Application Server on page 147.

In our case, the http port is 7101, the https port is 7102, and the application server context is wasp.

5 Check that the paths for log4j.appender.eventLog.File, log4j.appender.errorLog.File, and wasp.war\conf\log4j.config are valid on all cluster nodes.

6 Deploy wasp.war into all WebLogic cluster nodes

You must also prepare the package for the balancer which will only be deployed to the cluster manager server. To do so:

1 Create a balancer directory, in, for example, REGISTRY_HOME. This directory is referenced in this section as PACKAGE_HOME.

2 Create a subdirectory of PACKAGE_HOME named WEB-INF.

3 In this subdirectory, create the file web.xml containing the following text. Under WebLogicCluster specify the names and ports of your cluster nodes separated by a pipe (|). In our case, the file looks like:

```
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE web-app PUBLIC "-//Sun Microsystems, Inc.//DTD Web Application 2.3//EN"
                                        "http://java.sun.com/dtd/web-app_2_3.dtd">
<web-app>
  <servlet>
     <servlet-name>HttpClusterServlet</servlet-name>
     <servlet-class>weblogic.servlet.proxy.HttpClusterServlet</servlet-class>
     <init-param>
        <param-name>WebLogicCluster</param-name>
        <param-value>kila:7101|fido:7101</param-value>
     </init-param>
  </servlet>

  <servlet>
      <servlet-name>FileServlet</servlet-name>
      <servlet-class>weblogic.servlet.FileServlet</servlet-class>
  </servlet>

  <servlet-mapping>
     <servlet-name>FileServlet</servlet-name>
     <url-pattern>/uddi/webdata*</url-pattern>
  </servlet-mapping>

  <servlet-mapping>
     <servlet-name>HttpClusterServlet</servlet-name>
     <url-pattern>/</url-pattern>
  </servlet-mapping>

  <servlet-mapping>
    <servlet-name>FileServlet</servlet-name>
    <url-pattern>/uddi/bsc/webdata*</url-pattern>
  </servlet-mapping>
</web-app>
```

4 In the WEB-INF subdirectory, create the file weblogic.xml containing the following text, where /wasp is the context of HP SOA Registry Foundation deployed to this application server. Your text must be customized for your own installation.

```
<!DOCTYPE weblogic-web-app PUBLIC "-//BEA Systems, Inc.//DTD Web Application 8.1//EN"
"http://www.bea.com/servers/wls810/dtd/weblogic810-web-jar.dtd">
<weblogic-web-app>
  <context-root>/wasp</context-root>
</weblogic-web-app>
```

5 Create the directory `%PACKAGE_HOME%\uddi\webdata`.

6 Unjar `REGISTRY_HOME\app\uddi\bsc.jar` and copy the content of the webroot subdirectory from the jar to `%PACKAGE_HOME%\uddi\bsc\webdata`

7 Unjar `REGISTRY_HOME\app\uddi\web.jar` and copy the content of the `webroot` subdirectory from the jar to `%PACKAGE_HOME%\uddi\webdata`.

8 Package the content of `%PACKAGE_HOME%` into the file `balancer.war` using jar or some other compression utility.

9 Deploy `balancer.war` into the cluster manager server.

## Authentication Configuration

In this section, we will show you how to change the HP SOA Registry Foundation configuration to allow the following authentication options:

- HTTP Basic
- Netegrity SiteMinder
- SSL Client Authentication
- J2EE Server Authentication
- Internal SSL Client Authentication Mapping in J2EE
- Disabling Normal Authentication
- Outgoing Connections Protected with SSL Client Authentication

### HTTP Basic

To allow HTTP Basic authentication:

1 Modify `REGISTRY_HOME/app/uddi/services/Wasp-inf/package.xml` to enable HTTP basic authentication as follows:

a. Under `<processing name="UDDIv1v2v3PublishingProcessing"/>`, uncomment `<use ref="tns:HttpBasicInterceptor"/>`. This enables the HTTP Basic authentication for UDDI Publishing API v1, v2, v3.

b. Under `<processing name="UDDIv1v2v3InquiryProcessing">`, add `<use ref="tns:HttpBasicInterceptor"/>` . This enables the HTTP Basic authentication for all three versions of the UDDI Inquiry API.

c. Under `<processing name="wsdl2uddiProcessing">`, add `<use ref="tns:HttpBasicInterceptor"/>` . This enables the HTTP Basic authentication for versions 2 and 3 of the WSDL2UDDI API.

d. Add the attribute `accepting-security-providers="HttpBasic"` to other service-endpoints (except UDDI publishing and Inquiry endpoint) you wish to access via HTTP Basic authentication.

A fragment of the `package.xml` is shown in Example 7 on page 183

2. Shutdown HP SOA Registry Foundation, delete the `REGISTRY_HOME/work` directory, and restart the registry.

## Example 7: package.xml - HTTP Basic Enabled

```
.....
    <service-endpoint path="/inquiry" version="3.0" name="UDDIInquiryV3Endpoint"
        service-instance="tns:UDDIInquiryV3" processing="tns:UDDIv1v2v3InquiryProcessing"
          accepting-security-providers="HttpBasic">
        <wsdl uri="uddi_api_v3.wsdl" service="uddi_api_v3:UDDI_Inquiry_SoapService"/>
        <envelopePrefix xmlns="arbitraryNamespace" value=""/>
        <namespaceOptimization xmlns="arbitraryNamespace">false</namespaceOptimization>
    </service-endpoint>
    <service-instance
        implementation-class="com.systinet.uddi.publishing.v3.PublishingApiImpl"
        name="UDDIPublishingV3"/>
    <service-endpoint path="/publishing" version="3.0" name="UDDIPublishingV3Endpoint"
        service-instance="tns:UDDIPublishingV3"
        processing="tns:UDDIv1v2v3PublishingProcessing"
        accepting-security-providers="HttpBasic">
        <wsdl uri="uddi_api_v3.wsdl" service="uddi_api_v3:UDDI_Publication_SoapService"/>
        <envelopePrefix xmlns="arbitraryNamespace" value=""/>
        <namespaceOptimization xmlns="arbitraryNamespace">false</namespaceOptimization>
    </service-endpoint>

    <processing name="UDDIv3Processing">
      <use ref="uddiclient_v3:UDDIClientProcessing"/>
      <fault-serialization name="MessageTooLargeFaultSerializer"
      serializer-class="com.systinet.uddi.publishing.v3.serialization.MessageTooLargeFaultSerializer"
      serialized-exception-class="com.systinet.uddi.interceptor.wasp.MessageTooLargeException"/>
    </processing>

    <processing name="UDDIv1v2v3PublishingProcessing">
     <use ref="uddiclient_v3:UDDIClientProcessing"/>
     <use ref="uddiclient_v2:UDDIClientProcessing"/>
     <use ref="uddiclient_v1:UDDIClientProcessing"/>
     <!-- HttpBasic (without authtoken)         -->
     <use ref="tns:HttpBasicInterceptor"/>

    <interceptor name="MessageSizeCheckerInterceptor"
       implementation-class="com.systinet.uddi.interceptor.wasp.MessageSizeCheckerInterceptor"
       direction="in">
        <config:maxMessageSize>2097152</config:maxMessageSize>
        </interceptor>
    </processing>

    <processing name="UDDIv1v2v3InquiryProcessing">
        <use ref="tns:UDDIv3Processing"/>
        <use ref="tns:UDDIv2Processing"/>
        <use ref="tns:UDDIv1Processing"/>
        <use ref="tns:HttpBasicInterceptor"/>
    </processing>
.....
```

## Netegrity SiteMinder

To allow Netegrity SiteMinder authentication:

1. Modify `REGISTRY_HOME/app/uddi/services/Wasp-inf/package.xml` as follows:

   a. Under `<processing name="UDDIv1v2v3PublishingProcessing"/>`, add `<use ref="tns:SiteMinderInterceptor"/>`. This enables the SiteMinder authentication for all three versions of the UDDI Publishing API.

   b. Under `<processing name="UDDIv1v2v3InquiryProcessing">`, add `<use ref="tns:SiteMinderInterceptor"/>`. This enables the SiteMinder authentication for versions 1, 2, and 3 of the Inquiry API.

   c. Under `<processing name="wsdl2uddiProcessing">`, add `<use ref="tns:SiteMinderInterceptor"/>` . This enables the SiteMinder authentication for versions 2 and 3 of the WSDL2UDDI API.

   d. Add the attribute `accepting-security-providers="Siteminder"` to other service-endpoints (except UDDI publishing and Inquiry endpoint) you wish to access via Netegrity SiteMinder authentication.

   e. Under the elements `<securityProviderPreferences>` and `<interceptor name="SiteMinderInterceptor"`, fill in:

      - `<loginNameHeader>` - login name header
      - `<groupHeader>` - group header
      - `<delimiter>` - group name delimiter.

      You must set the same element values to both `<securityProviderPreferences>` and `<interceptor name="SiteMinderInterceptor"` elements.

A fragment of the `package.xml` is shown in Example 8 on page 185

2 Shutdown HP SOA Registry Foundation, delete the `REGISTRY_HOME/work` directory, and restart the registry.

---

**Example 8: package.xml - Netegrity SiteMinder Enabled**

```
.....
  <!-- Netegrity SiteMinded security provider preferences for the server side -->
    <securityProviderPreferences xmlns="http://systinet.com/wasp/package/extension"
       name="Siteminder">
        <loginNameHeader>sm-userdn</loginNameHeader>
        <groupHeader>sm-role</groupHeader>
        <delimiter>^</delimiter>
    </securityProviderPreferences>

    <!-- Netegrity SiteMinded interceptor-->
    <interceptor name="SiteMinderInterceptor"
         implementation-class="com.systinet.uddi.security.siteminder.SmInterceptor" >
        <config:loginNameHeader>sm-userdn</config:loginNameHeader>
        <config:groupHeader>sm-role</config:groupHeader>
        <config:delimiter>^</config:delimiter>
    </interceptor>
.....
```

## SSL Client authentication

Standalone registry can be configured to perform authentication using client certificate obtained via 2-way SSL, where also the client has to authenticate itself to a server. Setup instructions differes for a standalone and a deployed registry. This section is focused on a standalone registry. See J2EE Server Authentication on page 189 for instruction of how to configure SSL client authentication for deployed registry.

To allow SSL client authentication for a standalone registry:

1 Make sure that the registry is not running.

2 Modify `REGISTRY_HOME/conf/serverconf.xml` as follows:

- Under `<httpsPreferences name="https">`, change `<needsClientAuth>` to *true*. This will setup HTTPS transport to require client certificates.

- Under `<securityPreferences name="main">`, add `<acceptingSecurityProvider>SSL</acceptingSecurityProvider>`. This will turn on mapping of client certificates to a user name.

A fragment of changed `REGISTRY_HOME/conf/serverconf.xml` is shown in Example 9 on page 188.

3 Trust the certificate of a certification authority that is used to issue client certificates. Run the `PStoreTool` tool from the `REGISTRY_HOME/bin` directory to import this certificate to a truststore that is used by registry.

```
PStoreTool add --certFile <client certificates authority certificate file>
```

4 Configure a way how a client certificate is mapped to a user name. Registry comes with JAAS login module that extracts the user name out of a subject that is necessary part of a client certificate. The login module that performs this mapping is configured under the `CertsMapping` entry of the `REGISTRY_HOME/conf/jaas.conf` file. An example of `CertsMapping` entry is shown in Example 10 on page 189.

You can configure the following options:

- `debug` - if set it to *true*, debug actions of the login module are printed to error stream. False by default.
- `issuer` - issuer name, recommended to set. If set, mapped certificate must be issued by a certification authority with this subject name.
- `pattern` - regular expession (as per java.util.regexp) that is used to get user name. The first capturing group of a specified pattern is used as a user name. When there is no capturing group and the pattern matches, the whole subject becomes a user name. Used regular expressions are case-insensitive. Examples are:
  - The default is `(?<!\\,\s?)EMAILADDRESS=(.+)@`. It matches a name listed in EMAILADDRESS. This regular expression ignores the case of EMAILADDRESS possibly contained in another part of subject.
  - `CN=([^,]+)` matches common name.
  - `.*` matches every subject. Since it has no capturing group, the whole subject DN is used.

You can configure more than one login module to perform certificate mapping. This is usefull when you have to accept different issuers and/or provide a fallback to a failed certificate mapping of the first configured login module. An example of a `CertsMapping` entry that allows to map certificates issued by 2 issuers with a different way of mapping is shown in Example 11 on page 189.

5 Now the registry is configured for SSL client authentication. You may also change the applicability of SSL client authentication by changing configuration of SSL security provider. This configuration is in the `<securityProviderPreferences name="SSL">` element of the `REGISTRY_HOME/conf/serverconf.xml` file. An example is shown in Example 9 on page 188.

## Example 9: A fragment of serverconf.xml with 2-way SSL turned on

```
<?xml version="1.0" encoding="UTF-8"?>
<config name="main">
   ...
  <securityPreferences name="main">
     <!-- Added acceptingSecurityProvider -->
    <acceptingSecurityProvider>SSL</acceptingSecurityProvider>
    <pstoreInitParams/>
    ...
  </securityPreferences>
  ...
  <httpsPreferences name="https">
    ...
    <!-- Client authentication required -->
    <needsClientAuth>true</needsClientAuth>
    ...
  </httpsPreferences>
  ...
  <!-- security provider preferences intended mainly for SSL client authentication -->
  <securityProviderPreferences name="SSL">
      <!-- What to do when SSL is not used to access the resource? Avalaible options:
      redirect
        - perform HTTP redirect to associated HTTPS URL (302 Moved Temporarily)
      fail
        - return a message that informs to use HTTPS URL (400 Bad Request)
      skip
        - do not perform certififate mapping at all
      perform
        - try to perform certificate mapping with no client certificates
      -->
      <whenNotSsl>skip</whenNotSsl>
     <!-- Can certificate mapping fail? If set to true and it fails, no received subject will be constructed.
 -->
      <certMappingMayFail>false</certMappingMayFail>
      <!-- Can a default account be created when no account for a mapped user exists? -->
      <createDefaultAccount>false</createDefaultAccount>
  </securityProviderPreferences>
</config>
```

**Example 10: CertsMapping JAAS configuration**

```
CertsMapping{
 com.systinet.uddi.security.jaas.CertMappingLoginModule sufficient pattern="(?<!\\,\s?)EMAILADDRESS=(.+)@"
 debug=false issuer="CN=Company CA, OU=mycomp";
};
```

**Example 11: CertsMapping JAAS configuration with 2 possible issuers**

```
CertsMapping{
 com.systinet.uddi.security.jaas.CertMappingLoginModule sufficient pattern="(?<!\\,\s?)EMAILADDRESS=(.+)@"
 debug=false issuer="CN=Company CA, OU=mycomp";
 com.systinet.uddi.security.jaas.CertMappingLoginModule sufficient pattern="CN=([^,]*)" issuer="CN=Company
 CA2, OU=mycomp" debug=false;
};
```

## J2EE Server Authentication

The registry can be configured to let a J2EE application server perform authentication. Unlike Netegrity SiteMinder on page 184 and HTTP Basic on page 181, the authentication takes place for a whole registry application. To allow J2EE server authentication:

1. Create a deployment package using instructions provided in Deployment to an Application Server on page 147.

2. Modify `WEB-INF/web.xml` file of the resulted war file as follows:

   a. Change the value of context parameter `use.request.user` to `true`.

   b. Add a `login-config` element with a type of chosen J2EE authentication. Example 12 on page 190 shows a login config that will turn on `CLIENT-CERT` authentication method, which is essentially used for SSL client authentication.

      You may also add `security-constraint` element to specify a set of resources where confidentialy and/or integrity is required. Example 12 on page 190 contains a `security-constraint` that requires confidential communication between client and server for all registry resources, which typically means to allow only HTTPS in the communication with registry.

c Configure a J2EE application server for an authentication method of your choice. For SSL client authentication, this typically means to setup HTTPS transport to require client certificates and to map client certificates to user name. Consult documentation of a target J2EE application server for details.

3 Go on with deployement of a modified war file.

---

**Example 12: A fragment of web.xml**

```
<?xml version="1.0" encoding="UTF-8"?>
<web-app>
    <display-name>Registry</display-name>
...
    <context-param>
        <param-name>use.request.user</param-name>
        <param-value>true</param-value>
    </context-param>
....
<!-- Added CLIENT-CERT authentication method -->
    <login-config>
      <auth-method>CLIENT-CERT</auth-method>
    </login-config>

<!-- Added security contraint that allow to access registry only via HTTPS -->
    <security-constraint>
      <display-name>HTTPS required to access registry</display-name>
      <web-resource-collection>
        <web-resource-name>Protected Area</web-resource-name>
        <url-pattern>/*</url-pattern>
        <http-method>DELETE</http-method>
        <http-method>GET</http-method>
        <http-method>POST</http-method>
        <http-method>PUT</http-method>
      </web-resource-collection>
      <user-data-constraint>
        <description>Require confidentiality</description>
        <transport-guarantee>CONFIDENTIAL</transport-guarantee>
      </user-data-constraint>
    </security-constraint>
</web-app>
```

## Internal SSL Client Authentication Mapping in J2EE

While J2EE application authentication can be configured in many ways, some configurations can be cumbersome on some application servers. Internal SSL client authentication mapping can be easier to configure for simple deployments. This method has been tested on Tomcat 5.5 and JBOSS 4.0.5.

Internal client authentication mapping offers the same options for configuration as CertMapper described in SSL Client authentication on page 185. Installation steps:

1. Ensure that certificates are trusted by the J2EE server. Some servers have dedicated trust stores, while others use the `cacerts` java keystore file inside Java runtime. Add the certificate of the Certification Authority you are using to the server's trust store as a trusted certificate.

2. Set up your J2EE server SSL. You usually need to provide the Java trust store file with the server identity. Configure the server SSL to use the trust store by specifying file, alias and store password.

3. Set up your J2EE server to ask for or require Client Authentification.

4. Edit `web.xml` inside the deployed registry.

    - Change tag `servlet-class` to contain `com.systinet.transport.servlet.server.registry.RegistryServletTwoWaySSL`.

    - Add the CLIENT-CERT authentification method (as seen in Example 13 on page 192).

    - Add context parameters. Set the context parameter "twowayssl.use_user" to value "true".

    - Set the context parameter "twowayssl.issuer" to the X.509 Issuer DN of certificates you want to allow.

    - You can set the context parameter "twowayssl.mapping" to a regular expression for matching parts of Subject DN (by default, it is set to the name part of the email address in the email field).

    - You can set the context parameter "twowayssl.debug" to "true" for run-time information about matching.

    All context parameters that you set correspond to parameters in SSL Client authentication on page 185. For examples of these parameters, see Example 13 on page 192.

**Example 13: A fragment of web.xml**

```
<login-config>
  <auth-method>CLIENT-CERT</auth-method>
</login-config>

<context-param>
  <param-name>twowayssl.use_user</param-name>
  <param-value>true</param-value>
</context-param>
<context-param>
  <param-name>twowayssl.issuer</param-name>
  <param-value>C=CZ, ST=Czech, L=Prague, O=Example company, OU=Security Team, CN=CA</param-value>
</context-param>
```

## Disabling Normal Authentication

After you implement a custom authentication mechanism, such as a client SSL certificate, you may want to disable normal authentication. Disable normal authentication by removing permission for the `get_authToken` UDDI API from the `system#everyone` group. (The `get_authToken` API has this permission by default.)

To remove permission for the `get_authToken` UDDI API from the `system#everyone` group:

1. Log into the WEB UI using your administrative account and open the **Management** tab.

2. Open the **Permissions** page.

3. Select the **Group** radio button.

4. Edit the group `system#everyone` and remove the following permissions (Permission type / Api name / Actions):

   - org.systinet.uddi.security.permission.ApiUserPermission / org.systinet.uddi.client.v3.UDDI_Security_PortType / get_authToken,

   - org.systinet.uddi.security.permission.ApiUserPermission / org.systinet.uddi.client.v2.Publish / get_authToken,

   - org.systinet.uddi.security.permission.ApiUserPermission / org.systinet.uddi.client.v1.PublishSoap / get_authToken.

➤ Remember that you will not be able to log in to WEB user interfaces with the normal login dialog after you disable normal authentication.

## Consoles Configuration

In this section, we will show you how to configure HTTP Basic or Netegrity Siteminder authentication for both Registry Console and Business Service Console. The configuration of consoles is very similar to the configuration of other endpoints.

➤ **Referring to jar packages**

The file path `REGISTRY_HOME/app/uddi/web.jar/WASP-INF/package.xml` means the `/WASP-INF/package.xml` inside the `jar` package `REGISTRY_HOME/app/uddi/web.jar`.

For the Registry Console, modify the file `REGISTRY_HOME/app/uddi/web.jar/WASP-INF/package.xml` with the following:

```
<service-endpoint path="/web" name="WebUIEndpoint1"
     service-instance="tns:WebUI" type="raw" other-methods="get"
     accepting-security-providers="HttpBasic"/>
<service-endpoint path="/web/*" name="WebUIEndpoint2"
     service-instance="tns:WebUI" type="raw" other-methods="get"
     accepting-security-providers="HttpBasic"/>
```

If you want to set Netegrity SiteMinder provider, use `accepting-security-providers="Siteminder"`

For the Business Service Console do the same in the file `REGISTRY_HOME/app/uddi/bsc.jar/WASP-INF/package.xml`

We just set authentication providers for both HTTP and HTTPS protocols. Now, we must specify which protocol consoles will be using for user authentication. The default registry configuration is to use HTTP for browsing and searching. HTTPS is used for publishing. To avoid displaying the login dialog twice, (for the first time when accessing via HTTP then the second time when accessing via HTTPS), modify the configuration to use only one protocol.

For the Registry Console, modify url and secureUrl elements in the file `REGISTRY_HOME/app/uddi/conf/web.xml` to have the same value:

```
<url>https://servername:8443</url>
<secureUrl>https://servername:8443</secureUrl>
```

For the Business Service Console, make the same change in the `REGISTRY_HOME/app/uddi/bsc.jar/conf/web.xml` file.

## Outgoing Connections Protected with SSL Client Authentication

HP SOA Registry Foundation can be the client in SSL Client Authentication. This allows the following scenarios:

- SOAP Client - This is commonly used in following scenarios
  - Approval process
  - Replications
  - Cluster

  Approval process, Replications, or Cluster functionality connects via SOAP endpoints. Deployment in those scenarios does not usually need SSL protection because all registries are located in a dedicated internal network, but HP SOA Registry Foundation can be configured to use client SSL certificates in those scenarios. When registry on the other side is protected with Client SSL Authentication and plain HTTP connection is not allowed, your registry has to connect with an SSL Certificate. This can be achieved by configuring `destinationConfig` inside security.xml. See the documentation for sslTool in the Administration Guide, which describes the tool for SSL related tasks and `destinationConfig`. Destination config allows you to specify different certificates for different endpoints by either specifying the SOAP stub or the URL prefix.

- HTTPS protected resources
  - WSDL
  - XML
  - XSD
  - XSLT

Resources which are downloaded for processing by HP SOA Registry Foundation can be behind HTTPS protected by Client SSL Authentication. HP SOA Registry Foundation can be set up so that these connections use a specified certificate. The certificate has to be present as a key entry inside `pstore.xml`. This key entry is identified by its alias. The alias and password has to be specified in `REGISTRY_HOME/app/uddi/conf/security.xml` inside `security` which is contained in `config` as shown in example:

```
<sslConnectionAlias>myAliasName</sslConnectionAlias>
<sslConnectionPassword_coded>9vTJ9GKyjIURFY0qrWvADA==</sslConnectionPassword_coded>
```

To get encoded password from clear-text password, use `REGISTRY_HOME/bin/sslTool(.bat or .sh)` with "encrypt" option.

## Migration

Migration is used to migrate data from one database to another. You can migrate data during installation or during setup. Often users evaluate HP SOA Registry Foundation using the preconfigured Hypersonic SQL database, and migrate data to another database after evaluation.

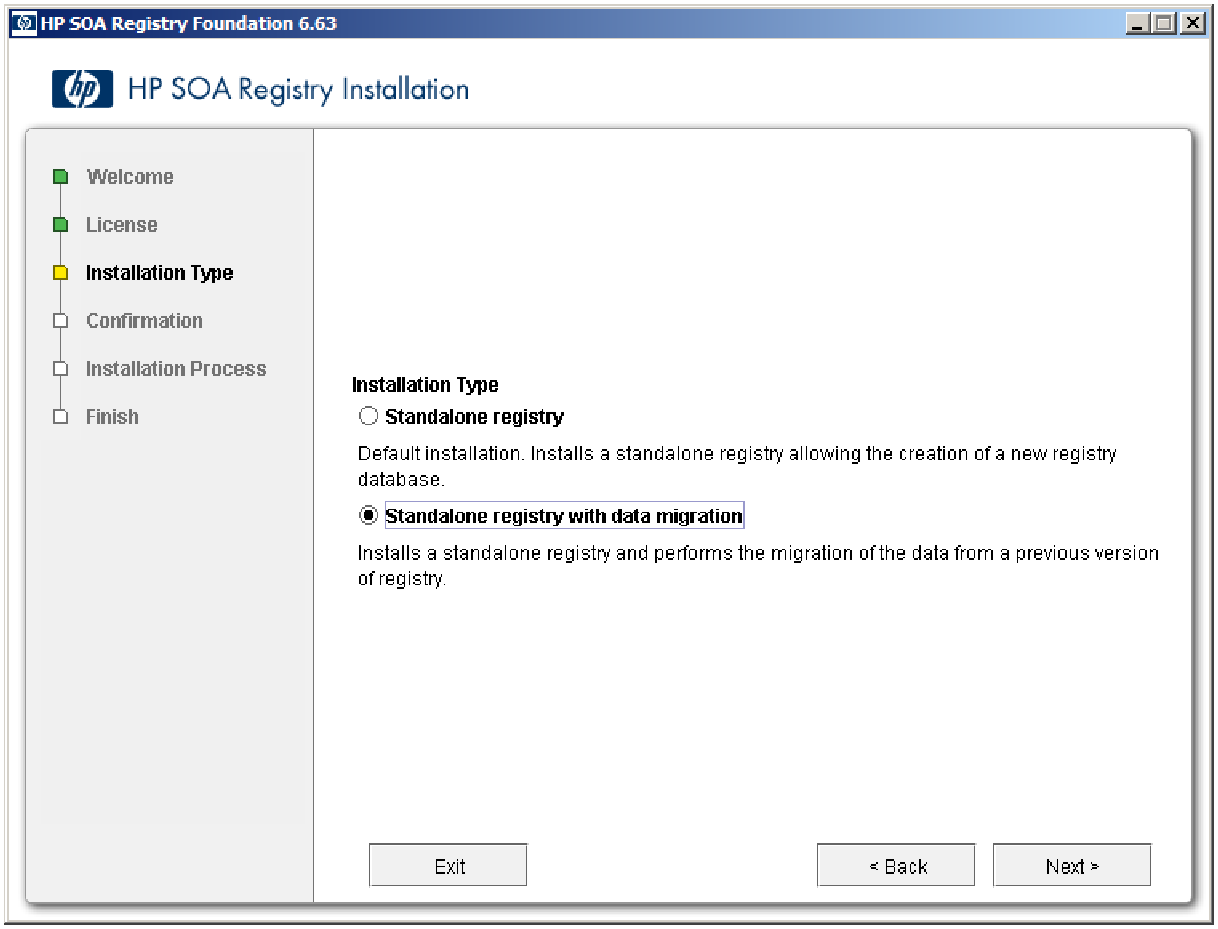
Demo data are not migrated. Internal UDDI data such as built-in T-Models are not migrated since they are avaiable in any installation by default. The list of such skipped entities is inside `migration*.xml` in `app\uddi\conf` directory which you may view before migration if you use Migration After Installation on page 198.

### Migration During Installation

To migrate data during installation:

1 Select **Standalone registry with data migration** as shown in Figure 50.

**Figure 50. Standalone Installation with Migration**



Installation Type

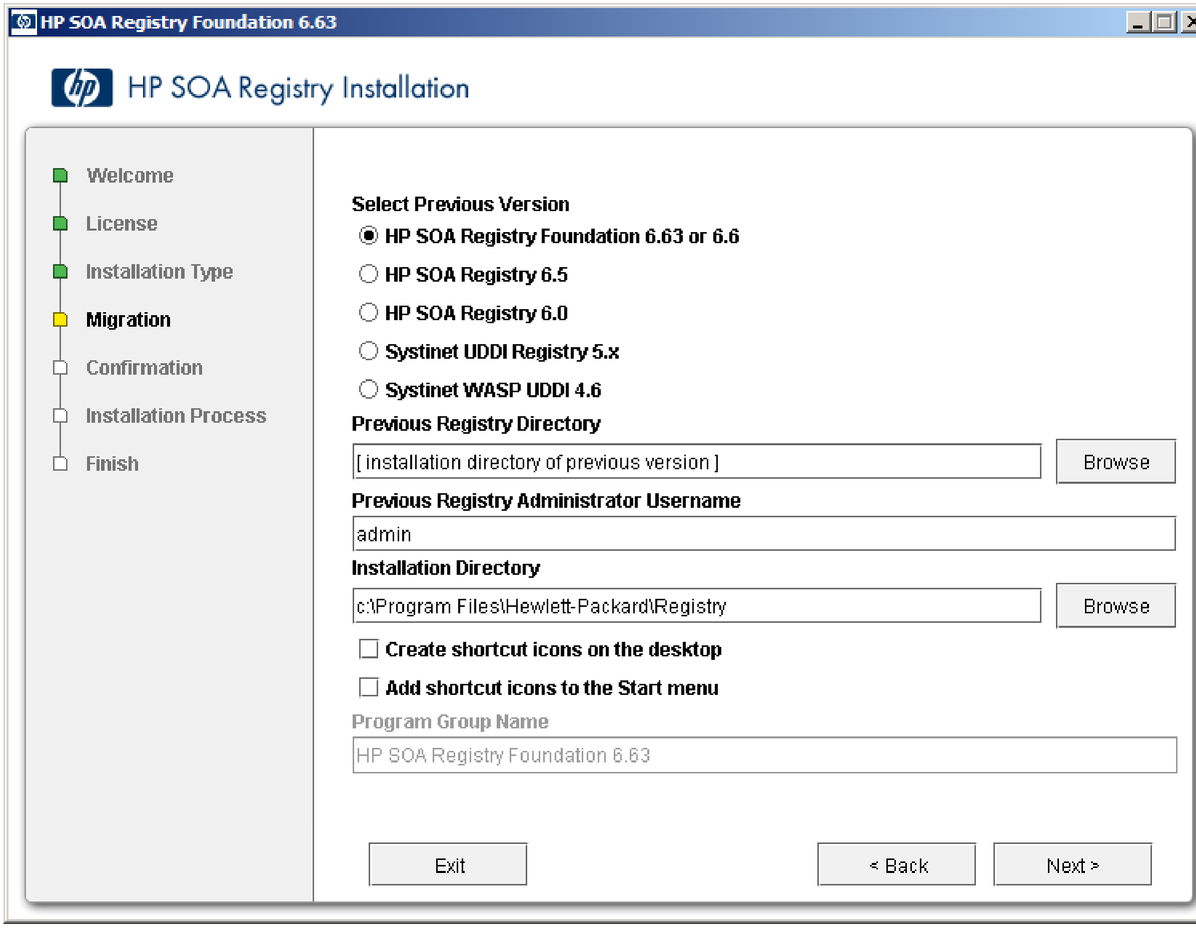
○ Standalone registry

Default installation. Installs a standalone registry allowing the creation of a new registry database.

● Standalone registry with data migration

Installs a standalone registry and performs the migration of the data from a previous version of registry.

2 Click **Next**. This returns the Migration panel shown below.



Select Previous Version

[✓ HP SOA Registry Foundation 6.63 or 6.6]

HP SOA Registry 6.5

HP SOA Registry 6.0

Systinet UDDI Registry 5.x

Systinet WASP UDDI 4.6

Previous Registry Directory: [ installation directory of previous version ]

Previous Registry Administrator Username: admin

Installation Directory: c:\Program Files\Hewlett-Packard\Registry

☐ Create shortcut icons on the desktop

☐ Add shortcut icons to the Start menu

Program Group Name: HP SOA Registry Foundation 6.63

3 Fill the following properties:

- **Previous Registry Version** - HP SOA Registry version from which you are migrating data
- **Previous Registry Directory** - the directory containing the previous installation of HP SOA Registry Foundation. The existing data will be migrated from it.

- **Previous Registry Administrator Username** - name of the user having rights to retrieve data from the previous version Registry. By default, only administrator can migrate all data including private data.
- **Installation directory** - select the directory where HP SOA Registry Foundation will be installed.

4 Click **Next** and continue your Standalone installation as described in Server Settings on page 60. During the installation process, all data will be migrated from the specified previous HP SOA Registry Foundation installation to the current installation.

## Migration After Installation

Migration is additive. It does not delete entities that are already present in HP SOA Registry Foundation and not present in migration source.

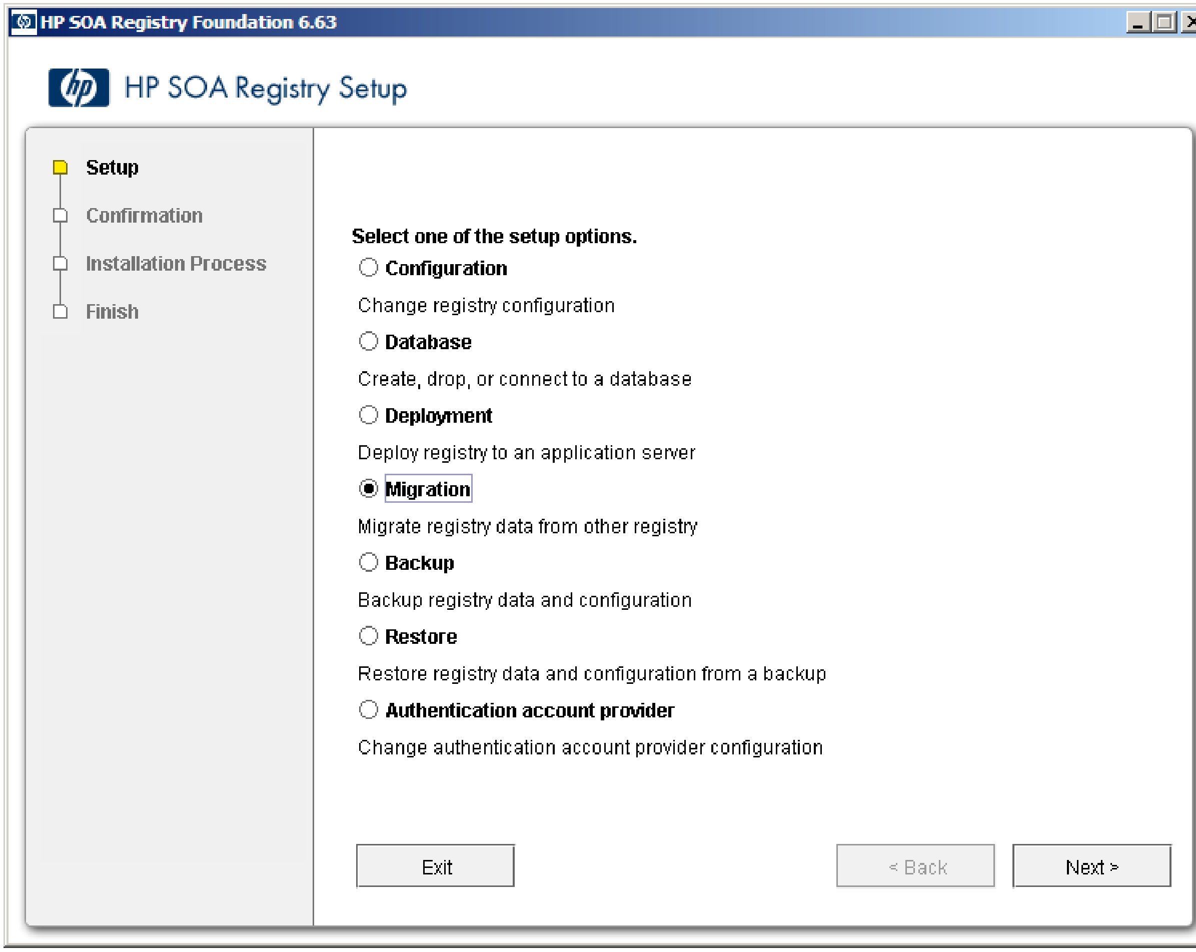
To migrate data after installation, use the Setup tool described in Reconfiguring After Installation on page 72. Briefly:

1 Launch the Setup tool by issuing the following command from the `bin` subdirectory of your installation:

| | |
|---|---|
| Windows: | setup.bat |
| UNIX: | ./setup.sh |

See command-line parameters in Setup on page 71.

2 Select the **Migration** tool on first panel:



Select one of the setup options.

( ) Configuration

Change registry configuration

( ) Database

Create, drop, or connect to a database

( ) Deployment

Deploy registry to an application server

[✓ Migration]

Migrate registry data from other registry

( ) Backup

Backup registry data and configuration

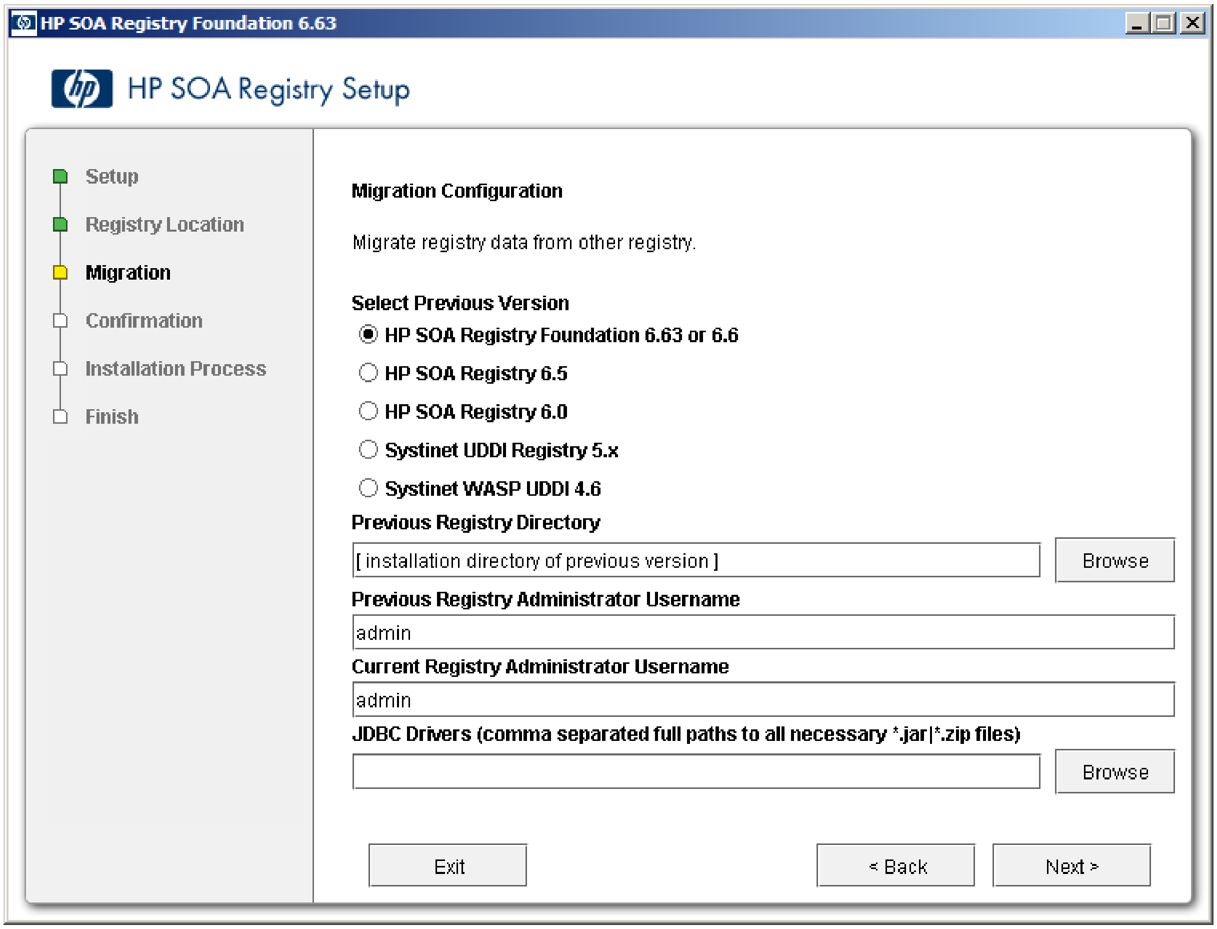
( ) Restore

Restore registry data and configuration from a backup

( ) Authentication account provider

Change authentication account provider configuration

3 Fill in the following properties:



Migration Configuration

Migrate registry data from other registry.

Select Previous Version

- [✓ HP SOA Registry Foundation 6.63 or 6.6]
- HP SOA Registry 6.5
- HP SOA Registry 6.0
- Systinet UDDI Registry 5.x
- Systinet WASP UDDI 4.6

Previous Registry Directory: [ installation directory of previous version ]

Previous Registry Administrator Username: admin

Current Registry Administrator Username: admin

JDBC Drivers (comma separated full paths to all necessary *.jar|*.zip files):

- **Previous Registry Version** - HP SOA Registry version from which you are migrating data
- **Previous Registry Directory** - the directory in which the previous HP SOA Registry Foundation is installed. The existing data will be migrated from it.
- **Previous Registry Administrator Username** - name of the user having rights to retrieve data from the previous version Registry.

- **Current Registry Administrator Username** - name of the user having rights to save UDDI structure keys. By default, only administrator can migrate all data including private data.
- **JDBC drivers** - Set path to the directory in which the `.jar` (`.zip`) of JDBC drivers is located.

Enter this path only if the previous HP SOA Registry Foundation installation is configured with a different type of database than the current one.

## Backup

Backup functionality allows you to save the HP SOA Registry Foundation data and configuration to a filesystem directory. Later the backup data can serve for full restore of HP SOA Registry Foundation data and configuration.

What is subject to backup?

- All registry data stored in the database.
- Configuration files.
- HP SOA Registry Foundation libraries and JSP files.

The HP SOA Registry Foundation server must be shut down before you start backup or restore operations.

Restoration is additive. It does not delete entities that are already present in HP SOA Registry Foundation and not present in the data source. If you need to restore and don't want to retain any current data, you must clean the database which can be done via: drop schema, create schema during setup. For details, see Database Installation on page 91

### Backup HP SOA Registry Foundation

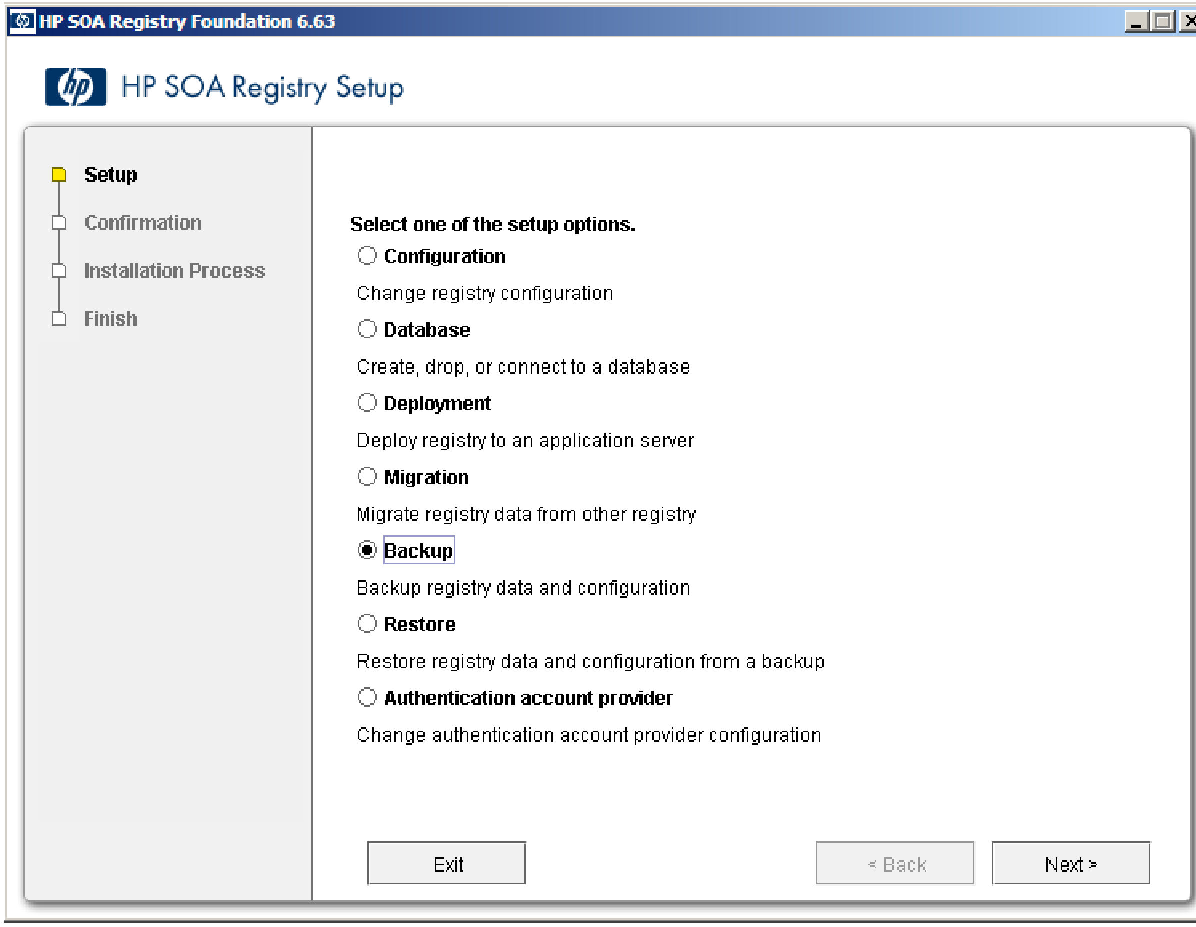
To back up HP SOA Registry Foundation data:

1 Use the Setup tool and choose **Backup**. To run the Setup tool, execute the following script from the `bin` subdirectory of your installation:

| | |
|---|---|
| Windows: | setup.bat |
| UNIX: | ./setup.sh |

For more information, see command-line parameters in Setup on page 71.

**Figure 51. Setup Tool - Select Backup**


HP SOA Registry Foundation 6.63

HP SOA Registry Setup

Select one of the setup options.

Configuration
Change registry configuration

Database
Create, drop, or connect to a database

Deployment
Deploy registry to an application server

Migration
Migrate registry data from other registry

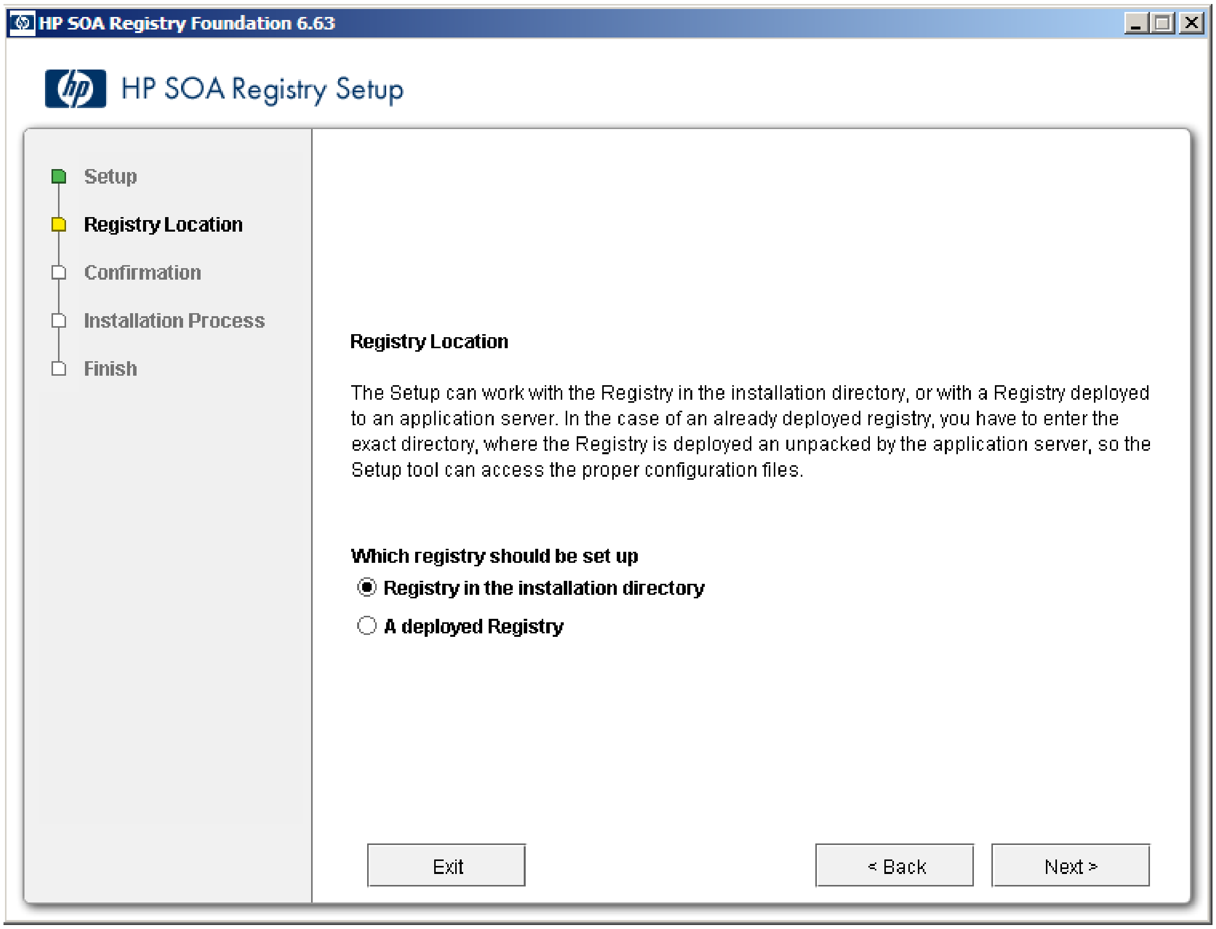
[✓ Backup]
Backup registry data and configuration

Restore
Restore registry data and configuration from a backup

Authentication account provider
Change authentication account provider configuration

2 Select whether you want to use HP SOA Registry Foundation that has been deployed (second choice) or not (first choice).

Figure 52. Setup



Registry Location

The Setup can work with the Registry in the installation directory, or with a Registry deployed to an application server. In the case of an already deployed registry, you have to enter the exact directory, where the Registry is deployed an unpacked by the application server, so the Setup tool can access the proper configuration files.

Which registry should be set up

[✓ Registry in the installation directory]

A deployed Registry

3 Specify the location of the backup directory. You can check which items you wish to back up as shown in Figure 53.

Item description.

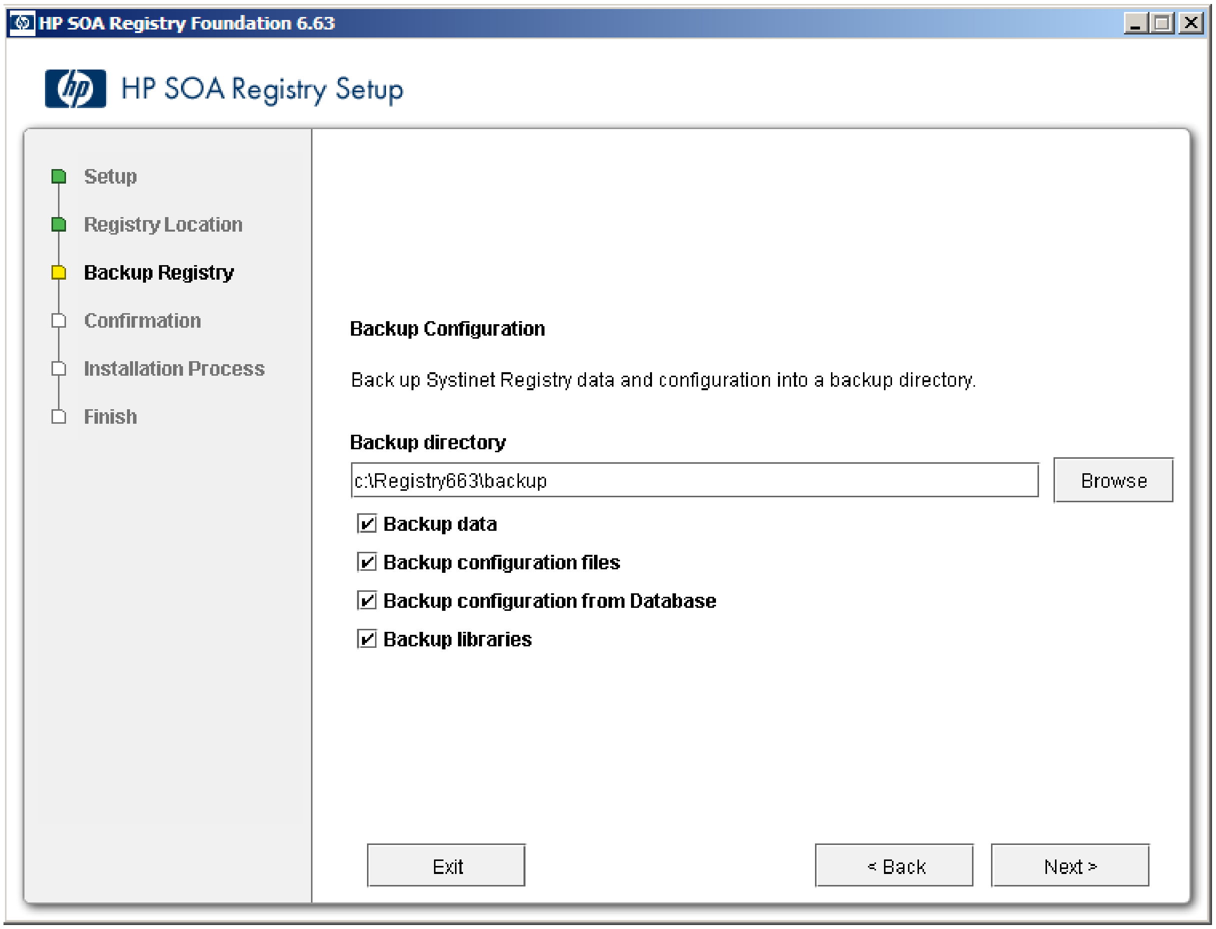
a. **Backup data** makes a backup of UDDI data such as different kind of entites and taxonomies.

b. **Backup configuration files** makes a backup of configuration files from `REGISTRY_HOME/app/uddi/conf` and `REGISTRY_HOME/work/uddi/bsc.jar/conf`.

c. **Backup configuration from Database** makes a backup of configuration files and their history as they are stored in database. See Configuration in Database on page 383.

d. **Backup libraries** makes a backup of `bsc.jar` and `web.jar` from both `app` and `work` directories. These files and directories contain UI customizations and modifications.

**Figure 53. Setup Tool - Backup**



Backup Configuration

Back up Systinet Registry data and configuration into a backup directory.

Backup directory

c:\Registry663\backup

- [✓] Backup data
- [✓] Backup configuration files
- [✓] Backup configuration from Database
- [✓] Backup libraries

## Restore HP SOA Registry Foundation

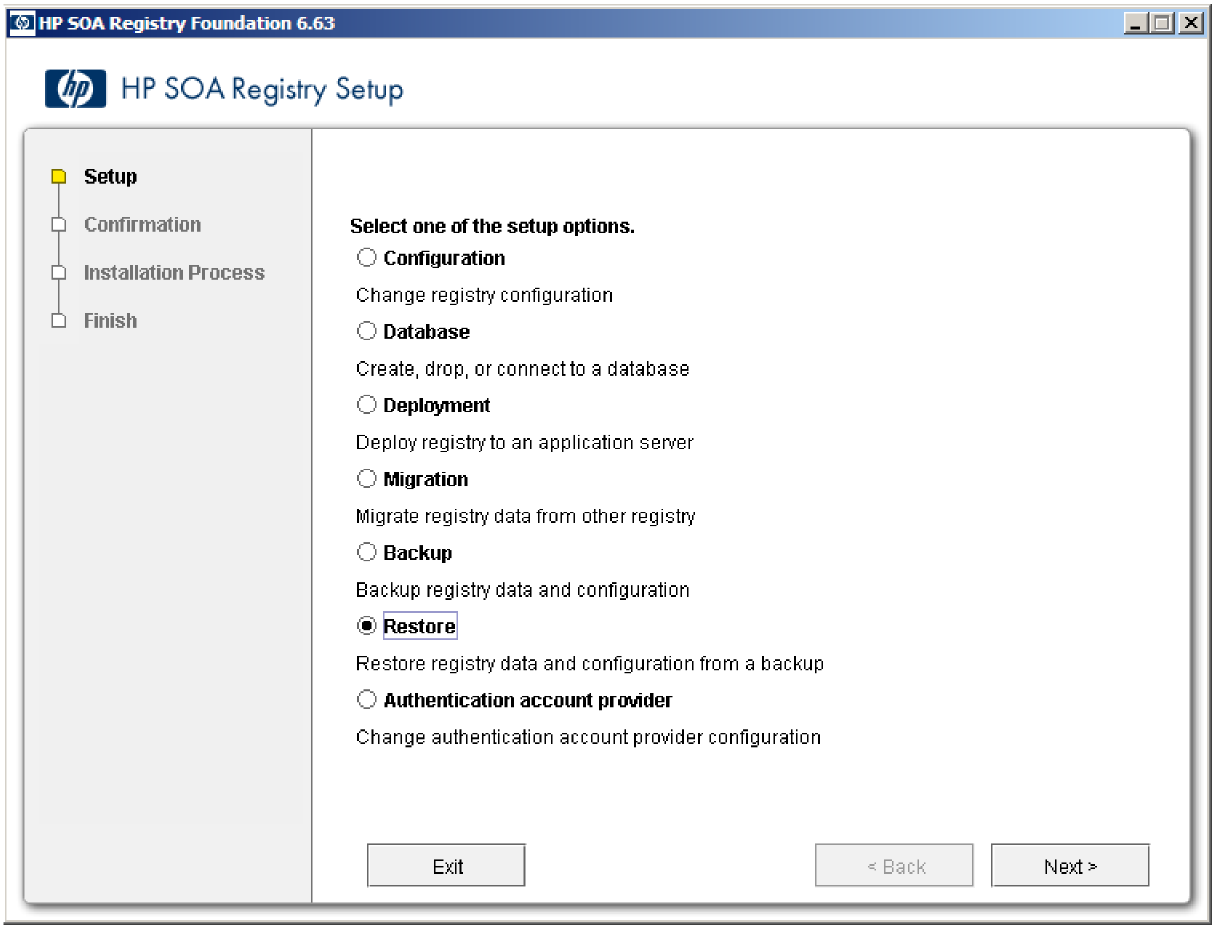
To restore registry data and configuration from a backup:

1. Use the Setup tool and choose **Restore**. To run the Setup tool, execute the following script from the `bin` subdirectory of your installation:

| | |
|---|---|
| Windows: | setup.bat |
| UNIX: | ./setup.sh |

See command-line parameters in Setup on page 71.

**Figure 54. Setup Tool - Select Restore**



Select one of the setup options.

○ Configuration

Change registry configuration

○ Database

Create, drop, or connect to a database

○ Deployment

Deploy registry to an application server

○ Migration

Migrate registry data from other registry

○ Backup

Backup registry data and configuration

[✓ Restore]

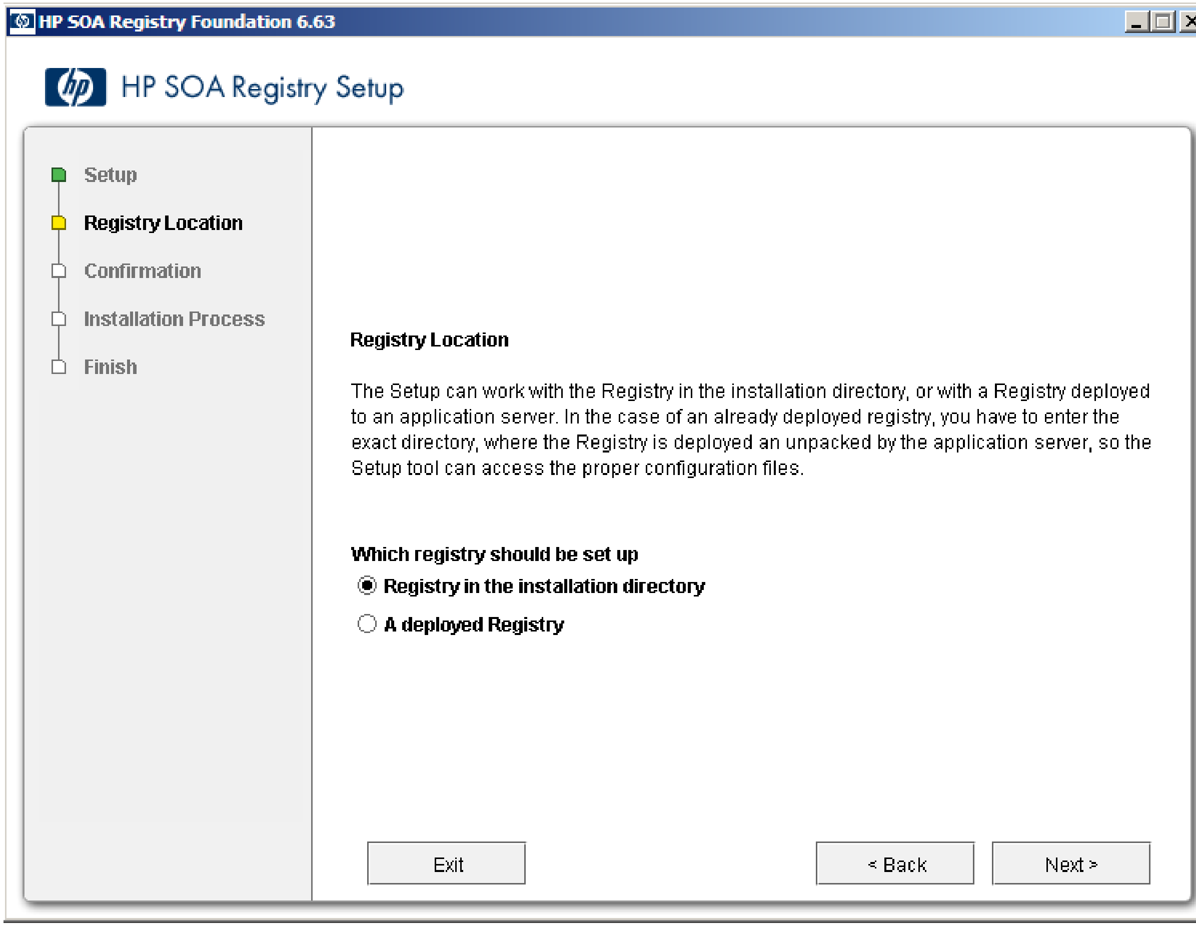
Restore registry data and configuration from a backup

○ Authentication account provider

Change authentication account provider configuration

2 Select whether you want to use HP SOA Registry Foundation that has been deployed (second choice) or not (first choice).

**Figure 55. Setup**



**Registry Location**

The Setup can work with the Registry in the installation directory, or with a Registry deployed to an application server. In the case of an already deployed registry, you have to enter the exact directory, where the Registry is deployed an unpacked by the application server, so the Setup tool can access the proper configuration files.

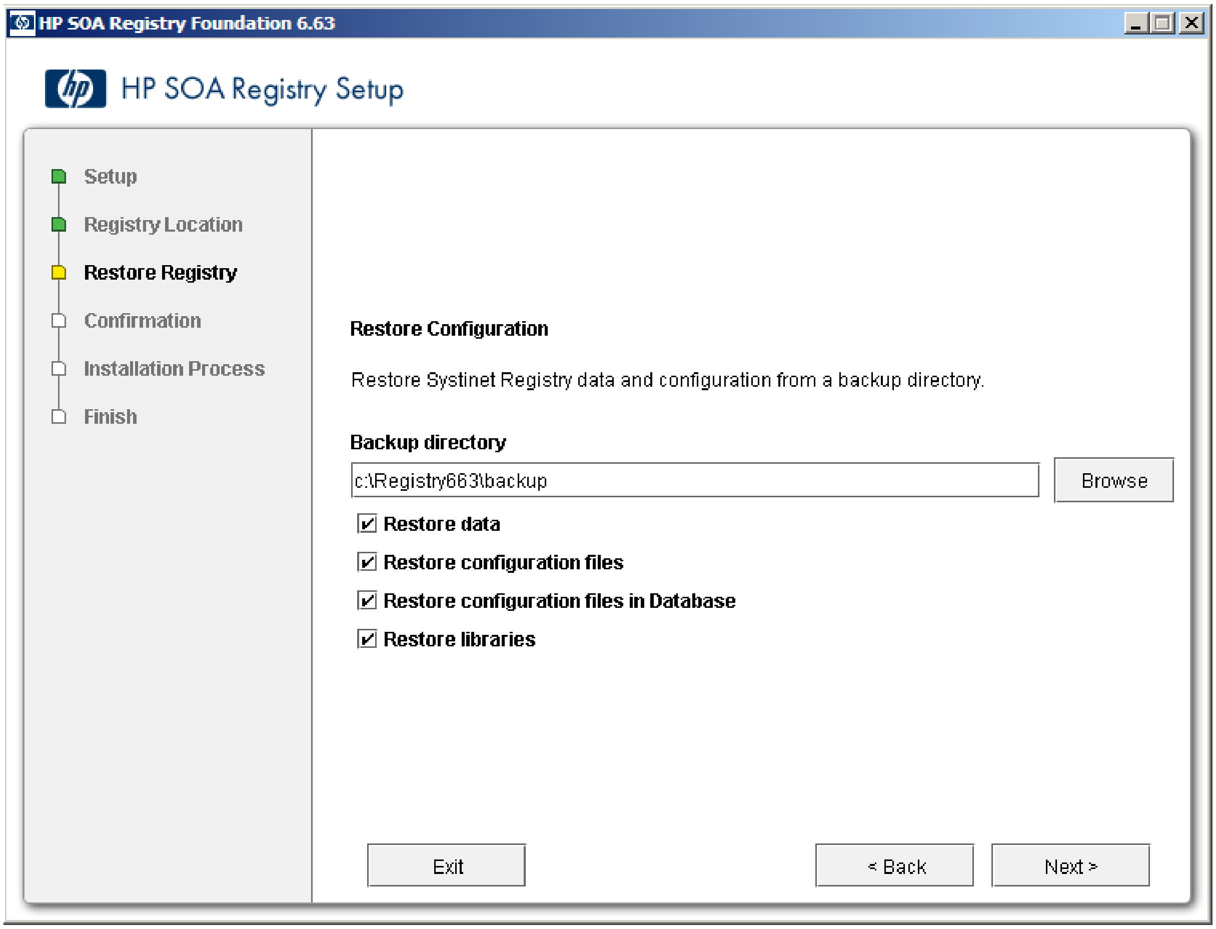
**Which registry should be set up**

[✓ Registry in the installation directory]

A deployed Registry

3 Specify the location of backup directory and check the items you wish to restore. The restore will work only for items that have been backed up previously.

**Figure 56. Setup Tool - Restore from Backup**



Restore Configuration

Restore Systinet Registry data and configuration from a backup directory.

Backup directory: c:\Registry663\backup

- [✓] Restore data
- [✓] Restore configuration files
- [✓] Restore configuration files in Database
- [✓] Restore libraries

## NT Service Support

The HP SOA Registry Foundation server can be run as a service on Windows 2000/XP. Support for NT service installation is installed by default on Windows servers, and cannot be installed on UNIX machines.

The support is a set of executable files that let you install, start, stop, and uninstall HP SOA Registry Foundation as an NT service.

The server log is by default written into the log file. The output to the NT log can be manually configured.

## Installation

When the HP SOA Registry Foundation installation is complete, the `REGISTRY_HOME\bin` directory contains these four batch files related to NT service support:

- `InstallService.bat`
- `UnInstallService.bat`
- `StartService.bat`
- `StopService.bat`

After installing HP SOA Registry Foundation with NT Service support, the registry server is *not* installed as an NT service. It must be installed manually, as follows.

If you want to customize the NT service first (set-up the JVM max memory, add files to `classpath`, etc.), please read the Customizing section now.

Make sure that the `JAVA_HOME` environment variable points to your JDK and run the `InstallService.bat` command.

When the installation is finished, the name of the installed NT service is printed to the screen. The default name is HP SOA Registry Foundation.

You may need extra permissions to install a new service into your OS. To determine whether you have these permissions, please consult your system administrator.

If the installation fails, read the Customizing section. If it does not contain the solution, contact Systinet support [http://www.systinet.com/support].

## Starting and Stopping

Once the HP SOA Registry Foundation server NT service is installed, start it as you would any NT service, by selecting **Control Panel**> **Administrative Tools** > **Services** > **start**.

As a shortcut, you can use the `StartService.bat` command in the `REGISTRY_HOME\bin` directory.

➤ You may need extra permissions to start or stop an NT service in your OS. To determine whether you have these permissions, please consult your system administrator.

To stop the server, use either the system tools or the `StopService.bat` command.

➤ For security reasons, you cannot use `serverstop.bat` or `server.bat stop` to stop a HP SOA Registry Foundation server that is running as an NT service.

## Logging

By default, the logs of the server are written into the `REGISTRY_HOME\log\registry_NTService.log` file. The default maximum size of the log file is 1MB. When the file is full, a backup is created and the content of the file is cleaned. By default, 3 backups are kept and older backups are deleted.

### Logging Customization

HP SOA Registry Foundation uses the Log4J library for logging. You can manually change its logging behavior. The configuration is stored in the file `REGISTRY_HOME\conf\log4j_NTservice.config`. You can change the log output, message priority and other settings in this file as follows:

### Message Priority Settings

To change the message priority from INFO to ERROR, comment out the following lines in the `config` file:

```
log4j.category.com.systinet.wasp.events=INFO,R
log4j.additivity.com.systinet.wasp.events=false

log4j.category.com.systinet.wasp.events=INFO,ntlog
log4j.additivity.com.systinet.wasp.events=false
```

## Log File Properties

To change the log file properties, change the Rolling File appender settings:

```
log4j.appender.R.File=log/registry_NTService.log
log4j.appender.R.MaxFileSize=1024KB
log4j.appender.R.MaxBackupIndex=3
```

## Switching to NT Log

To switch logging from file to NT log, comment out the lines:

```
log4j.category.com.systinet.wasp.events=INFO,R
log4j.additivity.com.systinet.wasp.events=false
log4j.category.com.systinet.wasp.errors=ERROR,R
log4j.additivity.com.systinet.wasp.errors=false
```

*and* uncomment the lines:

```
#log4j.category.com.systinet.wasp.events=INFO,ntlog
#log4j.additivity.com.systinet.wasp.events=false
#log4j.category.com.systinet.wasp.errors=ERROR,ntlog
#log4j.additivity.com.systinet.wasp.errors=false
```

from this section:

```
# Assigning appenders to categories
# (using rolling file appender by default)
log4j.category.com.systinet.wasp.events=INFO,R
log4j.additivity.com.systinet.wasp.events=false
log4j.category.com.systinet.wasp.errors=ERROR,R
log4j.additivity.com.systinet.wasp.errors=false

# Uncomment next line if you want use NT Event Log
# for logging of error messages
#log4j.category.com.systinet.wasp.events=INFO,ntlog
#log4j.additivity.com.systinet.wasp.events=false
#log4j.category.com.systinet.wasp.errors=ERROR,ntlog
#log4j.additivity.com.systinet.wasp.errors=false
```

so that the section reads:

```
# Assigning appenders to categories
# (using rolling file appender by default)
#log4j.category.com.systinet.wasp.events=INFO,R
#log4j.additivity.com.systinet.wasp.events=false
#log4j.category.com.systinet.wasp.errors=ERROR,R
```

```
#log4j.additivity.com.systinet.wasp.errors=false

# Uncomment next line if you want use NT Event Log
# for logging of error messages
log4j.category.com.systinet.wasp.events=INFO,ntlog
log4j.additivity.com.systinet.wasp.events=false
log4j.category.com.systinet.wasp.errors=ERROR,ntlog
log4j.additivity.com.systinet.wasp.errors=false
```

We recommend that you log only errors to the NT log.

The `REGISTRY_HOME\lib\NTEventLogAppender.dll` file must be copied into the system PATH if you want to use the NT event log for logging.

### Using other Log4J Appenders

Rolling File and NTLog are the two default appenders. You can choose any Log4J appender that suits your needs. To add custom classes to the HP SOA Registry Foundation NT service classpath, please see the Customizing section.

You must restart the HP SOA Registry Foundation NT service to put the changes into effect.

For more information about Log4J and its settings, please visit Apache/Jakarta's Log4j Project website [http://jakarta.apache.org/log4j].

## Customizing

You can manually set up the name "HP SOA Registry Foundation NT Service" and the JVM parameters that are used to start HP SOA Registry Foundation as an NT service. To customize logging, please visit the previous section, Logging.

All customizable files in the following instructions are located in the `REGISTRY_HOME\bin` directory.

All the following changes require reinstallation of the HP SOA Registry Foundation NT Service. Uninstall it first, make your modifications and reinstall the service.

## NT Service Name Change

To change the service name:

1. Uninstall the existing service by running **UnInstallService.bat**.

2. Manually edit the files

   - `UnInstallService.bat`
   - `InstallService.bat`
   - `StartService.bat`
   - `StopService.bat`

3. Change the system variable `NT_SERVICE_NAME`, so the row with the variable resembles:

   ```
   set NT_SERVICE_NAME=HP SOA Registry Foundation
   ```

4. Install your NT service with its new name by running **InstallService.bat**.

5. Start the new service by running **StartService.bat**.

## JVM Startup Parameters

The parameters of the Java Virtual Machine are set up during the installation of the NT service. If you modify the parameters, you must reinstall the NT service to put the changes into effect. To modify the parameters of the NT service, open `InstallService.bat` in a text editor and do the following:

- To change the maximum size of available memory, change the value of the `JVM_MEM` variable, with a command like **set JVM_MEM=-Xmx256m**.

- To add custom files to the classpath, edit the `RegistryService.exe` parameters. These are in the line **"-Djava.class.path=%REGISTRY_HOME%\lib\wasp.jar"**.

### HP SOA Registry Foundation deployed to Application Server

Systinet does not support installation of deployed HP SOA Registry Foundation as an NT Service. For more information, please see the documentation of your application server provider. However, any Java application can be installed as an NT Service with Systinet's NT service solution. Please contact http://www.systinet.-com/support if you need to run a deployed HP SOA Registry Foundation server as an NT service.

### Uninstallation

To uninstall the HP SOA Registry Foundation server NT service, run `UnInstallService.bat` from the `REGISTRY_HOME\bin` directory. The uninstaller first tries to stop the NT service. It then removes the NT service from your OS.

## Running in Linux

### Using the `syslog` Daemon with HP SOA Registry Foundation

The log4j system used in HP SOA Registry Foundation can be configured to send log messages to the `syslog` daemon. In order to utilize this feature, your system must be configured as follows:

1 Change `log4j` in `REGISTRY_HOME/conf/log4j.config`. First add a `syslog` appender, as shown in Example 14 on page 216. Note the following properties in particular:

- `syslogHost` - Set to host name of the computer where `syslog` is running.
- `Facility` - HP SOA Registry Foundation log message facility recognized by `syslog`.

**Example 14: log4j.config--syslog Appender**

```
# Appender to syslog
log4j.appender.syslog=org.apache.log4j.net.syslogAppender
log4j.appender.syslog.syslogHost=localhost
log4j.appender.syslog.Facility=local6
log4j.appender.syslog.layout=org.apache.log4j.PatternLayout
log4j.appender.syslog.layout.ConversionPattern=%p: %c{2} - %m%n
```

Then add `syslog` to the value of the property `log4j.category.com.systinet.wasp.events` under `# event monitoring`, as follows:

**Example 15: log4j.config--Event Monitoring**

```
# event monitoring
log4j.category.com.systinet.wasp.events=INFO,eventLog,syslog
```

2 Set the `syslogd` configuration to recognize log messages from HP SOA Registry Foundation. Implicitly, HP SOA Registry Foundation sends log messages to `syslog` under the facility `local6`. Therefore, modify the `/etc/syslog.conf` file by adding the following line of text:

**local6.* /var/log/registry.log**

HP SOA Registry Foundation will now log messages of all priorities into the file `/var/log/registry.log`. You should create this file now with appropriate permissions (otherwise `syslogd` will create it for you automatically with default permissions, which may not be suitable for you).

3 Your `syslog` daemon must be started with remote logging enabled (the `-r` command line option). To make sure that:

- `syslogd` is running, use the **pgrep syslogd** command.
- remote logging is enabled, use the **netstat -l** command (`syslog`'s udp port is 514).

The `local6` facility is not mandatory in any way. You may use other `localX` facilities instead.

## Running HP SOA Registry Foundation as a UNIX Daemon

HP SOA Registry Foundation can be forced to start as a system daemon using the script `REGISTRY_HOME/etc/bin/registry.sh`. This script can be renamed `registry` as per UNIX conventions. The directions for using this script follow.

1 Tailor the service script as needed. The meaning of variables is shown in Table 2.

**Table 2. Variables in the HP SOA Registry Service Script**

| Name of variable in `registry` service script | Description | Default value |
|---|---|---|
| `REGISTRY_HOME` | Home directory of HP SOA Registry Foundation | HP SOA Registry Foundation Installation directory. |
| `JAVA_HOME` | Home directory of Java | None. This variable must be set manually. |
| `REGISTRY_USER` | User under whom the HP SOA Registry server should run. If this is set to root, it will be changed to "nobody". | Determined during runtime according to the user who owns the `REGISTRY_HOME` directory. If the user is root, this value reverts to "nobody". |
| `TIMEOUT` | Number of seconds the system waits for HP SOA Registry to successfully start up. | 60 seconds. |

2 Rename the script `registry` (without the `.sh` extension) and save it in the `/etc/init.d/` directory.

3 (optional) To start HP SOA Registry Foundation automatically in the appropriate run-level, create `SXXregistry` and `KXXregistry` symbolic links in the appropriate `/etc/rcX.d/` directory.

Now you may start and stop HP SOA Registry Foundation using the installed script. You can invoke this script directly or by using specific OS tools. For example, on RedHat, by using the **redhat-config-services** command.

The parameters of the script are shown in Table 3.

**Table 3. Parameters of `init.d` Scripts**

| Parameter | Function |
|---|---|
| *`start`* | Starts HP SOA Registry Foundation |
| *`stop`* | Stops HP SOA Registry Foundation |
| *`restart`* | Restarts HP SOA Registry Foundation |
| *`condrestart`* | Restarts HP SOA Registry Foundation only if it is already running |
| *`status`* | Displays whether HP SOA Registry Foundation is running or not |

The provided startup script may be run by the root user. The script uses the **su** command to run as `REGISTRY_USER`.

## Uninstallation

### Windows

1 If you installed HP SOA Registry Foundation as NT service, uninstall it by executing script **REGISTRY_HOME\bin\UninstallService.bat**. See more information on NT Service Support on page 210.

2 Remove Icons and Start menu items on Windows platform.

3 Drop database manually via the Setup tool. Setup should automatically detect the current configuration of the database. See Reconfiguring After Installation on page 72.

4 Delete installation directory of HP SOA Registry Foundation.

### Linux

1 If you installed HP SOA Registry Foundation as Linux daemon, remove the `registry` files from `/etc/init.d`. Remove also links `KXXregistry` and `SXXregistry` from appropriate directory `/etc/rcX.d`. Unregister the daemon by system tools.

2 Drop database manually via the Setup tool. Setup should automatically detect the current configuration of the database. See Reconfiguring After Installation on page 72.

3 Delete installation directory of HP SOA Registry Foundation.

# 3 User's Guide

The HP SOA Registry Foundation User's Guide is mainly focused on the web user interface. The users to whom this guide is addressed are those who query the registry or publish to it using this interface as opposed to accessing the registry over SOAP. It is comprised of the following sections:

**Introduction to HP SOA Registry Foundation**

This section is a brief intoduction to HP SOA Registry Foundation including basic concepts of UDDI specifications.

**Registry Consoles**

This section presents both Business Service Console and Registry Console

**Demo Data Description**

The HP SOA Registry Foundation's Demo Data chapter describes the business domain and UDDI data structures used in the HP SOA Registry Foundation Demo Suite and both registry consoles.

**Advanced Topics**

**Access Control Principles**

Describes principles of permissions and access control to UDDI data structures.

**Publisher-Assigned Keys**

Under UDDI v3, users may assign alpha-numeric keys to structures rather than having these keys automatically generated by the registry (as was the case under UDDI v1 and v2).

**Range Queries**

HP SOA Registry Foundation's range queries functionality allows you to search UDDI entities with the ability to use comparative operators (>, <).

**Taxonomy: Principles, Creation and Validation**

This section gives you a brief overview of taxonomy classification in HP SOA Registry Foundation

**Registry Console Reference**

Describes the Registry Console and basic tasks you can perform with it.

**Signer Tool**

Allows the user to digitally sign published UDDI structures and validate digital signatures.

## Introduction to HP SOA Registry Foundation

HP SOA Registry Foundation is a fully V3-compliant implementation of the UDDI (Universal Description, Discovery and Integration) specification, and is a key component of a Service Oriented Architecture (SOA). A UDDI registry provides a standards-based foundation for locating services, invoking services and managing metadata about services (security, transport or quality of service). A UDDI registry can store and provide these metadata using arbitrary categorizations. These categorizations are called taxonomies.

This introduction has the following sections:

- UDDI's Role in the Web Services World - UDDI Benefits on page 222
- Typical Application of a UDDI Registry on page 223
- Basic Concepts of the UDDI Specification on page 223
- Subscriptions in HP SOA Registry Foundation on page 229

### UDDI's Role in the Web Services World - UDDI Benefits

When development teams start to build Web service interfaces into their applications, they face such issues as code reuse, ongoing maintenance and documentation. The need to manage these services can increase rapidly.

The UDDI registry can help to address these issues and provides the following benefits:

- It delivers **visibility** when identifying which services within the organization can be reused to address a business need.
- It promotes **reuse** and prevents reinvention. It accelerates development time and improves productivity. This ability of UDDI to categorize a growing portfolio of services makes it easier to manage them. It helps you understand relationships between components, supports versioning and manages dependencies.

- It supports service **configurability and adaptability** by using the service-oriented architectural principle of location and transport independence. Users can dynamically discover services stored in the UDDI registry.
- It allows you to understand and manage **relationships** between services, component versions and dependencies.

## Typical Application of a UDDI Registry

A UDDI registry stores data and metadata about business services. A UDDI registry offers a standards-based mechanism to classify, catalog and manage Web services so that they can be discovered and consumed by other applications. As part of a generalized strategy of indirection among services-based applications, UDDI offers several benefits to IT managers at both design-time and run-time, including increasing code reuse and improving infrastructure management by:

- Publishing information about Web services and categorization rules (taxonomies) specific to an organization.
- Finding Web services that meet given criteria.
- Determining the security and transport protocols supported by a given Web service and the parameters necessary to invoke the service.
- Providing a means to insulate applications (and providing fail-over and intelligent routing) from failures or changes in invoked services.

## Basic Concepts of the UDDI Specification

UDDI is based upon several established industry standards, including HTTP, XML, XML Schema (XSD), SOAP, and WSDL. The latest version of the UDDI specification is available at: http://www.oasis-open.-org/committees/uddi-spec/doc/tcspecs.htm#uddiv3.

The UDDI specification describes a registry of Web services and its programmatic interfaces. UDDI itself is a set of Web services. The UDDI specification defines services that support the description and discovery of:

- Businesses, organizations and other providers of Web services;
- The Web services they make available;

- The technical interfaces which may be used to access and manage those services.

## UDDI Data Model

The basic information model and interaction framework of UDDI registries consist of the following data structures:

- A description of a service business function is represented as a `businessService`.
- Information about a provider that publishes the service is put into a `businessEntity`.
- The service's technical details, including a reference to the service's programmatic interface or API, is stored in a `bindingTemplate`.
- Various other attributes, or metadata, such as taxonomy, transports, and policies, are stored in `tModels`.

These UDDI data structures are expressed in XML and are stored persistently by a UDDI registry. Within a UDDI registry, each core data structure is assigned a unique identifier according to a standard scheme. This identifier is referred as a UDDI key.

## Business Entity

A business entity represents an organization or group of people responsible for a set of services (a service provider). It can also represent anything that overreaches a set of services; for example a development project, department or organization. The business entity structure contains the following elements:

- Names and Descriptions. The business entity can have a set of names and descriptions, in a variety of languages if necessary.
- Contacts. The list of people who are associated with the business entity. A contact can include, for example, a contact name, addresses, phone numbers, and use type.
- Categories. Set of categories that represent the business entity's features or quantities. For example the business entity can be associated with the category California to say that the business entity is located in that geographical area.
- Identifiers. The business entity can be associated with arbitrary number of identifiers that uniquely identify it. For example, the business entity can be identified by a department number or D-U-N-S number.

- Discovery URLs are additional links to documents describing the business entity.

Business entities can be linked to one another using so-called assertions that model a relationships between them.

### Business Service

Business services represent functionality or resources provided by business entities. A business entity can reference multiple business services. A business service is described by the following elements:

- Names and descriptions. The business service can have a set of names and descriptions, in a variety of languages if necessary.

- Categories. A set of categories that represent the business service features and quantities. For example, the business service can be associated by a category that represents service availability, version, etc.

A business service in a UDDI registry does not necessarily represent a Web service. The UDDI registry can register arbitrary services such as example EJB, CORBA, etc.

### Binding Template

A business service can contain one or more binding templates. A binding template represents the technical details of how to invoke its service. Binding templates are described by the following elements:

- Access point represents the service endpoint. It contains endpoint URI and specification of the protocol.

- tModel instance infos can be used to represent any other information about the binding template

- Categories. The binding template can be associated with categories to reference specific features of the binding template, for example certification status (test, production) or versions.

### tModel

The tModel provides a reference to an abstraction describing compliance with a specification and concepts. TModels are described by the following elements:

- Name and description. The tModel can have a set of names and descriptions, in different languages if required.

- An overview document is a reference to a document that specifies the tModel's purpose.

- Categories. Like all the other UDDI entities, tModels can be categorized.
- Identifiers. The tModel can be associated with an arbitrary number of identifiers that uniquely identify it.

UDDI entities are categorized through tModels via taxonomies. Business entities, business services, and binding templates declare associations to a certain category by presence of specific tModels in their categoryBags.

### Taxonomic Classifications

UDDI provides a foundation and best practices that help provide semantic structure to the information about Web services contained in a registry. UDDI allows users to define multiple taxonomies that can be used in a registry. Users can employ an unlimited number of appropriate classification systems simultaneously. UDDI also defines a consistent way for a publisher to add new classification schemes to their registrations.

Taxonomies are used for representing various UDDI entity features and qualities (such as product types, geographical regions or departments in a company).

The UDDI specification mandates several standard taxonomies that must be shipped with each UDDI registry product. Some are internal UDDI taxonomies such as the UDDI types taxonomy or geographical taxonomy. A taxonomy can be marked as specific to business, service, binding template or tModel or it can be used with any type of the UDDI entity

### Enterprise Taxonomies

Enterprise taxonomies are taxonomies that are specific to the particular enterprise or application. These taxonomies reflect specific categories like company departments, types of applications, and access protocols.

HP SOA Registry Foundation allows definition of enterprise taxonomies. Users can also download and upload any taxonomy as an XML file. HP SOA Registry Foundation offers tools for browsing taxonomies on both the web user interface and SOAP API levels.

### Checked and Unchecked Taxonomies

There are two types of taxonomies: checked and unchecked. Checked taxonomies are rigid, meaning that the UDDI registry does not allow the use of any categories other than those predefined in the taxonomy. Checked taxonomies are usually used when the taxonomy author can enumerate all distinct values within the taxonomy. A checked taxonomy can be **validated** using the internal validation service that is available in HP SOA Registry Foundation or by using an external validation service.

Unchecked taxonomies do not prescribe any set of fixed values and any name and value pair can be used for categorization of UDDI entities. Unchecked taxonomies are used for things like volume, weight, price, etc. A special case of the unchecked taxonomy is the `general_keywords` taxonomy that allows categorizations using arbitrary keywords.

## Security Considerations

UDDI specification does not define an access control mechanism. The UDDI specification allows modification of the specific entity only by its owner (creator). This does not scale in the enterprise environment where the right to modify or delete a specific UDDI entity must be assigned with more identities or even better with some role.

HP SOA Registry Foundation addresses this issue with the ACL (Access Control List) extension to the UDDI security model. Every UDDI entity can be associated with the ACL that defines who can find (list it in some UDDI query result), get (retrieve all details of the UDDI object), modify or delete it. The ACL can reference either the specific user account or user group.

The UDDI v3 specification provides support for digital signatures. In HP SOA Registry Foundation, the publisher of a UDDI structure can digitally sign that structure. The digital signature can be validated to verify the information is unmodified by any means and confirm the publisher's identity.

## Notification and Subscription

The UDDI v3 specification introduces notification and subscription features. Any UDDI registry user can subscribe to a set of UDDI entities and monitor their creation, modification and deletion. The subscription is defined using standard UDDI get or find API calls. The UDDI registry notifies the user whenever any entity that matches the subscription query changes even if the change causes the entity to not match the query anymore. It also notifies about entities that were changed in a way that after the change they match the subscription query.

The notification might be synchronous or asynchronous. By synchronous, we mean solicited notification when the interested party explicitly asks for all changes that have happened since the last notification. Asynchronous notifications are run periodically in a configurable interval and the interested party is notified whenever the matched entity is created, modified, or deleted.

## Replication

Content of the UDDI registry can be replicated using the simple master-slave model. The UDDI registry can replicate data according to multiple replication definitions that are defined using UDDI standard queries. The master-slave relationship is specific to the replication definition. So one registry might be master for one specific replication definition and slave for another. The security settings (ACL, users, and groups) are not subject to replication but you can set permissions on replicated data.

## UDDI APIs

The core data management tools functions of a UDDI registry are:

- Publishing information about a service to a registry.
- Searching a UDDI registry for information about a service.

The UDDI specification also includes concepts of:

- Replicating and transferring custody of data about a service.
- Registration key generation and management.
- Registration subscription API set.
- Security and authorization.

The UDDI specification divides these functions into `Node API sets` that are supported by a UDDI server and `Client API Sets` that are supported by a UDDI client .

## Technical Notes

Technical Notes (TN) are non-normative documents accompanying the UDDI Specification that provide guidance on how to use UDDI registries. Technical Notes can be found at http://www.oasis-open.-org/committees/uddi-spec/doc/tns.htm. One of the most important TNs is "Using WSDL in a UDDI Registry".

## Benefits of UDDI Version 3

The most important features include:

- **User-friendly identifiers** facilitate reuse of service descriptions among registries.

- **Support for digital signatures** allows UDDI to deliver a higher degree of data integrity and authenticity.
- **Extended discovery features** can combine previous, multi-step queries into a single-step, complex query. UDDI now also provides the ability to nest sub-queries within a single query, letting clients narrow their searches much more efficiently.

## Subscriptions in HP SOA Registry Foundation

Subscriptions are used to alert interested users in changes made to structures in HP SOA Registry Foundation. The HP SOA Registry Foundation Subscription API provides users the ability to manage (save and delete) subscriptions and evaluate notification. Notifications are lists of changes made within a specified time interval. The Subscription mechanism allows the user to monitor new, changed, and deleted entries for businessEntities, businessServices, bindingTemplates, tModels or publisherAssertions. The set of entities in which a user is interested is expressed by a SubscriptionFilter, which can be any one of the following UDDI v3 API queries:

- `find_business`, `find_relatedBusinesses`, `find_services`, `find_bindings`, `find_tmodel`
- `get_businessDetail`, `get_serviceDetail`, `get_bindingDetail`, `get_tModelDetail`, `get_assertionStatusReport`

In Business Service Console, users can also create subscriptions also resources (WSDL, XML, XSD and XSLT) without a detailed knowledge of how resources are mapped to UDDI data structures.

### Subscription Arguments

A subscription is the subscriber's interest in changes made to entities as defined by the following arguments:

- `SubscriptionKey` - The identifier of the subscription, as generated by the server when the subscription is registered.
- `Subscription Filter` - Specifies the set of entities in which the user is interested. This field is required. Note that once the subscription filter is set, it cannot be changed.
- `Expires After` - The time after which the subscription is invalid (optional).
- `Notification Interval` - How often the client will be notified (optional). The server can extend it to the minimum supported notification interval supported by the server as configured by the administrator.

For more information, please see Administrator's Guide, Registry Configuration on page 373.

- `Max Entities` - how many entities can be listed in a notification (optional). When the number of entities in a notification exceeds max entities, the notification will contain only the number of entities specified here or in the registry configuration. A chunkToken different from "0" will be specified in the notification. This chunkToken can be used to retrieve trailing entities.
- `BindingKey` - points to the bindingTemplate that includes the endpoint of the notification handling service (optional). Only http and mail transports are currently supported. If this bindingKey is not specified, the notification can be retrieved only by synchronous calls.
- `Brief` - By default, notifications contain results corresponding to the type of the Subscription Filter. For example, when the subscription filter is find_business, notifications contain Business Entities in the businessInfos form. If brief is toggled on, notifications will contain only the keys of entities. (optional)

## Subscription Notification

Notification is the mechanism by which subscribers learn about changes. Notifications inform subscribers about entities that:

1. Satisfy the Subscription Filter now and were last changed, or created, within a given time period. The entities are included in a list of the appropriate data type by default. For example, when find_business represents the Subscription Filter, notifications contain Business Entities in the businessList/businessInfo form. (If the brief switch is toggled on, only the entity keys in the keyBag are included.)
2. Were changed or deleted in the given time period and no longer satisfy the Subscription Filter. Only the keys of the appropriate entities are included in the keyBag structure and the `deleted` flag is toggled on.

There are two types of notifications:

- `Asynchronous notification` - Using asynchronous notification, the server periodically checks for changes and offers them to the client via HTTP or SMTP. HTTP is suitable for services listening to UDDI changes. SMTP (that is, mail notification) is suitable for both services and users. With this transport, the user is notified at each notification interval by email. To perform asynchronous notification, the subscription must be populated with `notification interval` and `bindingKey`. See Developer's Guide, Writing a Subscription Notification Service on page 574 for details.

- `Synchronous notification` - Using synchronous notification, the server checks for changes and offers them when the client explicitly asks for them outside of periodical asynchronous notifications. It is useful for client applications which cannot listen for notifications, and for services that want to manage the time of notification by themselves. See Demos, Subscription on page 668 for details.

### XSLT Over Notification

To improve the readability of notifications sent to users via email, HP SOA Registry Foundation provides the ability to process the XSL transformation before the notification is sent. To enable this feature:

1. Register the XSL transformation in UDDI as a tModel that refers to XSL transformation in its first overviewDoc.
2. Modify the bindingTemplate (with the bindingKey specified in the subscription) to refer to the XSLT tModel by its tModelInstanceInfo.
3. Tag the XSLT tModel by a keyedReference to `uddi:uddi.org:resource:type` with the keyValue="`xslt`".

### Suppressing Empty Notifications

Another HP SOA Registry Foundation extension to the specification is the ability to suppress empty notifications. To do this, tag the bindingTemplate referenced from the subscription with a keyedReference to the tModel `uddi:uddi.org:categorization:general_keywords` with keyValue="`suppressEmptyNotification`" and keyName="`suppressEmptyNotification`".

### Related Links

- To manage subscriptions via the Registry Console, see the Registry Console Reference.
- To use and manage subscriptions, see the Subscription API.
- More details about subscriptions can be found in the Subscription API [http://uddi.org/pubs/uddi-v3.00-published-20020719.htm#_Toc42047327] chapter of the UDDI v3 Specification.

## Registry Console

HP SOA Registry Foundation web console.

- **Registry Console.** Using the Registry Console users can browse and publish registry contents, create subscriptions and perform ownership changes. The Registry Console is the primary console for administrators to perform registry management.

  The Registry Console can be found at `http://<hostname>:<port>/uddi/web`. Host name and port are defined when HP SOA Registry Foundation is installed. The default port is 8080. See Registry Console Overview on page 272

Make sure your browser allows HTTPS connections, supports JavaScript and does not block popup windows.

## Demo Data

Demo data is pre-installed with HP SOA Registry Foundation. There are two demo data sets:

- demo data to demonstrate Business Service Console
- demo data to demonstrate Registry Console and Demo Suite

### Demo Data for Business Service Console

Demo data is pre-installed with HP SOA Registry Foundation for use with the Business Service Console. This data describes a financial institution (bank) with several departments. It contains entities providing services for its operations. Entities providing services are modelled as service providers. There are the following providers and their services in the demo data:

**Account Services**

Account Services provides services related to account information, transfers, check orders, bill pay, online statements.

- Account - The account service provides the account related operations :`getAccount`, `listAccountDetail`, `listRelatedAccounts`, `listTransactionHistory`.
- Bill Payment - The bill payment service provides the ability to establish bill payment service, cancel bill payment service and get information about bill payment for a customer. Operations: `authorizeAcctForBillPymt`, `cancelBillPymtSvc`, `createBillPymtSvc`.

- Check Order - This service supports new check orders, check reorders, check order inquiry. Operations: `getLastCheckOrder`, `orderChecks`, `reorderChecks`.
- Direct Deposit Advance -This service supports the operations used to set up the advancement of money. Operation: `addDirectDepositAdvance`.
- Notification Services - This service is used to provide notifications. Operation: `sendAccountTransferNotification`.
- Stop Payment - This service allows stops to be set and maintained. Operations: addStopPaymentForCheck, `cancelStopPay`
- Transfer Funds - This service allows funds to be transferred from one account to another. Operations: `authorizeTransfer`, `sendInvoicePayment`, `transferFunds`.

**Customer Management System**

Customer relationship and management system.

- Add Customer - This service allows a customer to be added to the enterprise customer system. Operation: `addCustomer`.
- Customer Notification - This service provides notification messages for various customer changes. Operations: `customerNameChangeNotif`, `customerAddressChangeNotif`.

**Outlet Locator**

Provides information about outlets and sites.

- Outlet - The Outlet service gets all of the information about a Company outlet. Operation: `getOutletDetail`.
- Site - This service gets information about a site. Operations: `getSiteDetail`, `listSites`, `searchSites`

**Document Services**

Provides access to company forms.

- Electronic Forms - Provides access to company forms. Operations: `updateAddrPhone`, `updateNameAndTitle`.

**Transaction Services**

Middleware applications for posting transactions with high performance SLA.

- Monetary Transaction - Monetary Posting. Operation: `postTransaction`.

Each service has a WSDL definition. Demo data also contains information about service interfaces and endpoints including categorization as certification statuses, availability statuses, and stages of lifecycle.

## Demo data for Registry Console and demos

Demo data describes a multinational company with offices in several locations and HP SOA Registry Foundation installed in its headquarters division. The headquarters division has two departments: IT and HR.

There are two predefined users, demo_john and demo_jane. The passwords for these users are the same as their log on names.

Departments are represented as the following Business Entities:

- Headquarters
- HR
- IT

The following taxonomies are used:

**demo:hierarchy**

Represents the organizational structure (hierarchy). KeyValue is the businessKey of the parent department.

**demo:location:floor**

Represents the geographical location of departments. Headquarters is located in a building; IT and HR are located in different floors of the same building. KeyValue is the number of the floor.

**demo:departmentID**

Identifies each department uniquely. The value from keyValue can be used as an argument in WSDL services.

Pre-published services are shown in Table 4:

**Table 4. Pre-published Demo Web Services**

| Name | WSDL Service | Description |
|---|---|---|
| Holiday request | Yes | stored in the HR department; used by employees to submit holiday request |
| Phone support | No | stored in the IT department; used by employees to call IT phone support for help with their PCs. |
| Employee list | Yes | stored in the HR department, projected to IT department; takes single argument - departmentId; used by employees to view a list of employees that belong to a department. |

Assertions are an alternate way to represent relationships between business entities. In the HP SOA Registry Foundation demo data, assertions are created between the Headquarters and HR departments.

The demo data also contains the following resource files located in the `REGISTRY_HOME/demos/conf` directory:

- EmployeeList.wsdl
- employees.xml
- employees.xsd
- employeesToDepartments.xsl
- departments.xml
- departments.xsd

## Advanced Topics

### Data Access Control: Principles

This chapter describes the entity access control mechanism, which defines permissions for users and groups to access structures in HP SOA Registry Foundation

There are two types of user groups: **public** and **private**. Both public and private groups are visible to all users in the registry, meaning that all users are able to see which groups exist. Public and private groups differ in that members of public groups are visible to all users of the registry whereas members of private groups are visible only to the owner of the group.

There are other permissions in HP SOA Registry Foundation used to control access to APIs and their operations. API permissions are relations between the user or group and operation only. Please see Permissions: Principles on page 389 in the Administration Guide for details.

Permission in this chapter is limited to Data Access Permission - ACL permission.

We use the following terms with regard to ACL permissions:

- **Party.** A user or group of users
- **Core Structure.** One of the major UDDI data structures: businessEntity, businessService, bindingTemplate or tModel
- **Action.** An operation: "find", "get", "save", or "delete" on the entity plus special action "create", which means to save sub-entities. (For example, a user with the "create" permission on a businessService can save new bindingTemplates under the businessService, but can not update whole businessService.) Note that the "create" permission makes sense only on businessEntity and businessService, because bindingTemplates and tModels have no sub-entities.

Standard UDDI access control defines that only the owner of a UDDI core structure can update or delete it. Every user can find or get the structure (with the exception that deleted/hidden tModels are visible for `get_tModelDetail` but not for the `find_tModel` operation). ACLs (Access Control Lists) added to a UDDI entity can override standard UDDI access control as there are several cases in which standard access control is not sufficient.

**Examples:**

- When a Web service is under construction, its UDDI representation (businessService and bindingTemplate) should be visible only to members of the development team. Arbitrary users should not be able to obtain it in the result set of `get_serviceDetail` or `find_service` operations. Moreover, a `get_businessDetail` or `find_business` operation result, which includes a superior businessEntity, should not give away the existence of the businessService.

- On the other hand when the server (where the service prototype is running) goes down, the administrator should be able to deploy the Web service on another server and repair the service endpoint in the accessPoint within its bindingTemplate, despite not being the owner of the bindingTemplate.

### Explicit Permissions

Explicit permission gives (positive permission), or revokes (negative permission), access rights to a party to process an action on a specified entity.

Explicit permissions are saved with the entity as special keyedReferences in the categoryBag. For more information, please see Setting ACLs on UDDI v3 Structures and Setting ACLs on UDDI v1 and v2 Structures below.

### Permission Rules

When no explicit permission is set for the find/get action on an entity, everyone can find/get it. When no explicit permission is set for the save/delete action on an entity, only owner of the entity can save/delete it. This is a standard UDDI access control. When an explicit Permission is set for an action, a completely different access control is used which is defined by the following rules:

1 **Owner always has full control.** The owner can always process an operation over an owned entity, even if the permission is explicitly revoked.

2 **Negative permission for a user overrides positive permission for a user..** Example: User U has explicit *positive* permission on businessEntity BE for the `get` action. However, if U also has explicit *negative* permission on BE for action `get`, then an attempt to process `get_businessDetail` by user U on the BE will fail.

3 **Negative permission for group overrides positive permission for group..** Example: User U has belongs to groups G1 and G2. Group G1, has explicit *positive* permission on the BE for action `get`. Group G2, has explicit *negative* permission on the BE for action `get`. Because of this negative permission, any attempt to process `get_businessDetail` by user U on the BE will fail.

4 **Permission for user has more weight than permission for group.** Example: User U has explicit *positive* permission on businessEntity BE for action `get`. Group G, to which U belongs, has explicit *negative* permission on the BE for action `get`. User U can process `get_businessDetail` on the BE, even though U belongs to group G.

5 **The owner of an entity can always process `get_XXX` on a direct sub-entity.** Example: User U1 owns businessEntity BE. U1 (as owner) grants "create" permission to user U2. Then U2 saves new businessService BS with bindingTemplate BT under BE. When user U1 executes `get_businessDetail`, U1 obtains BE with BS but without BT, because BT is not a direct sub-element of the BE.

Motivation: This rule ensures that the owner of an entity will see all direct sub-entities. The number of sub-entities is limited. By default, a user can save only one businessEntity, four businessServices per businessEntity, two bindingTemplates per businessService and 10 tModels. Suppose that user U1 has businessEntity BE. User U2 can save businessServices in BE (permission "create" on BE). If U2 has already saved four businessServices under BE, user U1 cannot, therefore, save a new businessService. Therefore, the owner of an businessEntity should see why the limit is reached.

6 **Delete and Save positive permissions are inherited from parent entities and override negative permissions on sub-entities.** Example: User U has "delete" permission on businessEntity BE. Then U can execute the `delete_business` operation, which deletes the BE with all its businessServices and bindingTemplates, even if some of these sub-entities have negative permission for deletion by the user U.

Motivation: Sub-entities can not survive parent entity deletion. This rule ensures that a user who can save/delete an entity can do this despite not having sufficient privileges on sub-entities.

7 **To perform update by `save_XXX` operation, it is necessary to have both "save" and "get" permissions.** Example: User U1 has "save" and "get" permissions on businessEntity BE, but he is not the owner. User U2 owns the BE and saves businessService BS1, which has "get" permission for U1, and businessService BS2 without any permissions. Both BS1 and BS2 are created under BE. U1 gets BE with only BS1 and updates BE in this way: U1 can add a category and save BE again without BS1. In fact, when BE is updated, BS1 is deleted but BS2 remains.

**Example:**

User U1 owns a businessEntity BE. The user U1 defines the explicit `get allowed` permission to user group G1. Everyone can find the BE, because there is no explicit permission for `find` and therefore the standard UDDI access control is used. On the other hand, only user U1 (as the owner) and all users from group G1 can get the BE.

## Composite Operations

BusinessService BS can be moved from one businessEntity BE1 to other businessEntity BE2. By performing the `save_service` operation on BS, where BS has updated businessKey to point to the BE2. To perform this action, the party must have permission to save BE1, BE2, and BS, because all these entities are changed.

Similarly bindingTemplate BT can be moved from businessService BS1 to businessService BS2. The party who moves it must have save permission on BS1, BS2 and BT.

BusinessService BS hosted in businessEntity BE1 can be projected into businessEntity BE2. The party who projects BS must have save permission on BE2.

## Pre-installed Groups

ACL logic considers some special pre-published abstract groups during permission evaluation. These abstract groups allow a publisher to give a permission to a specific set of HP SOA Registry Foundation users.

**`system#everyone`**

Holds all users of HP SOA Registry Foundation (both users who have and who do not have a HP SOA Registry Foundation account, authenticated and non-authenticated). If this group is used, all users always have the specified permission to the associated data.

**`system#registered`**

Holds all authenticated HP SOA Registry Foundation users. Every user who is authenticated (that is, who has an account and has logged into the registry) is a member of this group. If this group is used, all authenticated users always have the specified permission to the associated data.

**`system#intranet`**

Holds users who access HP SOA Registry Foundation via a local intranet. (This group is reserved for a future release. There is no implementation behind it as of HP SOA Registry Foundation 6.63)

## ACL tModels

ACL permissions are represented as tModels as detailed below:

| ACL Permission | v3 tModelKey | v2 tModelKey |
|---|---|---|
| find allowed | uddi:systinet.com:acl:find-allowed | uuid:aacfc8e0-dcf5-11d5-b238-cbbeaea0a8d4 |

| ACL Permission | v3 tModelKey | v2 tModelKey |
|---|---|---|
| find denied | uddi:systinet.com:acl:find-denied | uuid:ced3c160-dcf5-11d5-b238-cbbeaea0a8d4 |
| get allowed | uddi:systinet.com:acl:get-allowed | uuid:f9977a90-dcf5-11d5-b238-cbbeaea0a8d4 |
| get denied | uddi:systinet.com:acl:get-denied | uuid:09e202d0-dcf6-11d5-b238-cbbeaea0a8d4 |
| save allowed | uddi:systinet.com:acl:save-allowed | uuid:19885bd0-dcf6-11d5-b239-cbbeaea0a8d4 |
| save denied | uddi:systinet.com:acl:save-denied | uuid:2a25e610-dcf6-11d5-b239-cbbeaea0a8d4 |
| delete allowed | uddi:systinet.com:acl:delete-allowed | uuid:37f44ac0-dcf6-11d5-b239-cbbeaea0a8d4 |
| delete denied | uddi:systinet.com:acl:delete-denied | uuid:4e51d8f0-dcf6-11d5-b239-cbbeaea0a8d4 |
| create allowed | uddi:systinet.com:acl:create-allowed | uuid:5bc32980-dcf6-11d5-b239-cbbeaea0a8d4 |
| create denied | uddi:systinet.com:acl:create-denied | uuid:6d0be7e0-dcf6-11d5-b239-cbbeaea0a8d4 |

## Setting ACLs on UDDI v3 Structures

In UDDI v3, explicit ACL permission is saved in a special keyedReferenceGroup having the tModelKey `uddi:systinet.com:acl`. This keyedReferenceGroup can contain only keyedReferences to ACL tModels. Only the terms "user" and "group" are allowed in the included keyName, and the keyValue must contain the name of the user or group (according to keyName value).

For example, user demo_john can save (update) following businessEntity even if he is not the owner:

### Example 1: Setting ACLs - v3

```
<businessEntity xmlns="urn:uddi-org:api_v3">
  ...
  <categoryBag>
    ...
    <keyedReferenceGroup tModelKey="uddi:systinet.com:acl">
      <keyedReference tModelKey="uddi:systinet.com:acl:save-allowed"
      keyName="user" keyValue="demo_john"/>
      ...
    </keyedReferenceGroup>
  </categoryBag>
</businessEntity>
```

## Setting ACLs on UDDI v1/v2 Structures

Under versions 1 and 2 of UDDI, explicit ACL permission is saved as a special keyedReference in the categoryBag. This keyedReference refers to one of the tModels representing ACL permissions. Only the terms "user" and "group" are allowed in the included keyName and the keyValue must contain the name of the user or group (according to the keyName value).

For example, user demo_john can save (update) following businessEntity even if he is not the owner:

```
<businessEntity ...>
  ...
  <categoryBag>
    <keyedReference tModelKey="uuid:19885bd0-dcf6-11d5-b239-cbbeaea0a8d4"
                                         keyName="user" keyValue="demo_john"/>
    ...
  </categoryBag>
</businessEntity>
```

ACL permissions cannot be set on the bindingTemplate structure because this structure has no categoryBag in UDDI v1/v2.

## Publisher-Assigned Keys

Under UDDI v1 and v2, keys are generated automatically when a structure is published. Generated keys in these versions are in form `(uuid:)8-4-4-4-12` where the numbers indicate a count of hexadecimal values. For example, `uuid:327A56F0-3299-4461-BC23-5CD513E95C55`. Note that the prefix "uuid:" was only used in tModelKeys.

In UDDI v3 users may assign keys when saving a structure for the first time. These Keys can be 255 characters long and can contain numbers and Latin characters, so that the key itself describes what the UDDI structure means. For example, the key `uddi:systinet.com:uddiRegistry:demo:businessService` has the following elements:

- The prefix `uddi:` is a schema much like `http:` or `ftp:` and must be always present.
- `systinet.com` is an optional host name.
- The elements `uddiRegistry`, `demo`, and `businessService` represent a hierarchy of domains. The domain `demo` is a subdomain of `uddiRegistry`.

This description is sufficient for our purposes for now. For a more precise description of keys, please see the UDDI v3 Specification [http://uddi.org/pubs/uddi-v3.00-published-20020719.htm#_Toc42047261].

### Generating Keys

The key generator tModel is a tModel with a key in the form `domain:keygenerator`. This tModel permits its owner to save structures with keys in the form `domain:string`. For example, the tModel `uddi:systinet.com:uddiRegistry:demo:keygenerator` allows its owner to publish structures with keys like:

- `uddi:systinet.com:uddiRegistry:demo:businessService`
- `uddi:systinet.com:uddiRegistry:demo:b52`

These are derived keys of the `uddi:systinet.com:uddiRegistry:demo` domain.

With one exception, the key generator tModel does *not* allow the user to save keys from subdomains such as `uddi:systinet.com:uddiRegistry:demo:businessService:exchangeRate`, that is, derived keys of `uddi:systinet.com:uddiRegistry:demo:businessService`.

The key generator tModel, however, permits the user to save the key generator for each direct subdomain. For example, the user can save `uddi:systinet.com:uddiRegistry:demo:businessService:keygenerator`. After creating this second key generator, the user is permitted to save structures with keys of the `uddi:systinet.com:uddiRegistry:demo:businessService` domain, such as `uddi:systinet.com:uddiRegistry:demo:businessService:exchangeRate`.

➤ To generate keys for a domain, the user must own the domain's key generator tModel. Only the administrator can save structures with assigned keys without having the key generator tModel. To enable this process for other users, the administrator must save the domain's tModel and then change its ownership to the user via custody transfer. For more information, please see Publish Custody Transfer on page 315.

## Affiliations of Registries

The rules above ensure that two users can not create structures with the same key. A complicated situation arises when one user wants to copy UDDI structures from one registry to another while preserving the keys of those structures. There are two problems:

1. The key of the copied structure must not exist on the second registry. The key must be unique - this is required by the UDDI specification.
2. The user must be allowed to save a structure with a specified key on the second registry.

The **Affiliated registries** mechanism solves both problems. An affiliation is a relationship between two registries. The first registry gives up generation of keys for a certain domain and transfers this privilege to the second registry. This ensures that keys from both registries are unique.

➤ In the examples below we name the two registries 'master' and 'slave'. Moreover there are three people:

- The person 1 is an administrator of the master registry, this account is called **master-admin**.
- The person 2 is an administrator of the slave registry (account **slave-admin**) and a common user on the master registry (account **master-user2**).
- The person 3 is a common user on slave registry (account **slave-user3**) and a common user on master registry (account **master-user3**).

## Affiliation Setup

To set up an affiliation:

1. The administrator of the slave registry (slave-admin) registers a user account on the master registry (master-user2).
2. Master-user2 requests a key generator tModel from the administrator of the Master registry.
3. This administrator, master-admin, creates the key generator tModel and transfers it to the master-user2 account using custody transfer.
4. Person 2 manually copies the key generator tModel to the slave registry (his slave-admin account has permission to assign any key) and sets up the slave registry to generate all keys based on this key generator. For more information, please see Node on page 381 in the Administrator's Guide.

All keys generated by the slave registry or its users will be from the domain or some subdomain defined by the key generator.

## Copying Structures with Key Preservation

Given key should refer to the same structure no matter which registry the structure is in.

Suppose that slave-admin creates a key generator tModel for slave-user3 and this user uses the key generator to generate a key for a structure in the slave registry. To copy the structure to the master registry, this key generator tModel must exist on both registries.

To copy a structure from the slave to the master registry:

1. The slave-user3 must ask person 2 (slave-admin) to copy the second key generator, because only the holder of the account master-user2, as owner of the first key generator, can do this on the master registry.
2. Then master-user2 transfers ownership of the second key generator in the master registry to master-user3. Now master-user3 can copy the structure while preserving the generated keys.

## Range Queries

HP SOA Registry Foundation's range queries functionality allows you to search UDDI entities with the ability to use comparative operators (>, <) for matching keyValues in keyedReferences. There must be a defined type of keyValues in the taxonomy which defines the ordering. The following ordering types are supported: `string`, `numeric`, and `custom`. KeyedReferences in `find_XXX` queries are extended by a list of find qualifiers. Do not mix with find qualifiers of the whole query. Find Qualifiers are used for specifying comparison operators.

See Find Business by Categories on page 288 how to search UDDI data structures using range queries with Registry Console.

The HP SOA Registry Foundation implementation of range queries goes beyond the current UDDI v3 specification since the specification does not define this functionality.

The following findQualifiers are supported:

- `equal` - the default find qualifier. If no one from the group of ( equal, greaterThan, lesserThan qualifiers) is specified. This is done due to the backward compatibility with a standard UDDI. When used, the keyedReference from the request matches to the all keyedReferences from the database with the same tModelKey and the **same** keyValue.

- `greaterThan` - When used, the keyedReference from the request match to the all keyedReferences from the database with the same tModelKey and a **greater** keyValue.

- `lesserThan` - When used, the keyedReference from the request match to the all keyedReferences from the database with the same tModelKey and a **lesser** keyValue.

- `notExists` - This findQualifier has validity for the whole keyedReference (not just for keyValues). An entity matches the find request with `notExists` findQualifier if and only if the specific keyedReference does not exist in its categoryBag. This findQualifier can be arbitrarily combined with `greaterThan`, `lesserThan` and `equal` findQualifiers. If the `notExists` findQualifier is used alone, then the `equal` findQualifier is considered automatically.

Comparators can be combined:

- `greaterThan` and `equal` find qualifiers can be used together with the keyedReference match to the all keyedReferences with the same tModelKey and a **greater or equal** keyValue (>=).
- `lesserThan` and `equal` find qualifiers can be used together with the keyedReference match to the all keyedReferences with the same tModelKey and a **lesser or equal** keyValue (<=).
- `lesserThan` and `greaterThan` find qualifiers can be used together with the keyedReference match to the all keyedReferences with the same tModelKey and a **not equals** keyValue (<>).
- Combination of lesserThan, greaterThan and equal is not allowed.

## Examples

The following examples demonstrate the usage of range queries. Suppose that the keyedReferences are placed in the category bag of the `find_business` request.

**greaterThan.** Only business entities that have a keyedReference with tModelKey equal to tmKey, and a keyValue that is greater than kv, in their categoryBags are returned.

```
<keyedReference tModelKey="tmKey" keyValue="kv" keyName="kn">
   <findQualifiers>
      <findQualifier>greaterThan</findQualifier>
   </findQualifiers>
</keyedReference>
```

**greaterThan and lesserThan.** Only business entities that have keyedReference with tModelKey that is equal to tmKey, and a keyValue not equal to kv, in their categoryBags are returned.

```
<keyedReference tModelKey="tmKey" keyValue="kv" keyName="kn">
   <findQualifiers>
      <findQualifier>greaterThan</findQualifier>
      <findQualifier>lesserThan</findQualifier>
   </findQualifiers>
</keyedReference>
```

**notExists.** Only business entities that do not have a keyedReference with a tModelKey equal to tmKey, and a keyValue equal to kv, in their categoryBags are returned.

```
<keyedReference tModelKey="tmKey" keyValue="kv" keyName="kn">
   <findQualifiers>
```

```
      <findQualifier>notExists</findQualifier>
   </findQualifiers>
</keyedReference>
```

**notExists and greaterThan.** Only business entities that do not have a keyedReference with a tModelKey equal to tmKey, and a keyValue greater than kv, in their categoryBags are returned.

```
<keyedReference tModelKey="tmKey" keyValue="kv" keyName="kn">
   <findQualifiers>
      <findQualifier>notExists</findQualifier>
      <findQualifier>greaterThan</findQualifier>
   </findQualifiers>
</keyedReference>
```

**notExists, greaterThan, equal.** Only business entities that do not have a keyedReference with a tModelKey equal to tmKey, and a keyValue greater than or equal to kv, in their categoryBags are returned.

```
<keyedReference tModelKey="tmKey" keyValue="kv" keyName="kn">
   <findQualifiers>
      <findQualifier>notExists</findQualifier>
      <findQualifier>greaterThan</findQualifier>
      <findQualifier>equal</findQualifier>
   </findQualifiers>
</keyedReference>
```

See also Demos, Advanced Inquiry - Range Queries on page 657.

## Taxonomy: Principles, Creation and Validation

The UDDI Version 3 Specification [http://www.oasis-open.org/committees/uddi-spec/doc/tcspecs.htm#uddiv3] provides tools for setting the context on all four major UDDI structures: businessEntities, businessServices, bindingTemplates and tModels. This document covers basic principles and management of this feature - the taxonomies.

### What Is a Taxonomy?

A taxonomy, or value set in the terminology of the UDDI specifications, is a tModel which can be used in categoryBags, identifier bags, or Publisher Assertions. This tModel must be in a specific form, so that HP SOA Registry Foundation can recognize it as a taxonomy. The tModel must be categorized with the type of taxonomy and, optionally, with information concerning whether and how to validate the values in keyedReferences.

## Taxonomy Types

The UDDI specification distinguishes four types of taxonomies: categorizations, categorizationGroups, identifiers, and relationships.

**Categorizations**

Categorizations can be used in all four main UDDI structures. They are used to tag them with additional information, such as identity, location, and what the taxonomy describes.

**CategorizationGroups**

New in UDDI version 3, CategorizationGroups group several categorizations into one logical categorization. For example, a geographical location comprised of two categorizations: longitude and latitude.

**Identifiers**

Used in businessEntities and tModels, Identifiers reference published information.

**Relationships**

Used only in Publisher Assertions, Relationships define the relation between two businessEntities.

## Validation of Values

The publisher of a taxonomy can decide whether the values in keyedReferences within the taxonomy will be checked or not.

## Unchecked Taxonomies

HP SOA Registry Foundation does not perform any checks on values used in keyedReferences associated with unchecked taxonomies. Unchecked taxonomies are those that are marked as such, *or* those that are not marked as checked. These two states are equivalent.

## Checked Taxonomies

If a taxonomy is checked, HP SOA Registry Foundation executes its validation service for every keyedReference in which the checked taxonomy is used. The validation service may check the expected syntax of values, such as the format of a credit card or ISBN number. Taxonomies like the ISO 3166 Geographic taxonomy, which permits only existing countries, check the existence of the value against a list. A validation service may even permit or deny values depending on the context in which they are used.

## HP SOA Registry Foundation Requirements

HP SOA Registry Foundation conforms to the technical note Providing A Value Set For Use In UDDI Version 3 [http://oasis-open.org/committees/uddi-spec/doc/tn/uddi-spec-tc-tn-valuesetprovider-20030212.htm]. To create a checked taxonomy, you must:

1. Prepare and deploy a validation service which implements the `Valueset_validation` API.
2. Publish the tModel categorized as a checked taxonomy and mark it as unvalidatable.
3. Publish the bindingTemplate that implements the `Valueset_validation` API and the taxonomy's tModel.
4. Republish the tModel, without the unvalidatable categorization, and with the categorization `uddi-org:validatedBy` pointing to the bindingTemplate.

HP SOA Registry Foundation requires that the bindingTemplate be published in the businessService of the Operational Business Entity. If this businessService is not part of the Operational Business Entity, the checked taxonomy will not be validatable and thus it may not be used in keyedReferences. This implies that only the HP SOA Registry Foundation administrator may publish checked taxonomies.

The bindingTemplate must contain an accessPoint with its `useType` attribute set to `"endPoint"`.

If the accessPoint starts with the prefix `class:`, then the remaining part is assumed to contain the fully qualified name of the class that implements interface `org.systinet.uddi.client.valueset.validation.v3.UDDI_ValueSetValidation_PortType` and is accessible by the HP SOA Registry Foundation classloader.

If the accessPoint does not start with the prefix `class:`, it is assumed to be the URL of the Web service implementing the `Valueset_validation` API and a stub is created for this Web service.

## Internal Validation Service

HP SOA Registry Foundation contains a special validation service called the Internal Validation Service. This service is used by checked taxonomies that declare a list of available values published using the Systinet Taxonomy API.

## Types of keyValues

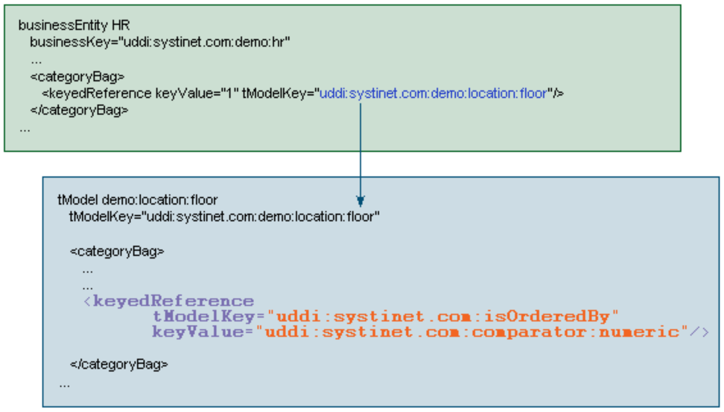
The creator of the taxonomy must specify types of keyValues by assigning the appropriate comparator reference (comparator tModel) of the `systinet-com:isOrderedBy` taxonomy to the categorization taxonomy you want to use to categorize a UDDI entity. The following types of key values types are supported:

- `string` - keyValues are treated as string values. If keyValues type is unknown then keyValues are treated as strings. The maximum length is 255 characters.
- `numeric` - keyValues are treated as decimal numbers. The value can have maximum 19 digits before the decimal point and maximum 6 digits after the decimal point.
- `custom` - keyValues must be transformed to string or numeric values using a transformation service. Please see Custom Ordinal Types on page 251 for more information.

For example, the tModel of the categorization taxonomy with numeric key values must have the following keyedReference in its category bag:

```
<keyedReference tModelKey="uddi:systinet.com:isOrderedBy"
   keyValue="uddi:systinet.com:comparator:numeric"/>
```

**Figure 57. Example of Numeric Categorization**



```
businessEntity HR
  businessKey="uddi:systinet.com:demo:hr"
  ...
  <categoryBag>
    <keyedReference keyValue="1" tModelKey="uddi:systinet.com:demo:location:floor"/>
  </categoryBag>
...
```

```
tModel demo:location:floor
  tModelKey="uddi:systinet.com:demo:location:floor"

  <categoryBag>
    ...
    ...
    <keyedReference
            tModelKey="uddi:systinet.com:isOrderedBy"
            keyValue="uddi:systinet.com:comparator:numeric"/>

  </categoryBag>
...
```

Figure 57 shows how the `demo:location:floor` taxonomy from Demo data can be assigned numeric key values.

If you change type of keyValues of the taxonomy and there are entities in the HP SOA Registry Foundation that were already categorized with the taxonomy, the HP SOA Registry Foundation administrator must execute the task **Transform keyed references**. The button for executing this task is located in the Registry Console under the **Manage** tab, **Registry Management** link. See Administrator's Guide, Accessing Registry Management on page 332

- To learn how to make this assignment using the Registry Console , see User's Guide, Adding a Category on page 306.
- See User's Guide, Searching on page 285 how to search UDDI data structures using range queries with Registry Console.

## Custom Ordinal Types

You can define your custom ordinal types. To demonstrate possible extensions, HP SOA Registry Foundation contains two demo comparators:

- `systinet-com:comparator:date`
- `systinet-com:comparator:stringToLowerCase`

Let's assume you want to create a taxonomy with date values in keyValues. You must mark the taxonomy tModel (that is, add the following keyedReference into its categoryBag) by `<keyedReference tModelKey="uddi:systinet.com:isOrderedBy" keyValue="uddi:systinet.com:comparator:date"/>`. It is quite easy because there is a demo comparator for date in the registry. Imagine the date comparator is not present. Take the following steps to create it in the registry:

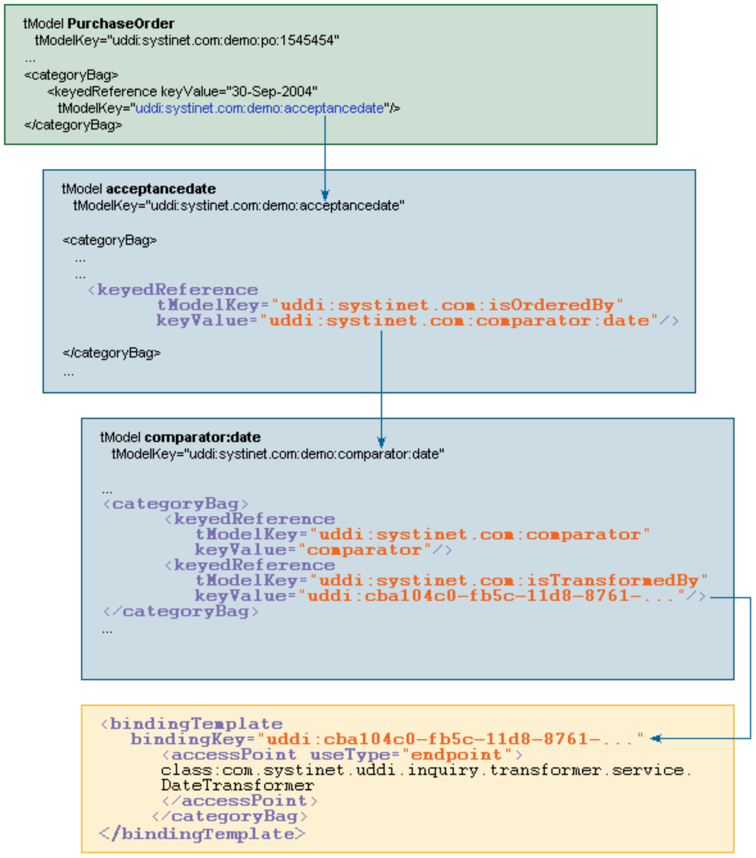
1 Create a transformer service that transforms the date value into a string or numeric value. The transformer service must implement `org.systinet.uddi.client.transformer.kr.TransformerKeyedReferenceApi` and add this class to the HP SOA Registry Foundation class path.

2 Create a new comparator tModel for date. The tModel must be categorized as a comparator using the `systinet-com:comparator` taxonomy. The comparator must refer to the transformer service. This reference is specified by the taxonomy `IsTransformedBy` (where "uddi:cba104c0-fb5c-11d8-8761-eb2505508761" is the key of the bindingTemplate with the specification of the transformer service.

➤ If you change implementation of the of the transformer service of the taxonomy and there are entities in the HP SOA Registry Foundation that were already categorized with the taxonomy, the HP SOA Registry Foundation administrator must execute the task **Transform keyed references**. The button for executing this task is located in the Registry Console under the **Manage** tab, **Registry Management** link. See Administrator's Guide, Accessing Registry Management on page 332

Figure 58 shows the tModel references for date categorization ordering. It describes a purchase order document that has been mapped to HP SOA Registry Foundation via XML-to-UDDI functionality, and then categorized by the `acceptancedate` taxonomy. The categorization taxonomy must refer to the comparator tModel `uddi:systinet.com:comparator:date` that references a bindingTemplate with the location of the date transformation service.

**Figure 58. Example of Custom Categorization (date)**



```
tModel PurchaseOrder
  tModelKey="uddi:systinet.com:demo:po:1545454"
...
<categoryBag>
    <keyedReference keyValue="30-Sep-2004"
      tModelKey="uddi:systinet.com:demo:acceptancedate"/>
</categoryBag>
```

```
tModel acceptancedate
  tModelKey="uddi:systinet.com:demo:acceptancedate"

<categoryBag>
  ...
  ...
   <keyedReference
          tModelKey="uddi:systinet.com:isOrderedBy"
          keyValue="uddi:systinet.com:comparator:date"/>

</categoryBag>
...
```

```
tModel comparator:date
  tModelKey="uddi:systinet.com:demo:comparator:date"

...
<categoryBag>
      <keyedReference
         tModelKey="uddi:systinet.com:comparator"
         keyValue="comparator"/>
      <keyedReference
         tModelKey="uddi:systinet.com:isTransformedBy"
         keyValue="uddi:cba104c0-fb5c-11d8-8761-..."/>
</categoryBag>
...
```

```
<bindingTemplate
   bindingKey="uddi:cba104c0-fb5c-11d8-8761-..."
      <accessPoint useType="endpoint">
      class:com.systinet.uddi.inquiry.transformer.service.
      DateTransformer
      </accessPoint>
     </categoryBag>
</bindingTemplate>
```

The transformer service is called whenever the appropriate keyedReference is processed. If any entity contains the keyedReference with a taxonomy tModel whose type is custom then the transformer service is called to discover the correct (that is, transformed) keyValue of the keyedReference. Such transformed values are stored into the database. If you want to find entities by this keyedReference (the keyedReference with the same taxonomy tModel), the service is called again to get the transformed value. Transformed values are used for the saving and searching of keyedReferences.

## Taxonomy API

This section demonstrates the basics of taxonomy API and taxonomy persistence format. A comprehensive description of the Taxonomy API can be found in the Developer's Guide, Taxonomy on page 446.

For clarity, we use an XML representation, but you can achieve the same results with Java objects.

```
<taxonomy xmlns="http://systinet.com/uddi/taxonomy/v3/5.0"
        xmlns:uddi="urn:uddi-org:api_v3"
         check="false">
    <tModel tModelKey="uddi:systinet.com:demo:myTaxonomy">
        <uddi:name>My taxonomy</uddi:name>
        <uddi:description>Category system</uddi:description>
    </tModel>
    <compatibilityBag>
        <compatibility>businessEntity</compatibility>
    </compatibilityBag>
    <categorizationBag>
        <categorization>categorization</categorization>
    </categorizationBag>
</taxonomy>
```

Each taxonomy, in order to be saved, requires a valid tModel. While it must contain a tModelKey and a name, you do not need to set the content of the categoryBag.

- The Taxonomy attribute `check` determines whether the taxonomy will be checked or not.
- The compatibilityBag is an interface to Systinet's `uddi:systinet.com:taxonomy:categorization` taxonomy, which is used to limit usage of the selected taxonomy within the four main UDDI structure types. In this way you can enforce that your taxonomy can be used only within the UDDI structures of your choice and not in others.
- The categorizationBag is used to declare the type of the taxonomy, for example, whether it is a categorization, categorizationGroup, identifier or relationship taxonomy.

  Note that values may be combined.

Let's enhance the previous example and convert the taxonomy from unchecked to checked. Checked taxonomies must contain Validation. In this example, the taxonomy is checked by the Custom Validation Web service located at `http://www.foo.com/MyValidationService.wsdl`.

```
<taxonomy xmlns="http://systinet.com/uddi/taxonomy/v3/5.0"
        xmlns:uddi="urn:uddi-org:api_v3"
         check="true">
    <tModel tModelKey="uddi:foo.com:demo:myTaxonomy">
        <uddi:name>My taxonomy</uddi:name>
        <uddi:description>Category system</uddi:description>
    </tModel>
    <compatibilityBag>
        <compatibility>businessEntity</compatibility>
    </compatibilityBag>
    <categorizationBag>
        <categorization>categorization</categorization>
    </categorizationBag>
    <validation>
        <bindingTemplate bindingKey="" serviceKey="" xmlns="urn:uddi-org:api_v3">
            <accessPoint useType="endPoint">
               http://www.foo.com/MyValidationService.wsdl
            </accessPoint>
            <tModelInstanceDetails>
                <tModelInstanceInfo
                        tModelKey="uddi:uddi.org:v3_valueSetValidation"/>
                <tModelInstanceInfo
                        tModelKey="uddi:systinet.com:demo:myTaxonomy"/>
            </tModelInstanceDetails>
        </bindingTemplate>
    </validation>
</taxonomy>
```

The `validation` element must hold the bindingTemplate identifying the validation Web service or categories structures. In this example we chose bindingTemplate. It must contain complete accessPoint and tModelInstanceDetails must hold the `Valueset_validation` API and tModelKey of the saved taxonomy. If the serviceKey is specified and if the businessService already exists, it must be part of the Operational Business Entity.

Be aware that the service will be replaced during the `save_taxonomy` process.

If you can provide a list of allowed values, you do not need to implement your own validation Web service. Just provide the allowed values inside the `categories` structure (as shown below) and the Internal Validation Service will be responsible for validation of the keyedReferences.

```
<taxonomy xmlns="http://systinet.com/uddi/taxonomy/v3/5.0"
        xmlns:uddi="urn:uddi-org:api_v3"
         check="true">
    <tModel tModelKey="uddi:foo.com:demo:myTaxonomy">
        <uddi:name>My taxonomy</uddi:name>
        <uddi:description>Category system</uddi:description>
    </tModel>
    <compatibilityBag>
        <compatibility>businessEntity</compatibility>
    </compatibilityBag>
    <categorizationBag>
        <categorization>categorization</categorization>
    </categorizationBag>
    <validation>
        <categories>
            <category keyName="Value A" keyValue="A"/>
            <category keyName="Value B" keyValue="B">
                <category keyName="Value B1" keyValue="B1"/>
                <category keyName="Value B3" keyValue="B3" disabled="true" />
            </category>
            <category keyName="Value C" keyValue="C"/>
        </categories>
    </validation>
</taxonomy>
```

As you can see, you can arrange your values hierarchically. This is useful for the Registry Console that implements the drill-down pattern. If you really need, you can even specify bindingTemplate along with the `categories` structure, but its accessPoint must point to the Internal Validation Service.

## Predeployed Taxonomies

HP SOA Registry Foundation comes with the following predeployed taxonomies:

- `uddi-org:types` is a UDDI Type Category System.

| | |
|---|---|
| v3 UDDI key | `uddi:uddi.org:categorization:types` |
| v2 UUID key | `uuid:c1acf26d-9672-4404-9d70-39b756e62ab4` |

| | |
|---|---|
| Categorization | categorization |
| Compatibility | tModel |
| Checked | yes, Internal Validation Service |

- `uddi-org:general_keywords` is a category system consisting of namespace identifiers and the keywords associated with namespaces.

| | |
|---|---|
| v3 UDDI key | `uddi:uddi.org:categorization:general_keywords` |
| v2 UUID key | `uuid:A035A07C-F362-44dd-8F95-E2B134BF43B4` |
| Categorization | categorization |
| Compatibility | tModel, businessEntity, businessService, bindingTemplate |
| Checked | yes |

- `uddi-org:entityKeyValues` is a category system used to declare that a value set uses entity keys as valid values.

| | |
|---|---|
| v3 UDDI key | `uddi:uddi.org:categorization:entitykeyvalues` |
| v2 UUID key | `uuid:916b87bf-0756-3919-8eae-97dfa325e5a4` |
| Categorization | categorization |
| Compatibility | tModel |
| Checked | yes, Internal Validation Service |

- `uddi-org:isreplacedby` is the identifier system used to point to the UDDI entity, using UDDI keys, that is the logical replacement for the one in which `isReplacedBy` is used.

| | |
|---|---|
| v3 UDDI key | `uddi:uddi.org:identifier:isReplacedBy` |
| v2 UUID key | `uuid:e59ae320-77a5-11d5-b898-0004ac49cc1e` |
| Categorization | identifier |
| Compatibility | tModel, businessEntity |

| | |
|---|---|
| Checked | yes |

- `uddi-org:nodes` is a category system for identifying the nodes of a registry.

| | |
|---|---|
| v3 UDDI key | `uddi:uddi.org:categorization:nodes` |
| v2 UUID key | `uuid:327A56F0-3299-4461-BC23-5CD513E95C55` |
| Categorization | categorization |
| Compatibility | businessEntity |
| Checked | yes |

- `uddi-org:owningBusiness_v3` is a category system used to point to the businessEntity associated with the publisher of the tModel.

| | |
|---|---|
| v3 UDDI key | `uddi:uddi.org:categorization:owningbusiness` |
| v2 UUID key | `uuid:4064c064-6d14-4f35-8953-9652106476a9` |
| Categorization | categorization |
| Compatibility | tModel |
| Checked | yes |

- `uddi-org:validatedBy` is a category system used to point a value set or category group system tModel to associated value set Web service implementations.

| | |
|---|---|
| v3 UDDI key | `uddi:uddi.org:categorization:validatedby` |
| v2 UUID key | `uuid:25b22e3e-3dfa-3024-b02a-3438b9050b59` |
| Categorization | categorization |
| Compatibility | tModel |
| Checked | yes |

- `uddi-org:wsdl:types` is a WSDL Type Category System.

| | |
|---|---|
| v3 UDDI key | `uddi:uddi.org:wsdl:types` |
| v2 UUID key | `uuid:6e090afa-33e5-36eb-81b7-1ca18373f457` |
| Categorization | categorization |
| Compatibility | tModel, businessEntity, businessService, bindingTemplate |
| Checked | yes, Internal Validation Service |

- `uddi-org:wsdl:categorization:protocol`

| | |
|---|---|
| v3 UDDI key | `uddi:uddi.org:wsdl:categorization:protocol` |
| v2 UUID key | `uuid:4dc74177-7806-34d9-aecd-33c57dc3a865` |
| Categorization | categorization |
| Compatibility | tModel |
| Checked | yes |

- `uddi-org:wsdl:categorization:transport`

| | |
|---|---|
| v3 UDDI key | `uddi:uddi.org:wsdl:categorization:transport` |
| v2 UUID key | `uuid:e5c43936-86e4-37bf-8196-1d04b35c0099` |
| Categorization | categorization |
| Compatibility | tModel |
| Checked | yes |

- `uddi-org:wsdl:portTypeReference` is a category system tModel that can be used to identify a relationship to a portType tModel.

| | |
|---|---|
| v3 UDDI key | `uddi:uddi.org:wsdl:portTypeReference` |
| v2 UUID key | `uuid:082b0851-25d8-303c-b332-f24a6d53e38e` |
| Categorization | categorization |

| | |
|---|---|
| Compatibility | tModel |
| Checked | yes |

- `systinet-com:taxonomy:compatibility` enhances a taxonomy tModel with additional information, in which structures the taxonomy can be used.

| | |
|---|---|
| v3 UDDI key | `uddi:systinet.com:taxonomy:compatibility` |
| v2 UUID key | `uuid:cf68c700-f93d-11d6-8cfc-b8a03c50a862` |
| Categorization | categorization |
| Compatibility | tModel |
| Checked | yes, Internal Validation Service |

- `systinet-com:dependency` creates link between two structures (may be different types). Both keyName and keyValue must be specified. KeyName must be one of businessEntity, businessService, bindingTemplate and tModel. KeyValue must be existing UDDI key of specified structure.

| | |
|---|---|
| v3 UDDI key | `uddi:systinet.com:dependency` |
| v2 UUID key | `uuid:179e5540-f27b-11d6-9738-b8a03c50a862` |
| Categorization | categorization |
| Compatibility | tModel, businessEntity, businessService, bindingTemplate |
| Checked | yes |

- `dnb-com:D-U-N-S` - Thomas Registry Suppliers

| | |
|---|---|
| v3 UDDI key | `uddi:uddi.org:ubr:identifier:dnb.com:d-u-n-s` |
| v2 UUID key | `uuid:8609c81e-ee1f-4d5a-b202-3eb13ad01823` |
| Categorization | identifier |
| Compatibility | tModel, businessEntity, businessService, bindingTemplate |
| Checked | no |

- `microsoft-com:geoweb:2000` - Geographic Taxonomy: GeoWeb (2000 Release)

| | |
|---|---|
| v3 UDDI key | `uddi:297aaa47-2de3-4454-a04a-cf38e889d0c4` |
| v2 UUID key | `uuid:297aaa47-2de3-4454-a04a-cf38e889d0c4` |
| Categorization | categorization |
| Compatibility | tModel, businessEntity, businessService, bindingTemplate |
| Checked | no |

- `ntis-gov:naics:1997` - Business Taxonomy: NAICS (1997 Release)

| | |
|---|---|
| v3 UDDI key | `uddi:uddi.org:ubr:categorization:naics:1997` |
| v2 UUID key | `uuid:c0b9fe13-179f-413d-8a5b-5004db8e5bb2` |
| Categorization | categorization |
| Compatibility | tModel, businessEntity, businessService, bindingTemplate |
| Checked | yes, Internal Validation Service |

- `ntis-gov:sic:1997` - Business Taxonomy: SIC (1997 Release)

| | |
|---|---|
| v3 UDDI key | `uddi:70a80f61-77bc-4821-a5e2-2a406acc35dd` |
| v2 UUID key | `uuid:70a80f61-77bc-4821-a5e2-2a406acc35dd` |
| Categorization | categorization |
| Compatibility | tModel, businessEntity, businessService, bindingTemplate |
| Checked | yes, Internal Validation Service |

- `ntis-gov:naics:2002` - Business Taxonomy: Business Taxonomy: NAICS (2002 Release

| | |
|---|---|
| v3 UDDI key | `uddi:uddi.org:ubr:categorization:naics:2002` |
| v2 UUID key | `uuid:1ff729f2-1948-46cf-b660-31ec107f1663` |
| Categorization | categorization |

| | |
|---|---|
| Compatibility | tModel businessEntity businessService bindingTemplate |
| Checked | yes, Internal Validation Service |

- `unspsc-org:unspsc:3-1` - Product Taxonomy: UNSPSC (Version 3.1)

| | |
|---|---|
| v3 UDDI key | `uddi:db77450d-9fa8-45d4-a7bc-04411d14e384` |
| v2 UUID key | `uuid:db77450d-9fa8-45d4-a7bc-04411d14e384` |
| Categorization | categorization |
| Compatibility | tModel, businessEntity, businessService, bindingTemplate |
| Checked | no |

- `unspsc-org:unspsc` - Product Taxonomy: UNSPSC (Version 7.3)

| | |
|---|---|
| v3 UDDI key | `uddi:unspsc-org:unspsc` |
| v2 UUID key | `uuid:cd153257-086a-4237-b336-6bdcbdcc6634` |
| Categorization | categorization |
| Compatibility | tModel, businessEntity, businessService, bindingTemplate |
| Checked | yes, Internal Validation Service |

- `unspsc-org:unspsc:v6.0501` - Product and Service Category System: United Nations Standard Products and Services Code (UNSPSC)

| | |
|---|---|
| v3 UDDI key | `uddi:uddi.org:ubr:categorization:unspsc` |
| v2 UUID key | `uuid:4614C240-B483-11D7-8BE8-000629DC0A53` |
| Categorization | categorization |
| Compatibility | tModel businessEntity businessService bindingTemplate |
| Checked | yes, Internal Validation Service |

- `ws-i-org:conformsTo:2002_12` is a category system used for UDDI entities to point to the WS-I concept to which they conform.

| | |
|---|---|
| v3 UDDI key | `uddi:65719168-72c6-3f29-8c20-62defb0961c0` |
| v2 UUID key | `uuid:65719168-72c6-3f29-8c20-62defb0961c0` |
| Categorization | categorization |
| Compatibility | tModel |
| Checked | no |

## WSM Taxonomies

The following taxonomies are used for integration with a web service management system:

### systinet-com:management:metrics:avg-byte

Average sum of incoming and outgoing message length

| | |
|---|---|
| v3 UDDI key | `uddi:systinet.com:management:metrics:avg-byte` |
| v2 UUID key | `uuid:3c13a2e2-dfd0-30a2-bd58-c5de8c2ae3bb` |
| Categorization | categorization |
| Compatibility | tModel |
| Checked | no |

### systinet-com:management:metrics:avg-byte-input

Average input message length per hour

| | |
|---|---|
| v3 UDDI key | `uddi:systinet.com:management:metrics:avg-byte-input` |
| v2 UUID key | `uuid:f18a50ad-ddb2-392a-b97c-1181c67b2817` |
| Categorization | categorization |
| Compatibility | tModel |
| Checked | no |

### systinet-com:management:metrics:avg-byte-output

Average output message length

| | |
|---|---|
| v3 UDDI key | `uddi:systinet.com:management:metrics:avg-byte-output` |
| v2 UUID key | `uuid:7664723d-896a-3ed2-b7e9-46c9f38e7681` |
| Categorization | categorization |
| Compatibility | tModel |
| Checked | no |

### systinet-com:management:metrics:avg-hits

Average message hits per hour

| | |
|---|---|
| v3 UDDI key | `uddi:systinet.com:management:metrics:avg-hits` |
| v2 UUID key | `uuid:bf010bf9-cafa-3f68-bf51-3cde3bd0f483` |
| Categorization | categorization |
| Compatibility | tModel |
| Checked | no |

### systinet-com:management:metrics:avg-response-time

Average response time in milliseconds

| | |
|---|---|
| v3 UDDI key | `uddi:systinet.com:management:metrics:avg-response-time` |
| v2 UUID key | `uuid:099d67a9-eae6-3c30-8be9-48b44c5d9728` |
| Categorization | categorization |
| Compatibility | tModel |
| Checked | no |

### systinet-com:management:metrics:errors

Count of application failures in the last hour

| | |
|---|---|
| v3 UDDI key | `uddi:systinet.com:management:metrics:errors` |
| v2 UUID key | `uuid:b074de10-e781-383a-bd00-248a1c42f0fa` |
| Categorization | categorization |
| Compatibility | tModel |
| Checked | no |

### systinet-com:management:metrics:hits

Count of hits in the last hour

| | |
|---|---|
| v3 UDDI key | `uddi:systinet.com:management:metrics:hits` |
| v2 UUID key | `uuid:720689a4-dce4-398c-adba-e5c0f50d1eb2` |
| Categorization | categorization |
| Compatibility | tModel |
| Checked | no |

### systinet-com:management:metrics:median-byte

Median sum of incoming and outgoing message lengths

| | |
|---|---|
| v3 UDDI key | `uddi:systinet.com:management:metrics:median-byte` |
| v2 UUID key | `uuid:0adefd4c-7624-3973-91a5-ea4971d6b0ef` |
| Categorization | categorization |
| Compatibility | tModel |
| Checked | no |

### systinet-com:management:metrics:median-byte-input

Median value of incoming message lengths

| | |
|---|---|
| v3 UDDI key | `uddi:systinet.com:management:metrics:median-byte-input` |
| v2 UUID key | `uuid:c9c2fd87-f806-3ca0-819e-3f788cc8fd95` |

| | |
|---|---|
| Categorization | categorization |
| Compatibility | tModel |
| Checked | no |

## systinet-com:management:metrics:median-byte-output

Median output message length

| | |
|---|---|
| v3 UDDI key | `uddi:systinet.com:management:metrics:median-byte-output` |
| v2 UUID key | `uuid:bdb4e8f8-1aba-3558-b1f5-cf89b5455529` |
| Categorization | categorization |
| Compatibility | tModel |
| Checked | no |

## systinet-com:management:metrics:median-response-time

Median response time in milliseconds

| | |
|---|---|
| v3 UDDI key | `uddi:systinet.com:management:metrics:median-response-time` |
| v2 UUID key | `uuid:62f08146-1d3f-30e3-8c6a-1f2062c332d4` |
| Categorization | categorization |
| Compatibility | tModel |
| Checked | no |

## systinet-com:management:metrics:policy-violations

Count of policy violations in the last hour

| | |
|---|---|
| v3 UDDI key | `uddi:systinet.com:management:metrics:policy-violations` |
| v2 UUID key | `uuid:be42511a-3c68-34d2-b137-d00e56bb4de4` |
| Categorization | categorization |
| Compatibility | tModel |

| | |
|---|---|
| Checked | no |

## systinet-com:management:metrics:reference

Reference to a tModel containing all metrics about the service. The keyValues in keyedReferences that refer to this tModel must be a tModelKey of the metric tModel.

| | |
|---|---|
| v3 UDDI key | `uddi:systinet.com:management:metrics:reference` |
| v2 UUID key | `uuid:0d709256-b9f3-30a3-9aa1-51a1adb11324` |
| Categorization | categorization |
| Compatibility | bindingTemplate |
| Checked | yes |

## systinet-com:management:proxy-reference

WSM Proxy Reference Taxonomy

| | |
|---|---|
| v3 UDDI key | `uddi:systinet.com:management:proxy-reference` |
| v2 UUID key | `uuid:79bf6f6d-b0b7-3f08-b45e-9893b525de9b` |
| Categorization | categorization |
| Compatibility | bindingTemplate |
| Checked | yes |

## systinet-com:management:server-reference

WSM Server Reference Taxonomy.

| | |
|---|---|
| v3 UDDI key | `uddi:systinet.com:management:server-reference` |
| v2 UUID key | `uuid:1583604a-57a2-3887-9b1d-2549e270390c` |
| Categorization | categorization |
| Compatibility | bindingTemplate |
| Checked | yes |

## systinet-com:management:state

WSM State Taxonomy

| | |
|---|---|
| v3 UDDI key | `uddi:systinet.com:management:state` |
| v2 UUID key | `uuid:73c7ef28-6150-36a0-ba82-414424ede582` |
| Categorization | categorization |
| Compatibility | bindingTemplate |
| Checked | yes |

## systinet-com:management:state-change-request-type

WSM State Change Request Taxonomy

| | |
|---|---|
| v3 UDDI key | `uddi:systinet.com:management:state-change-request-type` |
| v2 UUID key | `uuid:64473cda-4a78-3ddb-b0c6-801533ce1943` |
| Categorization | categorization |
| Compatibility | bindingTemplate |
| Checked | yes |

## systinet-com:management:system

WS Management System Taxonomy

| | |
|---|---|
| v3 UDDI key | `uddi:systinet.com:management:system` |
| v2 UUID key | `uuid:e148d85e-cc08-32f6-8f00-db85e258e511` |
| Categorization | categorization |
| Compatibility | bindingTemplate |
| Checked | no |

## systinet-com:management:type

WSM Type Taxonomy

| | |
|---|---|
| v3 UDDI key | `uddi:systinet.com:management:type` |
| v2 UUID key | `uuid:5d14645d-66ea-39ac-8122-49d06b09b492` |
| Categorization | categorization |
| Compatibility | bindingTemplate |
| Checked | yes |

### systinet-com:management:url

Endpoint URL Taxonomy

| | |
|---|---|
| v3 UDDI key | `uddi:systinet.com:management:url` |
| v2 UUID key | `uuid:4897f99b-bd23-3889-af37-b80351cf8b52` |
| Categorization | categorization |
| Compatibility | bindingTemplate |
| Checked | no |

## Registry Console Reference

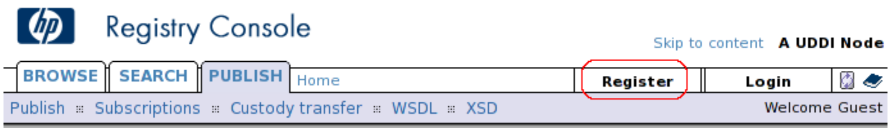
- Registry Console Overview
- Manage user account and user groups
- Browsing the registry;
- Searching the registry
- Publishing in the registry

### Register/Create Account

### Register

Before you can publish data to the registry, you must have a HP SOA Registry Foundation account. You can create an account via the web interface.

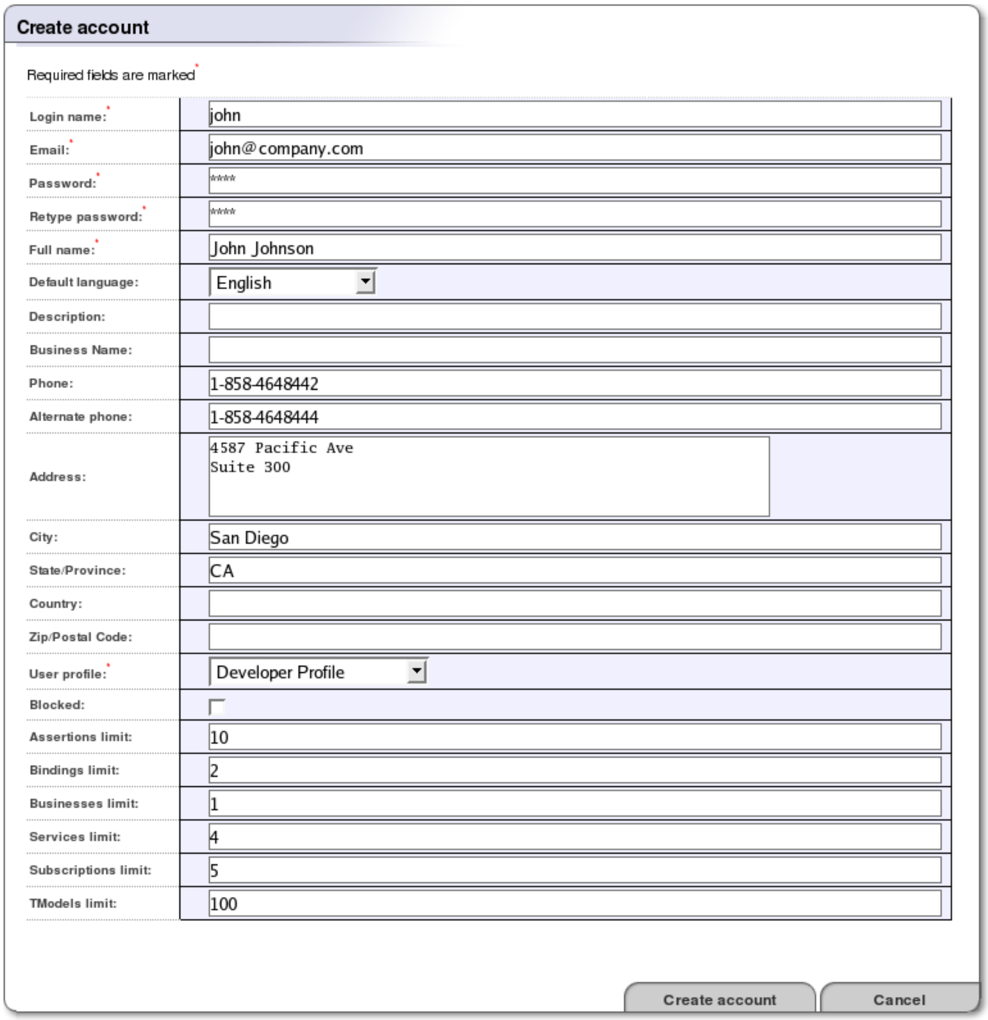
**Figure 59. Register Account**



Follow these steps to register a user account:

1. Click the **Register** link on the main Registry Console page. This returns the **Create account** page.
2. Fill in all fields. Those labeled with an asterisk (*) are required. Your email address may be used later for enabling your account.

**Figure 60. Create Account**


Create account

Required fields are marked*

| | |
|---|---|
| Login name:* | john |
| Email:* | john@company.com |
| Password:* | ***** |
| Retype password:* | ***** |
| Full name:* | John Johnson |
| Default language: | English |
| Description: | |
| Business Name: | |
| Phone: | 1-858-4648442 |
| Alternate phone: | 1-858-4648444 |
| Address: | 4587 Pacific Ave<br>Suite 300 |
| City: | San Diego |
| State/Province: | CA |
| Country: | |
| Zip/Postal Code: | |
| User profile:* | Developer Profile |
| Blocked: | ☐ |
| Assertions limit: | 10 |
| Bindings limit: | 2 |
| Businesses limit: | 1 |
| Services limit: | 4 |
| Subscriptions limit: | 5 |
| TModels limit: | 100 |

3 Click the **Create account** button.

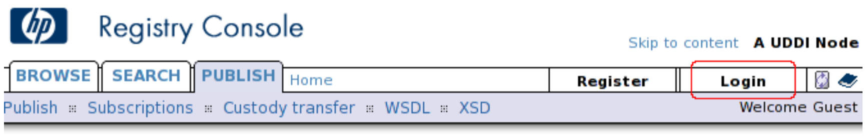
The new account is now enabled.

➤ HP SOA Registry Foundation may be configured to require email confirmation in order to enable the user account. In this case, the registry sends an email confirmation. Follow the instructions in this email to enable your account.

## Login

To log on, click the **Login** link on the upper part of the Registry Console, and enter your username and password.

**Figure 61. Login Tab**



Once logged into the registry, you are able to publish, delete, and update the various UDDI structures. Users have access to their own account information. Administrators also have account administration access; that is, the ability to delete and edit accounts and produce account audit reports.

## Registry Console Overview

Registry Console is comprised of the following objects:

**A: Main Menu Tabs.**

**Browse**

This tab allows you to browse UDDI entities using taxonomies.

**Search**

This tab allows you to search the registry. You can perform inquiry on UDDI entities, you can find business entity, service, bindings, tModels, and related businesses. The menu option also allows you to browse taxonomies and directly get information from HP SOA Registry Foundation when you know a key of UDDI data types (business, service, binding, and tModel)

**Publish**

This tab allows you to publish UDDI structures (businessEntities, businessServices, bindingTemplates, and tModels). On this tab, you can also assert relationships between business entities, subscribe interest in receiving information about changes made to a registry, transfer ownership of selected UDDI structures (Custody Transfer), and publish WSDLs to the registry.

**Profile**

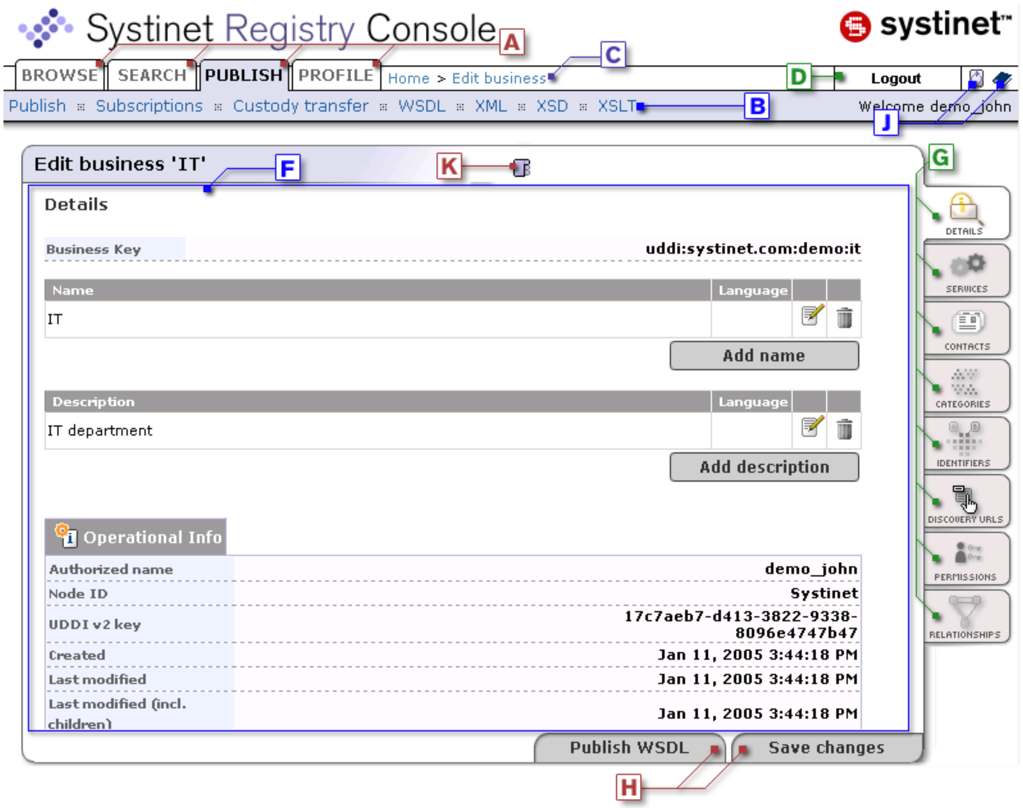
Here you can manage your user account properties, account groups and favorite taxonomies.

**Manage**

This tab is used by the HP SOA Registry Foundation administrator to perform management tasks. See Administrators Guide for more information.

**B: Menu Bar.** Sub menu options are located here.

**Figure 62. Registry Console Overview**



Edit business 'IT'

Details

| | |
|---|---|
| Business Key | uddi:systinet.com:demo:it |

| Name | Language |
|---|---|
| IT | |

| Description | Language |
|---|---|
| IT department | |

Operational Info

| | |
|---|---|
| Authorized name | demo_john |
| Node ID | Systinet |
| UDDI v2 key | 17c7aeb7-d413-3822-9338-8096e4747b47 |
| Created | Jan 11, 2005 3:44:18 PM |
| Last modified | Jan 11, 2005 3:44:18 PM |
| Last modified (incl. children) | Jan 11, 2005 3:44:18 PM |

**C: History path (breadcrumbs).** This area displays the log of your recent actions. You can return to any of these previous actions by clicking on the hyperlinks.

**D: User Actions.** This area contains several control elements that enable a user to:

- Create an account
- Log On

- Log Out

**F: Main Display Area.** Information chosen from the tabs and the tree display is made available in the Main Display Area.

**G: Display Tabs.** These tabs allow the user to control the main area's display based on information type. A plain listing of all business properties would be very long and very difficult to read. Dividing the properties into tabs reduces the amount of information and improves page readability. The displayed information changes with the context.

**H: Action Buttons.** The action buttons allow you to perform operations on the contents of the main display.

**J: Action Icons.** There are two icons in this area. The first one allows you to refresh the page content, second one will open the product documentation page.

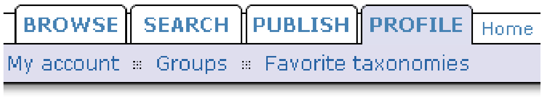
**K: Action Icons .** Icons from this area allow you to switch on/off display tabs and open the current page in the printer friendly mode.

For more information, please see Figure 62.

## User Profile

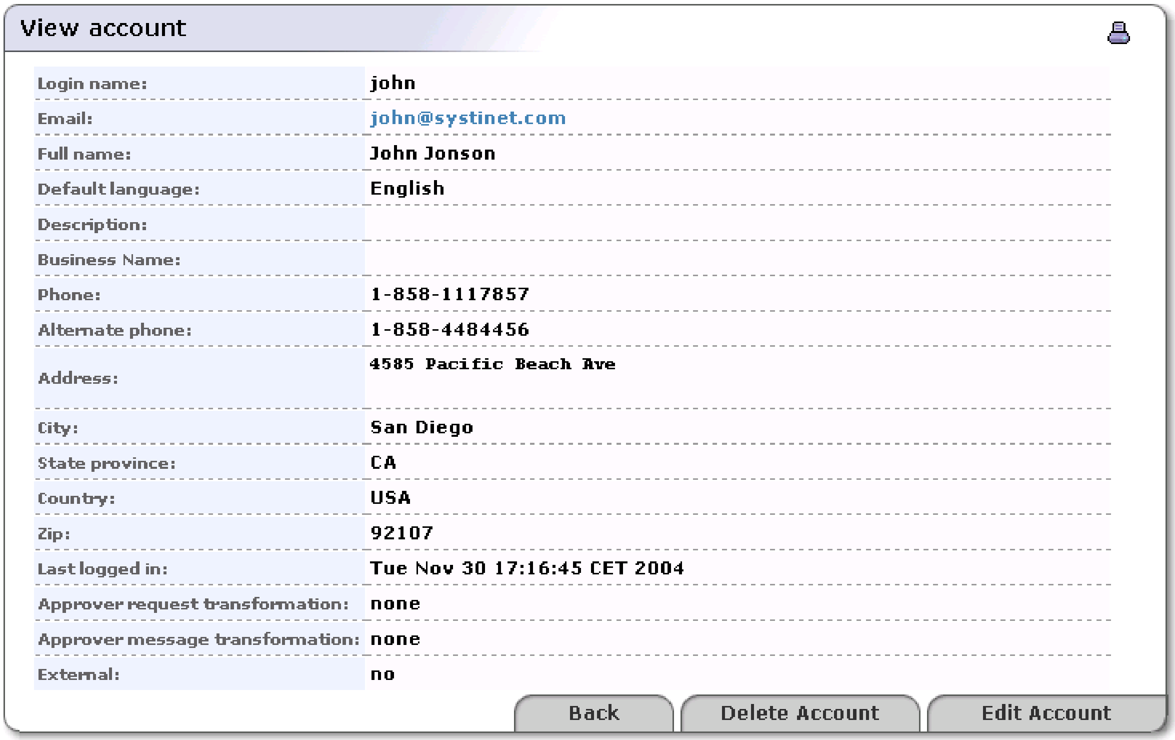
You can manage your user account, user groups, and favorite taxonomies under the **Profile** menu tab.

**Figure 63. Profile Menu Tab**



To update your account properties, select **My account** and click the **Edit Account** button

**Figure 64. View Account**



| | |
|---|---|
| Login name: | john |
| Email: | john@systinet.com |
| Full name: | John Jonson |
| Default language: | English |
| Description: | |
| Business Name: | |
| Phone: | 1-858-1117857 |
| Alternate phone: | 1-858-4484456 |
| Address: | 4585 Pacific Beach Ave |
| City: | San Diego |
| State province: | CA |
| Country: | USA |
| Zip: | 92107 |
| Last logged in: | Tue Nov 30 17:16:45 CET 2004 |
| Approver request transformation: | none |
| Approver message transformation: | none |
| External: | no |

Field descriptions (self-explanatory fields are omitted):

**Default Language Code**

Set the default language code. Used when publishing, it is the language code associated with a particular field when the language is not specified.

**Use the following profile**

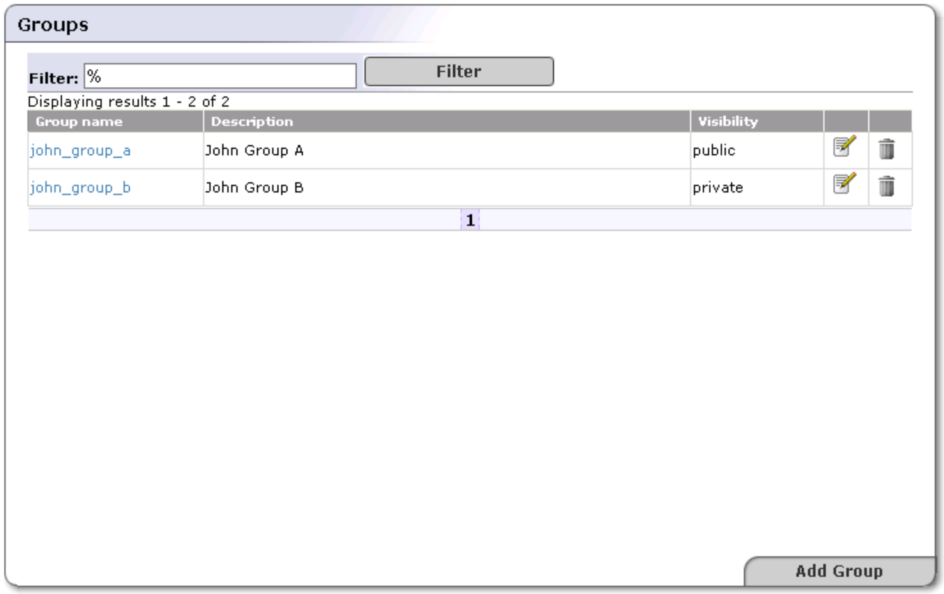
**Profile preference** - Select your preferred predefined user profile from this drop down list

To maintain user groups, click the **Groups** link. From the Groups screen, you can:

- Create and manage your own groups

- Manage group membership

**Figure 65. View User Groups**



Filter: %

Displaying results 1 - 2 of 2

| Group name | Description | Visibility | | |
|---|---|---|---|---|
| john_group_a | John Group A | public | | |
| john_group_b | John Group B | private | | |

1

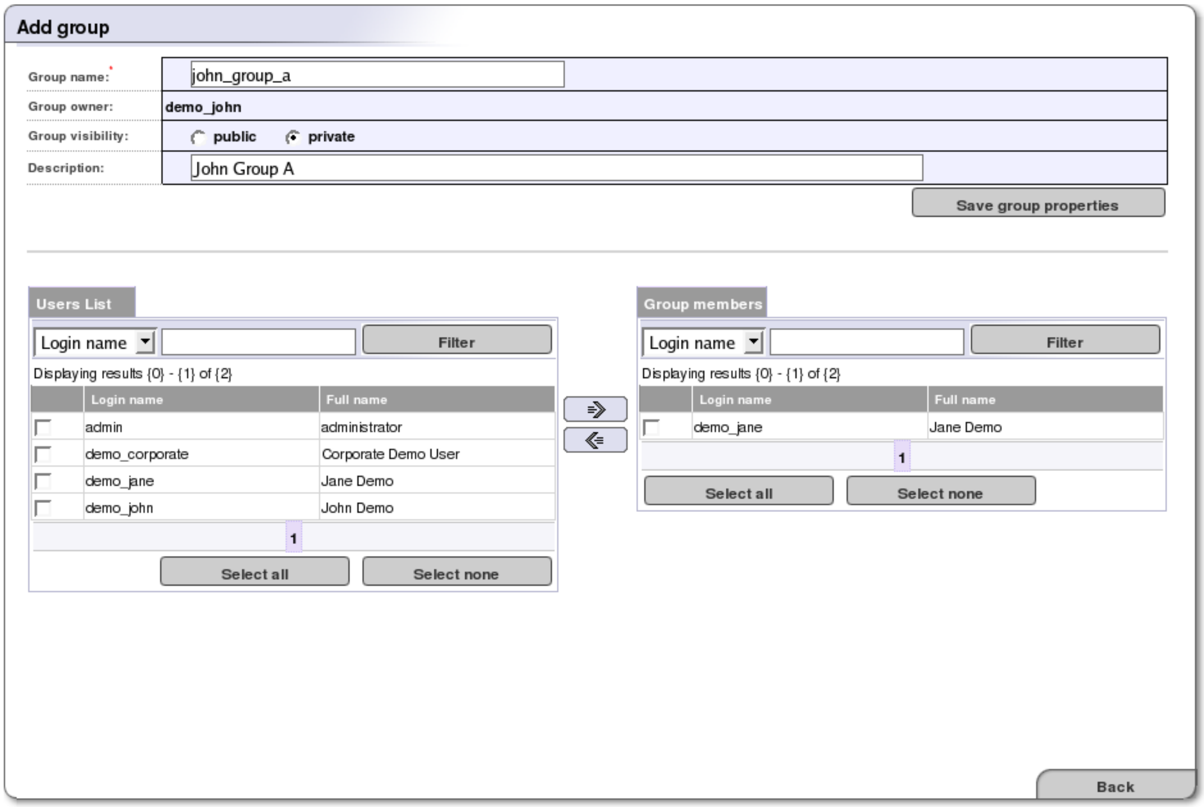
## Create and Manage Groups

To create a new group:

1. Click on the **Profile** menu tab, and select the **Groups** link. This returns the Group list shown in Figure 65.

2. Click the **Add Group** button.

**Figure 66. Edit Group Membership**


Add group

| | |
|---|---|
| Group name:* | john_group_a |
| Group owner: | demo_john |
| Group visibility: | public [✓ private] |
| Description: | John Group A |

Save group properties

Users List

Login name | Filter

Displaying results {0} - {1} of {2}

| | Login name | Full name |
|---|---|---|
| ☐ | admin | administrator |
| ☐ | demo_corporate | Corporate Demo User |
| ☐ | demo_jane | Jane Demo |
| ☐ | demo_john | John Demo |

1

Select all | Select none

Group members

Login name | Filter

Displaying results {0} - {1} of {2}

| | Login name | Full name |
|---|---|---|
| ☐ | demo_jane | Jane Demo |

1

Select all | Select none

Back

3 In the edit box labeled **Group name**, type the name of your group.

4 Use the radio buttons labeled **public** and **private** to establish whether this group should be visible to all members (public) or visible only to the group owner (private).

5 Click **Filter** to display a list of the registry's users.

6 Check the boxes for all members you wish to include, then click the right-pointing arrow to move them to the **Group members** table.

7 Once users are added, click **Save Group** to update HP SOA Registry Foundation

## Manage Group Membership

To add or remove members from a group:

1 Click on the **Profile** menu tab.

2 Click on the **Groups** link. This returns the Group list shown in Figure 65.

3 Click on the **Edit** button.

4 Use arrow buttons to add and remove users as shown in Figure 66

## favorite Taxonomies

You can manage your favorite taxonomies under the **Profile** tab. You can define which taxonomies will be present in the list of your favorite taxonomies. Favorite taxonomies help you to search and categorize UDDI entities.

To manage your list of favorite taxonomies:

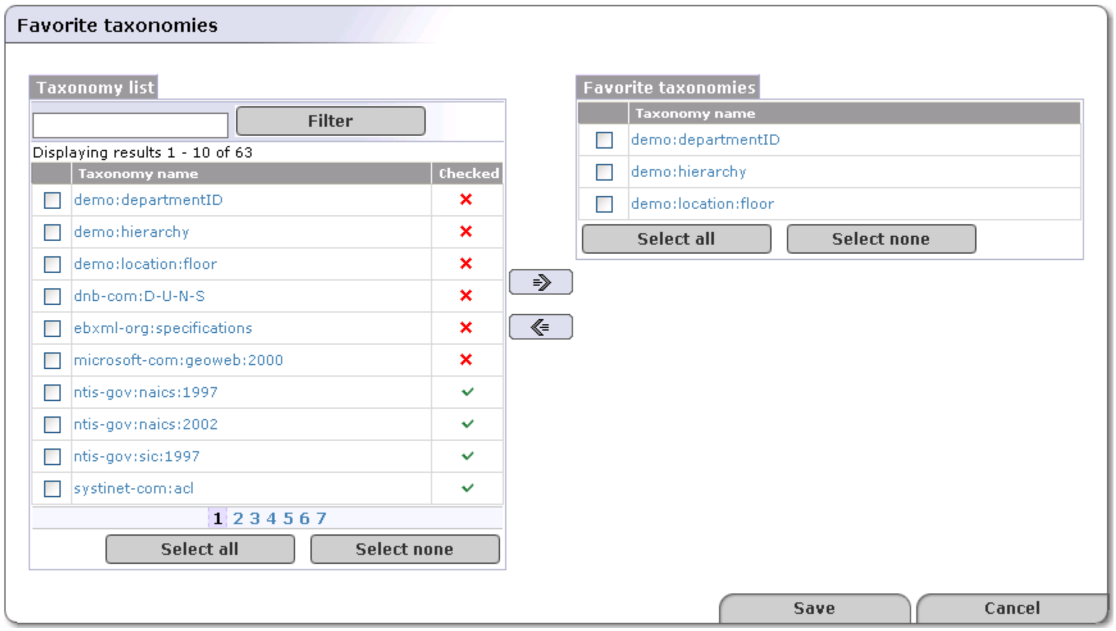
1 Click on the **Profile** menu tab. Click on the **favorite taxonomies** link. This returns the list of your favorite taxonomies shown in Figure 67.

2 Click **Filter** to search taxonomies by name.

3 Check the boxes for all taxonomies you wish to include, and click the right-pointing arrow to copy them to the favorite taxonomies table.

4 Once taxonomies are added, click the **Save** button to update the registry.

**Figure 67. Manage favorite Taxonomies**


Favorite taxonomies

Taxonomy list

Displaying results 1 - 10 of 63

| | Taxonomy name | Checked |
|---|---|---|
| ☐ | demo:departmentID | ✗ |
| ☐ | demo:hierarchy | ✗ |
| ☐ | demo:location:floor | ✗ |
| ☐ | dnb-com:D-U-N-S | ✗ |
| ☐ | ebxml-org:specifications | ✗ |
| ☐ | microsoft-com:geoweb:2000 | ✗ |
| ☐ | ntis-gov:naics:1997 | ✓ |
| ☐ | ntis-gov:naics:2002 | ✓ |
| ☐ | ntis-gov:sic:1997 | ✓ |
| ☐ | systinet-com:acl | ✓ |

1 2 3 4 5 6 7

Favorite taxonomies

| | Taxonomy name |
|---|---|
| ☐ | demo:departmentID |
| ☐ | demo:hierarchy |
| ☐ | demo:location:floor |

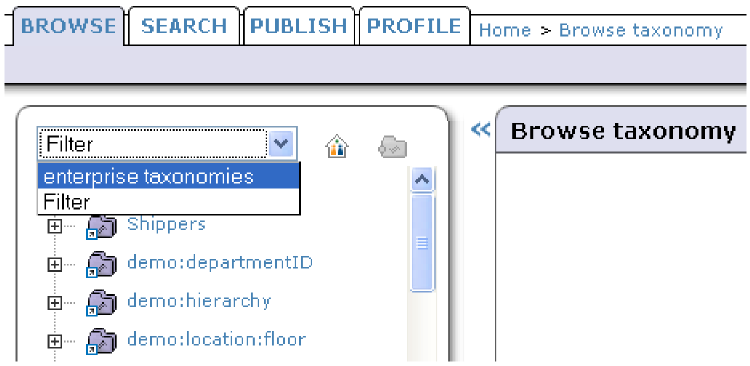
## Browsing

In this section, we will show you how to browse taxonomy structures to discover UDDI entities categorized or identified by taxonomies. You can also define a taxonomy filter and put your search criteria to a query. We present a demo data set that is installed with HP SOA Registry Foundation. This demonstration set is designed to help familiarize you with the registry.

To browse taxonomies and UDDI entities:

1. Click on the **Taxonomies** link under the **Browse** main menu tab.
2. The page shown in Figure 68 will appear.

**Figure 68. Browse Menu Tab**



On this page, you can use the drop down list to switch the taxonomy list to **favorite taxonomies**, **enterprise taxonomies**, and a defined **filter**.

The **favorite taxonomies** option appears in the drop down list only if your list of favorite taxonomies is not empty. To add a taxonomy to your favorites, follow the direction in favorite Taxonomies on page 279. The list of enterprise taxonomies is defined by an administrator. For more information, see Taxonomy Management on page 347 in the Administrator's guide.

Initially, the **filter** contains all taxonomies except system taxonomies. Icons next to the drop down list serve to show/hide categorized entities, and show all/suppress empty categories.

Drill down through the taxonomy tree to see all taxonomy categories. Those with sub-categories can be expanded and collapsed.

When you browse internally checked taxonomies you can see their value set to see UDDI entities categorized by these key values. For unchecked or externally checked taxonomies, you can search UDDI entities by key values. We will show you how to browse an unchecked taxonomy from the demo data.

To browse the demo data using **demo:location:floor** taxonomy:

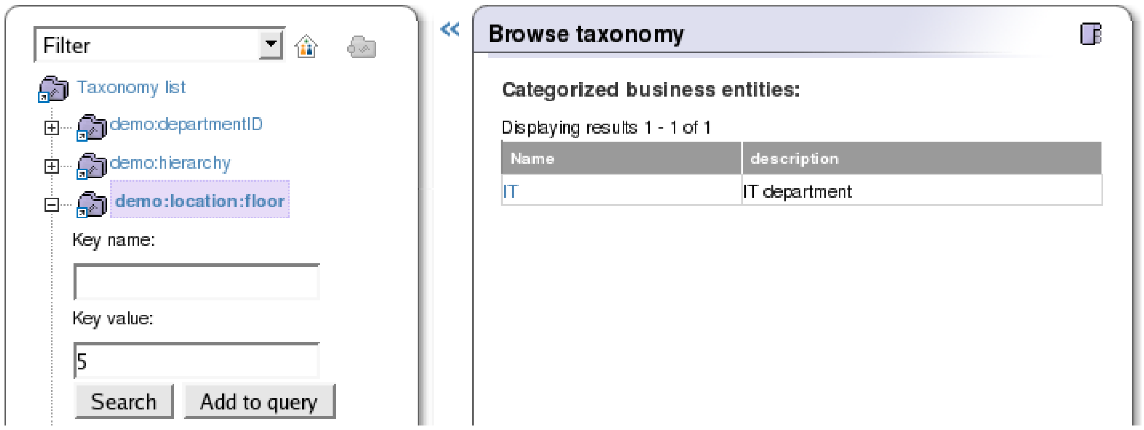
1 Switch the drop down list shown in Figure 68 to the **filter** option.

2 Click on the **demo:location:floor** taxonomy. Expand the taxonomy by clicking on the plus sign in front of the taxonomy name. The key name and key value field pair appears.

3 Enter key value as 5, then click **Search** button.

4 You will get a list of UDDI entities categorized by this taxonomy with matching key value (IT in this case) as shown in Figure 69.

**Figure 69. Browse Demo**



Categorized business entities:

Displaying results 1 - 1 of 1

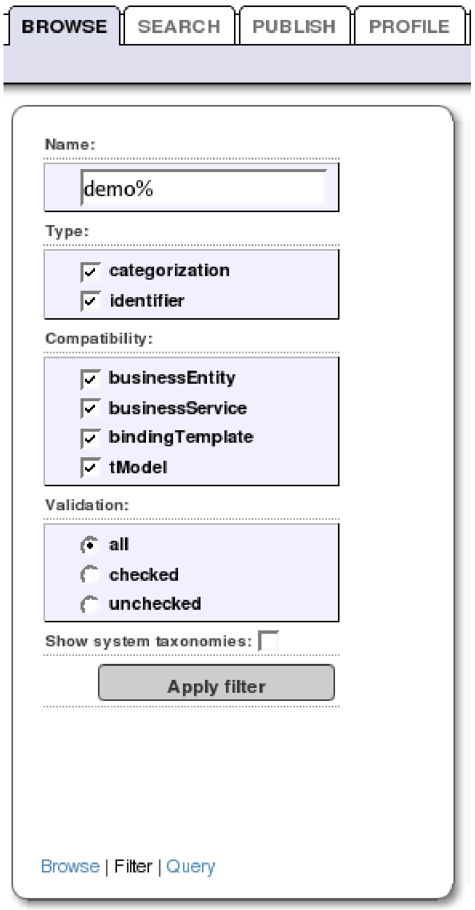
| Name | description |
|---|---|
| IT | IT department |

You can also add this search criterion to a query.

## Define Filter

You can reduce the number of taxonomies in the taxonomy list by defining a taxonomy filter. To switch from taxonomy browsing to filter definition, click on the **filter** link in the lower left corner. The page shown in Figure 70 will appear.

**Figure 70. Taxonomy Filter**



Name: demo%

Type: [✓ categorization] [✓ identifier]

Compatibility: [✓ businessEntity] [✓ businessService] [✓ bindingTemplate] [✓ tModel]

Validation: [✓ all] checked unchecked

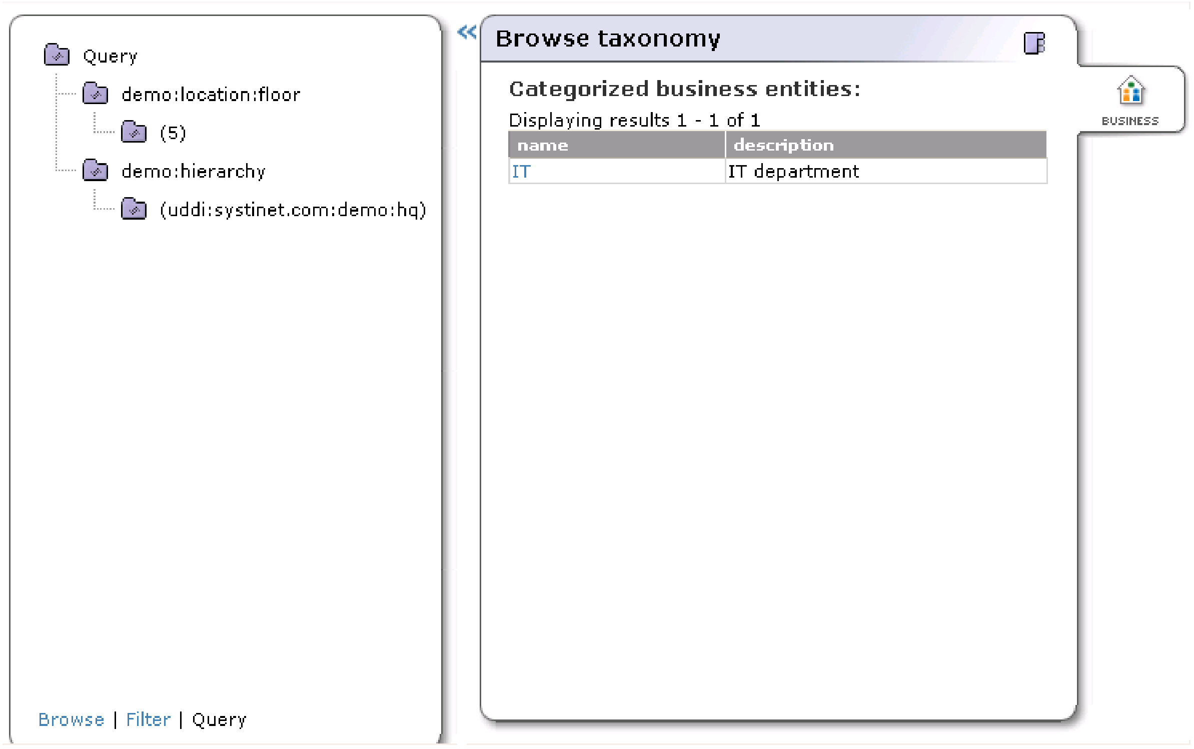
Show system taxonomies: ☐

You can filter taxonomies by name using the wild card characters `%` and `_`. You can specify taxonomy type, compatibility, and a validation type. Once you define the filter criteria, click **Apply filter**. This will return you to the browse taxonomy page.

## Define Query

You can also combine search criteria in a query. To add a search criterion to a query, use the button **Add to query** shown in Figure 69. Then, you can expand another taxonomy and specify a new criterion. The page shown at Figure 71 presents the query displaying business entities located on the 5th floor (demo:location:floor taxonomy) having Headquarter department as the superior department (demo:hierarchy taxonomy).

**Figure 71. Query**


Query
demo:location:floor
(5)
demo:hierarchy
(uddi:systinet.com:demo:hq)

Browse | Filter | Query

Browse taxonomy

Categorized business entities:

Displaying results 1 - 1 of 1

| name | description |
|---|---|
| IT | IT department |

To remove a category from the query, right-click on the query and select **remove from query** from the context menu.

The query definition is not persistent. Once you leave the **Browse** menu tab, the query will disappear.

## Searching

HP SOA Registry Foundation search function allows you to perform the following searches:

**Find UDDI data structures**

You can search for business entities, services, bindings, and tModels using names and categories in combination with find qualifiers including range queries.

- Find Business
- Find Services
- Find Binding
- Find tModel

**Direct Get**

You can retrieve data from HP SOA Registry Foundation when you know the key of the UDDI entity you want to retrieve.

**Find Resources**

You can search for resources:

- Find WSDL
- Find XSD

In the Search section, we present a demonstration data set that is installed with HP SOA Registry Foundation. This demonstration set is designed to help familiarize you with the registry.

HP SOA Registry Foundation supports the use of wildcard characters. You can use both `%` and `_`.

Use `%` in place of any number of characters and spaces. For example, if you wish to find all business beginning with A, type `A%`. Use the underscore wildcard (_) in place of any single character. For example, to find Dan or Dane, type `Dan_`.

See Find Business by Categories on page 288 how to use range queries functionality.

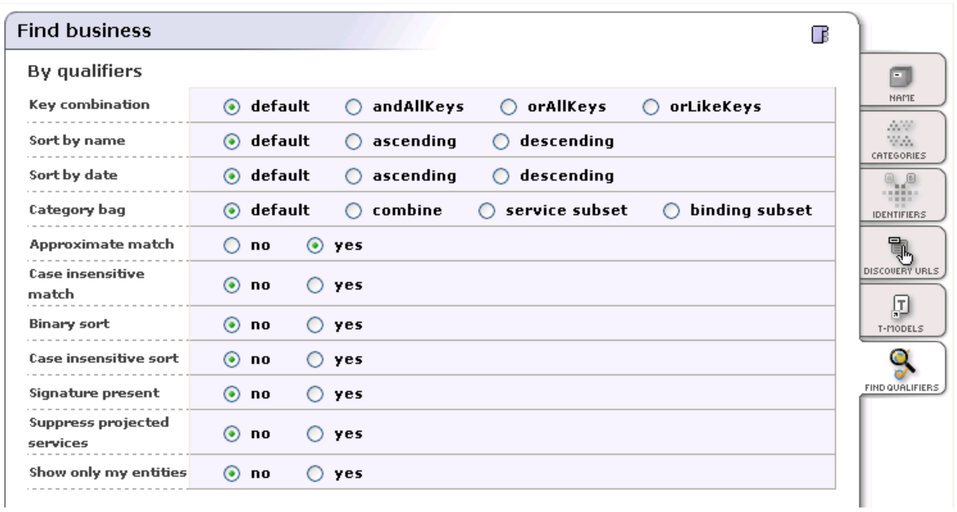
### Find Business

In this section, we cover locating business entities using a number of different methods. You can locate business entities by:

- Name
- Categories
- Identifiers
- Discovery URL
- tModel

For each find method, you can specify qualifiers located on the **Find Qualifiers** tab of the **Search** panel.

**Figure 72. Find Qualifiers**


Find business

By qualifiers

| | |
|---|---|
| Key combination | [✓ default] andAllKeys orAllKeys orLikeKeys |
| Sort by name | [✓ default] ascending descending |
| Sort by date | [✓ default] ascending descending |
| Category bag | [✓ default] combine service subset binding subset |
| Approximate match | no [✓ yes] |
| Case insensitive match | [✓ no] yes |
| Binary sort | [✓ no] yes |
| Case insensitive sort | [✓ no] yes |
| Signature present | [✓ no] yes |
| Suppress projected services | [✓ no] yes |
| Show only my entities | [✓ no] yes |

## Find Business by Name

To find a business by name:

1 Under the main **Search** tab, click the **Businesses** link.

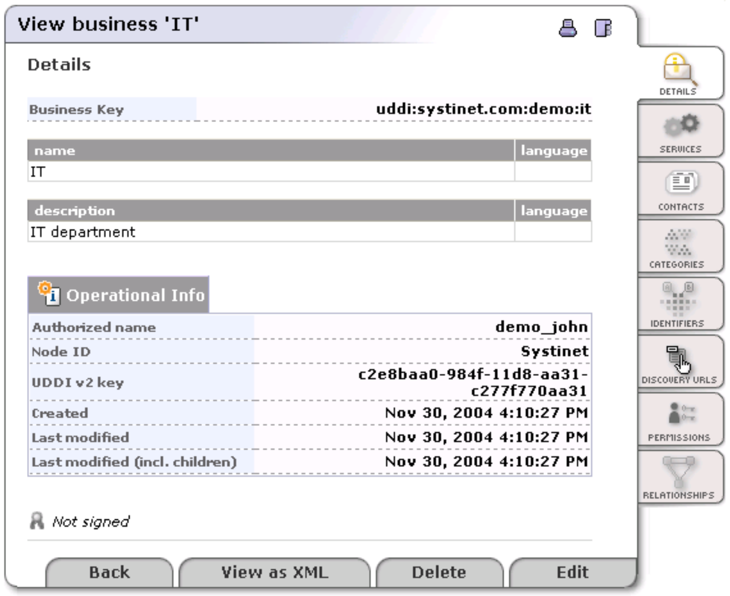
2 Click the **Add Name** button in the **Search** panel.

3 Type in the business name, such as `IT` from the pre-installed demo data. Then click the **Find** tab at the bottom right corner.

To see all businesses, type the wildcard `%` and click **Find**.

4 The search result will appear on the **Results** panel. Click on the link with the business name, this opens the page shown at Figure 73.

**Figure 73. View Business Detail**


View business 'IT'

Details

| | |
|---|---|
| Business Key | uddi:systinet.com:demo:it |

| name | language |
|---|---|
| IT | |

| description | language |
|---|---|
| IT department | |

Operational Info

| | |
|---|---|
| Authorized name | demo_john |
| Node ID | Systinet |
| UDDI v2 key | c2e8baa0-984f-11d8-aa31-c277f770aa31 |
| Created | Nov 30, 2004 4:10:27 PM |
| Last modified | Nov 30, 2004 4:10:27 PM |
| Last modified (incl. children) | Nov 30, 2004 4:10:27 PM |

*Not signed*

## Find Business by Categories

In this section we will show you how to search for business entities by categories. We will use demo data to demonstrate how to find all departments located on specific floors. Also, an example how to use range queries will be shown.

To find a business by category:

1 Under the main **Search** tab, click the **Businesses** link

2 Click the **Categories** tab, then click the **Add category** button. This returns a list of available taxonomies.

You can switch the **Show** drop down list from **favorite taxonomies** to see **all taxonomies**. To manage **favorite taxonomies** see User Profile on page 275.

3 Click on the desired taxonomy.

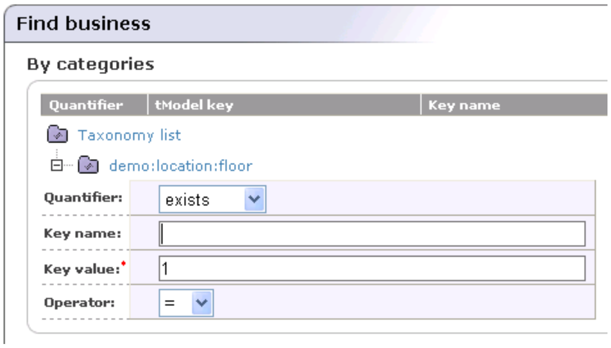
The taxonomy is shown as a tree; its sub-branches include categories.

Select `demo:location:floor` from our demo data.

4 Now you can enter **Key name** and **Key value**.

Type `1` in the box labeled **Key value** and then click the **Add category** icon.

**Figure 74. Find Business by Category**


Find business

By categories

| Quantifier | tModel key | Key name |
|---|---|---|

Taxonomy list
demo:location:floor

| | |
|---|---|
| Quantifier: | exists |
| Key name: | |
| Key value:* | 1 |
| Operator: | = |

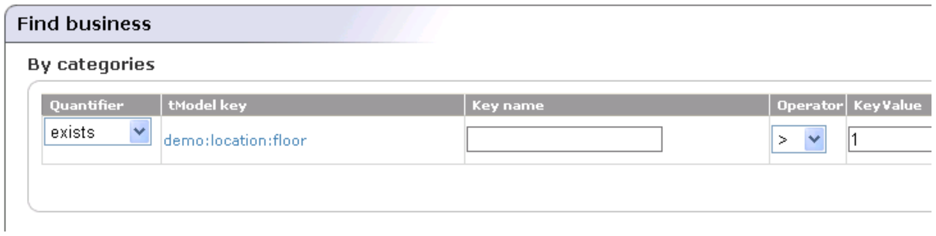
5 Once a category is added as your search criteria, click **Find**.

You will get the department with that is located on the first floor. If you want search for all departments located on higher floors you must use range queries functionality. We will continue with the previous search.

1 Click the tab **Search** to return to the Find business by categories page.

2 Click the **Edit category** icon. The page shown in Figure 75 is returned.

**Figure 75. Find Business by Range Category**


Find business

By categories

| Quantifier | tModel key | Key name | Operator | KeyValue |
|---|---|---|---|---|
| exists | demo:location:floor | | > | 1 |

3 From the **Operator** drop down list, select the > operator, and click the **Update** icon.

4 Click **Find**. You will get all departments located higher than the first floor.

## Find Business by Identifier

In this section we will show you how to find a business entity by identifier. We will use demo data to demonstrate how to find departments by their department number identifiers.

To find a business by identifier:

1 Under the main **Search** tab, click the **Businesses** link

2 Click the **Identifiers** tab. Then click the **Add identifier** button. This returns a list of available taxonomies.

3 Click on the desired taxonomy

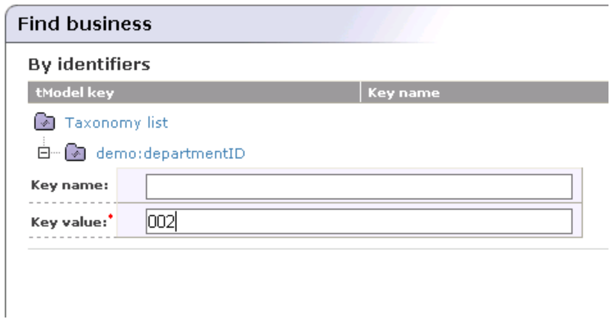
The taxonomy is shown as a tree with its sub-branches including categories.

Select `demo:departmentID` from the demo data.

4 Now you can enter **Key name** and **Key value**.

Type `002` in the box labeled **Key value**, and click **Add identifier**.

**Figure 76. Find Business by Identifier**


Find business

By identifiers

| tModel key | Key name |
|---|---|

Taxonomy list

demo:departmentID

Key name:

Key value:* 002

5 Once the Identifier is added as your search criteria, click **Find**.

## Find Business by Discovery URL

To find a business entity by discovery URL:

1 Under the main **Search** tab, click the **Businesses** link.

2 Select the **Discovery URLs** tab.

3 Type in the discovery URL and click **Find**.

## Find Services

You can find services using a number of different methods including by:

- Name
- Category
- tModel

Search principles for finding services are the similar to those used for finding business entities.

## Find Binding

You can find bindings using a number of different methods including by:

- Parent service
- Category
- tModel

The search principles for finding bindings are similar to those used for finding business entities.

## Find tModel

You can find tModels using a number of different methods including by:

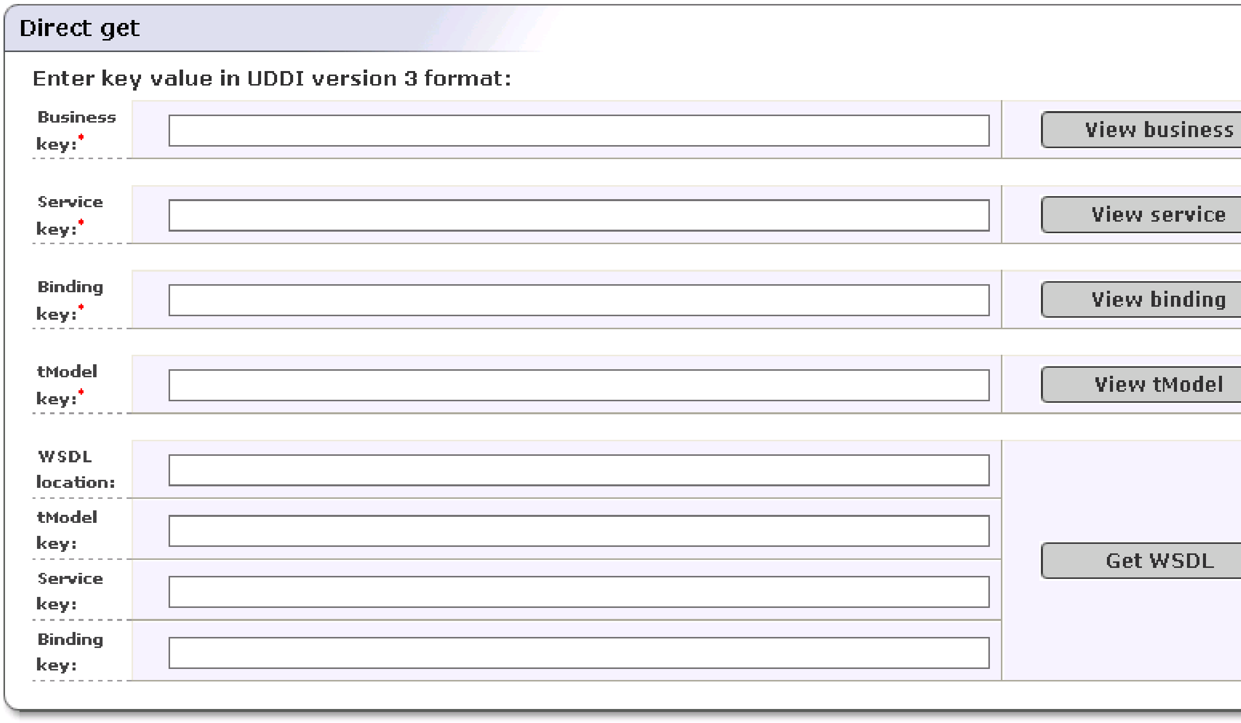
- Name
- Category
- Identifiers

The search principles for finding tModels are similar to those used for finding business entities.

## Direct Get

You can also use **Direct get** from the **Search menu** tab to retrieve data from HP SOA Registry Foundation when you know the key of the UDDI structure you want to retrieve. HP SOA Registry Foundation allows you to specify keys for both UDDI version 2 and UDDI version 3. Click the **Find by v2** tab if you want to search using UDDI v2 keys.

**Figure 77. Direct Get**



## Direct Get of XML Structures

You can also acquire the XML form of businesses, services, bindings, and tModels for use in automated processing by entering the key of the structure into a URI.

The form of the URI is:

```
http://<hostname>:<port>/uddi/web/directGetXml?<structureKey>=<key>
```

**URI Examples.** Note that UDDI v3 is assumed by default.

- `http://localhost:8080/uddi/web/directGetXml?businessKey=uddi:systinet.com:uddinodebusinessKey`

- `http://localhost:8080/uddi/web/directGetXml?serviceKey=...`
- `http://localhost:8080/uddi/web/directGetXml?bindingKey=...`
- `http://localhost:8080/uddi/web/directGetXml?tModelKey=...`

**Example with Login.** This URI includes username and password.

- `https://localhost:8080/uddi/web/directGetXml?businessKey=uddi:systinet.com:uddinodebusinessKey&userName=admin&password=changeit`

**Example with UDDI Version Specification.** Use this format when getting information associated with v1 and v2 structures.

- `http://localhost:8080/uddi/web/directGetXml?businessKey=8f3033d0-c22f-11d5-b84b-cc663ab09294&version=2`

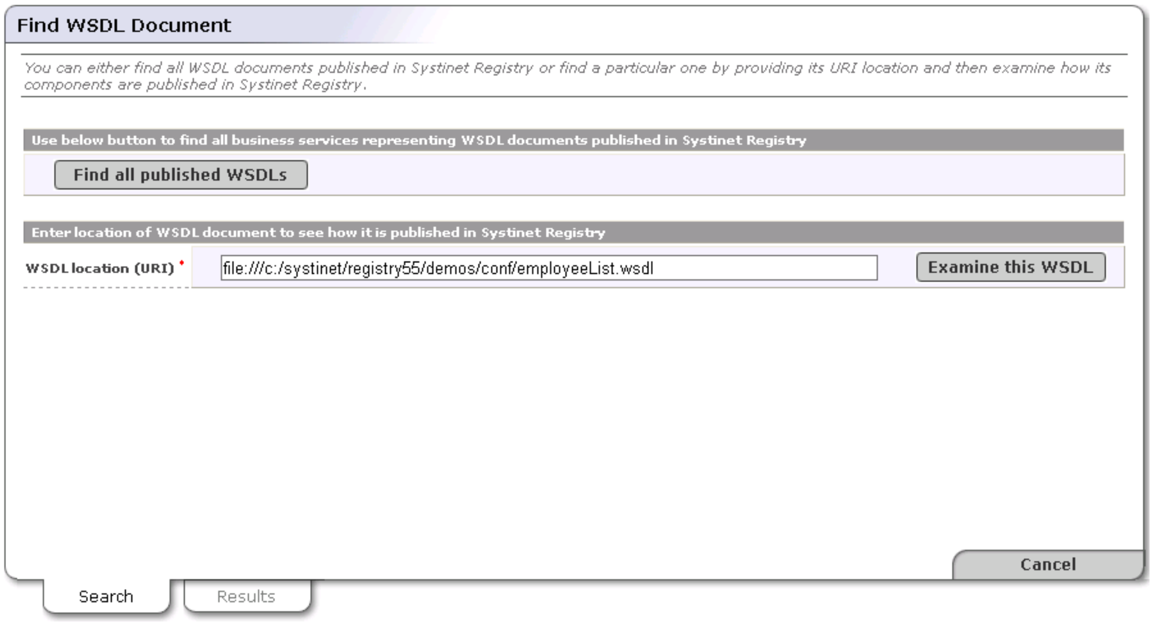
## Find WSDL

You can find all WSDL documents published in HP SOA Registry Foundation. When you supply the WSDL location URI, you can review how artifacts of the WSDL document are published in HP SOA Registry Foundation. The following criteria: a WSDL document location, a tModel key, a business service key, and a binding template key can be used. To search for a WSDL document in HP SOA Registry Foundation:

1. Select the **Search** menu tab and click the **WSDL** link. The page shown in Figure 78 will appear.
2. Click the **Find all published WSDLs** button, or

   Enter **WSDL location URI** , then click **Examine this WSDL** button.

**Figure 78. Find WSDL**


Find WSDL Document

*You can either find all WSDL documents published in Systinet Registry or find a particular one by providing its URI location and then examine how its components are published in Systinet Registry.*

Use below button to find all business services representing WSDL documents published in Systinet Registry

Find all published WSDLs

Enter location of WSDL document to see how it is published in Systinet Registry

WSDL location (URI) * file:///c:/systinet/registry55/demos/conf/employeeList.wsdl Examine this WSDL

## Find XSD

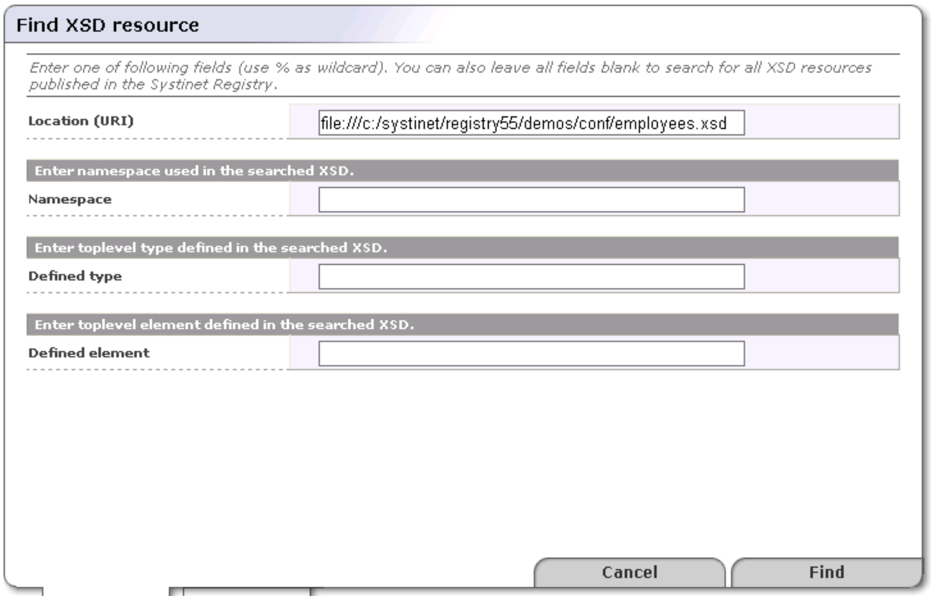
You can search for an XML Schema in HP SOA Registry Foundation according to location URI of the XML document.

To search an XML document:

1 Select the **Search** menu tab and click the **XSD** link. The page shown in Figure 79 will appear.

2 You can search by the location of the XML Schema document, namespaces, and by xsd:elements and xsd:types defined in the XML Schema document. Once you specify the search criteria, click **Find**.

**Figure 79. Find XSD**


Find XSD resource

*Enter one of following fields (use % as wildcard). You can also leave all fields blank to search for all XSD resources published in the Systinet Registry.*

| | |
|---|---|
| Location (URI) | file:///c:/systinet/registry55/demos/conf/employees.xsd |

Enter namespace used in the searched XSD.

| | |
|---|---|
| Namespace | |

Enter toplevel type defined in the searched XSD.

| | |
|---|---|
| Defined type | |

Enter toplevel element defined in the searched XSD.

| | |
|---|---|
| Defined element | |

## Publishing

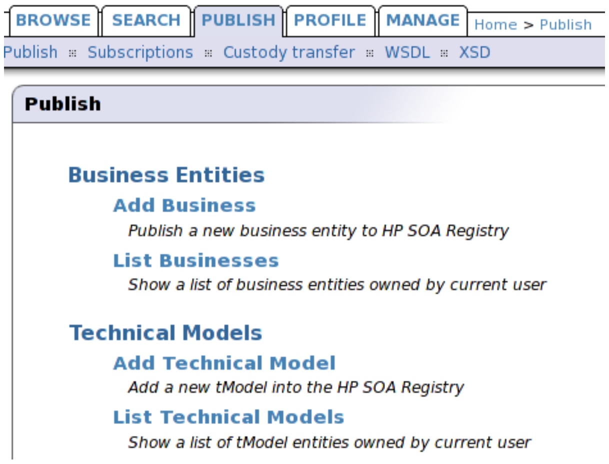
Publishing in HP SOA Registry Foundation has several components:

- Publish UDDI core structures:
    - Publishing a Business on page 297
    - Publishing a Service on page 303
    - Publishing a Binding Template on page 304
    - Publishing a tModel on page 305
    - Publishing Assertions on page 307 - Asserting relationships between business entities.

- Publishing Subscriptions on page 309 - Subscribing interest in receiving alerts regarding changes made to a registry.
- Publish Custody Transfer on page 315 - Transferring ownership of selected UDDI structures.
- Publish Resources
  - Publishing WSDL Documents on page 316 - Publishing Web Services Description Language documents (WSDL) to HP SOA Registry Foundation.
  - Publish XSD on page 321 - Publishing XML Schema Definition (XSD) Documents.

You must be logged into HP SOA Registry Foundation to publish to it. There is a limitation of how many UDDI structures a user can store. See Administrator's Guide, Account Limits on page 338

**Figure 80. Publish Page**



**Publish**

**Business Entities**

**Add Business**

*Publish a new business entity to HP SOA Registry*

**List Businesses**

*Show a list of business entities owned by current user*

**Technical Models**

**Add Technical Model**

*Add a new tModel into the HP SOA Registry*

**List Technical Models**

*Show a list of tModel entities owned by current user*

## Publishing a Business

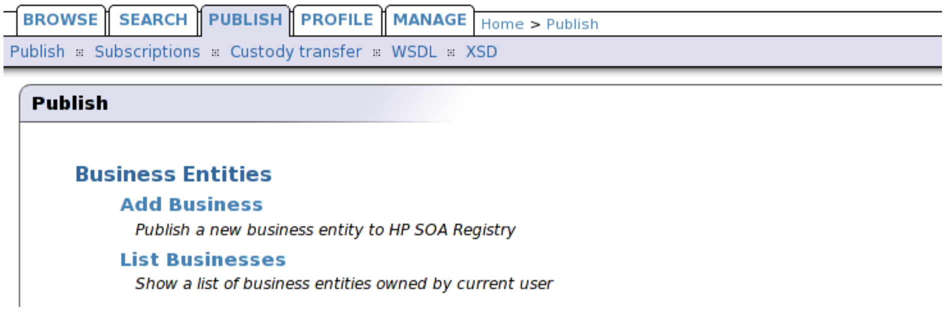
This section explains how to publish a businessEntity and edit businessEntity-related structures:

- Add business name and description
- Add Contact
- Add a Discovery URL
- Add a Category
- Add an Identifier
- Add Business Services
- Add Projected Services
- Assert Business Relationships

To publish a business:

1 Click the **Add Business** button in the right-hand panel of the publish page, or select **Add Business** from the context menu that appears when you right-click the **Business Entities** node.

**Figure 81. Add Business**



Publish a new business entity to HP SOA Registry

Show a list of business entities owned by current user

2 Enter the business name and a description, then click **Add Business**.

3 The business will appear in the left tree panel under the **Business entities** node

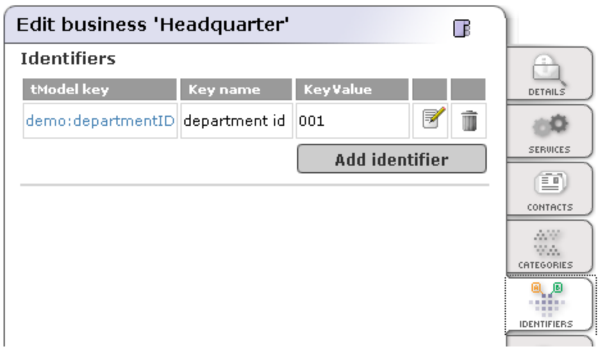
To edit a business entity:

1 Select the **Publish** menu tab.

2 Click the **Publish** link.

3 Click the **List Businesses** link and click on edit icon next the name of business you wish to edit.

**Figure 82. Edit Business**



Edit business 'Headquarter'

Identifiers

| tModel key | Key name | KeyValue | | |
|---|---|---|---|---|
| demo:departmentID | department id | 001 | | |

4 After you modified the business entity, click the **Save changes** button.

## Adding a Contact

The contact structure provides you with a space where you can list the people associated with the business entity. It is comprised of six properties: name, phone, email, address, description, and use type.

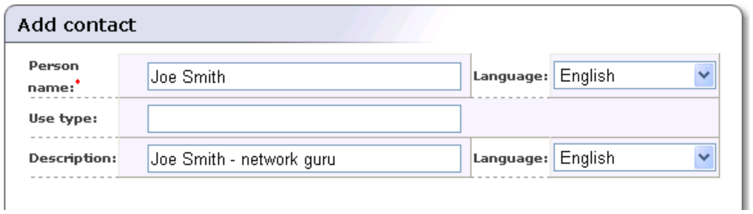
It is recommended that you use the description field to give a brief explanation of how the contact should be used.

Use types can be used to indicate the expected way in which the contact should be used. For example, "New Franchises", "Sales contact", "Technical Questions".

To add a contact:

1 On the **Contacts** tab of the Edit business or View business page, click the **Add contact** button. This displays the Add contact page where you can specify the contact's name and use type, as shown in Figure 83:

**Figure 83. Add Contact**


Add contact

| | | | |
|---|---|---|---|
| Person name:* | Joe Smith | Language: | English |
| Use type: | | | |
| Description: | Joe Smith - network guru | Language: | English |

2 Click **Add contact**.

3 Build your lists of information for descriptions, phone numbers, and addresses. Each collection page, with the exception of Address collection, functions in the same manner. Click the **Add** button for the element you want to add. You will see two or more edit fields to be completed.

Once the fields have been edited, you must click the **Update** icon on the right.

For addresses, click the **Addresses** tab. On this tab, add, edit, or delete existing address structures by clicking through the appropriate buttons.

When you add or edit an address, fill in the desired fields, add the data to your list, and click **Update** when finished.

4 Once you have updated all of the contact's information, click **Save changes** at the bottom of the Edit contact page. You will see the name and use type of your new contact entry in the contacts list.

## Adding a Discovery URL

To add a Discovery URL:

1 On the Edit business page click on the **Add discovery URL** button at the bottom of the **Discovery URLs** tab.

2 Complete the **Discovery URL** and **Use Type** edit fields with the relevant data.

3 When the fields are complete, click **Update** on the right to add this information to the list.

4 Click **Save changes**

## Adding a Category

With categories you can make your business more visible to searches by associating it with a number of accepted taxonomies. These taxonomic categories identify a business and its services by location, product or service line, and industry.

HP SOA Registry Foundation comes with keys for three basic checked taxonomies by default: These are the `ISO 3166` geographical classification system and the `NAICS` and `SIC` industry and product classifications.

A key is also provided for `Microsoft GeoWeb 2000`, but as this is an unchecked taxonomy, key names and key values must be entered by hand.

To add a category to your list:

1. On the **Categories** tab of the Edit business page, click the **Edit** button. If there are already categories associated with this business entity, a list of them will be returned along with the **Add category** button. Otherwise, only the button will be displayed.
2. Click the **Add category** button beneath the **Categories** tab. This returns a list of available taxonomies from which you can choose categories to add to the list.
3. Click on an available taxonomy. Checked taxonomies will expand to a tree of categories valid for that model. You can type a known key name in the search box for faster retrieval. Note that larger branches are limited to ten items per page.
4. You can also search for the name of the taxonomy through the search box at the top of the taxonomy form. Use the **starts with**, **contains**, and **exact match** radio buttons as necessary. Like standard wild cards, these buttons search for the entered string as specified. For example, The pattern `Cana`, when used with the **starts with** button and a geographic taxonomy, returns the set {"Canada" "Canarias"}. The result set is limited to a maximum of 250 items.

   If you provide too broad a search pattern, the resulting list will be truncated to 100 items.

   With unchecked taxonomies (for example, Microsoft's `GeoWeb` taxonomy), it is possible to supply the key name and value through edit fields.

5 To add multiple categories, for example Albania and Armenia from the `uddi-org:iso-ch:3166:1999` taxonomy, check the boxes to the right of those key names, and click **Add category**. If you would like to add categories from different pages, you must click **Add category** on the first page before continuing to the next page containing your selections. For example, to choose Albania and Kazakhstan:

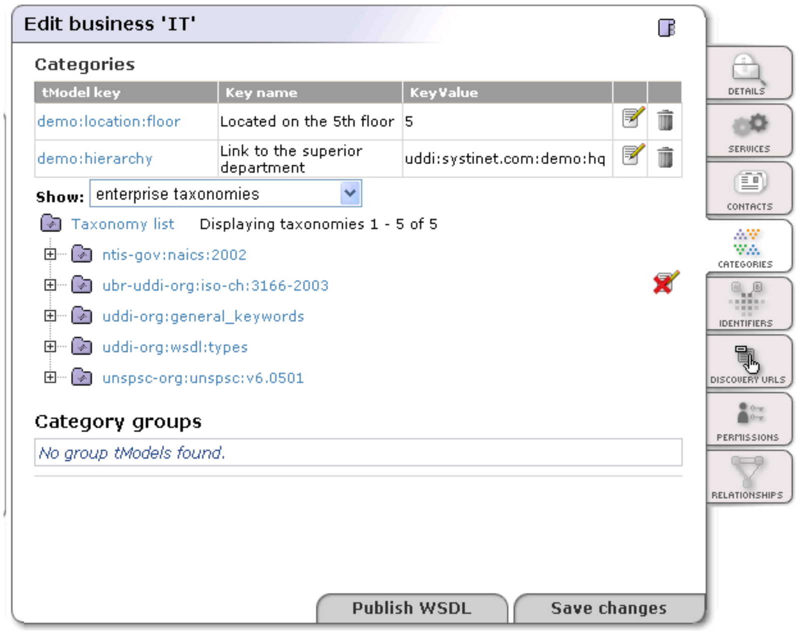
a Select Albania and click **Add category**.

b Click **Add category** on the Find service page.

c Click the link for page 8 on the expanded Find service page.

d Check the box next to Kazakhstan and click **Add category**.

**Figure 84. Add Category**


Edit business 'IT'

Categories

| tModel key | Key name | KeyValue | | |
|---|---|---|---|---|
| demo:location:floor | Located on the 5th floor | 5 | | |
| demo:hierarchy | Link to the superior department | uddi:systinet.com:demo:hq | | |

Show: enterprise taxonomies

Taxonomy list Displaying taxonomies 1 - 5 of 5

- ntis-gov:naics:2002
- ubr-uddi-org:iso-ch:3166-2003
- uddi-org:general_keywords
- uddi-org:wsdl:types
- unspsc-org:unspsc:v6.0501

Category groups

*No group tModels found.*

6 When you find the taxonomic classification you want, click the **Add category** button for checked taxonomies. For unchecked taxonomies, click **Add category** once the edit fields have been completed.

## Adding an Identifier

You can also make your organization more visible by supplying any of your public or private identifiers, such as D-U-N-S, Tax, or Geographical Locator numbers to the registry. UDDI identifier structures are composed of the following elements:

**tModel Key**
: Identifies a namespace or service in which the key name and key value have significance

**keyName**
: The name or description of the key being used

**keyValue**
: The value of the key

To add an identifier to your list:

1. On the Edit business page, switch to the **Identifiers** tab.
2. Click the **Add identifier** button at the bottom of the Identifiers list.
3. Choose the identifier type from the displayed list of available taxonomical tmodels. This returns a field in which you enter key names and key values.
4. When you have filled in the fields, click the **Add identifier** button to the right to add the new identifier to the list.

If you use a tModel for a checked identifier, the key value must be of a recognizable form and value. For example, if you want to use a `uddi-org:isReplacedBy` key, you must supply the valid business entity UUID key in the keyValue field. Failure to do so will generate an error when you attempt to submit your business data to the database.

## Publishing a Service

To publish a service:

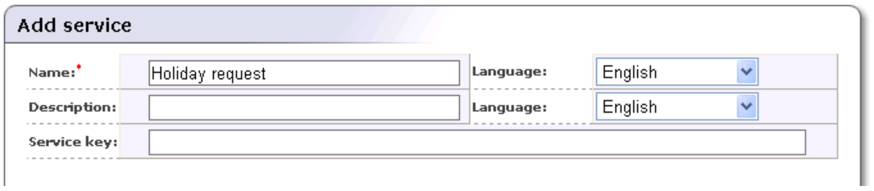
1. Select the **Publish** menu tab and click the **Publish** link

2 In the left panel, click on the business to which you want to add a service. The right display area will show business details.

3 Select the **Services** tab, and click the **Add Service** button.

Alternately, right-click on the business node to which you want to add a service, and select **Add Service** from the context menu.

**Figure 85. Add Service**



Add service

| | | | |
|---|---|---|---|
| Name:* | Holiday request | Language: | English |
| Description: | | Language: | English |
| Service key: | | | |

4 Enter the service name and description and click **Add service**.

The service is added to the left panel tree.

## Publishing a Binding Template

Once you have declared and defined a business service, you must establish how current and potential business partners can access that service, a technical description of the service including where it can be found. This is accomplished through bindingTemplates.

A bindingTemplate represents a Web service instance where you obtain (among other things) the access point of an instance of the parent business service. Every bindingTemplate has a unique bindingKey for identification. (An access point contains contact information such as a URL, email address, or telephone number used to locate the service.)

The AccessPoint in a bindingTemplate structure can contain a URL of the endpoint of the web service. If there is more than one businessEntity that provides the same business service we recommend you reuse this information in a bindingTemplate. Create a bindingTemplate on the businessService that holds technical information. Other businessServices should contain bindingTemplates with accessPoints containing the key of the first technical bindingTemplate. These accessPoints should also contain useTypes with the value `hostingRedirector`.

Alternatively, reference to another bindingTemplate can be stored in a hostingRedirector structure instead of in an accessPoint. However the hostingRedirector structure (not the hostingRedirector value of useType) is a relic of UDDI v2 and is deprecated in UDDI v3.

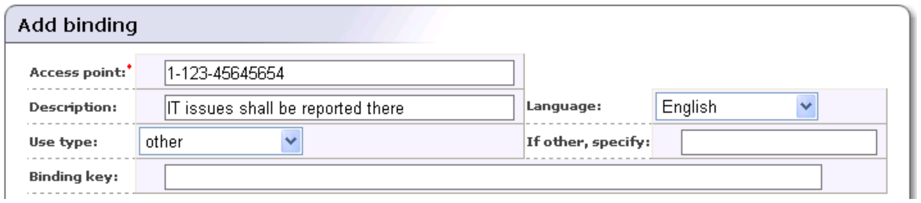
To add a bindingTemplate:

1 Select the **Publish** menu tab and click the **Publish** link

2 In the left panel, click on the service to which you want to add a binding. The right display area will show service details. Select the **Bindings** tab and click the **Add Binding** button.

  Alternatively, right-click the service node to which you want to add a binding, and select **Add Binding** from the context menu.

  **Figure 86. Add Binding**



Add binding

| | | | |
|---|---|---|---|
| Access point:* | 1-123-45645654 | | |
| Description: | IT issues shall be reported there | Language: | English |
| Use type: | other | If other, specify: | |
| Binding key: | | | |

## Publishing a tModel

The tModel is a structure that takes the form of keyed metadata (data about data). In a general sense, the purpose of a tModel within HP SOA Registry Foundation is to provide a reference system based on abstraction. Among the roles that a tModel plays in UDDI is the ability to provide and to describe compliance with a specification or concept, to a taxonomy, for example.

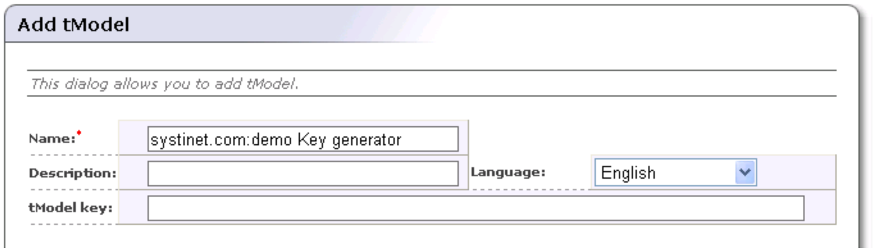
To publish a tModel:

1 Select the **Publish** tab, and click the **Publish** link.

2 On the right Publish panel, click the **Add tModel** button.

Alternatively, right-click on the tModels node in the left panel and select **Add tModel** from the context menu.

**Figure 87. Add tModel**


Add tModel

*This dialog allows you to add tModel.*

| | | | |
|---|---|---|---|
| Name:* | systinet.com:demo Key generator | | |
| Description: | | Language: | English |
| tModel key: | | | |

3 Enter tModel name and description, and click the **Add tModel** button.

If you delete an unused tModel, the tModel will be deleted from the database. The HP SOA Registry Foundation Administrator can change this behavior that tModels will be only marked as deleted. See Administrator's Guide, Node on page 381.

## Adding a Category

In this section we will show you how to assign `demo:location:floor` taxonomy to the numeric ordering as show at Figure 57.

1 Log on as `demo_john` user. ( password is the same as the username).

2 Click the **Publish** tab in the main menu. Click on the tModel `demo:location:floor` item in the tree in the left part of the page. Edit tModel 'demo:location:floor' page will appear.

3 Click **Add category** button. A taxonomy list will appear.

4 Select the taxonomy `systinet-com:isOrderedBy`, enter **Key value** `uddi:systinet.com:comparator:numeric`.

5 Click the button **Add category** , then **Save changes** button.

## Publishing Assertions

You can assert relationships that businesses under your HP SOA Registry Foundation custody have with others under your custody or with those under the custody of another user registered at the same operator node. The success of the latter assertion depends upon the approval of the user to whom the assertion is made.

When making an assertion you must supply:

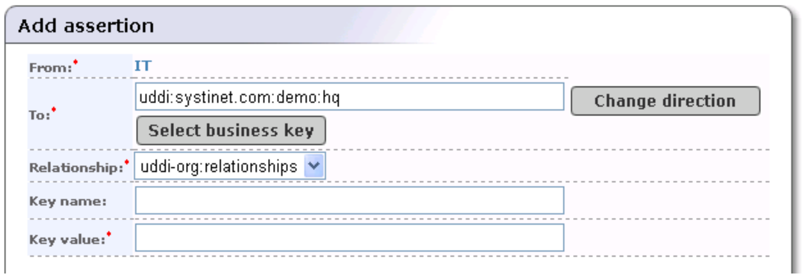
- The identity of the business from which the assertion is being made
- The identity of the business to which it is making a claim. HP SOA Registry Foundation specifies these business identities through their UUID keys.
- A reference explaining the nature of the relationship. References about the nature of the asserted relationship are derived from your own tModels or from the `uddi-org:relationships` tModel.

## Adding an Assertion

To add a new assertion:

1. On the Edit business panel, switch to the **Relationships** tab. This displays the Relationship assertions page. If you have already set assertions you will see a list of those previously published. If not, you will see the message "No assertions found."
2. Click the **Add new assertion** button to display the Add assertion page shown in Figure 88.

**Figure 88. Add Assertion**


Add assertion

| | |
|---|---|
| From:* | IT |
| To:* | uddi:systinet.com:demo:hq |
| Relationship:* | uddi-org:relationships |
| Key name: | |
| Key value:* | |

3 If the business for which you are making an assertion will assume the "To" role, click the **Change Direction** button.

4 Find the business with which you want to assert a relationship in the same way you would on the inquiry side of UDDI. The difference is that, along with the business name, you will see the business descriptions in the retrieved record set and a **Select business key** icon next to each record.

When you locate the target business among the records, click its **Select business key** icon. This returns you to the Add assertion page with the UUID key of the selected business as the previously missing role.

A Keyed Reference will be required for the assertion to be valid. Click the **Set** button on the right of the Keyed Reference line. The Set keyed reference page displays.

5 Locate a tModel for your reference in the same way you would on the inquiry side of UDDI. The difference is that there are edit fields for Key Names and Key Values next to the tModel names and a **Set** button at the end of each row. Pertinent tModels include `uddi-orgs:relationship` and those you have published yourself.

a Enter the key value and the key name or description. For `uddi-orgs:relationship`, the key value may be `parent-child`, `peer-peer`, or `identity`.

b Click the **Set** value. This returns you to the Add assertion page. The tModel, key name, and key value added to the Keyed Reference record are displayed there.

6 Click the **Add assertion** button.

7 If the assertion is made to a business of which you have custody, the assertion will be completed automatically. If it is made to a business in the custody of another user, that user will need to review the assertion and complete it through his or her own account. This process is described below.

## Accepting an Assertion

Assume that you have been notified by a parent company, a subsidiary, a peer, or a cooperative member that they have asserted a relationship with your company. Now you must review that assertion and, if you are in agreement, complete it.

To accept the assertion:

1. On the Edit business page, switch to the **Relationships** tab.
2. View the incomplete assertions made toward your business in the **Requested assertions** list. Each assertion will have a **Complete assertion** button next to its status message.
3. Click the **Complete assertion** button to accept the assertion.
4. If you wish to refuse, leave the assertion incomplete by omitting step 3. Return to the Publisher assertions page by clicking the link at the top of the page. Contact the business making the assertion to resolve the details of your relationship. Incomplete assertions will not appear when users query for related businesses.

## Publishing Subscriptions

Subscriptions give you the ability to register interest in receiving information about changes made to HP SOA Registry Foundation. It allows the monitoring of new, changed, and deleted UDDI structures. Each subscription has a filter that limits the subscription scope to a subset of registry entities.

You can establish a subscription based on a specific query or set of entities in which you are interested. Query-based subscriptions notify the user if the result set changes within a given time span; entity-based subscriptions notify the user if the contents of the specified entities change.

Subscriptions enable:

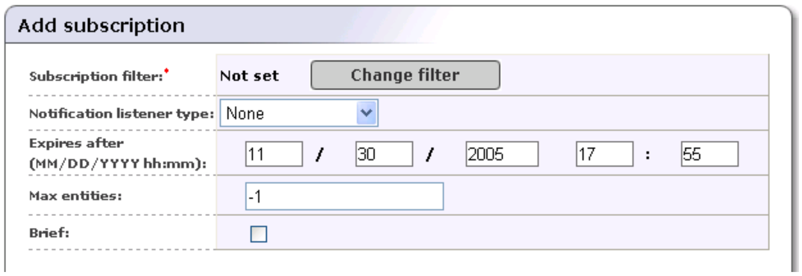
- notification of the registration of new businesses or services
- monitoring of existing businesses or services
- acquiring registry information for use in a private registry
- acquiring data for use in a marketplace or portal registry

This filter should be one of the following ordinary UDDI inquiry calls:

- find_business
- find_relatedBusinesses

- find_service
- find_binding
- find_tModel
- get_businessDetail
- get_serviceDetail
- get_bindingDetail
- get_tModelDetail

**Figure 89. Add Subscription**



Add subscription

| | |
|---|---|
| Subscription filter:* | Not set [Change filter] |
| Notification listener type: | None |
| Expires after (MM/DD/YYYY hh:mm): | 11 / 30 / 2005 17 : 55 |
| Max entities: | -1 |
| Brief: | ☐ |

## Adding Subscriptions

To add new subscription:

1. Click on the **Subscriptions** link under the **Publish** menu tab to display the Subscriptions page.
2. Click the **Add subscription** button to display the Add subscriptions page shown in Figure 89.
3. Click **Change filter** to specify a filter for your subscriptions. This returns the **Subscription filter type** page.
4. Select the filter type from the drop down list labeled **Subscription filter type**.
5. Click **Select filter**.

6 Set the filter properties in the same way you would for ordinary search calls.

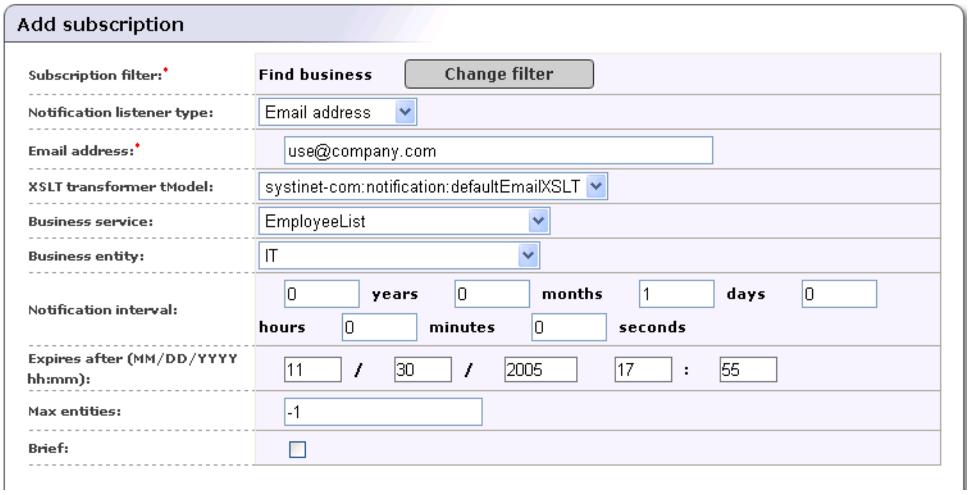
7 Click the **Preview results** button to check filter results.

8 Click **Save filter** to return to the page with the filter settings shown in Figure 89.

9 Fill in the other subscription fields if needed. These are described below.

## Notification Listener Types

**Figure 90. Add Subscription - Email Notification Listener Type**



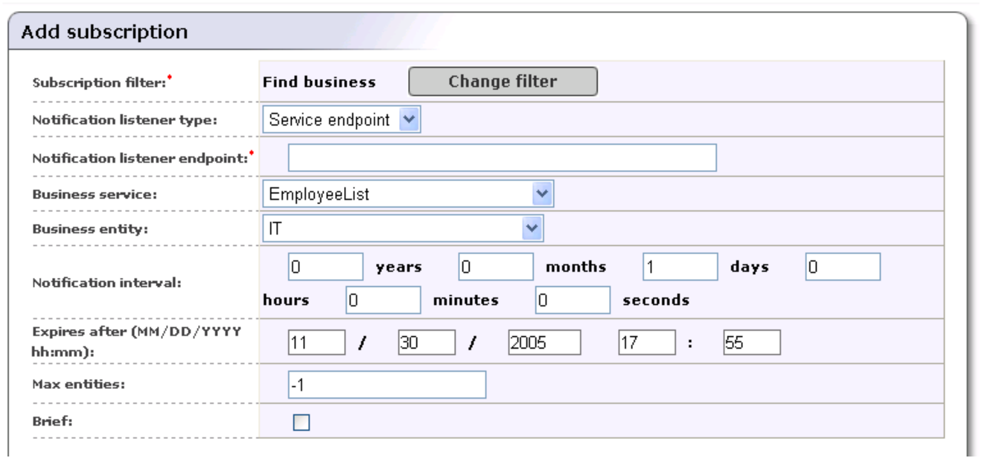
Add subscription

| | |
|---|---|
| Subscription filter:* | Find business [Change filter] |
| Notification listener type: | Email address |
| Email address:* | use@company.com |
| XSLT transformer tModel: | systinet-com:notification:defaultEmailXSLT |
| Business service: | EmployeeList |
| Business entity: | IT |
| Notification interval: | 0 years 0 months 1 days 0 hours 0 minutes 0 seconds |
| Expires after (MM/DD/YYYY hh:mm): | 11 / 30 / 2005 17 : 55 |
| Max entities: | -1 |
| Brief: | ☐ |

- **Subscription filter** - Specifies on which UDDI structure change the notification will occur.
- **Notification listener type** - Select notification listener type
  - Email address
  - Service endpoint
  - Binding template

- **Email address** - Email address to which notifications will be sent
- **XSLT transformer tModel** - tModel that references XSLT
- **Business service** and **Business entity** - Business service and business entity to which the bindingTemplate representing the notification listener service will be saved. These drop down lists lists only business entities and business services under which you have the permission to create the binding template.
- **Notification interval** - Specifies how often change notifications are to be provided to a subscriber. Required only for asynchronous notifications.
- **Expires after** - Specifies the period of time for which the administrator would like the subscription to exist.
- **Max entities** - Contains the maximum number of entities in a notification returned to a subscription listener.
- **Brief** - Controls the level of detail returned to a subscription listener.

### Figure 91. Add Subscription - Service Endpoint Listener Type

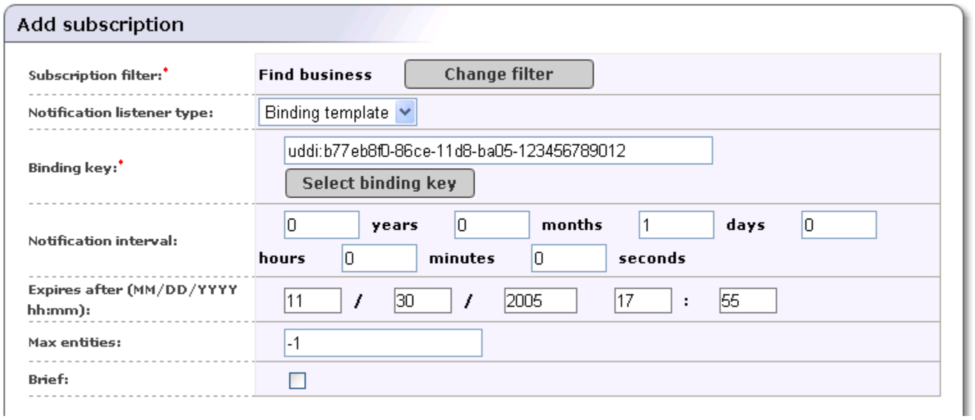

Add subscription

| | |
|---|---|
| Subscription filter:* | Find business [Change filter] |
| Notification listener type: | Service endpoint |
| Notification listener endpoint:* | |
| Business service: | EmployeeList |
| Business entity: | IT |
| Notification interval: | 0 years 0 months 1 days 0 hours 0 minutes 0 seconds |
| Expires after (MM/DD/YYYY hh:mm): | 11 / 30 / 2005 17 : 55 |
| Max entities: | -1 |
| Brief: | ☐ |

- **Subscription filter** - Specifies on which UDDI structure change the notification will occur.

- **Notification listener type** - Select notification listener type here.
    - Email address
    - Service endpoint
    - Binding template
- **Notification listener endpoint** - URL to which the notification will be sent
- **Business service** and **Business entity** - business service and business entity to which the bindingTemplate representing the notification listener service will be saved. These drop down lists lists only business entities and business services under which you have the permission to create the binding template.
- **Notification interval** - Specifies how often change notifications are to be provided to a subscriber. Required only for asynchronous notifications.
- **Expires after** - Specifies the period of time for which the administrator would like the subscription to exist.
- **Max entities** - Contains the maximum number of entities in a notification returned to a subscription listener.
- **Brief** - Controls the level of detail returned to a subscription listener.

**Figure 92. Add Subscription - Binding Template Listener Type**



Add subscription

| | |
|---|---|
| Subscription filter:* | Find business [Change filter] |
| Notification listener type: | Binding template |
| Binding key:* | uddi:b77eb8f0-86ce-11d8-ba05-123456789012 [Select binding key] |
| Notification interval: | 0 years 0 months 1 days 0 hours 0 minutes 0 seconds |
| Expires after (MM/DD/YYYY hh:mm): | 11 / 30 / 2005 17 : 55 |
| Max entities: | -1 |
| Brief: | ☐ |

- **Subscription filter** - Specifies on which UDDI structure change the notification will occur.
- **Notification listener type** - Select notification listener type here.
  - Email address
  - Service endpoint
  - Binding template
- **Binding Template** - The bindingTemplate representing the notification listener service.
- **Notification interval** - Specifies how often change notifications are to be provided to a subscriber. Required only for asynchronous notifications.
- **Expires after** - Specifies the period of time for which the administrator would like the subscription to exist.
- **Max entities** - Contains the maximum number of entities in a notification returned to a subscription listener.
- **Brief** - Controls the level of detail returned to a subscription listener.

## Editing Subscriptions

To edit an existing subscription:

1. Click on the **Subscriptions** link under **Publish** menu tab to display the Subscriptions page.
2. Click the **Edit** button beside the subscription you want to edit. This returns the Edit subscription page. Here you can edit all subscription arguments except Subscription filter.

## Deleting Subscriptions

To delete subscription:

1. Click on the **Subscriptions** link under **Publish** menu tab to display the Subscriptions page.
2. Check the boxes beside subscriptions you want to delete.
3. Click the **Delete selected** button. This returns a confirmation page.
4. The confirmation page contains a list of subscriptions marked for deletion. If it is correct, press the **Yes** button to delete subscriptions permanently.

## Publish Custody Transfer

Custody transfer is a service used to transfer ownership of a selected structure (business entity, business service, binding template or tModel) from one user to another. It consists of two steps: selecting structure(s) to transfer and generating a custody transfer token. When the potential new owner receives the transfer token (by a secure transport such as encrypted email), that user may accept or reject the custody transfer.

➤ This token must be kept secret, as it is sufficient information to transfer custody of the structure to any user!

If you decide to cancel the request (for example the transfer token has been compromised), use the **Discard transfer token** button.

## Requesting Custody Transfer

To request custody transfer:

1. Click on the **Custody** link under **Publish** menu tab to display the Custody transfer page.
2. Click the **Request transfer token** link. This returns a list of UDDI data structures you own.
3. Check the box next to the UDDI structure(s) you wish to transfer, and click **Request transfer token**.
4. The next page will generate the transfer token. Copy the text of the transfer token to a file and send this file to the user who shall become the new owner of selected structures. Keep the token secret, as anyone who knows it can use it to transfer custody of that structure. Unencrypted email, for example, is not good data transfer choice.

### Accepting Custody Transfer

To accept custody transfer:

1. Click on the **Custody** link under **Publish** menu tab to display the Custody transfer page.
2. Click on the **Transfer custody** link.
3. Open the file with the transfer token, copy its contents to clipboard and paste it to the edit area on the **Transfer structures** page.
4. Click **Transfer** button.

## Publishing WSDL Documents

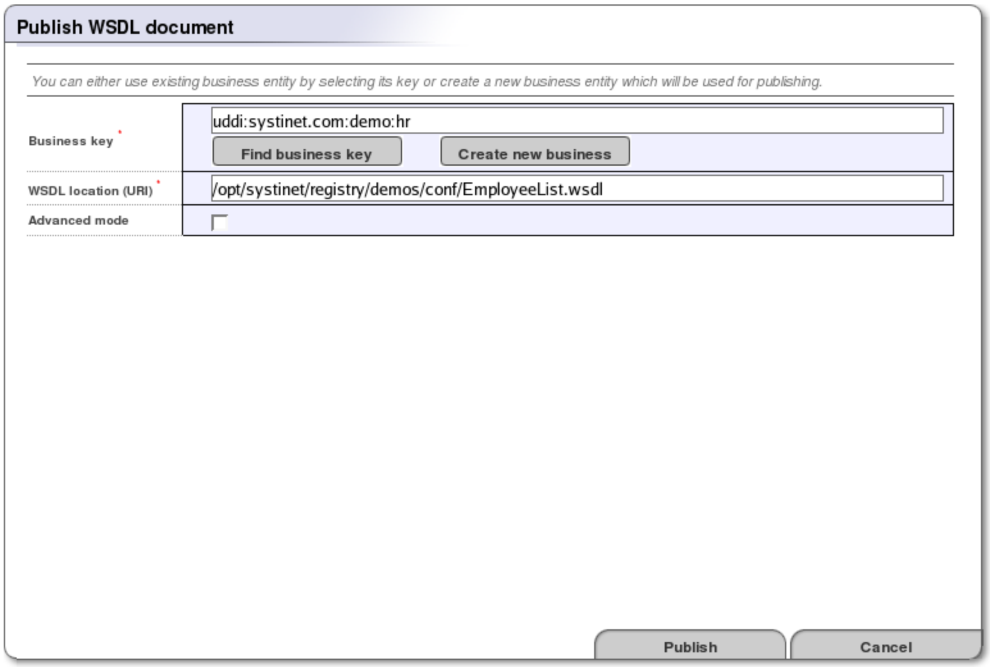
HP SOA Registry Foundation WSDL to UDDI (WSDL2UDDI) mapping is compliant with OASIS's technical note Using WSDL in a UDDI registry Version 2.0 [http://www.oasis-open.org/committees/uddi-spec/doc/tn/uddi-spec-tc-tn-wsdl-v200-20031104.htm]. It enables the automatic publishing of WSDL documents to UDDI, enables precise and flexible UDDI queries based on specific WSDL artifacts and metadata, and provides a consistent mapping for UDDI v2.

### Publish WSDL

To publish a WSDL document:

1. Click on the **WSDL** link under the **Publish** main menu tab.
2. The page shown at Figure 93 will appear.

**Figure 93. Publish WSDL**



Publish WSDL document

*You can either use existing business entity by selecting its key or create a new business entity which will be used for publishing.*

| | |
|---|---|
| Business key * | uddi:systinet.com:demo:hr |
| WSDL location (URI) * | /opt/systinet/registry/demos/conf/EmployeeList.wsdl |
| Advanced mode | ☐ |

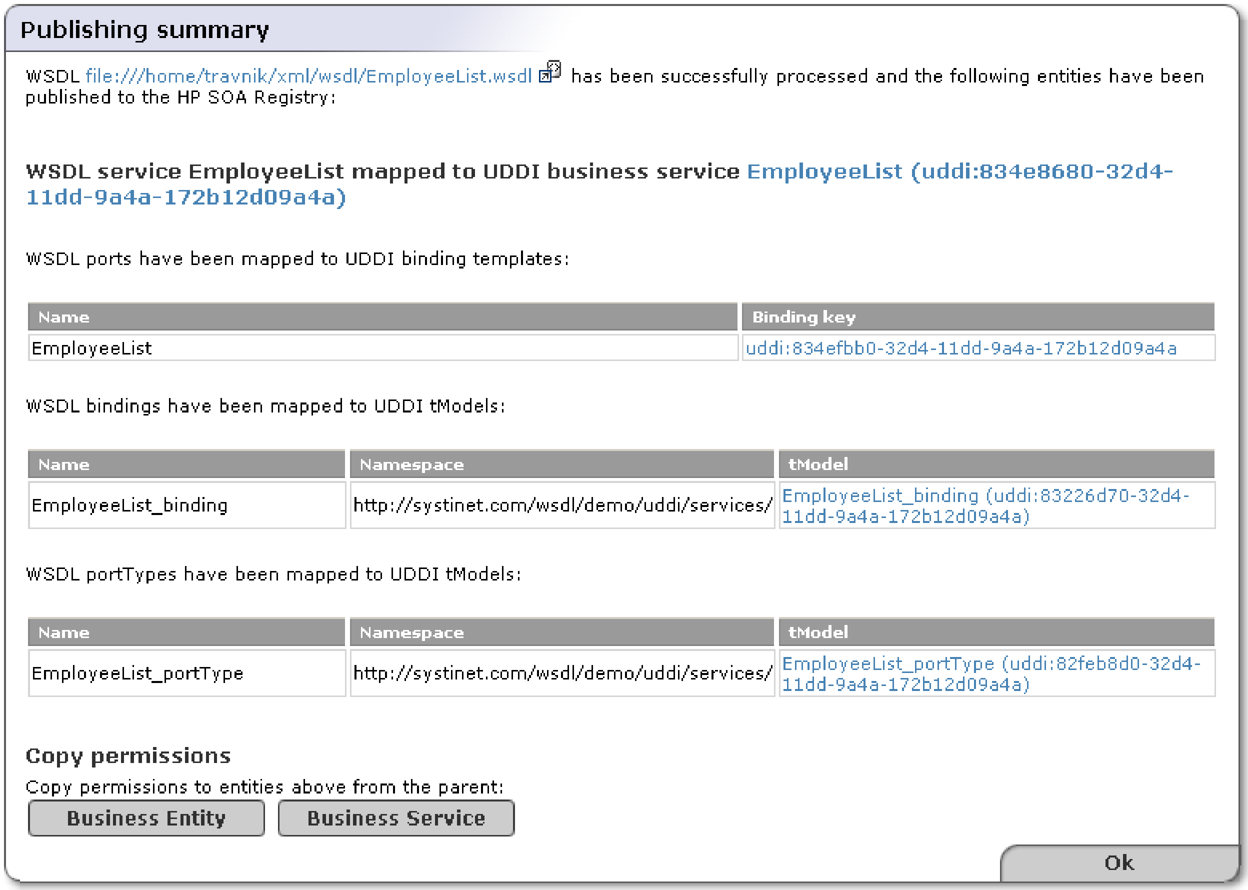
3 Enter the **Business key** of the business where services from WSDL document will be published. You can find a business key by clicking on the **Find business key** button.

4 Enter a **WSDL location**. You can try the WSDL document from HP SOA Registry Foundation demos from `REGISTRY_HOME/demos/conf/employeeList.wsdl`.

5 Leave the **Advanced mode** check box unchecked, then click **Publish** button.

The WSDL document will be published to HP SOA Registry Foundation. You can review how WSDL artifacts of the document have been mapped to HP SOA Registry Foundation at Figure 94.

**Figure 94. Publish WSDL Summary**



Publishing summary

WSDL file:///home/travnik/xml/wsdl/EmployeeList.wsdl has been successfully processed and the following entities have been published to the HP SOA Registry:

**WSDL service EmployeeList mapped to UDDI business service EmployeeList (uddi:834e8680-32d4-11dd-9a4a-172b12d09a4a)**

WSDL ports have been mapped to UDDI binding templates:

| Name | Binding key |
|---|---|
| EmployeeList | uddi:834efbb0-32d4-11dd-9a4a-172b12d09a4a |

WSDL bindings have been mapped to UDDI tModels:

| Name | Namespace | tModel |
|---|---|---|
| EmployeeList_binding | http://systinet.com/wsdl/demo/uddi/services/ | EmployeeList_binding (uddi:83226d70-32d4-11dd-9a4a-172b12d09a4a) |

WSDL portTypes have been mapped to UDDI tModels:

| Name | Namespace | tModel |
|---|---|---|
| EmployeeList_portType | http://systinet.com/wsdl/demo/uddi/services/ | EmployeeList_portType (uddi:82feb8d0-32d4-11dd-9a4a-172b12d09a4a) |

**Copy permissions**

Copy permissions to entities above from the parent:

The **Business Entity** button in the summary screen enables you to copy permissions from the business entity for which the WSDL was published to all other entities involved in the publishing operation. If the entities already contain permissions, the permission lists are merged.

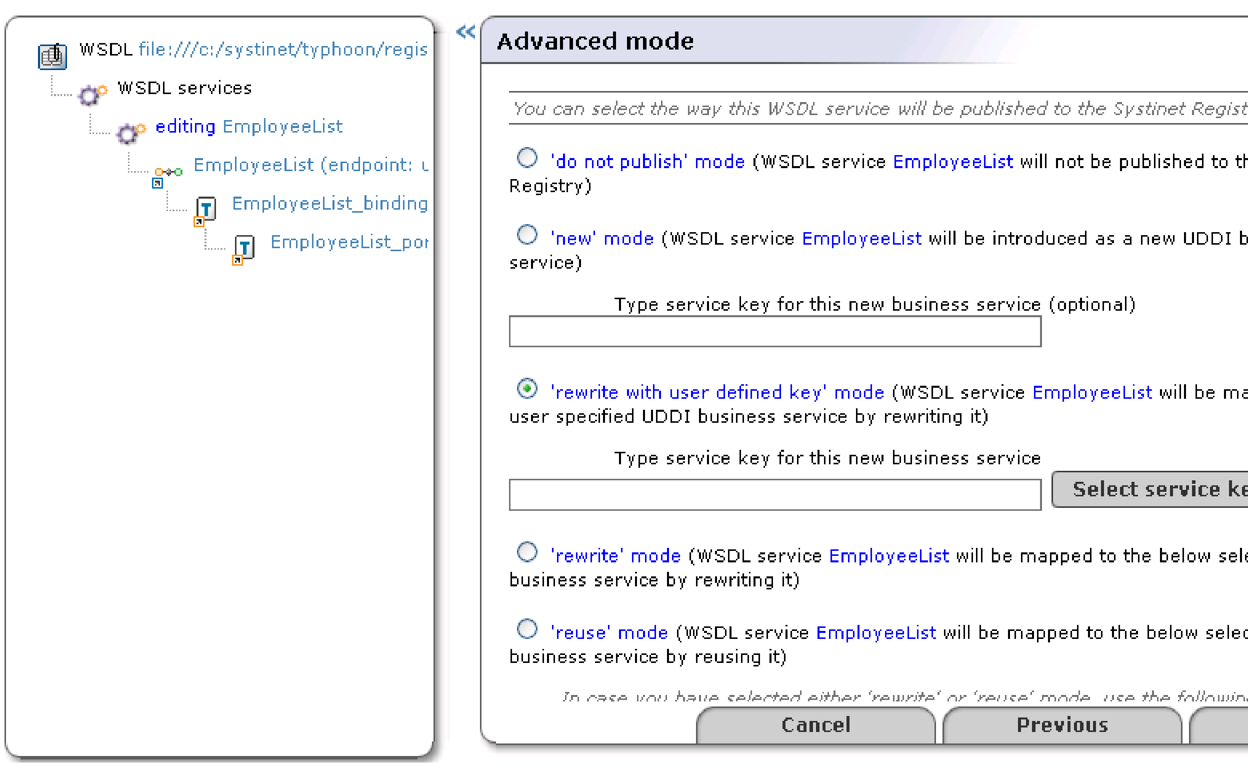
When a business service is reused during the publishing step, it may also contain permissions to distribute to associated binding templates and tModels.

The **Business Service** button, shown only when a business service is reused, enables you to copy permissions from a business service to associated binding templates and tModels involved in the publishing operation. If the entities already contain permissions, the permission lists are merged.

## Publishing WSDL Documents (Advanced Mode)

The advanced publishing mode allows you to specify certain details of how the WSDL document will be mapped to the UDDI registry. To publish in this mode, follow the steps from the previous section, and toggle the **Advanced mode** check box on. Once you click on the button **Publish** the Advanced Mode Publish page shown in Figure 95 will appear.

**Figure 95. Publish WSDL (Advanced Mode)**



WSDL file:///c:/systinet/typhoon/regis
WSDL services
editing EmployeeList
EmployeeList (endpoint: u
EmployeeList_binding
EmployeeList_por

**Advanced mode**

*You can select the way this WSDL service will be published to the Systinet Regist*

'do not publish' mode (WSDL service EmployeeList will not be published to th Registry)

'new' mode (WSDL service EmployeeList will be introduced as a new UDDI b service)

Type service key for this new business service (optional)

[✓ 'rewrite with user defined key' mode (WSDL service EmployeeList will be ma user specified UDDI business service by rewriting it)]

Type service key for this new business service

Select service ke

'rewrite' mode (WSDL service EmployeeList will be mapped to the below sele business service by rewriting it)

'reuse' mode (WSDL service EmployeeList will be mapped to the below selec business service by reusing it)

*In case you have selected either 'rewrite' or 'reuse' mode, use the followin*

Cancel | Previous

In the left tree panel, you can see how artifacts of the WSDL document will be published. Click on a tree branch to edit how WSDL artifacts will be mapped to HP SOA Registry Foundation. Explanatory instructions in the right panel describe the mapping options. Click **Preview** to see how each part of the WSDL document will be mapped to the registry. From the Preview page, you can go back to adjust the WSDL mapping.

The wizard's default selection in Figure 95 is based on the following rules:

- If a possible mapping of a WSDL artifact already exists in the registry, and the user owns this UDDI structure, the wizard will suggest rewriting that mapping in the registry.
- If a possible mapping of a WSDL artifact already exists in the registry, and the user does not own this UDDI structure, the wizard will suggest reusing that UDDI entity.
- If no mapping of the WSDL artifact exists in the registry, the wizard will suggest creating a new UDDI entity to represent the mapping.

HP SOA Registry Foundation applies these rules automatically when you publish a WSDL document without the **Advanced mode** option.

Publishing of WSDL operations and WSDL messages is not implemented in this HP SOA Registry Foundation release.

## Unpublish WSDL

To unpublish a WSDL definition:

1. Search for the WSDL document in the registry.
2. In the result view, click on a business service.
3. The page with business service details will appear, click the **Unpublish** button at the page.
4. The **Unpublish WSDL document** wizard will appear.

## Publish XSD

HP SOA Registry Foundation XSD to UDDI (XSD2UDDI) mapping enables the automatic publishing of XML schema documents to UDDI, enabling precise and flexible UDDI queries based on specific XML schema artifacts and metadata.

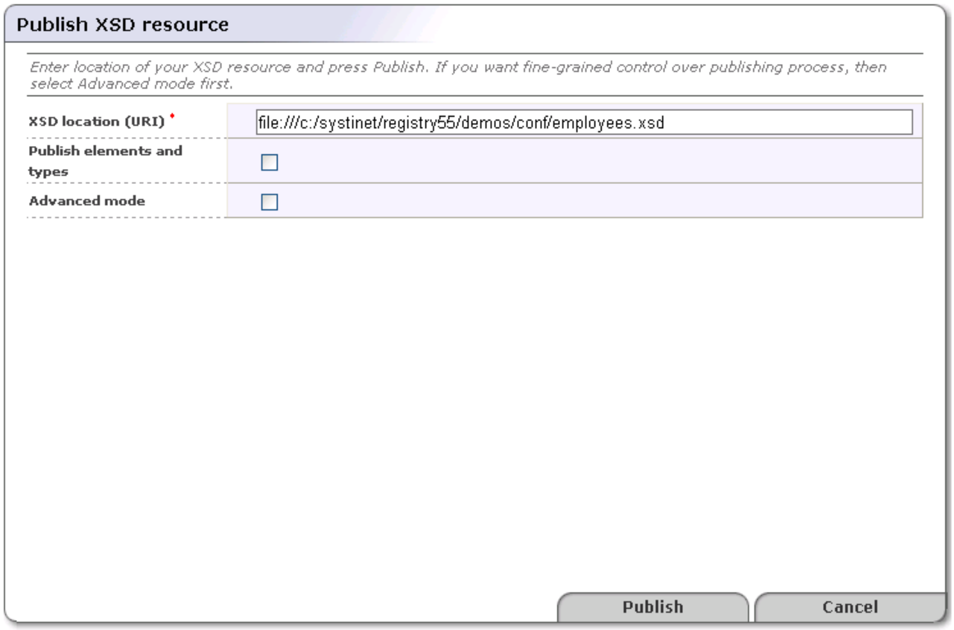
If you want to unpublish an XML schema document, use the **Find XSD** button and click the **Unpublish** button in the search result page.

### Publishing an XML Schema

To publish an XML Schema document:

1. Click on the **XSD** link under the **Publish** main menu tab.
2. The page shown in Figure 96 will appear.

**Figure 96. Publish XSD**


Publish XSD resource

*Enter location of your XSD resource and press Publish. If you want fine-grained control over publishing process, then select Advanced mode first.*

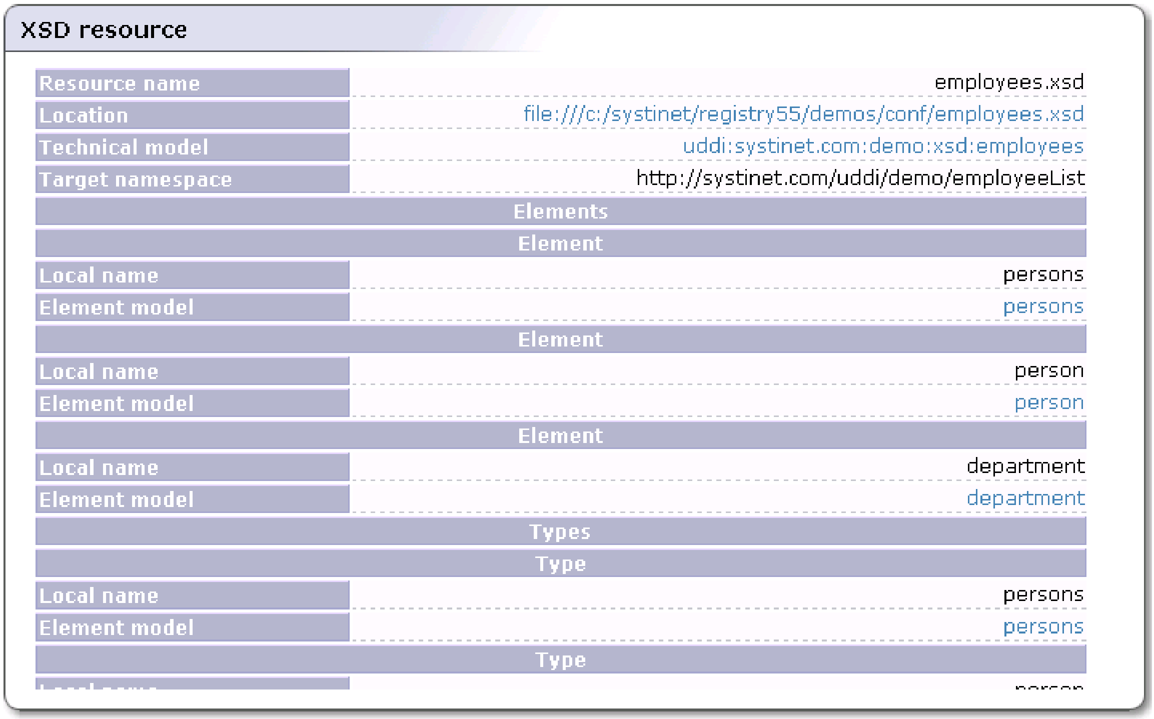
| | |
|---|---|
| XSD location (URI) * | file:///c:/systinet/registry55/demos/conf/employees.xsd |
| Publish elements and types | ☐ |
| Advanced mode | ☐ |

3 Enter an **XML Schema location**. To demonstrate, use the file `REGISTRY_HOME/demos/conf/employees.xsd` from the HP SOA Registry Foundation demos.

4 Leave the **Advanced mode** check box unchecked, then click **Publish**.

5 The XML Schema document will be published to the registry. You can review mappings of the XML Schema document itself and its elements at Figure 97.

**Figure 97. Publish XSD Summary**


XSD resource

|  |  |
|---|---|
| Resource name | employees.xsd |
| Location | file:///c:/systinet/registry55/demos/conf/employees.xsd |
| Technical model | uddi:systinet.com:demo:xsd:employees |
| Target namespace | http://systinet.com/uddi/demo/employeeList |
| Elements | |
| Element | |
| Local name | persons |
| Element model | persons |
| Element | |
| Local name | person |
| Element model | person |
| Element | |
| Local name | department |
| Element model | department |
| Types | |
| Type | |
| Local name | persons |
| Element model | persons |
| Type | |

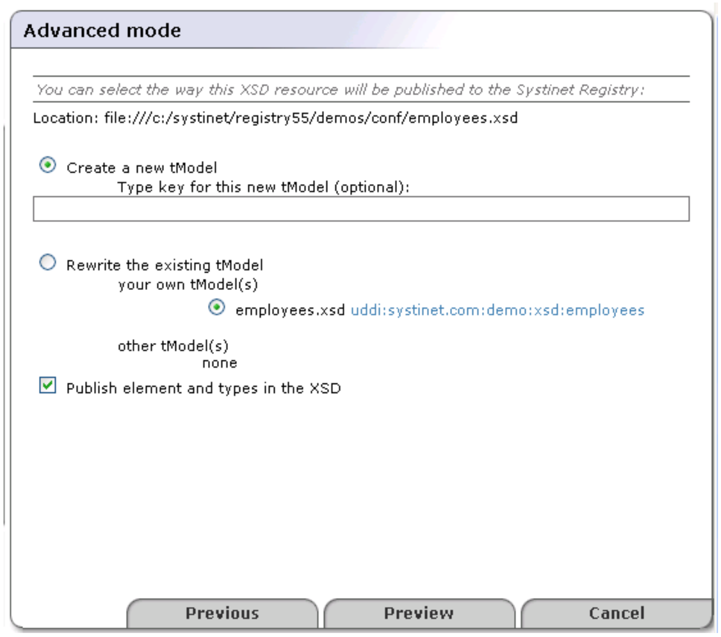
## Publishing an XML Schema (Advanced Mode)

The advanced publishing mode allows you to specify certain details of how the XML Schema document will be mapped to the UDDI registry. To publish in this mode:

1 Follow the steps from the previous section, but check the **Advanced mode** box

2 Click **Publish**. This returns the Advanced Mode Publish page shown in Figure 98.

**Figure 98. Publish XSD - Advanced**


Advanced mode

*You can select the way this XSD resource will be published to the Systinet Registry:*

Location: file:///c:/systinet/registry55/demos/conf/employees.xsd

[✓ Create a new tModel]
Type key for this new tModel (optional):

Rewrite the existing tModel
your own tModel(s)
[✓ employees.xsd uddi:systinet.com:demo:xsd:employees]

other tModel(s)
none

[✓ Publish element and types in the XSD]

3 In the left tree panel, you can see how the XML Schema and its possible XML Schema imports will be published. Click on an XML Schema model node to edit how the parts of the XML Schema will be mapped to the HP SOA Registry Foundation. The explanatory instructions in the right panel describe the mapping options.

4 Click the **Preview** to see how the XML Schema document will be mapped to HP SOA Registry Foundation. From the Preview page, you can go back to edit the XML Schema mapping.

## Unpublish an XML Schema

The Unpublish XML operation allows you to delete the XML Schema mapping from HP SOA Registry Foundation. To unpublish an XML Schema document, you must search for the XML Schema document first.

## Signer Tool

One of the most important advantages of UDDI version 3 is its support for digital signatures. Without signatures you cannot verify whether the publisher of a business entity is really who that publisher claims to be. But if the publisher has signed the UDDI structure, anyone can verify that the information is unmodified by any means (including by UDDI registry operators) and to confirm the publisher's identity.

The HP SOA Registry Foundation Signer tool simplifies signature manipulation. You can find this tool's script in the `bin` directory of your HP SOA Registry Foundation installation. The Signer is a graphical application that can be used to add, remove, and verify the signatures of UDDI structures you have published.

If you are using IBM Java, you must install Bouncy Castle security provider. See Installation Guide, System Requirements on page 38

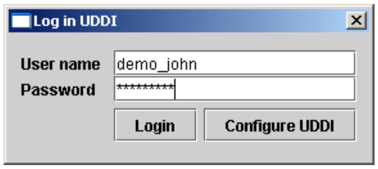
### Starting the Signer

1. To start the Signer tool, first ensure that HP SOA Registry Foundation is running, then execute the following script from the `bin` subdirectory of your HP SOA Registry Foundation installation:

| | |
|---|---|
| Windows: | signer.bat |
| UNIX: | ./signer.sh |

2. When the tool starts, you must first authenticate yourself against the selected UDDI version 3 registry. Simply provide your user name and password. If your registry is not running on a local machine, you must configure its endpoints. This can be accomplished via the **Configure UDDI** button.

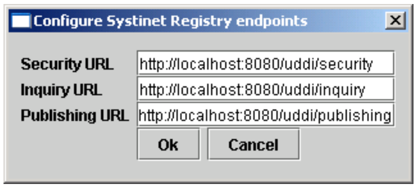
**Figure 99. Login Dialog**



User name: demo_john
Password: *********

3 On the returned screen, set the endpoints of the Security, Inquiry, and Publishing Web services. For help, ask the administrator of your registry.

**Figure 100. Configure Dialog**



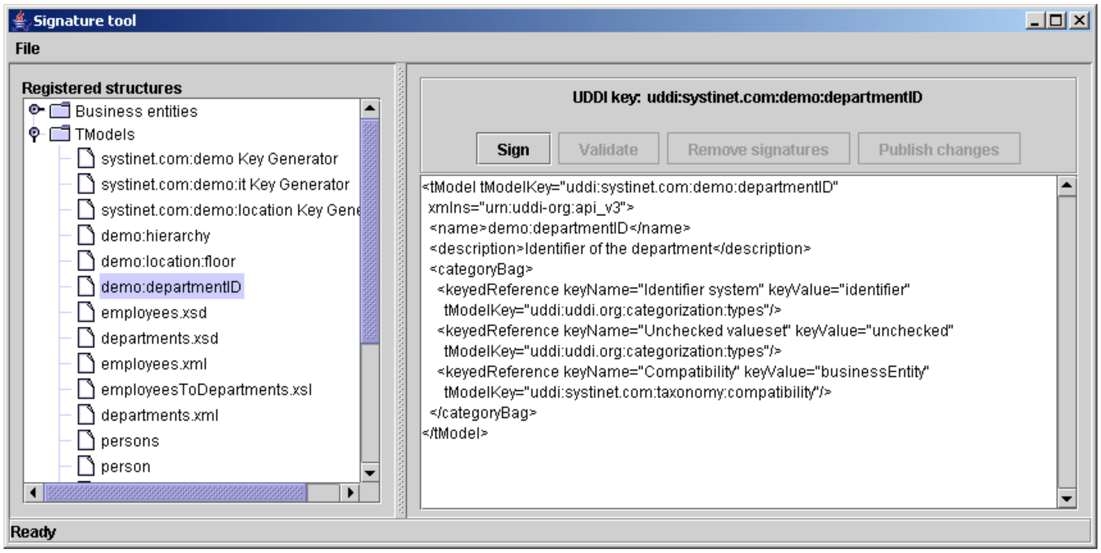
Security URL http://localhost:8080/uddi/security
Inquiry URL http://localhost:8080/uddi/inquiry
Publishing URL http://localhost:8080/uddi/publishing

4 Once you have entered your user name and password, click the **Login** button. The Signer tool will attempt to authorize you at the selected registry. If authorization fails, you can correct your login information. Once it succeeds, the **Login dialog** disappears and the Signer tool asks HP SOA Registry Foundation for your registered information (businessEntities and tModels that you have published).

## Main Screen

In the Signer tool's interface, the left part of the main screen consists of a tree containing all your businessEntities and tModels. If you wish to add or remove a digital signature, select the structure to sign from this tree. The Signer will fetch it from the registry. When the structure is fetched, its XML representation is displayed in the right panel. The **Sign** button is unblocked. If the structure has been already signed, the **Remove signatures** button is unblocked as well.

**Figure 101. Signature Tool - Main Screen**



```
<tModel tModelKey="uddi:systinet.com:demo:departmentID"
 xmlns="urn:uddi-org:api_v3">
 <name>demo:departmentID</name>
 <description>Identifier of the department</description>
 <categoryBag>
  <keyedReference keyName="Identifier system" keyValue="identifier"
   tModelKey="uddi:uddi.org:categorization:types"/>
  <keyedReference keyName="Unchecked valueset" keyValue="unchecked"
   tModelKey="uddi:uddi.org:categorization:types"/>
  <keyedReference keyName="Compatibility" keyValue="businessEntity"
   tModelKey="uddi:systinet.com:taxonomy:compatibility"/>
 </categoryBag>
</tModel>
```

The status bar at the bottom of the application informs the user of current action progress and results.

## Sign

To sign a UDDI structure, you must set up the Java keystore. Use JDK tool **keytool** to generate the keystore. Please, see your JDK documentation for more information how to use **keytool**. The Signer tool has been tested with keystores in JKS and PKCS12 formats.

➤ To generate the certificate issue the following command

**keytool -genkey -keyalg RSA -storetype JKS -alias demo_john -keystore test_certificate.jks**

Example of the dialog:

```
 Enter keystore password:  changeit
What is your first and last name?
  [Unknown]:  John Johnson
```

```
What is the name of your organizational unit?
  [Unknown]:  UDDI
What is the name of your organization?
  [Unknown]:  Myorg
What is the name of your City or Locality?
  [Unknown]:  San Diego
What is the name of your State or Province?
  [Unknown]:  California
What is the two-letter country code for this unit?
  [Unknown]:  CA
Is CN=John Johnson, OU=UDDI, O=Myorg, L=San Diego, ST=California, C=CA correct?
  [no]:  yes
Enter key password for <demo_john>
        (RETURN if same as keystore password):
```

To sign a UDDI structure, you must set the Java keystore file, alias, and password as follows:

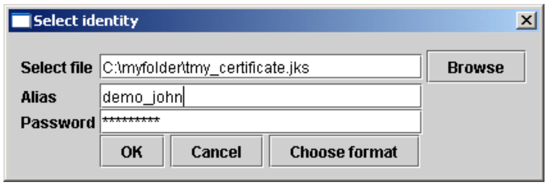
1 Click on the **Sign** button. This returns the **Select identity** dialog.

2 In the box labeled **Select identity**, type the path to the file with your Java keystore.

3 In the box labeled **Alias**, type the alias located in the identity.

4 In the box labeled **Password**, type the password used to encrypt the private key.

➤ If you enter the wrong value for the alias or the password, the tool will not be able to open the identity.


Select identity

Select file: C:\myfolder\my_certificate.jks

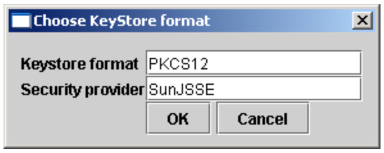
Alias: demo_john

Password: *********

5 If the keystore is in the Sun JKS format, you do not have to click on **Choose format** button. You can leave default values there. If the keystore is not in the Sun JKS format, you can specify the format by clicking the **Choose format** button. In the returned dialog window, set the keystore format and its

provider. For example, to use the PKCS12 format, set the format to PKCS12 and the provider to SunJSSE.

**Figure 102. KeyStore Format Dialog**



Choose KeyStore format

Keystore format: PKCS12
Security provider: SunJSSE

6 When the signing operation succeeds, the selected UDDI structure will have a digital signature and its XML representation will be updated. For security reasons, the signing process takes place on your computer so as not to risk compromise to your private key.

7 Finally the **Publish changes** and **Remove signatures** buttons are enabled.

### Validation

The **Validate** button is used to perform validity check of UDDI structures that contain XML digital signatures. The result of this operation is displayed in the status bar.

### Remove Signatures

The **Remove signatures** button is used to remove all digital signatures from the selected UDDI structure. When this operation is complete, the XML representation of the UDDI structure is updated. If the **Publish changes** button had been disabled, it is enabled.

### Publish Changes

If you have signed the selected UDDI structure or removed digital signatures from it, you can select the **Publish changes** button to publish the changes to the registry. Its invocation uses standard UDDI publishing methods (`save_tModel`, etc.) to update this UDDI structure on the registry. The private key is not used during this operation.

### Signer Configuration

The Signer tool automatically remembers the actual configuration such as registry endpoints or keystore location and format. The config file is saved in the user's home directory with the name `signer.conf`. You can change the location (and filename) by using the signer script's `-c` option. If you do not want this feature, use `-n`. The list of valid options can be obtained with `-h` option.

# 4 Administrator's Guide

The HP SOA Registry Foundation Administrator's Guide contains information necessary for the management of HP SOA Registry Foundation. It is aimed at the user responsible for configuring the registry and managing permissions, and replication. This guide is divided into the following sections:

**Registry Management on page 332** . Registry management includes also management of user accounts and permissions and taxonomy management.

**Registry Configuration on page 373** . How to configure the Registry Console.

**Registry Console Configuration on page 386** . This section covers setting the URLs, directories, contexts, timeouts and limits associated with the HP SOA Registry Foundation interface.

**Permissions: Principles on page 389** . This section discusses the mechanism HP SOA Registry Foundation provides for the management of users' rights; permissions allow the administrator to manage or make available different parts of the registry to different users.

**PStore Tool on page 403** . Describes a tool for management of protected stores for certificates and security identities.

Make sure HP SOA Registry Foundation is running before attempting to use its consoles for configuration. To start it change to the `bin` subdirectory of `REGISTRY_HOME` and run:

| | |
|---|---|
| Windows: | serverstart.bat |
| UNIX: | ./serverstart.sh |

The Registry Console can be found at `http://<hostname>:<port>/uddi/web` and the Business Service Console can be found at `http://<hostname>:<port>/uddi/bsc/web`.

Hostname and port are defined when HP SOA Registry Foundation is installed. The default port is 8080.

Log on as administrator. Initially, the administrator's user name is set to *admin* and the password to *changeit*.

➤ We strongly advise you to change the password for user admin once you have logged in.

➤ Be very careful when editing the `Operational business entity`, or deleting of the taxonomy `uddi-org:types`. Modification of these structures can lead to registry instability.

## Registry Management

### Accessing Registry Management

Registry Management is a set of tasks that the administrator can address through the Registry Console. These tasks are listed in Figure 103

To access the Registry Management console:

1. Log on as administrator or as a user with privilege to display **Manage** tab as described in Rules to Display the Manage Tab.
2. Click the **Manage** main menu tab.
3. Select the **Registry management** link under **Manage** tab. This returns the screen shown in Figure 103.

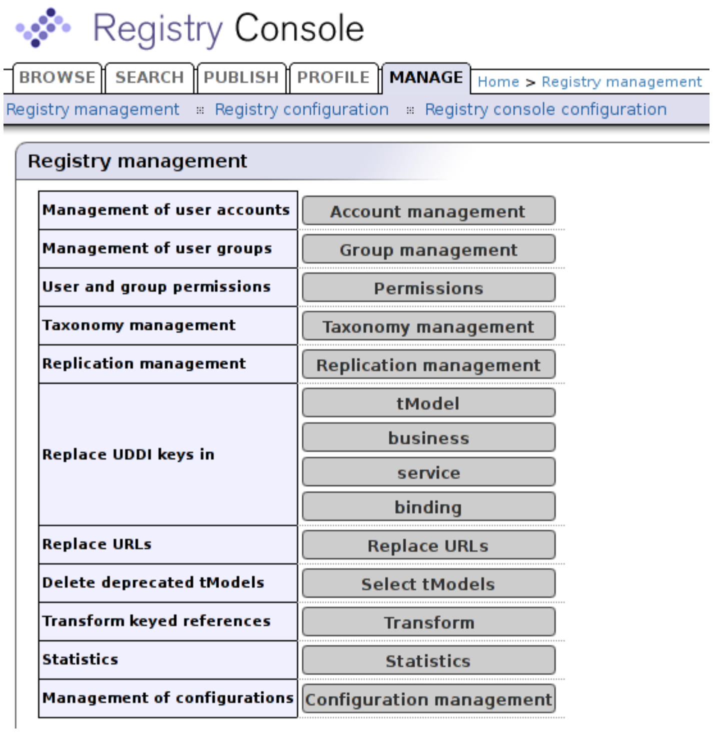
➤ **Rules to Display the Manage Tab**

The **Manage** tab is available if at least one of the following conditions is satisfied:

- You have ApiManagerPermission to all methods (*) of one or more APIs (Account,Group,Permission,Taxonomy,Statistics,Administration Utils).
- You have ConfiguratorManagerPermission to all operations (*) and all configurations (*).
- You have ApiManagerPermission to all methods (*) of ReplicationApi and ConfiguratorManagerPermission to all operations (*) for replication configuration.

- You have ConfiguratorManagerPermission to all operations (*) for web configuration.

**Figure 103. Registry Management**



Registry management

| | |
|---|---|
| Management of user accounts | Account management |
| Management of user groups | Group management |
| User and group permissions | Permissions |
| Taxonomy management | Taxonomy management |
| Replication management | Replication management |
| Replace UDDI keys in | tModel |
| | business |
| | service |
| | binding |
| Replace URLs | Replace URLs |
| Delete deprecated tModels | Select tModels |
| Transform keyed references | Transform |
| Statistics | Statistics |
| Management of configurations | Configuration management |

- Account Management - Create, edit, and delete user accounts.
- Group Management - Create, edit, and delete accounts groups.
- Permissions - Set up permissions using the Registry Console
- Taxonomy Management - Upload, download and removing taxonomies via the Registry Console.

- Replication Management - Set up a subscription-based replication mechanism under which a slave registry receives notification from a master registry regarding updates and changes. (For more information on replication, please see Replication Management on page 354.)
- Replace UDDI keys - Replace the UDDI keys of businessEntities, businessServices, tModels, and bindingTemplates.
- **Replace URLs** - Replace URL prefixes in the following entities:
  - tModel - OverviewDoc URL
  - tModelInstanceInfo - overviewDoc URL and DiscoveryURL
  - binding template - accessPoint URL
- **Delete deprecated tModels** - This option lets the administrator permanently delete deprecated tModels. A tModel is considered deprecated when it is marked as deleted by its owner. By default, tModels are deleted permanently by users. See Node on page 381 how to change this behavior.
- **Transform keyed references** - This operation is necessary when the type of taxonomy keyValues or the implementation of the taxonomy transformation service have been changed. For more information see, User's Guide, Taxonomy: Principles, Creation and Validation on page 247.
- Statistics - This option displays two statistics tabs:
  - The first tab displays information about the number of accesses made to the various UDDI interface methods. One column displays the total request counts and a count of calls that fail and therefore return exceptions.
  - The second one contains counts of the main data structures (businessEntities, businessServices, tModels, bindingTemplates) in the database.

## Account Management

The HP SOA Registry Foundation administrator manages user accounts using the Registry Console. Use this console whenever you want to disable an account, change limits for a particular account, or take care of general housekeeping.

To access the Account management console:

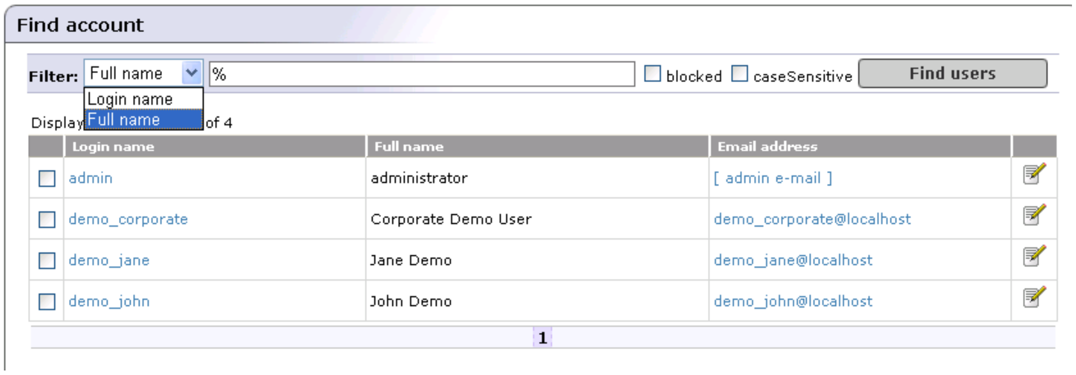
1 Log on as administrator.

2 Click the **Registry management** link under the **Manage** tab.

3 Click the **Account management** button.

This displays a list of all accounts, as shown in Figure 104.You can search accounts using the **Find users** button.

**Figure 104. Find Account**



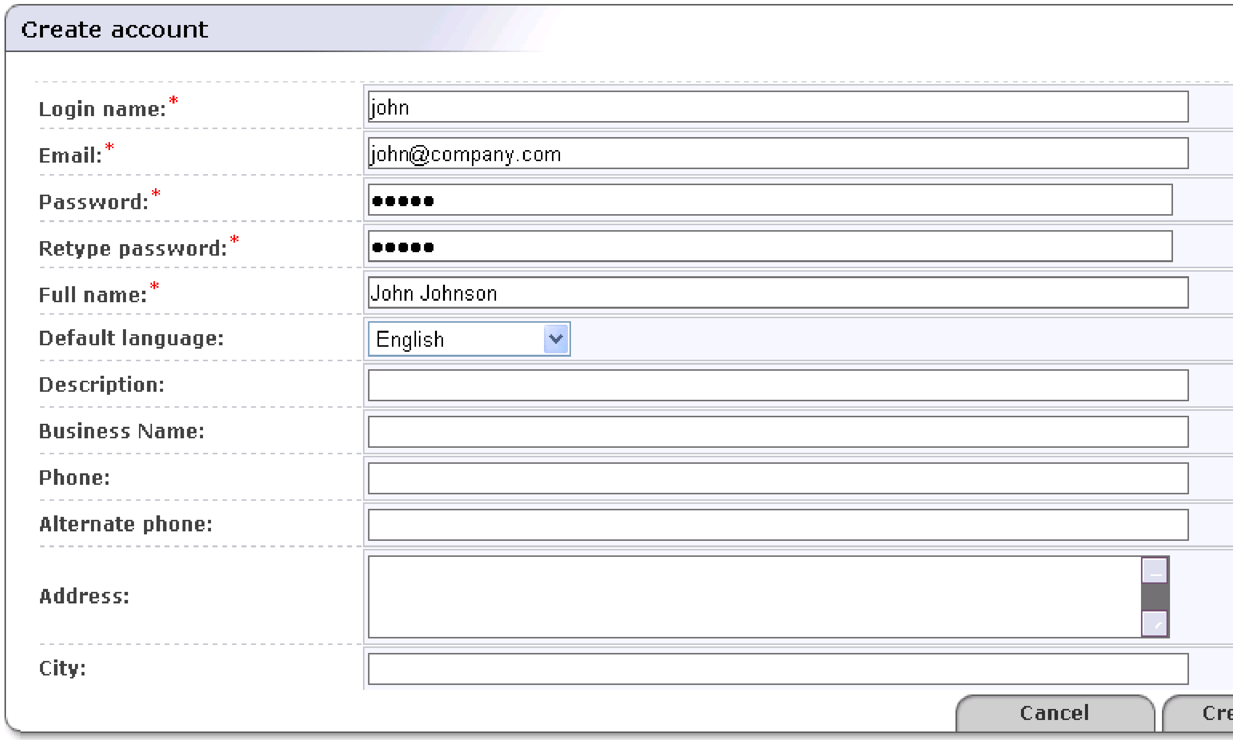
|  | Login name | Full name | Email address |  |
|---|---|---|---|---|
| ☐ | admin | administrator | [ admin e-mail ] |  |
| ☐ | demo_corporate | Corporate Demo User | demo_corporate@localhost |  |
| ☐ | demo_jane | Jane Demo | demo_jane@localhost |  |
| ☐ | demo_john | John Demo | demo_john@localhost |  |

## Create Account

To create an account:

1 On the **Find Account** page, click **Create Account** button. This returns the Create account page shown in Figure 105.

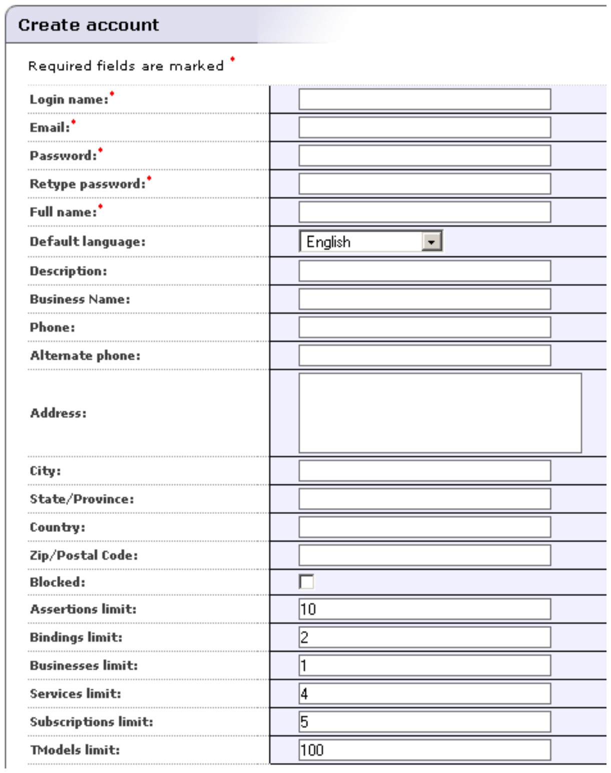
**Figure 105. Create Account**


Create account

| | |
|---|---|
| Login name:* | john |
| Email:* | john@company.com |
| Password:* | ●●●●● |
| Retype password:* | ●●●●● |
| Full name:* | John Johnson |
| Default language: | English |
| Description: | |
| Business Name: | |
| Phone: | |
| Alternate phone: | |
| Address: | |
| City: | |

2 Provide the information shown in . Fields marked with a red asterisk (*) are required.

**Figure 106. New Account - All Fields**


Create account

Required fields are marked *

| | |
|---|---|
| Login name:* | |
| Email:* | |
| Password:* | |
| Retype password:* | |
| Full name:* | |
| Default language: | English |
| Description: | |
| Business Name: | |
| Phone: | |
| Alternate phone: | |
| Address: | |
| City: | |
| State/Province: | |
| Country: | |
| Zip/Postal Code: | |
| Blocked: | ☐ |
| Assertions limit: | 10 |
| Bindings limit: | 2 |
| Businesses limit: | 1 |
| Services limit: | 4 |
| Subscriptions limit: | 5 |
| TModels limit: | 100 |

Field descriptions (self-explanatory fields are omitted):

**Default Language Code**

Set the default language to be used during publishing when the language code associated with a particular field is not specified.

**Use the following profile**

**Profile preference** - deprecated and unused now.

**Blocked**

Here you can enable/disable a user account. This is the account flag which prevents/permits a user from successfully logging onto the server.

**Limits**

These fields (**Assertions limit**, **Bindings limit**, **Businesses limit**, **Services limit**, **Subscriptions limit**, and**TModels limit**) indicate the number of these items allowed by the user. Changing default user limits is discussed in the Accounts section of Registry Configuration.

3 When finished, click **Create account**. This returns the Find account page. Note that the list of accounts now includes the account you have just created.

## Account Limits

Each user account has the following limits for data saved under the account:

- Businesses limit - maximum number of businessEntities the account can hold. (1 by default).
- Services limit - maximum number of businessServices in the same businessEntity (4 by default).
- bindings limit - maximum number of bindingTemplates in the same businessService (2 by default).
- tModels limit - maximum number of tModels the account can hold. (100 by default).
- Assertions limit - maximum number of publisherAssertions the account can hold (10 by default).
- Subscriptions limit - maximum number of subscriptions an account can hold. (5 by default)

Common users can not change these limits. Only the administrator can change limits for a user or change default limits for newly created users.

The number of businessServices/bindingTemplates are checked against the limit on the user account owning the parent structure, not against the limit of the user processing the save_XXX call. For example, a user U1 owns a businessEntity BE_U1 and provides `create` ACL right to the user U2. The user U2 saves a new businessService under the BE_U1, total count of businessServices under the BE_U1 (no matter who is the owner) is checked against the service limit of the BE account.

Limit checking is skipped if a user who performs the operation has an `ApiManagerPermission` with the appropriate permission name and action:

- API (permission name)
    - `org.systinet.uddi.client.v3.UDDI_Publication_PortType` for skipping limit tests on Publishing V3 API.
    - `org.systinet.uddi.client.v2.Publish` for skipping limit tests on Publishing V2 API.
    - `org.systinet.uddi.client.v1.PublishSoap` for skipping limit tests on Publishing V1 API.
    - `org.systinet.uddi.client.subscription.v3.UDDI_Subscription_PortType` for skipping limit tests on Subscription API.
- operation (action)
    - `save_business` for skipping businesses limit test on Publishing V1/V2/V3 API
    - `save_service` for skipping services limit test on Publishing V1/V2/V3 API
    - `save_binding` for skipping bindings limit test on Publishing V1/V2/V3 API
    - `save_tModel` for skipping tModels limit test on Publishing V1/V2/V3 API
    - `add_publisherAssertions` for skipping assertions limit test on Publishing V2/V3 API
    - `set_publisherAssertions` for skipping assertions limit test on Publishing V2/V3 API
    - `save_subscription` for skipping subscriptions limit test on Subscription API

For more information see Permissions: Principles on page 389. By default, only the administrator has these permissions, and therefore the administrator has an *unlimited* account.

## Edit Account

To edit an account:

1. On the **Find account** page shown in Figure 104, click the **Edit Account** icon ( ) associated with the account you want to edit.

   This returns the Edit account page.

2 On the Edit account page, provide or change the information in the various fields. These are the same as the fields shown in Figure 106.

Field descriptions (self-explanatory fields are omitted):

**Default Language Code**

Set the default language to be used during publishing when the language code associated with a particular field is not specified.

**Blocked**

Here you can enable/disable a user account. This is the account flag which prevents/permits a user from successfully logging onto the server.

**Limits**

These fields (**Assertions limit**, **Bindings limit**, **Businesses limit**, **Services limit**, **Subscriptions limit**, and**TModels limit**) indicate the number of these items allowed by the user. These are described in detail in the Accounts section of Registry Configuration.

3 When finished, click the button labeled **Save Changes**. This returns the Find account page.

## Delete Account

To delete an account:

1 On the Find account page, check the box next to the **Login name** of the account you want to delete.

2 Click the **Delete Selected** button.

3 If you are certain you want to delete the account, click **Yes** when prompted. Note that on publication registries and standard installations of HP SOA Registry Foundation, all published information associated with the user will be lost.

➤ If you are using LDAP for storing users, the user account will not be deleted from the LDAP store, because LDAP stores are treated as read-only. The `delete account` operation will delete an account only from the registry database.

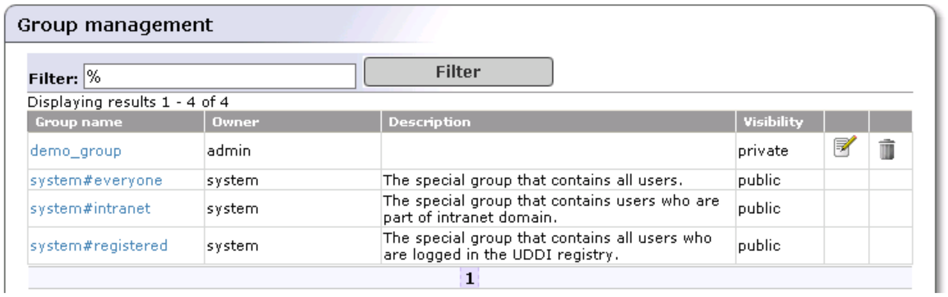
## Group Management

User groups simplify management of access rights to each UDDI data structure. You can use groups to group users with similar rights.

The administrator can:

- Create and manage user groups
- Manage group membership

**Figure 107. View User Groups**



Group management

Filter: %

Filter

Displaying results 1 - 4 of 4

| Group name | Owner | Description | Visibility | | |
|---|---|---|---|---|---|
| demo_group | admin | | private | | |
| system#everyone | system | The special group that contains all users. | public | | |
| system#intranet | system | The special group that contains users who are part of intranet domain. | public | | |
| system#registered | system | The special group that contains all users who are logged in the UDDI registry. | public | | |

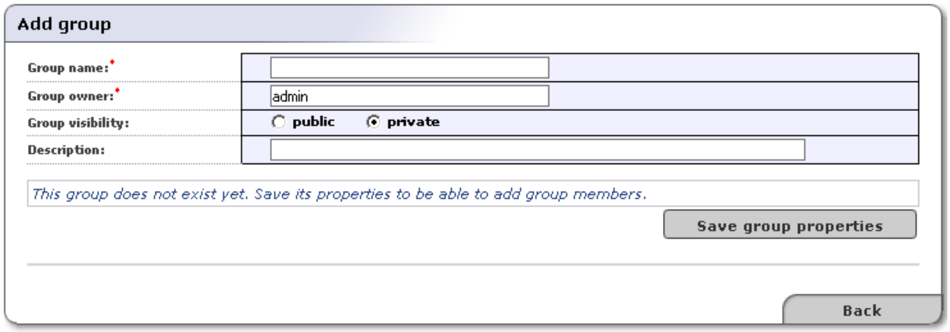
1

### Create and Manage Groups

To create a new group:

1. Click on the **Manage** menu tab. On the Manage tab, select the **Registry management** link, and then click the **Group management** button. This returns the Group Management page.
2. To display all groups on the registry, click **Filter**. This returns a Group list like the one shown in Figure 107.
3. Click the **Add Group** button. This returns a blank Add group page much like the one shown in Figure 108.

**Figure 108. Add Group Page**



| | |
|---|---|
| Group name:* | |
| Group owner:* | admin |
| Group visibility: | public [✓ private] |
| Description: | |

*This group does not exist yet. Save its properties to be able to add group members.*

4 In the edit box labeled **Group name**, type the name of your group. In the edit box labeled **Group owner**, type the owner of the group. The default owner is Admin. These two fields are required.

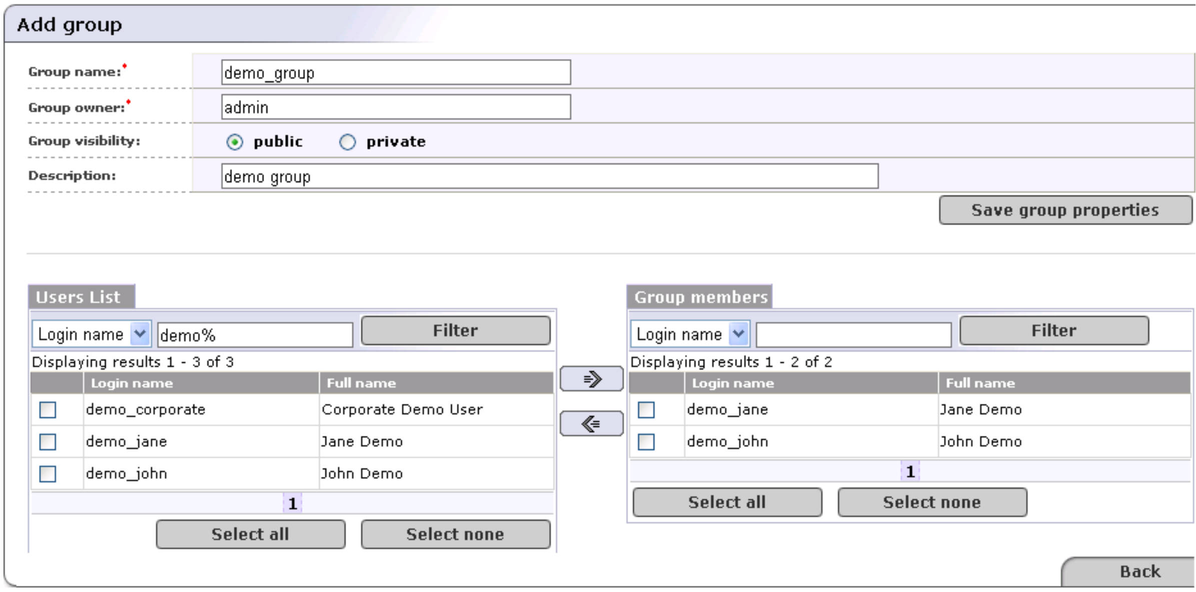
5 Use the radio buttons labeled **public** and **private** to set group visibility.

Both public and private groups are visible to all users in the registry, meaning that all users are able to see which groups exist. Public and private groups differ in that members of public groups are visible to all users of the registry whereas members of private groups are visible only to the owner of the group.

6 Optionally, Enter a description of the group in the box labeled **Description**.

7 Click the **Save group properties** button. This returns the **Users list** and **Group members** sections shown in Figure 107.

**Figure 109. Edit Group Membership**


Add group

| | |
|---|---|
| Group name:* | demo_group |
| Group owner:* | admin |
| Group visibility: | [✓ public] private |
| Description: | demo group |

Users List

Login name | demo%

Displaying results 1 - 3 of 3

| | Login name | Full name |
|---|---|---|
| ☐ | demo_corporate | Corporate Demo User |
| ☐ | demo_jane | Jane Demo |
| ☐ | demo_john | John Demo |

Group members

Login name

Displaying results 1 - 2 of 2

| | Login name | Full name |
|---|---|---|
| ☐ | demo_jane | Jane Demo |
| ☐ | demo_john | John Demo |

8 In the **Users list** section, click **Filter** to display a list of all of the registry's users.

Use the drop down list in this section to sort users by **Login name** or **Full name**.

Use the text box to further filter users. You can use % as wildcard in this field.

9 Check the boxes next to all members you wish to include, and click the right-pointing arrow ( ⇛ ) to move them to the **Group members** table.

Group members are updated in the database once you click the arrow buttons.

## Manage Group Membership

To add or remove members from a group:

1 Click on the **Manage** main menu tab.

2 Click on the **Registry management** link. This returns the main Registry Management page.

Click the **Group management** button. This returns the Group list shown in Figure 107.

3 Enter your search criteria, then click the **Filter** button. Click **Filter** without search criteria to return a list of all groups.

4 Click the **Edit** button ( ) in the row with the group you want to manage. This returns the Edit Group page. Specify search criterion for user accounts, then click the **Filter** button.

5 Use the arrow buttons ( and ) to add and remove users as shown in Figure 109

## Permissions

This chapter describes how you can set permissions using the Registry Console. Before you start to work with permissions, we recommend reading Permissions: Principles on page 389 to become familiar with permissions principles.

HP SOA Registry Foundation uses the same interface for managing both user permissions and group permissions. In this section we discuss user permissions, but group permissions are handled the same way.

### Accessing Permission Management

To access permission management:

1 Log on as Administrator or as a user who has permission to set permissions, as described in Permissions Definitions on page 390.

2 Click the **Manage** main menu tab. On the **Manage** tab, select the **Registry management** link, and then click the **Permissions** button.

3 On the initial Select Principal screen, click **Filter**, without changing the default settings, to view a list of all users (principals).

Use the drop down list in this section, labeled **Filter:** to sort users by **Login name** or **Full name**.

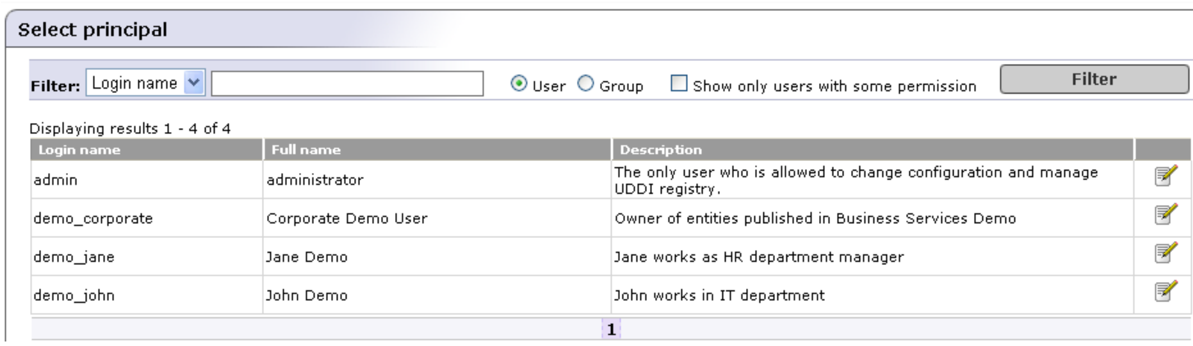
Use the text box to further filter users by name. You can use % as wildcard in this field.

Select the radio button labeled **User** to manage permissions for individual users. Select the button labeled **Group** to manage group permissions.

Check the box labeled **Show only users/groups with some permission** to filter out principals who have not already been granted permissions.

This returns the list of users shown in Figure 110.

**Figure 110. Select Principal**



Select principal

Filter: Login name [ ] (●) User ( ) Group [ ] Show only users with some permission Filter

Displaying results 1 - 4 of 4

| Login name | Full name | Description | |
|---|---|---|---|
| admin | administrator | The only user who is allowed to change configuration and manage UDDI registry. | 📝 |
| demo_corporate | Corporate Demo User | Owner of entities published in Business Services Demo | 📝 |
| demo_jane | Jane Demo | Jane works as HR department manager | 📝 |
| demo_john | John Demo | John works in IT department | 📝 |

1

4 Click the **Edit** icon ( 📝 ) associated with the user or group whose permissions you wish to set.

## Add Permission

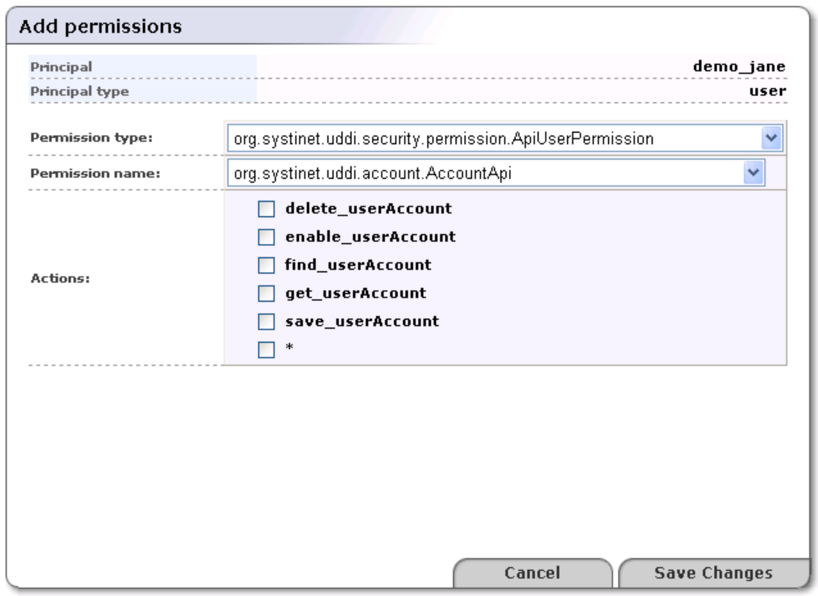
To add permissions:

1 Access permission management as described above in Accessing Permission Management on page 344.

2 On the principal list page shown in Figure 110, click the **Edit** icon ( 📝 ) associated with the group or user to whom you wish to add permissions. On the returned Permissions page, click **Add permission**.

3 An Add permissions page much like the one shown in Figure 111 will appear.

**Figure 111. Add Permission**



Add permissions

| | |
|---|---|
| Principal | demo_jane |
| Principal type | user |
| Permission type: | org.systinet.uddi.security.permission.ApiUserPermission |
| Permission name: | org.systinet.uddi.account.AccountApi |
| Actions: | ☐ delete_userAccount<br>☐ enable_userAccount<br>☐ find_userAccount<br>☐ get_userAccount<br>☐ save_userAccount<br>☐ * |

4
- Select the type of permission from the drop down list labeled **Permission type**.
- From the drop down list labeled **Permission name**, select the name of the permission to add.
- Check the box(es) next to the actions associated with the permission name in order to grant permission to perform those actions. Check the box next to the asterisk (*) to permit all the actions on the list.

5 Click **Save Changes** to save the permission.

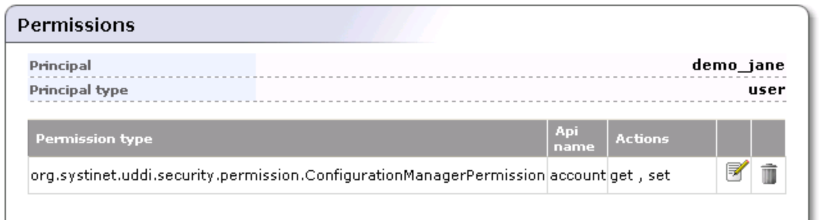
## Editing and Deleting Permissions

To edit a permission:

1 On the principal list page shown in Figure 110, click the **Edit** icon ( ) associated with the user whose permissions you want to edit or delete.

2 If the principal has permissions defined, a permission list like the one shown in Figure 112 will appear.

**Figure 112. Permissions List**



Permissions

| | |
|---|---|
| Principal | demo_jane |
| Principal type | user |

| Permission type | Api name | Actions | | |
|---|---|---|---|---|
| org.systinet.uddi.security.permission.ConfigurationManagerPermission | account | get , set | | |

3 Click the **Edit** or **Delete** icon ( ) associated with the permission you want to address.

## Assigning Administrator's Permission

If you want to give administrator's permissions to an existing user, you must assign the following permissions types to the user:

- `org.systinet.uddi.security.permission.ApiManagerPermission`
- `org.systinet.uddi.security.permission.ApiUserPermission`
- `org.systinet.uddi.security.permission.ConfigurationManagerPermission`

For each **Permission type** set all **Permission name**s and all **actions** using the asterisk (*)

# Taxonomy Management

This chapter describes how administrators can build and maintain taxonomies using the Registry Console. Before you start to manage taxonomies, we recommend reading User's Guide, Taxonomy: Principles, Creation and Validation on page 247 to become familiar with taxonomy principles.

The following tasks are described in this chapter:

- Finding taxonomies - How to locate taxonomies in HP SOA Registry Foundation.
- Uploading a taxonomy
- Downloading a taxonomy

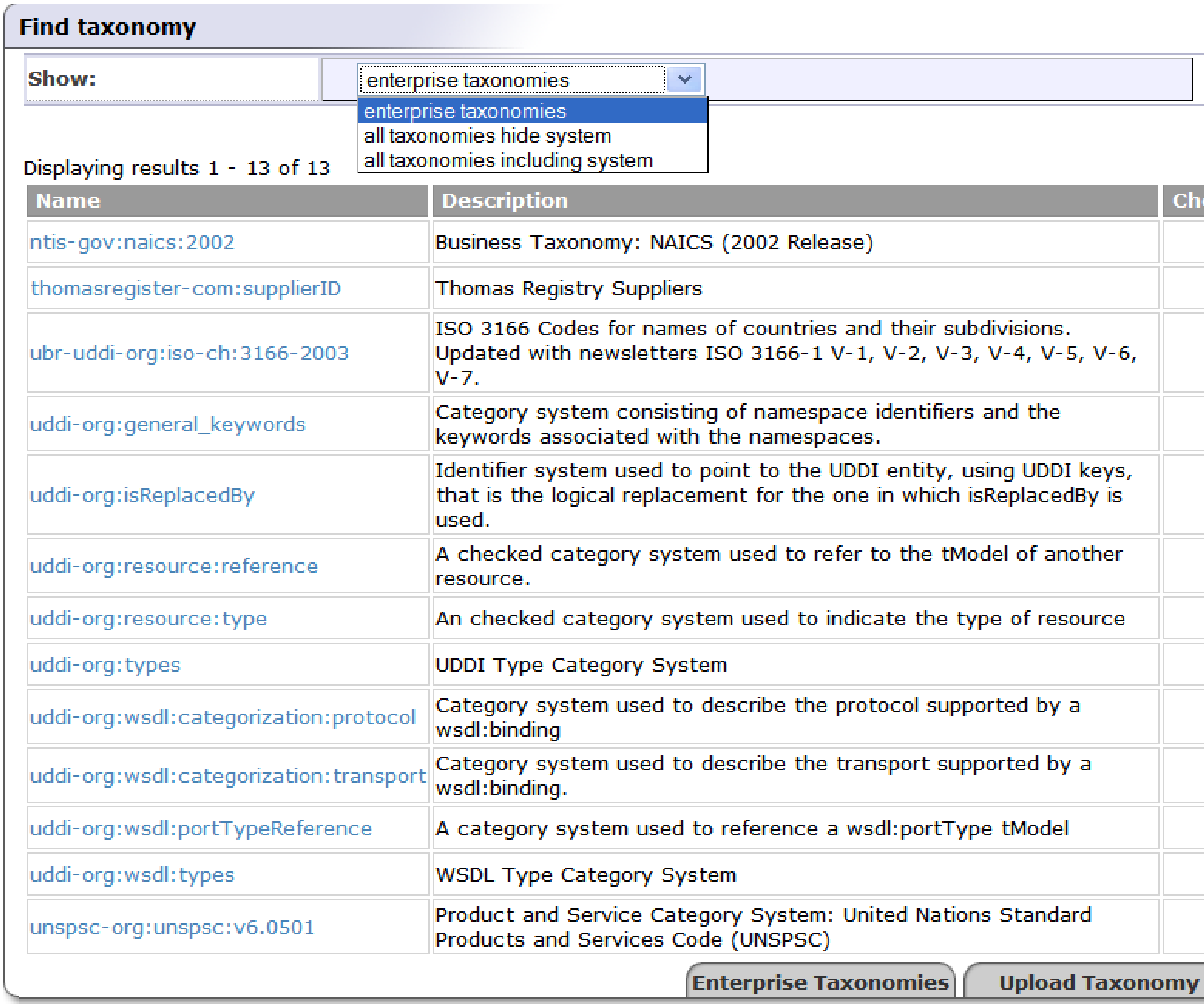
To view the Taxonomy management page:

1. Log on as administrator.
2. Click the **Manage** tab under the Main menu, and then click on the **Registry management** link under the **Manage** menu tab.
3. Click **Taxonomy management**. This returns a blank Taxonomy management page. To view a selection of taxonomies, select a filter from the drop down list labeled **Show**. Possible filters are:

   - Favorite taxonomies
   - Enterprise taxonomies
   - All taxonomies hide system
   - All taxonomies including system

   This returns a list of taxonomies similar to that shown in Figure 113.

**Figure 113. Find Taxonomy (Enterprise Taxonomies)**



Displaying results 1 - 13 of 13

| Name | Description | Ch |
|---|---|---|
| ntis-gov:naics:2002 | Business Taxonomy: NAICS (2002 Release) | |
| thomasregister-com:supplierID | Thomas Registry Suppliers | |
| ubr-uddi-org:iso-ch:3166-2003 | ISO 3166 Codes for names of countries and their subdivisions. Updated with newsletters ISO 3166-1 V-1, V-2, V-3, V-4, V-5, V-6, V-7. | |
| uddi-org:general_keywords | Category system consisting of namespace identifiers and the keywords associated with the namespaces. | |
| uddi-org:isReplacedBy | Identifier system used to point to the UDDI entity, using UDDI keys, that is the logical replacement for the one in which isReplacedBy is used. | |
| uddi-org:resource:reference | A checked category system used to refer to the tModel of another resource. | |
| uddi-org:resource:type | An checked category system used to indicate the type of resource | |
| uddi-org:types | UDDI Type Category System | |
| uddi-org:wsdl:categorization:protocol | Category system used to describe the protocol supported by a wsdl:binding | |
| uddi-org:wsdl:categorization:transport | Category system used to describe the transport supported by a wsdl:binding. | |
| uddi-org:wsdl:portTypeReference | A category system used to reference a wsdl:portType tModel | |
| uddi-org:wsdl:types | WSDL Type Category System | |
| unspsc-org:unspsc:v6.0501 | Product and Service Category System: United Nations Standard Products and Services Code (UNSPSC) | |

Use the page shown in Figure 113 to search enterprise taxonomies. You can classify taxonomies according to the following overlapping groups:

- Enterprise taxonomies - The HP SOA Registry Foundation administrator can define which taxonomies will be present in the enterprise taxonomies list. The **Enterprise taxonomies** button located in the bottom part of Figure 113 allows you to manage a list of enterprise taxonomies for all registry user accounts.
- Favorite taxonomies - All registry users can define their list of favorite taxonomies. See User's Guide, favorite Taxonomies on page 279 for more information on how to manage your list of favorite taxonomies.
- System taxonomies - When you edit a taxonomy you can assign whether the taxonomy is a system taxonomy using the check box **System taxonomy**.

The reason for this taxonomy classification is to make taxonomy management and UDDI entity categorization easier.

If you want to manage taxonomies which are not in the enterprise taxonomy list, select **see all taxonomies including system taxonomies** from the drop down list labeled **Show**. The page shown in Figure 114 will appear. You can search taxonomies using the following criteria: taxonomy name, type, compatibility, and validation.

**Figure 114. Find Taxonomy**

## Finding Taxonomies

To locate a taxonomy in HP SOA Registry Foundation:

1. Log on as administrator.
2. Click the **Manage** tab under the Main menu, and then click on the **Registry management** link under the **Manage** menu tab.
3. Click **Taxonomy management**. This returns a blank Taxonomy management page. Select a filter from the drop down list labeled **Show**. Possible filters are:
   - Favorite taxonomies
   - Enterprise taxonomies
   - All taxonomies hide system
   - All taxonomies including system

   This returns a list of taxonomies similar to that shown in Figure 113.
4. On the returned Find taxonomy page, you can further filter the results by
   a. name
   b. type - Types are discussed in Taxonomy Types on page 248
   c. compatibility
   d. validation
5. From the list of taxonomies the fit the filter criteria, select the taxonomy you wish to view by clicking on its name.

## Uploading Taxonomies

To upload a taxonomy:

1. Log on as administrator.
2. Click **Manage** main menu tab, then click on the link **Registry management** under the **Manage** menu tab.
3. A list of taxonomies like the one shown in Figure 114 will appear.
4. Click the **Upload taxonomy** button.
5. Choose a taxonomy file using the **Browse** button.
6. Click the **Upload taxonomy** button.

➤ The format of data on this page is described in the Persistence Format on page 456 of the Developer's Guide.

➤ To upload multiple taxonomies at once you should add them into one ZIP archive and upload this archive.

## Downloading Taxonomies

There are two obvious cases in which you will want to download a taxonomy from the database:

1. If you are planning to edit the taxonomy, it is good to keep a safe copy for version control. You can either edit the downloaded copy directly, and even manage it through a versioning system, or keep the downloaded copy as the safety copy and edit the taxonomy directly through the Registry Console and save changes directly to the database.
2. You may wish to replicate the taxonomy for other systems in other departments of your organization. These departments or branches may even tailor the taxonomy for their own purposes.

To download the taxonomy, click the **Download** () icon. This returns the system **Save file** dialog. The default name for the destination file is the taxonomy name with a `.xml` extension appended. Rename the file if you choose, then save the taxonomy file as you would any other.

### Deleting Taxonomies

If at any point you decide that a taxonomy is no longer necessary, you can delete it by clicking the **Delete taxonomy** icon (🗑) in the **Find Taxonomy** page.

➤ Because this procedure is irreversible you will be asked to confirm your deletion.

## Replication Management

Selective One-way Replication is a subscription-based replication mechanism under which a slave registry retrieves update and change notifications from a master registry. The slave registry then applies these to its own data.

Replication is set up by a subscription defining the set of businessEntities or tModels being replicated. The subscription filter is a find_business or find_tModel query with no special requirements.

Each time replication is invoked, the slave registry retrieves a set of changed businessEntities and referenced tModels. The tModels are referenced in tModelKeys of either tModelInstanceInfos or keyedReferences. These changes are then saved.

➤ Referenced tModels are only replicated if the slave registry does not already contain them. If a tModel is already present in the slave registry, it will not be replicated to the slave registry, even if the tModel has been modified in the master registry.

➤ Replicated data should not be changed because such changes in the slave registry will be lost when someone changes these entities in the master registry and the replication is automatically processed. Note also that replicated data should be stored under an account having administrator's privileges (admin).

Replication may fail or produce warning messages. The failure may occur for one of the following reasons:

- The master registry is not accessible or the connection is broken during data replication;
- Saving/Deleting of a subscribed businessEntity on the slave registry fails.

A warning is produced when:

- The subscribed businessEntity is not accessible on the master registry. For example because of ACL GET denied permission;
- Referenced tModels are not accessible on the master registry;
- Referenced tModels are saved/deleted.

Replication tries to obtain all changes to subscribed data since the last successful replication.

Replication process logs can be found in the `REGISTRY_HOME/log/replicationEvents.log` file. You can edit the `REGISTRY_HOME/conf/log4j.config` and make replication logging more detailed by uncommenting the following statement:

```
log4j.category.replication_v3.com.systinet.uddi.replication.v3.ReplicatorTask=DEBUG,replicationLog
```

Each registry must have a unique Operator Name. This value is set in the SMTP Configuration step during Registry installation. The Operator Names for the master registry and for any slave registries must not be the same.

## Master Registry Setup

To set up the master registry:

1. If you do not have an account on the master registry, you must create one. It can be a standard account.

   The default subscription limit for a new user is five. The HP SOA Registry Foundation Administrator may increase the subscriptions limit for the user.

2. Log into the master registry account.
3. Create a subscription for the replication with the following details:
   - The subscription filter must be a find_business or find_tModel query.
   - Set the **Notification listener type** drop down list to `None`

- The `brief` option is recommended to reduce the amount of transferred data.

For more information, please see Publishing Subscriptions on page 309.

## Slave Registry Setup

Only the administrator of the slave registry should do this.

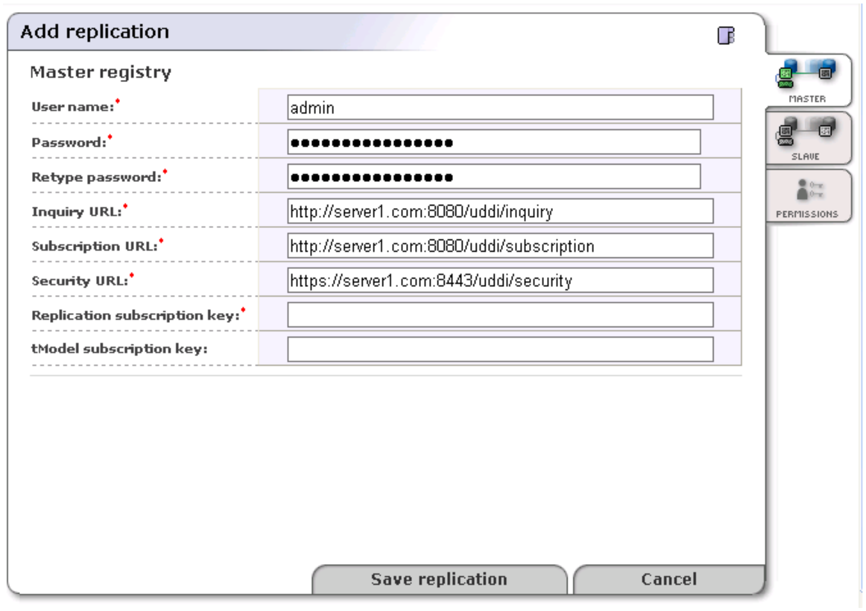
There are two parts to the slave registry configuration:

- Master registry information including the location of master registry endpoints for inquiry, subscription and security APIs, and the username/password pair on the master registry needed to obtain notifications;
- Slave registry information including the username/password pair on the slave registry for the user who will own the replicated data, and the notification interval.

To set up replication:

1. Log on as Administrator to the slave registry.
2. Click the **Manage** main menu tab, then click on the link **Registry management** under the **Manage** menu tab.
3. Click **Replication management**. This returns a list of replications.
4. Click **Add replication**.
5. Fill in the form under the **Master** tab as described in Figure 115.
6. Fill in the form under the **Slave** tab as described in Figure 116.
7. Specify permissions for replicated data under the **Permissions** tab as shown in Figure 117.
8. Click **Save replication**.

**Figure 115. Add Replication Master**



Master registry

| | |
|---|---|
| User name:* | admin |
| Password:* | •••••••••••••••• |
| Retype password:* | •••••••••••••••• |
| Inquiry URL:* | http://server1.com:8080/uddi/inquiry |
| Subscription URL:* | http://server1.com:8080/uddi/subscription |
| Security URL:* | https://server1.com:8443/uddi/security |
| Replication subscription key:* | |
| tModel subscription key: | |

- **User name** - Name of the user who created the replication subscription on the master registry
- **Password** - Password of the user who created this subscription. This password is encrypted in the configuration file.
- **URLs of Master Registry** - All URLs (Inquiry URL, Subscription URL and Security URL) must refer to the same master registry. Moreover the URLs must not refer to the slave registry itself, otherwise you can loose some data.
    - **Inquiry URL** - Inquiry URL of master registry. For example, `http://master.mycompany.com:8080/uddi/inquiry`. The inquiry URL is used to obtain full standard UDDI v3 structures.

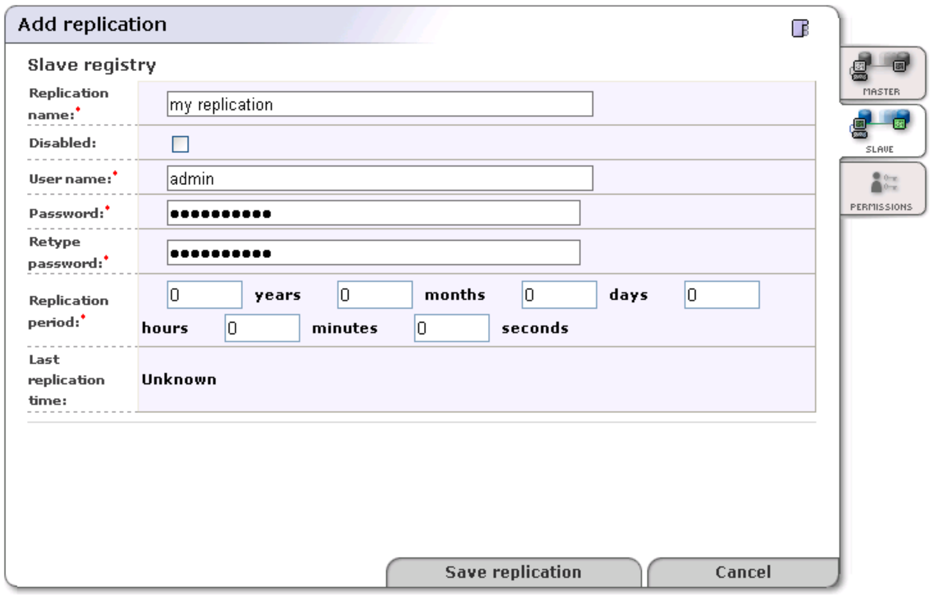
UDDI v2 keys are not included in the UDDI v3 structure and replicated structures differ with regard to v2 keys. To replicate v2 keys, specify the URL of the proprietary inquiry

API, which returns extended structures including v2 keys. This extended API has the context `/uddi/export`. For example, `http://master.mycompany.com:8080/uddi/export`.

- **Subscription URL** - Master registry's subscription URL. For example, `http://master.mycompany.com:8080/uddi/subscription`.
- **Security URL** - Master registry's security URL. For example, `https://master.mycompany.com:8443/uddi/security`.

- **Replication subscription key** - key of the `find_business` or `find_tModel` subscription from the master registry.
- **tModel subscription key** - key of the **helper** subscription for changes to tModels from the master registry.

### Figure 116. Add Replication Slave



Add replication

Slave registry

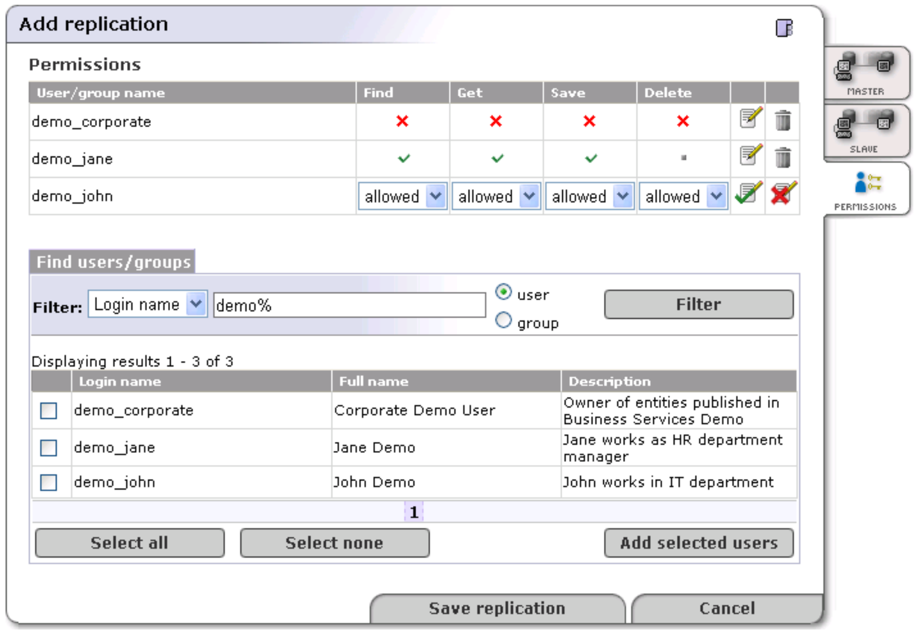
| | |
|---|---|
| Replication name:* | my replication |
| Disabled: | ☐ |
| User name:* | admin |
| Password:* | ●●●●●●●●●●● |
| Retype password:* | ●●●●●●●●●●● |
| Replication period:* | 0 years 0 months 0 days 0 hours 0 minutes 0 seconds |
| Last replication time: | Unknown |

- **Replication name** - Name the replication for better orientation within the list of replications.
- **Disabled** - Check this box to disable replication.
- **User name** - User account name under which replicated data will be stored.

> The user must have the `ApiManagerPermission` on `org.systinet.uddi.client.v3.UDDI_Publication_PortType` API for all * actions to be able to generate keys without having the appropriate keyGenerator. For more information, see User's Guide, Generating Keys on page 242. By default, the only user who can do this is the admin.

- **Replication period** - Specify the period between replications by entering the appropriate number in the boxes for years, months, days, hours, minutes, and seconds. The default period is one hour.
- **Last replication time** - The date and time when the last replication occurred.

**Figure 117. Add Replication Permissions**



Permissions

| User/group name | Find | Get | Save | Delete | | |
|---|---|---|---|---|---|---|
| demo_corporate | ✗ | ✗ | ✗ | ✗ | | |
| demo_jane | ✓ | ✓ | ✓ | ▪ | | |
| demo_john | allowed | allowed | allowed | allowed | ✓ | ✗ |

Find users/groups

Filter: Login name demo% [✓ user] group

Displaying results 1 - 3 of 3

| | Login name | Full name | Description |
|---|---|---|---|
| ☐ | demo_corporate | Corporate Demo User | Owner of entities published in Business Services Demo |
| ☐ | demo_jane | Jane Demo | Jane works as HR department manager |
| ☐ | demo_john | John Demo | John works in IT department |

In the page shown in Figure 117, the administrator can set up permissions for replicated data. If you do not enter any data on this page, all users from the slave registry have `find` and `get` permissions on replicated data.

To specify permissions on replicated data:

1. Enter a filter criteria for users or groups, and click **Filter**.

2. Check the box in front of users or groups. Then, click the **Add selected users** button. Selected users or groups will be added to the permissions list.

3. Click the **Edit**  icon to change permissions for `Find`, `Get`, `Save` and `Delete` operations

4. Click the **Save replication** button.

➤ Use the button **Replicate now** on the **replication** page to test the replication settings.

## Replacing UDDI Keys

Replacing keys of businessEntities, businessServices, tModels, and bindingTemplates is intended to correct errors in keys before entities are commonly used by users.

To access the key replacement page:

1. Log on as administrator.
2. Click the **Registry management** link under the **Manage** tab.
3. In the row labeled **Replace UDDI keys**, click the appropriate button **tModel**, **business**, **service**, or **binding**.

➤ The replace key operation can break digital signatures on changing entity as well as on other entities which reference to the changing entity.

### Replacing tModel keys

When you replace a tModel key, the key will be updated in the following data structures:

- tModel
- keyedReferenceGroups
- keyedReferences
- tModelInstanceInfos
- publisherAssertions
- addresses
- taxonomies

### Replacing businessEntity keys

When you replace a businessEntity key, the key will be updated in the following data structures:

- businessEntity
- services
- keyedReferences

### Replacing businessService keys

When you replace a businessService key, the key will be updated in the following data structures:

- businessService
- bindingTemplates
- keyedReferences

### Replacing bindingTemplate keys

When you replace a bindingTemplate key, the key will be updated in the following data structures:

- bindingTemplate
- keyedReferences
- subscriptions
- hostingRedirector
- accessPoint with `bindingTemplate` useType

## Registry Statistics

Registry statistics include statistics on::

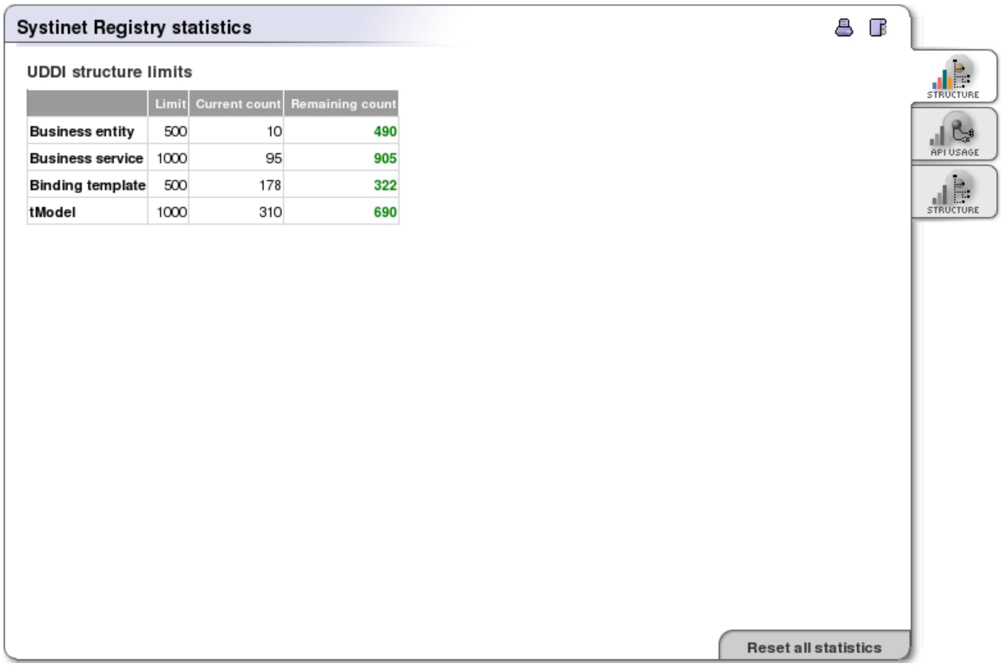
- UDDI structure counts versus limits imposed by the product license;

- invocations of registry APIs;
- UDDI structure counts generally;

To access the registry statistics page:

1. Log on as administrator.
2. Click the **Registry management** link under the **Manage** tab.
3. Click the **Statistics** button.
4. The page similar as shown in Figure 118 will appear, summarizing publishing limits imposed by the product license, current counts and the number remaining.

**Figure 118. Statistics - Publication Limits**



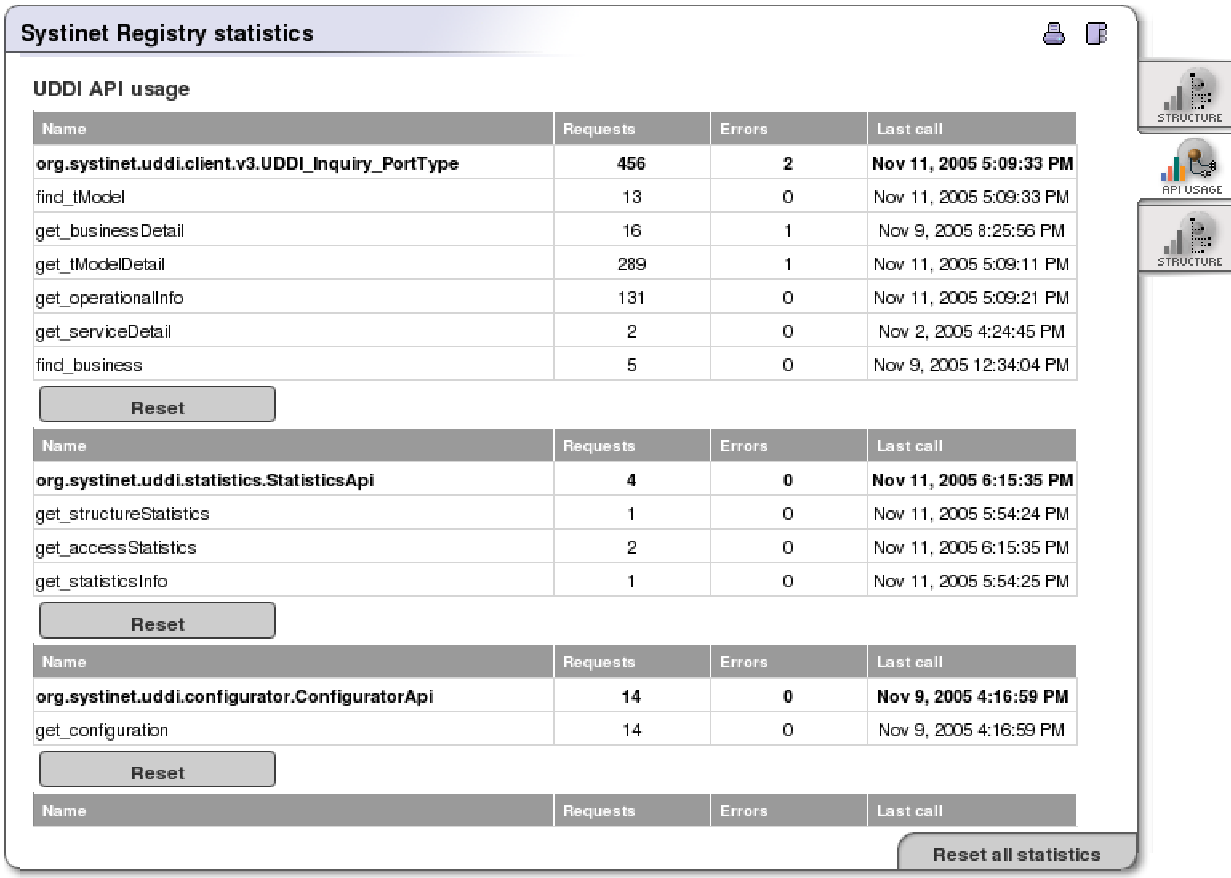
Systinet Registry statistics

UDDI structure limits

| | Limit | Current count | Remaining count |
|---|---|---|---|
| Business entity | 500 | 10 | 490 |
| Business service | 1000 | 95 | 905 |
| Binding template | 500 | 178 | 322 |
| tModel | 1000 | 310 | 690 |

5 Click the **API Usage** tab and you will see a page as in Figure 119 showing the number of requests for each API, number of unsuccessful requests and datetime of last API call. You can reset count separately for each API by clicking the **Reset** button or reset counts for all API by clicking on the **Reset all statistics**.

**Figure 119. Statistics - API usage**



UDDI API usage

| Name | Requests | Errors | Last call |
|---|---|---|---|
| **org.systinet.uddi.client.v3.UDDI_Inquiry_PortType** | **456** | **2** | **Nov 11, 2005 5:09:33 PM** |
| find_tModel | 13 | 0 | Nov 11, 2005 5:09:33 PM |
| get_businessDetail | 16 | 1 | Nov 9, 2005 8:25:56 PM |
| get_tModelDetail | 289 | 1 | Nov 11, 2005 5:09:11 PM |
| get_operationalInfo | 131 | 0 | Nov 11, 2005 5:09:21 PM |
| get_serviceDetail | 2 | 0 | Nov 2, 2005 4:24:45 PM |
| find_business | 5 | 0 | Nov 9, 2005 12:34:04 PM |

Reset

| Name | Requests | Errors | Last call |
|---|---|---|---|
| **org.systinet.uddi.statistics.StatisticsApi** | **4** | **0** | **Nov 11, 2005 6:15:35 PM** |
| get_structureStatistics | 1 | 0 | Nov 11, 2005 5:54:24 PM |
| get_accessStatistics | 2 | 0 | Nov 11, 2005 6:15:35 PM |
| get_statisticsInfo | 1 | 0 | Nov 11, 2005 5:54:25 PM |

Reset

| Name | Requests | Errors | Last call |
|---|---|---|---|
| **org.systinet.uddi.configurator.ConfiguratorApi** | **14** | **0** | **Nov 9, 2005 4:16:59 PM** |
| get_configuration | 14 | 0 | Nov 9, 2005 4:16:59 PM |

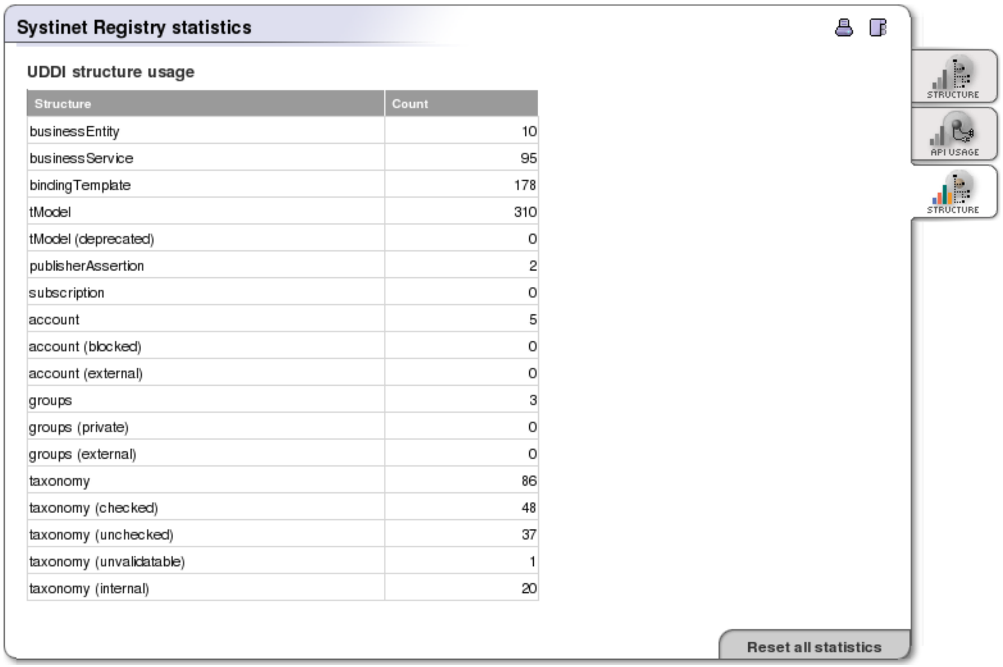
Reset

| Name | Requests | Errors | Last call |
|---|---|---|---|

Reset all statistics

6 You can click on the **Structure** tab. The page similar as shown in Figure 120 appears. On that page you can see number of UDDI entities stored in HP SOA Registry Foundation.

**Figure 120. Statistics - Structure**



Systinet Registry statistics

UDDI structure usage

| Structure | Count |
|---|---|
| businessEntity | 10 |
| businessService | 95 |
| bindingTemplate | 178 |
| tModel | 310 |
| tModel (deprecated) | 0 |
| publisherAssertion | 2 |
| subscription | 0 |
| account | 5 |
| account (blocked) | 0 |
| account (external) | 0 |
| groups | 3 |
| groups (private) | 0 |
| groups (external) | 0 |
| taxonomy | 86 |
| taxonomy (checked) | 48 |
| taxonomy (unchecked) | 37 |
| taxonomy (unvalidatable) | 1 |
| taxonomy (internal) | 20 |

## Management of configuration - User Interface

Configuration Management User Interface is available on the Registry Console, "Manage" tab, "Registry management" sub-tab (default), **Configuration management** button.

This management tool has two main parts designed for the following tasks:

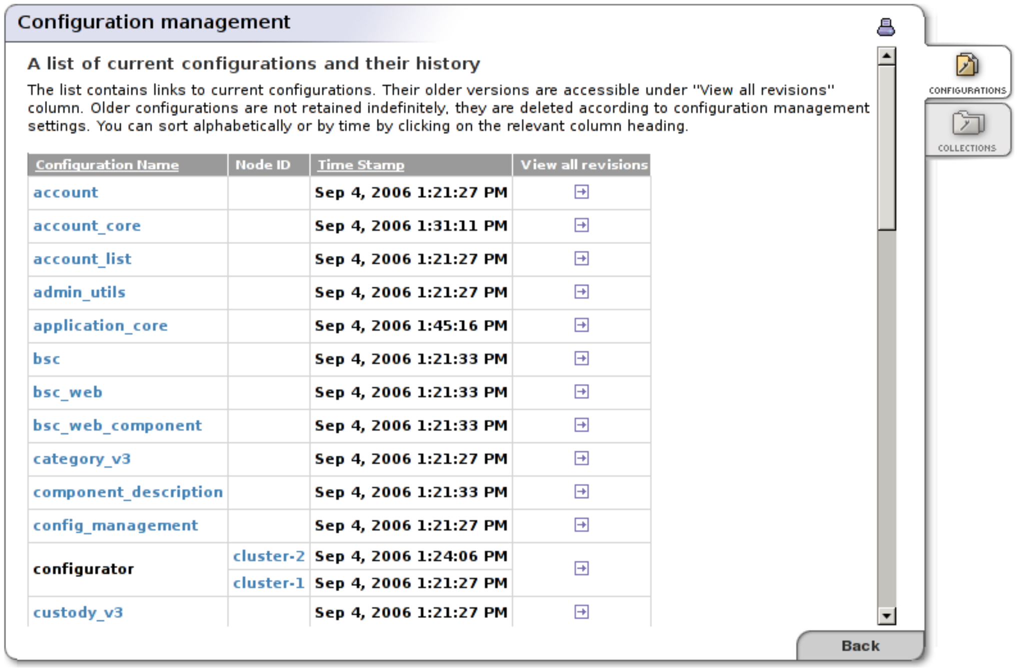
1 Inspection of current configurations and their history.

2 Saving configuration states into collections to compare or restore them later.

## Current configurations and their history

### View configuration

**Figure 121. View of current configurations**



A list of current configurations and their history

The list contains links to current configurations. Their older versions are accessible under "View all revisions" column. Older configurations are not retained indefinitely, they are deleted according to configuration management settings. You can sort alphabetically or by time by clicking on the relevant column heading.

| Configuration Name | Node ID | Time Stamp | View all revisions |
|---|---|---|---|
| account | | Sep 4, 2006 1:21:27 PM | ⇥ |
| account_core | | Sep 4, 2006 1:31:11 PM | ⇥ |
| account_list | | Sep 4, 2006 1:21:27 PM | ⇥ |
| admin_utils | | Sep 4, 2006 1:21:27 PM | ⇥ |
| application_core | | Sep 4, 2006 1:45:16 PM | ⇥ |
| bsc | | Sep 4, 2006 1:21:33 PM | ⇥ |
| bsc_web | | Sep 4, 2006 1:21:33 PM | ⇥ |
| bsc_web_component | | Sep 4, 2006 1:21:33 PM | ⇥ |
| category_v3 | | Sep 4, 2006 1:21:27 PM | ⇥ |
| component_description | | Sep 4, 2006 1:21:33 PM | ⇥ |
| config_management | | Sep 4, 2006 1:21:27 PM | ⇥ |
| configurator | cluster-2 | Sep 4, 2006 1:24:06 PM | ⇥ |
| | cluster-1 | Sep 4, 2006 1:21:27 PM | |
| custody_v3 | | Sep 4, 2006 1:21:27 PM | ⇥ |

This view shows current configurations. You can either sort it alphabetically or by time by clicking on the relevant column heading. Configurations that are local to a cluster node are displayed for all nodes. You can switch to the named collections view with the left tab.

Two actions are available:

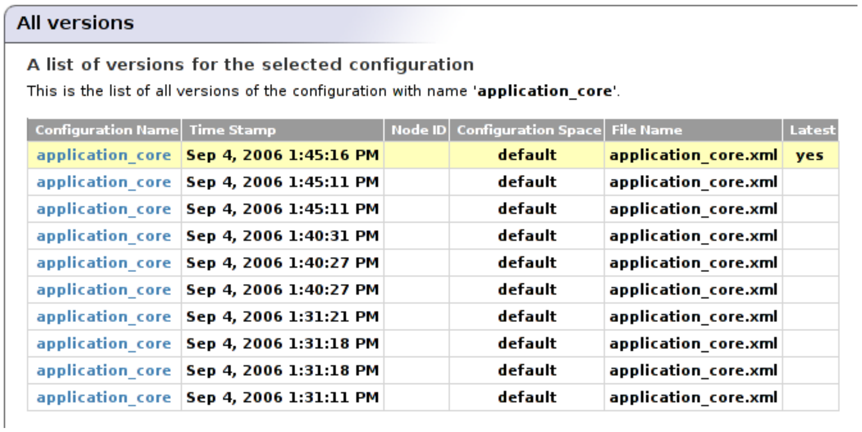
1 View the current configuration by clicking on the configuration name or in the case of cluster-local configurations on its Node ID.

2 View all versions of some configuration by clicking on the icon in the last column.

When the list is sorted by time the configurations with the same name but different Node IDs are not grouped together.

## All versions

**Figure 122. View of all versions**



All versions

A list of versions for the selected configuration

This is the list of all versions of the configuration with name '**application_core**'.

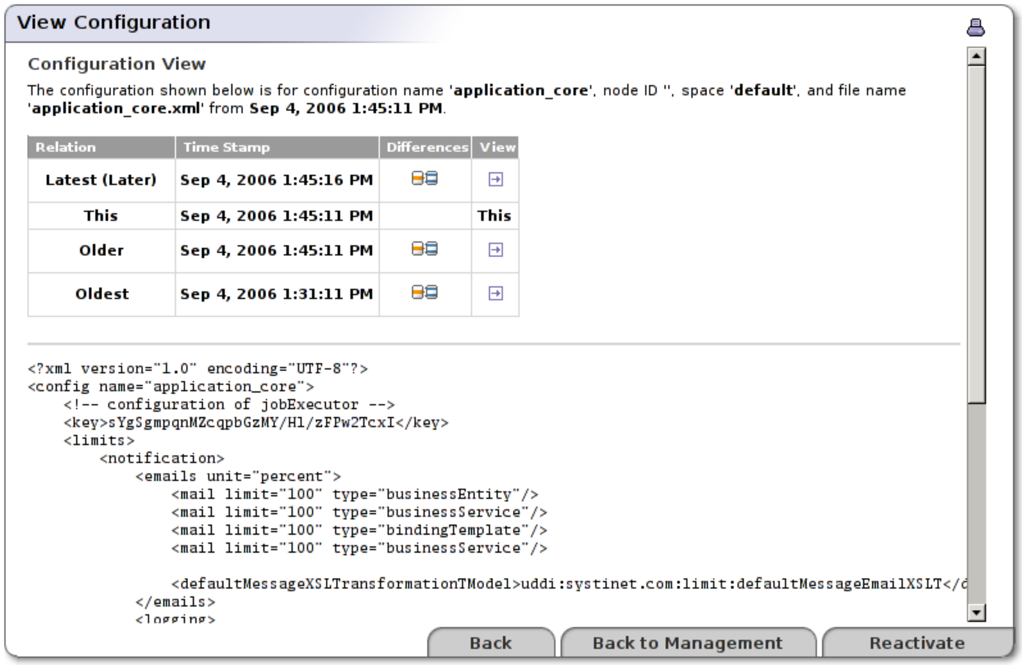
| Configuration Name | Time Stamp | Node ID | Configuration Space | File Name | Latest |
|---|---|---|---|---|---|
| application_core | Sep 4, 2006 1:45:16 PM | | default | application_core.xml | yes |
| application_core | Sep 4, 2006 1:45:11 PM | | default | application_core.xml | |
| application_core | Sep 4, 2006 1:45:11 PM | | default | application_core.xml | |
| application_core | Sep 4, 2006 1:40:31 PM | | default | application_core.xml | |
| application_core | Sep 4, 2006 1:40:27 PM | | default | application_core.xml | |
| application_core | Sep 4, 2006 1:40:27 PM | | default | application_core.xml | |
| application_core | Sep 4, 2006 1:31:21 PM | | default | application_core.xml | |
| application_core | Sep 4, 2006 1:31:18 PM | | default | application_core.xml | |
| application_core | Sep 4, 2006 1:31:18 PM | | default | application_core.xml | |
| application_core | Sep 4, 2006 1:31:11 PM | | default | application_core.xml | |

This view shows all versions of a specified configuration. If such a configuration is local, multiple entries may be marked as latest, one for each node. Latest nodes are also highlighted. The Length of this list is limited by rules for retaining older configurations (see Configuration in database section).

Clicking on a configuration name will show the configuration which is described in the row.

## Configuration view

**Figure 123. Configuration view**



View Configuration

Configuration View

The configuration shown below is for configuration name '**application_core**', node ID '', space '**default**', and file name '**application_core.xml**' from **Sep 4, 2006 1:45:11 PM**.

| Relation | Time Stamp | Differences | View |
|---|---|---|---|
| **Latest (Later)** | **Sep 4, 2006 1:45:16 PM** | | |
| **This** | **Sep 4, 2006 1:45:11 PM** | | **This** |
| **Older** | **Sep 4, 2006 1:45:11 PM** | | |
| **Oldest** | **Sep 4, 2006 1:31:11 PM** | | |

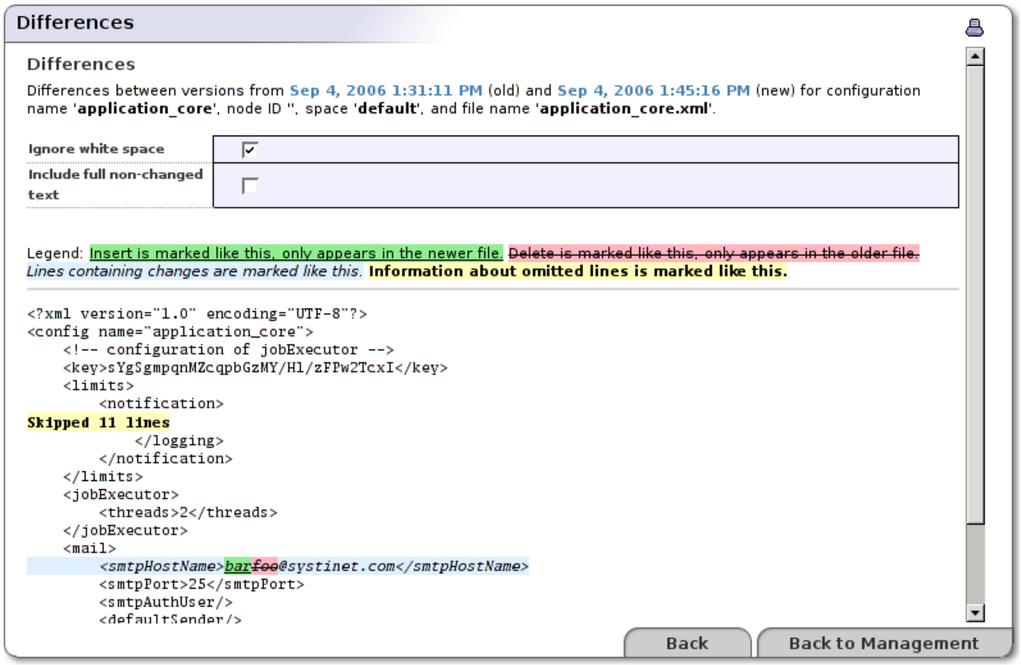
```
<?xml version="1.0" encoding="UTF-8"?>
<config name="application_core">
    <!-- configuration of jobExecutor -->
    <key>sYgSgmpqnMZcqpbGzMY/H1/zFPw2TcxI</key>
    <limits>
        <notification>
            <emails unit="percent">
                <mail limit="100" type="businessEntity"/>
                <mail limit="100" type="businessService"/>
                <mail limit="100" type="bindingTemplate"/>
                <mail limit="100" type="businessService"/>

                <defaultMessageXSLTransformationTModel>uddi:systinet.com:limit:defaultMessageEmailXSLT</
            </emails>
            <logging>
```

This view shows specified configuration information including the content. There are also links to related versions of the configurations (such as latest, later, older, or oldest). You can see these related configurations by clicking on the view icon or compare differences between the displayed version and a selected version by clicking the differences icon in the selected row.

If the displayed configuration is not the latest, a **Reactivate** button appears in the window. Its function is to make the displayed configuration active (after confirmation). It does so by adding it as a new configuration entry with the latest time stamp.

## Differences

**Figure 124. Differences**



Differences

Differences

Differences between versions from Sep 4, 2006 1:31:11 PM (old) and Sep 4, 2006 1:45:16 PM (new) for configuration name '**application_core**', node ID '', space '**default**', and file name '**application_core.xml**'.

| | |
|---|---|
| Ignore white space | ✓ |
| Include full non-changed text | ☐ |

Legend: Insert is marked like this, only appears in the newer file. ~~Delete is marked like this, only appears in the older file.~~ *Lines containing changes are marked like this.* **Information about omitted lines is marked like this.**

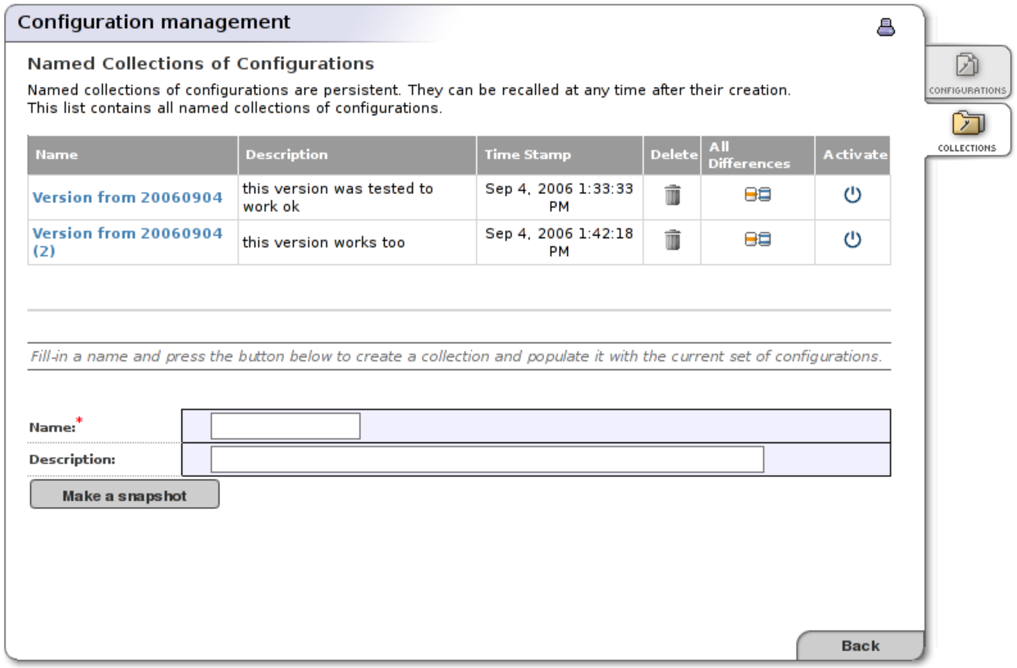
```
<?xml version="1.0" encoding="UTF-8"?>
<config name="application_core">
    <!-- configuration of jobExecutor -->
    <key>sYgSgmpqnMZcqpbGzMY/H1/zFPw2TcxI</key>
    <limits>
        <notification>
Skipped 11 lines
            </logging>
        </notification>
    </limits>
    <jobExecutor>
        <threads>2</threads>
    </jobExecutor>
    <mail>
        <smtpHostName>bar~~foo~~@systinet.com</smtpHostName>
        <smtpPort>25</smtpPort>
        <smtpAuthUser/>
        <defaultSender/>
```

This view can be invoked from the configuration view. It shows a comparison between two versions of the configuration. You can alter the options for differences comparison: whether it is case sensitive and whether the full text is shown or omitted.

## Named collections of configuration

### List of named collections

**Figure 125. List of named collections**


Configuration management

Named Collections of Configurations

Named collections of configurations are persistent. They can be recalled at any time after their creation.
This list contains all named collections of configurations.

| Name | Description | Time Stamp | Delete | All Differences | Activate |
|---|---|---|---|---|---|
| Version from 20060904 | this version was tested to work ok | Sep 4, 2006 1:33:33 PM | | | |
| Version from 20060904 (2) | this version works too | Sep 4, 2006 1:42:18 PM | | | |

*Fill-in a name and press the button below to create a collection and populate it with the current set of configurations.*

| | |
|---|---|
| Name:* | |
| Description: | |

This view shows named collections of configurations which are stored in the database. It also allows you to capture the current state of configurations into such a collection so that you can later compare or restore them.

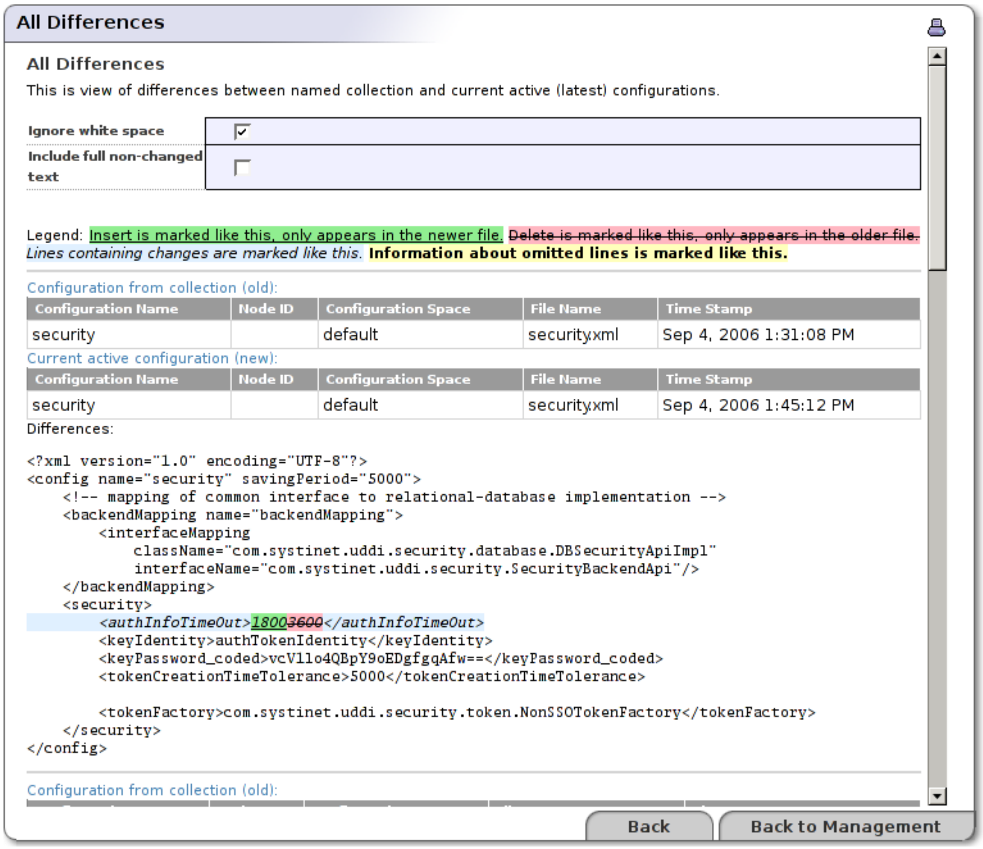
Creating new collections is easy. Just fill in the name and optionally the description of the collection and press the **Make a snapshot** button.

Once some collections are created, you can view their contents (by clicking the name) and compare them to the current set of configurations (by clicking the differences icon).

Activation of a collection means that all configurations that the collection holds will be added as new current configurations. Activation can be done on the collection as a whole (by clicking the icon in this view) or selectively on specified configurations (by button in the collection configuration view). Before activation proceeds a confirmation is required.

## All Differences

**Figure 126. All Differences**



All Differences

All Differences

This is view of differences between named collection and current active (latest) configurations.

| | |
|---|---|
| Ignore white space | ✓ |
| Include full non-changed text | ☐ |

Legend: Insert is marked like this, only appears in the newer file. ~~Delete is marked like this, only appears in the older file.~~ *Lines containing changes are marked like this.* **Information about omitted lines is marked like this.**

Configuration from collection (old):

| Configuration Name | Node ID | Configuration Space | File Name | Time Stamp |
|---|---|---|---|---|
| security | | default | security.xml | Sep 4, 2006 1:31:08 PM |

Current active configuration (new):

| Configuration Name | Node ID | Configuration Space | File Name | Time Stamp |
|---|---|---|---|---|
| security | | default | security.xml | Sep 4, 2006 1:45:12 PM |

Differences:

```
<?xml version="1.0" encoding="UTF-8"?>
<config name="security" savingPeriod="5000">
    <!-- mapping of common interface to relational-database implementation -->
    <backendMapping name="backendMapping">
        <interfaceMapping
            className="com.systinet.uddi.security.database.DBSecurityApiImpl"
            interfaceName="com.systinet.uddi.security.SecurityBackendApi"/>
    </backendMapping>
    <security>
        <authInfoTimeOut>1800~~3600~~</authInfoTimeOut>
        <keyIdentity>authTokenIdentity</keyIdentity>
        <keyPassword_coded>vcV1lo4QBpY9oEDgfgqAfw==</keyPassword_coded>
        <tokenCreationTimeTolerance>5000</tokenCreationTimeTolerance>

        <tokenFactory>com.systinet.uddi.security.token.NonSSOTokenFactory</tokenFactory>
    </security>
</config>
```

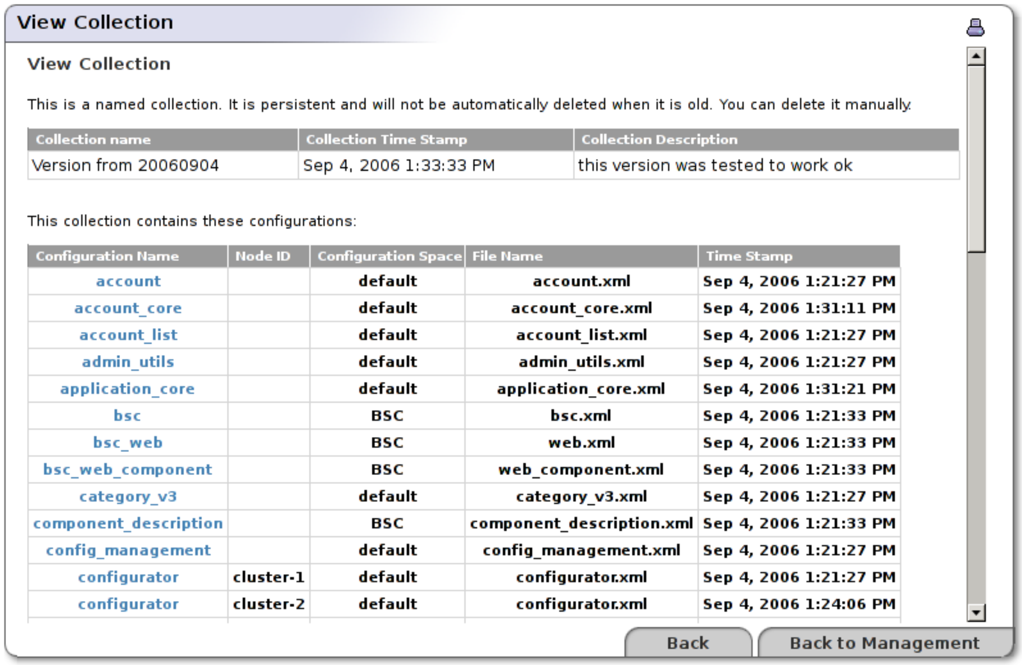
Configuration from collection (old):

This is what a comparison between a collection and the current set of configurations looks like. It shows the differences of matching pairs of all configurations. Matching configurations where no differences appear are listed below. Non-matching configurations (when the configuration appears in the collection only or in the current set only) are also listed below.

You can alter the options for differences comparison: whether it is case sensitive and whether the full text is shown or omitted. It is not recommended to show full text in all differences because the resulting page might get very long.

## View collection

**Figure 127. View collection**



View Collection

View Collection

This is a named collection. It is persistent and will not be automatically deleted when it is old. You can delete it manually.

| Collection name | Collection Time Stamp | Collection Description |
|---|---|---|
| Version from 20060904 | Sep 4, 2006 1:33:33 PM | this version was tested to work ok |

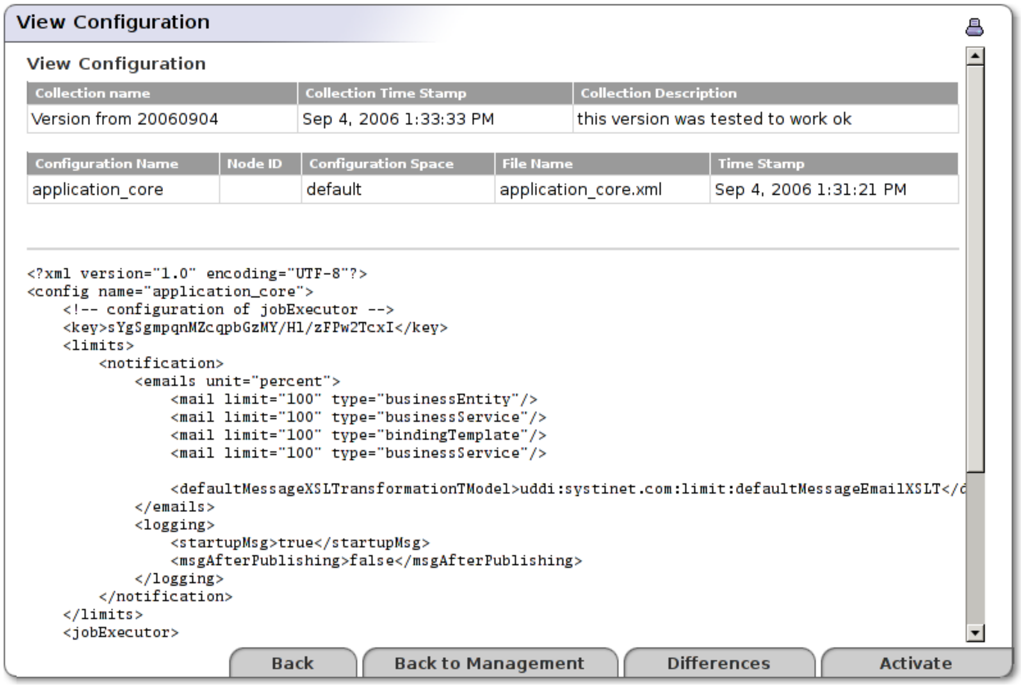
This collection contains these configurations:

| Configuration Name | Node ID | Configuration Space | File Name | Time Stamp |
|---|---|---|---|---|
| account | | default | account.xml | Sep 4, 2006 1:21:27 PM |
| account_core | | default | account_core.xml | Sep 4, 2006 1:31:11 PM |
| account_list | | default | account_list.xml | Sep 4, 2006 1:21:27 PM |
| admin_utils | | default | admin_utils.xml | Sep 4, 2006 1:21:27 PM |
| application_core | | default | application_core.xml | Sep 4, 2006 1:31:21 PM |
| bsc | | BSC | bsc.xml | Sep 4, 2006 1:21:33 PM |
| bsc_web | | BSC | web.xml | Sep 4, 2006 1:21:33 PM |
| bsc_web_component | | BSC | web_component.xml | Sep 4, 2006 1:21:33 PM |
| category_v3 | | default | category_v3.xml | Sep 4, 2006 1:21:27 PM |
| component_description | | BSC | component_description.xml | Sep 4, 2006 1:21:33 PM |
| config_management | | default | config_management.xml | Sep 4, 2006 1:21:27 PM |
| configurator | cluster-1 | default | configurator.xml | Sep 4, 2006 1:21:27 PM |
| configurator | cluster-2 | default | configurator.xml | Sep 4, 2006 1:24:06 PM |

Collection content usually looks like this. When you click on the configuration name its view with actions is displayed.

## View configuration

**Figure 128. View configuration**



View Configuration

View Configuration

| Collection name | Collection Time Stamp | Collection Description |
|---|---|---|
| Version from 20060904 | Sep 4, 2006 1:33:33 PM | this version was tested to work ok |

| Configuration Name | Node ID | Configuration Space | File Name | Time Stamp |
|---|---|---|---|---|
| application_core | | default | application_core.xml | Sep 4, 2006 1:31:21 PM |

```
<?xml version="1.0" encoding="UTF-8"?>
<config name="application_core">
    <!-- configuration of jobExecutor -->
    <key>sYgSgmpqnMZcqpbGzMY/H1/zFPw2TcxI</key>
    <limits>
        <notification>
            <emails unit="percent">
                <mail limit="100" type="businessEntity"/>
                <mail limit="100" type="businessService"/>
                <mail limit="100" type="bindingTemplate"/>
                <mail limit="100" type="businessService"/>

                <defaultMessageXSLTransformationTModel>uddi:systinet.com:limit:defaultMessageEmailXSLT</d
            </emails>
            <logging>
                <startupMsg>true</startupMsg>
                <msgAfterPublishing>false</msgAfterPublishing>
            </logging>
        </notification>
    </limits>
    <jobExecutor>
```

This view shows a configuration stored inside a collection. You can see the comparison between this configuration and the current configuration by clicking on button **Differences**. You can also make this configuration the current with the **Activate** button (after confirmation).

## Registry Configuration

Registry configuration is used whenever you want to set up the database, registry parameters, or account properties.

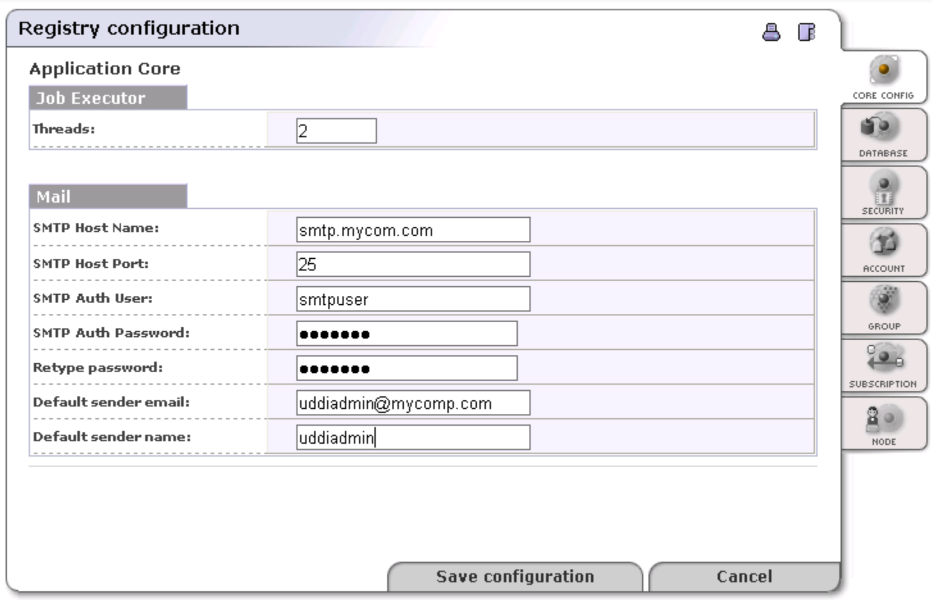
To access Registry configuration:

1. Log on as administrator or as a user with privilege to display the **Manage** tab. For more information, see Rules to Display the Manage Tab.

2. Click the **Manage** main menu tab.

3. Select the **Registry configuration** link under **Manage** tab. This returns the Registry configuration panel shown in Figure 129.

**Figure 129. Registry Configuration**



Registry configuration

Application Core

Job Executor

| | |
|---|---|
| Threads: | 2 |

Mail

| | |
|---|---|
| SMTP Host Name: | smtp.mycom.com |
| SMTP Host Port: | 25 |
| SMTP Auth User: | smtpuser |
| SMTP Auth Password: | ●●●●●●● |
| Retype password: | ●●●●●●● |
| Default sender email: | uddiadmin@mycomp.com |
| Default sender name: | uddiadmin |

The Registry configuration panel includes the following tabs:

- Core Config
- Database
- Security
- Account

- Group
- Subscription

In this part of the chapter, each of these sections settings is described in detail. Fields marked with an asterisk (*****) are the most important.

## Core Config

**Threads**

Maximum number of threads used in statement execution

The default is 2.

**Mail**

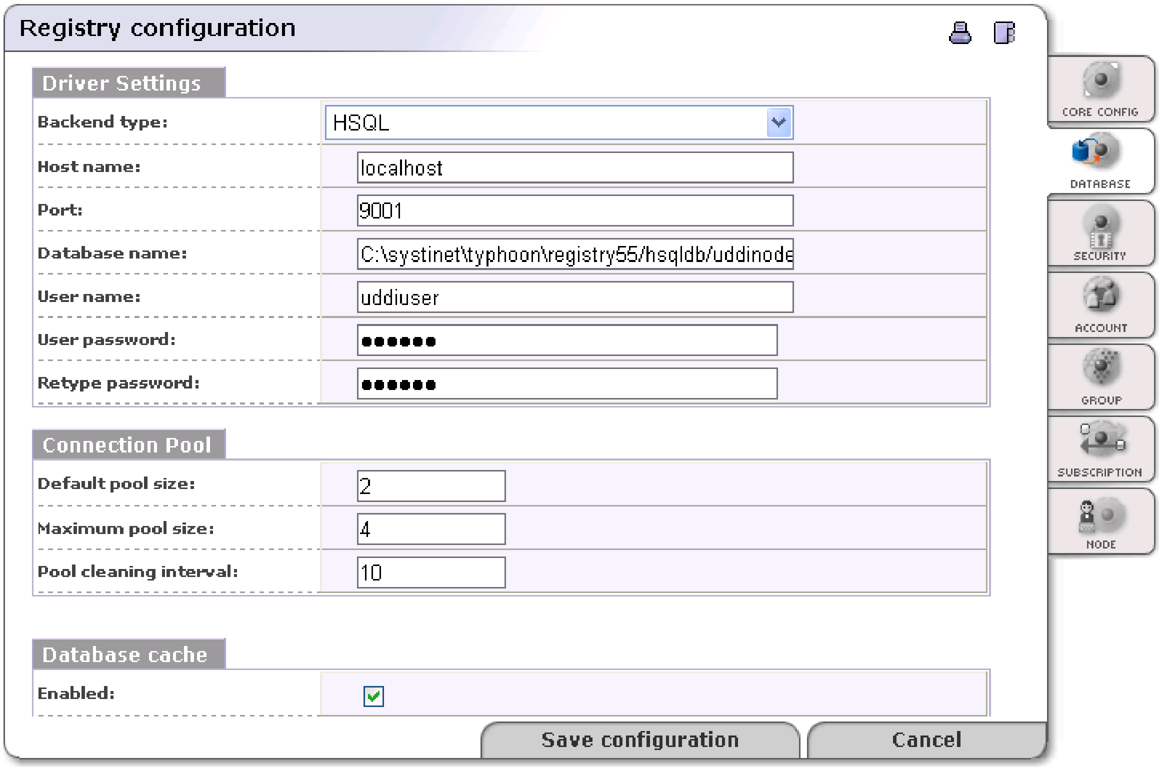
SMTP Host Name, SMTP Host Port, SMTP Auth User, SMTP Auth Password, Default sender email, and Default sender name are used to set up the entity that sends emails on behalf the registry administrator.

## Database

This section details how to set up the database connection. The default values are set according to the database chosen at installation. For details, please see Table 5.

➤ Database installation, that is, creating the database schema and loading basic data, is described in Database Installation on page 91.

**Figure 130. Registry Configuration - Database**


Registry configuration

Driver Settings

| | |
|---|---|
| Backend type: | HSQL |
| Host name: | localhost |
| Port: | 9001 |
| Database name: | C:\systinet\typhoon\registry55/hsqldb/uddinode |
| User name: | uddiuser |
| User password: | ●●●●●● |
| Retype password: | ●●●●●● |

Connection Pool

| | |
|---|---|
| Default pool size: | 2 |
| Maximum pool size: | 4 |
| Pool cleaning interval: | 10 |

Database cache

| | |
|---|---|
| Enabled: | ✓ |

**Backend type ***

A menu of databases from which to select the vendor of your database.

**Hostname ***

Database host name or IP address, for example, `dbserver.mycompany.com`

**Port ***

Database port number. For default values see Table 5. Note that if you are using the HSQL database, it is embedded in the same JVM and therefore the port number is ignored in this case.

**Database Name ***

Database name; for example, `uddinode`

**User Name ***

User name; `uddiuser` by default

**User Password ***

Database user password;`uddi` by default

**Default pool size**

Count of concurrent database connections initialized at start time

**Max pool size**

Maximum count of concurrent database connections. Each request books one connection until the request is served. If all connections are booked and new request comes in, the connection pool creates a new connection till the maximum count is reached. If this maximum is reached and new request comes in, this request must wait for a free connection to be released by a previous request.

**Pool cleaning interval**

How often database connections are closed over the default count. This value represents time in hours.

**Database cache**

This is used for performance optimization.

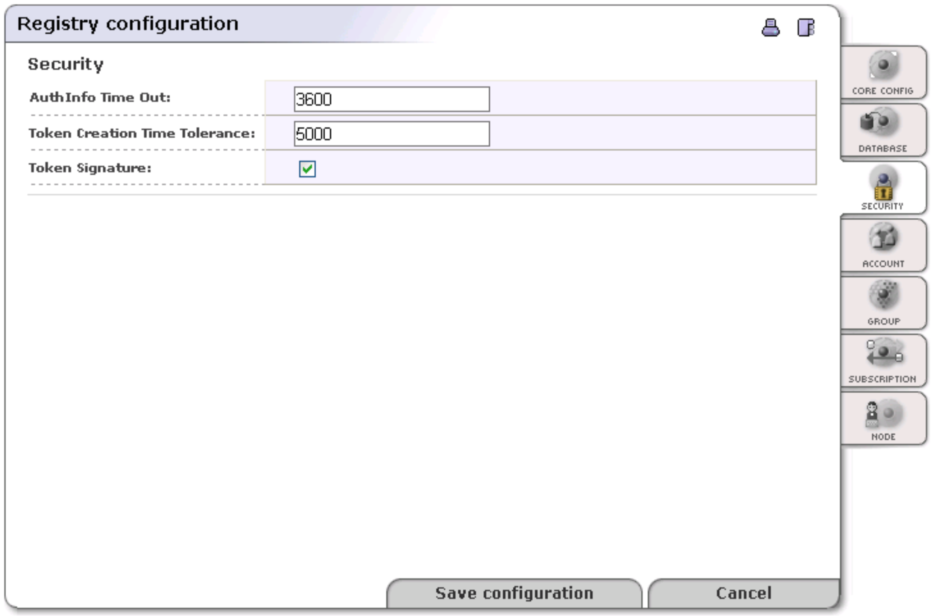
### Table 5. Default Ports for Supported Database Servers

| Database | Default Port |
|---|---|
| Oracle 8i | 1521 |
| MS SQL 2000 or 2005 | 1433 |
| DB2 8.0 | 6789 |
| Sybase ASE 12.5 | 5000 |
| PostgreSQL | 5432 |
| hsqldb 1.7.3 | - |

## Security

On the **Security** tab, you can configure your digital signature token and key properties.

**Figure 131. Registry Configuration - Security**


Registry configuration

Security

| | |
|---|---|
| AuthInfo Time Out: | 3600 |
| Token Creation Time Tolerance: | 5000 |
| Token Signature: | ✓ |

**AuthInfo Time Out**

Authorization token is obtained by invoking the `get_authToken` method. This token is used for each operation on the publishing port. Here you can set up the authorization token time-out in seconds. The default value is one hour.

**Token Creation Time Tolerance**

Tolerance interval of token validity, expressed in milliseconds

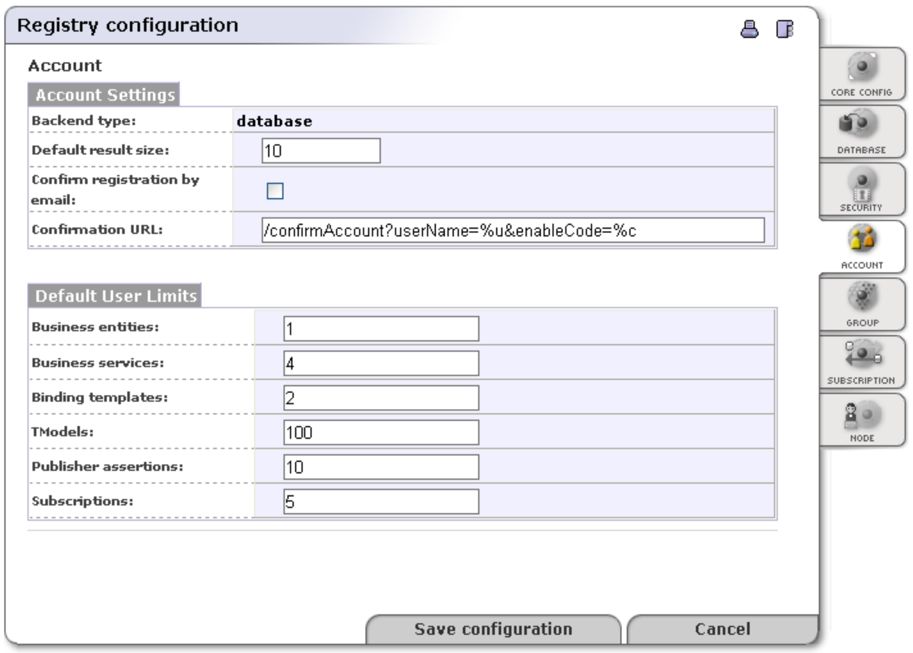
**Token Signature**

Whether authorization token is signed. We recommend you toggle this switch on.

## Account

On this tab, you can specify accounts properties applicable for all HP SOA Registry Foundation user accounts.

**Figure 132. Registry Configuration - Account**



Registry configuration

Account

Account Settings

| | |
|---|---|
| Backend type: | database |
| Default result size: | 10 |
| Confirm registration by email: | ☐ |
| Confirmation URL: | /confirmAccount?userName=%u&enableCode=%c |

Default User Limits

| | |
|---|---|
| Business entities: | 1 |
| Business services: | 4 |
| Binding templates: | 2 |
| TModels: | 100 |
| Publisher assertions: | 10 |
| Subscriptions: | 5 |

**Backend type**

This field is not editable. Its value is specified during installation.

**Default result size**

Number of items returned in search results when querying accounts

**Confirm registration by email**

Check this box if you would like new users to confirm account creation.

**Confirmation URL**

URL where new users can confirm registration

**Default User Limits.** Limits are used as default values only when creating a new account. Accounts that exist at the time of change are exempt from new limit values. Limits for existing accounts can be updated with the Account Management tool.

**Business entities**

Business entity limit; default is 1.

**Business services**

Number of allowed business services per business entity; default is 4.

**Binding templates**

Number of allowed bindingTemplates per businessService; default is 2.

**TModels**

Number of allowed tModels; default is 100.

**Publisher assertions**

Number of allowed relationship assertions; default is 10.

**Subscriptions**

Number of allowed subscriptions saved by user. Default is 5.

## Group

On this tab, you can specify the properties of the group API.

**Backend type**

Not editable, this field's value is specified during installation.

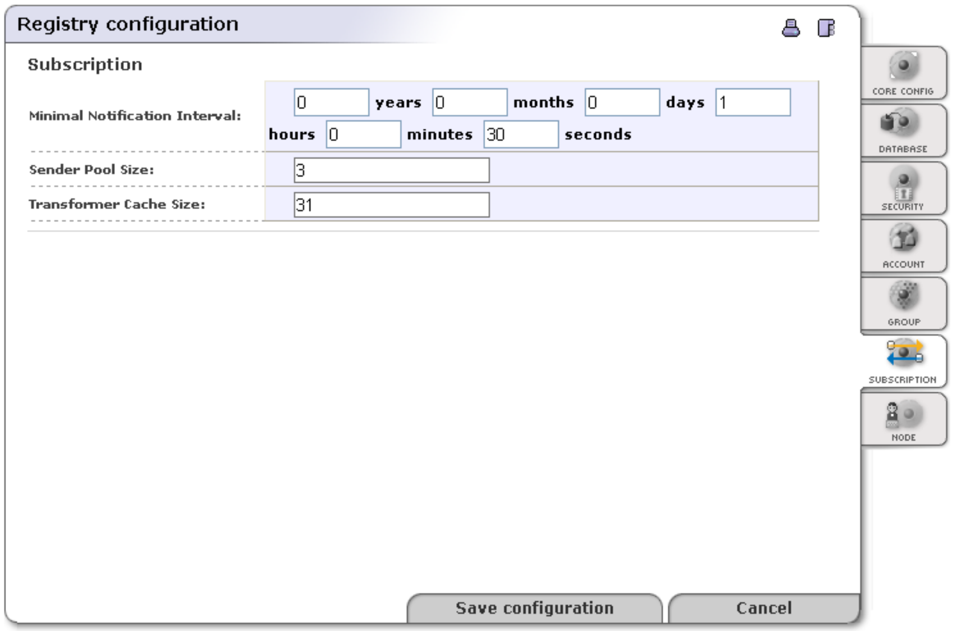
**Default result size**

Number of items returned in search results when querying groups; the default value for this field is 10.

## Subscription

On the **Subscription** tab, you can configure server limits for subscriptions. If a user saves a subscription which does not match these limits, the registry automatically adjusts the user's values.

**Figure 133. Registry Configuration - Subscriptions**


Registry configuration

Subscription

| | |
|---|---|
| Minimal Notification Interval: | 0 years 0 months 0 days 1 hours 0 minutes 30 seconds |
| Sender Pool Size: | 3 |
| Transformer Cache Size: | 31 |

There are three fields to configure on this tab:

**Min. notification interval**

Minimal interval between notifications provided to a subscriber

**Sender Pool size**

Number of stubs ready for notification

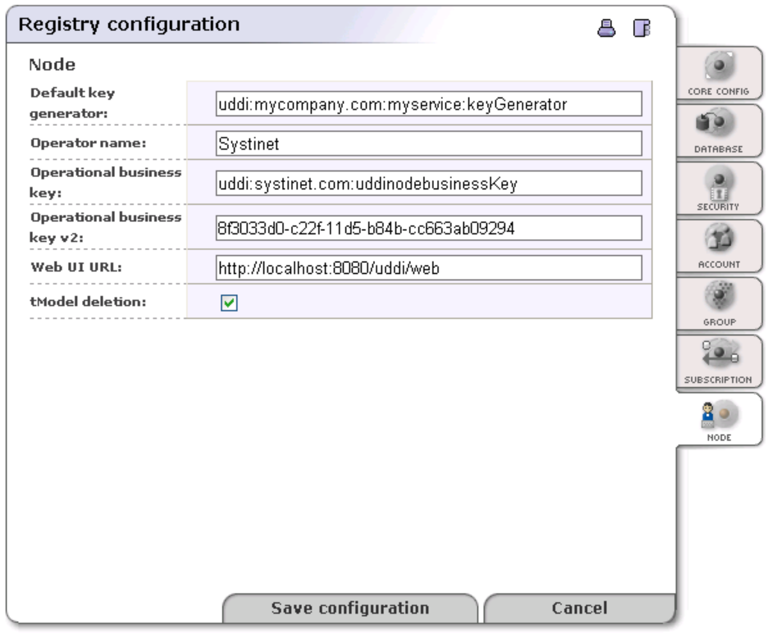
**Transformer Cache Size**

Number of cached XSLT transformations

## Node

On the **Node** tab, you can configure UDDI node properties.

**Figure 134. Registry Configuration - Node**


Registry configuration

Node

| | |
|---|---|
| Default key generator: | uddi:mycompany.com:myservice:keyGenerator |
| Operator name: | Systinet |
| Operational business key: | uddi:systinet.com:uddinodebusinessKey |
| Operational business key v2: | 8f3033d0-c22f-11d5-b84b-cc663ab09294 |
| Web UI URL: | http://localhost:8080/uddi/web |
| tModel deletion: | ✓ |

**Default key generator**

The Default Key generator tModel allows the Registry to generate keys in the form `domain:string` instead of only in the form `uuid`. For example, `uddi:mycompany.com:myservice:61c08bf0-be41-11d8-aa33-b8a03c50a862` instead of only `61c08bf0-be41-11d8-aa33-b8a03c50a862`. Enter the key of the tModel that is the key generator. For example, if you enter `uddi:mycompany.com:myservice:keyGenerator`, keys will be generated with the prefix `uddi:mycompany.com:myservice:`. For more information, please see Publisher-Assigned Keys on page 242 in the User's Guide.

**Operator name**

The name of the operator of the UDDI node. The default entry for this field is configured during installation.

**Operational business key**

The key of the Operational business entity. This entity holds miscellaneous registry settings such as the validation service configuration.

**Operational business key v2**

The key of the Operational business entity in UDDI v2 format.

**Web UI URL**

The URL of the Registry Console.

**tModel deletion**

If this box is checked then deleted tModels are deleted permanently. Otherwise, tModels are marked as deprecated. (Deprecated tModels are visible by direct get tModel call, but do not appear in any search results.)

## Configuration in Database

HP SOA Registry Foundation uses many configuration files. They are stored in `REGISTRY_HOME\app\uddi\conf` and `REGISTRY_HOME\work\uddi\bsc.jar\conf` directories. Some of them may be changed during setup or with web interfaces.

Each such configuration file is an XML file containing tag config with some information about how the configuration file is used.

These attributes are generally recognized:

**Table 6. Attributes of config tag**

| Attribute | Meaning | Optional | Default value |
|---|---|---|---|
| name | configuration name | no | |
| local | true when the file is local to the cluster node | yes | false |
| updateDB | when true the file is stored in the database on HP SOA Registry Foundation start | yes | false |
| history | when false configuration history is not logged | yes | true |
| savingPeriod | delay before changes in memory are written to file in milliseconds | yes | 2000 |

The most important attribute is `name` which is the identifier by which HP SOA Registry Foundation tries to find the configuration. Some configuration files have attribute `local` set to true. That means that the configuration is only used by this HP SOA Registry Foundation and other Registries in the cluster will not share it. Other nodes will have their own independent versions. These cluster nodes are distinguished by the Node ID which is specified inside `nodeid.xml`. If its value is empty, a unique ID will be generated at HP SOA Registry Foundation startup.

The configuration files are always present in the directories, however their copy is in the database. If a configuration file is present in both database and file-system, the one in the database has priority. After the initial startup of HP SOA Registry Foundation all configurations are put into the database. When HP SOA Registry Foundation needs to change some configuration settings it does so in the both the database and file-system.

If a user or another program like HP SOA Registry Foundation setup wants to edit the configuration file the priority of the configuration in database has to be overridden. This can be done in two ways:

1. By setting attribute `updateDB` to true in the top-level tag `config` in all configuration files where modifications have been done. Once HP SOA Registry Foundation starts, the attribute will be automatically removed.

2. By setting attribute `updateDBAll` (see in table below) to true in tag `dbconfig` in `database.xml` Once HP SOA Registry Foundation starts the attribute will be automatically cleared. There can be also time stamp in this attribute in format like 20070321133058 where digits denote year, month, day of month, hour, minute, and second in GMT time zone. Such time stamp is compared to time stamp in database. When config files have more recent time, they will be put in database on HP SOA Registry Foundation start. When stamp in database is more recent, database version will be used. In both cases the attribute will be cleared.

   Time stamp in `updateDBAll` is used by setup. Each time setup task is run it updates time stamp except for task that do not modify configuration files like drop database and backup. Purpose of the time stamp is to prevent overwritting current configuration with old one while redeploying same EAR/WAR file to application server.

   When HP SOA Registry Foundation operates in cluster mode the other means than the time stamp is used for synchronization. Clocks on cluster nodes are assumed to be not enough precise for that, but enough precise for redeployment and configuration changes. There is only one time stamp in database.xml, individual configuration files allow only true/false values in `updateDB` attribute.

The other important configuration setting for configurations is inside the `database.xml` file, in the `dbconfig` tag. The tag has following attributes:

**Table 7. Attributes of dbconfig tag**

| Attribute | Meaning | Optional | Default value |
|---|---|---|---|
| configRetainCount | number of latest configuration versions that are not deleted | yes | 10 |
| configRetainMinutes | age of configuration version before it can be deleted | yes | 10 |
| eventRetainMinutes | age of event information before it can be deleted | yes | 5 |
| updateDBAll | when true all configuration files will be stored in the database at HP SOA Registry Foundation startup, can be also a time stamp | yes | false |

➤ HP SOA Registry Foundation setup automatically sets the `updateDBAll` attribute when its operation has been successful so that all changed configurations will be stored in the database at HP SOA Registry Foundation startup. This is usually desirable behavior.

➤ When HP SOA Registry Foundation encounters an identical configuration in the database to the one that is being stored (e.g. when set `updateDB` or `updateDBAll` is encountered) then the store operation is ignored. This may be surprising as there would be no entry in the log of configurations, however the resulting state of the configurations is correct.

The database not only holds the current set of configurations but also their history in a log. You can monitor configuration changes, what the previous content was, or let HP SOA Registry Foundation show you differences between versions. This configuration history log is purged every few minutes. Old configurations are not retained indefinitely. There are rules on how many older versions are left there and the age of a configuration before it can be deleted. The purpose of these rules is to avoid running out of space in the database and yet still have information about recent changes. Rules can be configured inside tag `dbconfig` in `database.xml`. Their defaults are in the table above. Default settings specify that there must be at least `configRetainCount` new versions of the configuration before it can be deleted automatically. Also, the configuration has to be older than `configRetainMinutes` before it can be deleted automatically. This allows the correction of most non-fatal configuration errors after an invalid change or to track which configuration change might have caused unexpected behavior.

To allow easy comparison of current and older configurations or try-then-rollback scenarios, the current set of configurations can be stored into a named collection of configurations. These collections are not deleted automatically. They allow you to store a configuration that works correctly and compare it with the current version if something breaks later. You can then activate the old one if needed or change the incorrect setting manually.

Backup tool in setup can store both file and database configurations. You can select which you want to backup.

Configurations in the database can be managed with the "Configuration Management" component of Registry Console. You can find it under tab Manage, then Registry management sub-tab (default), then Configuration Management button.

## Registry Console Configuration

This section provides you with a catalog of web engine parameters.

Initially almost every web engine parameter is set correctly by default.

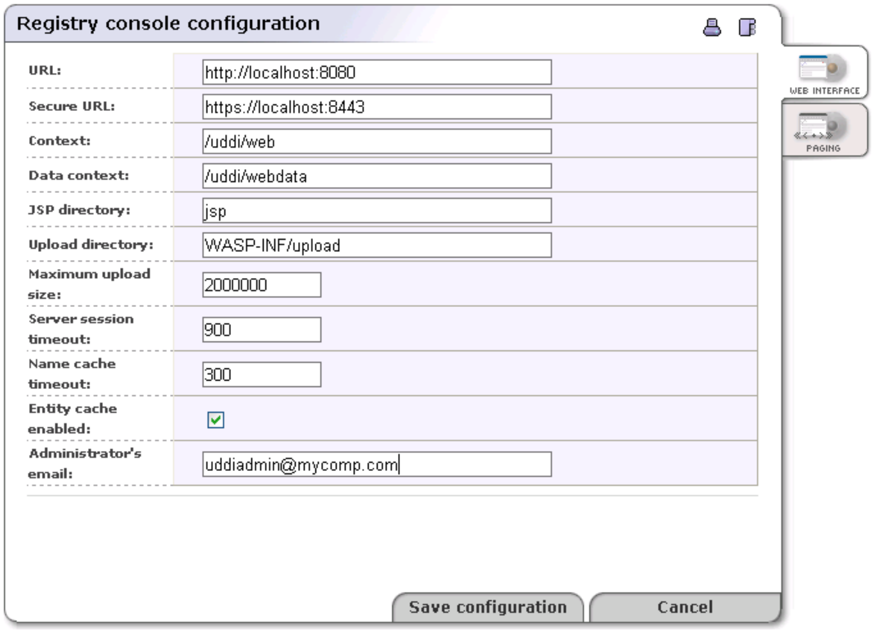
To access the Registry Console configuration:

1. Log on as administrator.
2. Click the **Manage** menu tab.
3. Click **Registry console configuration** link under the **Manage** tab. This returns the configuration screen shown in Figure 135. The Registry Console Configuration screen has two tabs:
   - On the **Web Interface** tab, you can set various parameters associated with HP SOA Registry Foundation's interface.
   - On the **Paging** tab, configure the number of rows per page and the maximum number of pages associated with the returns of various searches.

Note that on both tabs there is a button labeled **Reload Configuration**. When you change a registry configuration file directly, and save it, use this button to put the configuration changes into effect.

## Web Interface Configuration

**Figure 135. Registry Console Configuration - Web Interface Tab**


Registry console configuration

| | |
|---|---|
| URL: | http://localhost:8080 |
| Secure URL: | https://localhost:8443 |
| Context: | /uddi/web |
| Data context: | /uddi/webdata |
| JSP directory: | jsp |
| Upload directory: | WASP-INF/upload |
| Maximum upload size: | 2000000 |
| Server session timeout: | 900 |
| Name cache timeout: | 300 |
| Entity cache enabled: | ✓ |
| Administrator's email: | uddiadmin@mycomp.com |

Field description:

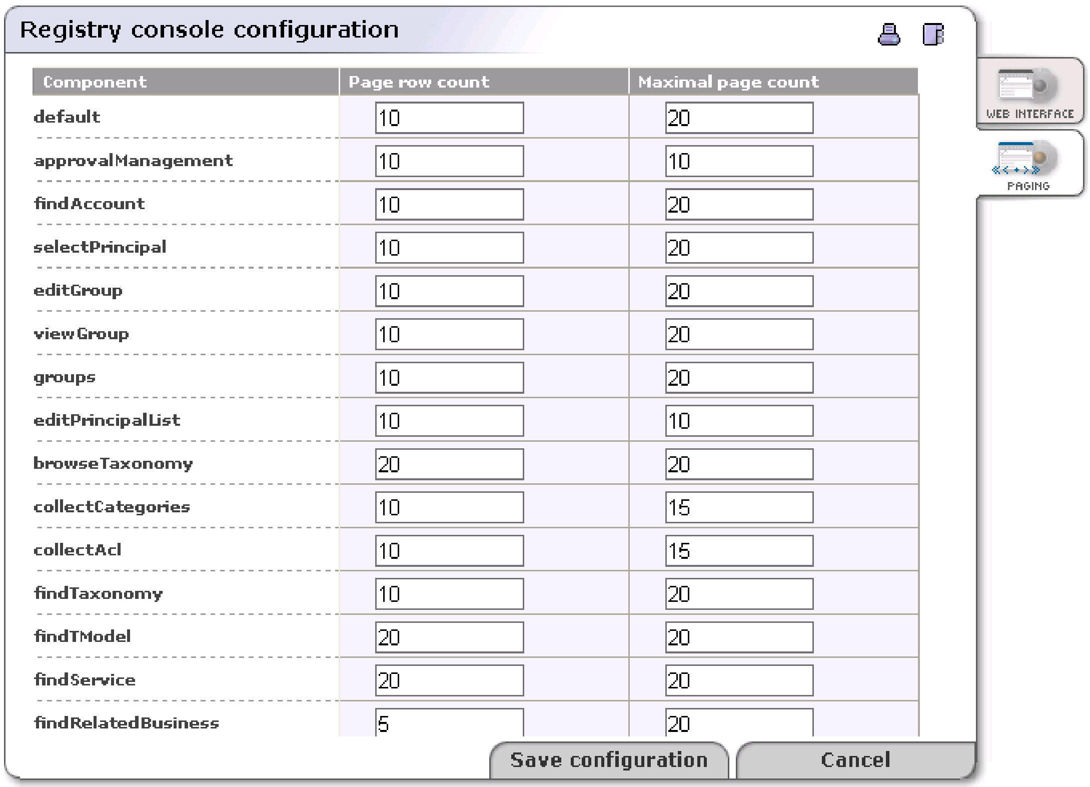
- **URL** - nonsecure registry URL
- **Secure URL** - secure registry URL
- **Context** - context of the Registry Console URL
- **Data context** - context where static objects such as JavaScript and images are stored
- **JSP directory** - location of JSP pages relative to `$REGISTRY_HOME/work/uddi`
- **Upload directory** - upload directory used for tasks such as uploading taxonomies

- **Maximum upload size** - maximum upload size in bytes
- **Server session timeout** - session timeout (measured in seconds)
- **Name cache timeout** - cache timeout for the names of UDDI structures. If someone renames a UDDI structure, the Registry Console will load the new name after this interval has passed (measured in seconds).
- **Entity cache enabled** - If you check this check box, entities will be cached.

Click **Save configuration** when finished.

## Paging Configuration

**Figure 136. Registry Console Configuration - Paging Tab**



| Component | Page row count | Maximal page count |
|---|---|---|
| default | 10 | 20 |
| approvalManagement | 10 | 10 |
| findAccount | 10 | 20 |
| selectPrincipal | 10 | 20 |
| editGroup | 10 | 20 |
| viewGroup | 10 | 20 |
| groups | 10 | 20 |
| editPrincipalList | 10 | 10 |
| browseTaxonomy | 20 | 20 |
| collectCategories | 10 | 15 |
| collectAcl | 10 | 15 |
| findTaxonomy | 10 | 20 |
| findTModel | 20 | 20 |
| findService | 20 | 20 |
| findRelatedBusiness | 5 | 20 |

**Paging limits** - On this tab, you can specify how many records and on how many pages searched data will appear. Click **Save configuration** when finished.

## Permissions: Principles

Permissions in HP SOA Registry Foundation were developed so that administrators might exercise control over users. Permissions:

- Provide a simple mechanism for the management of users' rights in HP SOA Registry Foundation.
- Allow the administrator to manage or make available different parts of the registry to different users.
- Help HP SOA Registry Foundation better reflect the real world where there are many roles with different responsibilities.

This chapter describes permissions in detail with some examples and a description of permission configuration.

Permission is defined as the right to perform an action on some interface. Put another way: permission is the ability to process some method on some interface. Permissions are very different from the other mechanism for rights in HP SOA Registry Foundation, the Access Control List.

Access Control enables the user to control access to the basic UDDI data structures (businessEntity, businessService, bindingTemplate, and tModel). Access Control on HP SOA Registry Foundation is provided by the Access Control List (ACL). The ACL is based on permissions given to a user or group. In the context of ACL, this means that a given user can access only that information in HP SOA Registry Foundation made available to the user by the registry administrator or other users. For more information about the Access Control List, see the Access Control chapter in the User's guide.

Access Control Lists limit the visibility of entities and so restrict the access to *data* in HP SOA Registry Foundation. Permissions on the other hand restrict access to interfaces. The ACLs restrain users by the restricting the visibility of UDDI structures. Permissions limit users through the visibility of interfaces.

## Permissions Definitions

There are two basic kinds of permission:

- The first, consisting of ApiUserPermission and ApiManagerPermission, is used to restrict access for some users on some interfaces.
- The second, ConfigurationManagerPermission, is used to restrict the ability to change configurations in HP SOA Registry Foundation.

**ApiUserPermission**

ApiUserPermission consists of the interface's name and method from the given interface. This permission provides the user common access to the specified method on the given API.

ApiUserPermission enables the user to call methods on an interface as a common user. Users usually must have this permission to perform any call.

**ApiManagerPermission**

ApiManagerPermission also consists of the names of an interface and of a method. This permission allows the user to call a determined method on the given API. It is very similar to ApiUserPermission. The only difference is in the user's significance. If a user has ApiManagerPermission, that user is considered to be a privileged user. There are many API calls where the result depends on user's importance.

**ConfigurationManagerPermission**

ConfigurationManagerPermission consists of configuration files and a method's name. The name of the method is either `get` or `set`. The ConfigurationManagerPermission combined with the `get` method allows user to read (get) data from the configuration file. On the other hand, the ConfigurationManagerPermission combined with the `set` method enables the user to write to the configuration.

## HP SOA Registry Foundation Permission Rules

The following permissions' rules are always valid:

- Permission is the ability to process a method on an API.
- Permission contains the type of permission (ApiUserPermission, ApiManagerPermission, ConfigurationManagerPermission), the name (interface's or config's name) and an action (method's name).

  You are allowed to use the asterisk wildcard (`*`) to substitute all names - names of interfaces, configurations, or actions.
- There is no hierarchy in permissions. The ability to set permission for users is also a permission (for some methods on PermissionApi).
- The HP SOA Registry Foundation administrator has all permissions for all methods on all APIs.
- Permissions are always positive. This means that permissions say what is possible or allowed. Permissions allow user to perform an action (some method on some API). Any action that is not expressly permitted is denied.

- Permissions can be set for an individual user or for a group of members. Each user is member of the group `system#everyone`, therefore every user has the default permissions associated with this group.

For more information, see Data Access Control: Principles on page 235

## Setting Permissions

This section describes the configuration of permissions. The setting of permissions is written from the administrator's point of view.

There are three basic ways to set permissions for a user:

- By performing methods on PermissionApi. A user can call these methods only if that user has the appropriate permissions.
- By calling methods via SOAP or via the Registry Console.
- By changing permissions directly in the configuration file.

The `PermissionApi` contains several methods for managing permissions. These methods are described below:

**`get_permission`**

Used for obtaining all of a user's permissions. A user possessing the `ApiManagerPermission` can obtain permissions of other users. A user with only `ApiUserPermission`, can only discover his or her own permissions.

Note that users who have neither `ApiUserPermission` nor `ApiManagerPermission` for a method on `PermissionApi`, cannot call this method.

**`set_permission`**

Provides users the ability to set permissions for other users. It is necessary to possess `ApiManagerPermission` for this call.

**`get_permissionDetail`**

Similar to `get_permission`, this method can be called for more than one user at a time.

`get_permission` takes a principal as the input parameter. On the other hand, `get_permissionDetail` takes an array of principals as the input parameter. If you want to find out the permissions of three users, you can call `get_permission` three times or you can call `get_permissionDetail` once.

**`who_hasPermission`**

Enables a user to find out who owns a given permission.

It is not recommended to change permissions directly in the configuration file. However, if the administrator wants to change default permissions for new users (meaning changing permissions for the group `system#everyone`), there is no other possibility. Before making any changes to these permissions, we strongly recommend making a reserve copy of the configuration. The permissions for special users or groups are stored in the file `permission_list.xml`.

## Permissions and User Roles

Many systems use user roles in addition to permissions. A user role is usually a set of permissions; it can be predefined in the system or be user-defined. In HP SOA Registry Foundation, the user roles mechanism is implemented by groups. The administrator is allowed to set permissions not only for individual users but also for groups. Instead of restricting the relationship to users and roles, it is possible to create groups, set permissions for them and then add users into these groups. This "group" mechanism in HP SOA Registry Foundation is nearly the same as user role mechanism and it is used instead of user roles.

HP SOA Registry Foundation contains the following built-in groups that represent basic roles. Each role has appropriate permissions already defined. So, administrator can set simply permissions by adding users into these groups. For more information, see Group Management on page 341.

**`accountManagerGroup`**

Members of the group `accountManagerGroup` are able to manage accounts. For example, they can create new accounts, edit and delete existing ones.

**`administrationUtilsManagerGroup`**

Members of the group `administrationUtilsManagerGroup` are able to use administration utilities. For example, they can delete tModels permanently, replace keys, replace URLs.

**`bscConfiguratorGroup`**

Members of the group `bscConfiguratorGroup` are able to configure settings for Business Service Console.

**`configuratorGroup`**

Members of the group `configuratorGroup` are able to configure setting for HP SOA Registry Foundation. This means that they can set consoles, database, mail settings and so on.

`groupManagerGroup`

Members of the group `groupManagerGroup` are able to manage groups. For example, they can create new groups, edit or delete existing ones.

`permissionManagerGroup`

Members of the group `permissionManagerGroup` are able to manage permissions. For example, they can add permission to some principal or remove permission from some principal.

`replicationManagerGroup`

Members of the group `replicationManagerGroup` are able to manage replication. For example, they can create new replication or manage the existing one.

`statisticsManagerGroup`

Members of the group `statisticsManagerGroup` are able to view or reset statistics.

`taxonomyManagerGroup`

Members of the group `taxonomyManagerGroup` are able to manage taxonomies. For example, they can upload or delete taxonomy.

`webConfiguratorGroup`

Members of the group `webConfiguratorGroup` are able to configure Registry Console.

## ApiManagerPermission Reference

ApiManagerPermission allow user to use operation in a privileged mode. The following tables explain what does it mean for certain APIs and operations.

**Table 8. Account API (org.systinet.uddi.account.AccountApi)**

| operation (action) | Description |
|---|---|
| find_userAccount | Not used. |
| get_userAccount | Allows to get foreign account. |
| save_userAccount | Allows to save/update any account. Allows to set up non default limits. Allows to skip mail confirmation (if it is required). |
| delete_userAccount | Allows to delete any account. |
| enable_userAccount | Not used. |

**Table 9. Admin Utils API (org.systinet.uddi.admin.AdministrationUtilsApi)**

| operation (action) | Description |
|---|---|
| deleteTModel | Allows to call the deleteTModel operation. (ApiUserPermission is not sufficient to call the operation.) |
| replaceKey | Allows to call the replaceKey operation. (ApiUserPermission is not sufficient to call the operation.) |
| cleanSubscriptionHistory | Allows to call the cleanSubscriptionHistory operation. (ApiUserPermission is not sufficient to call the operation.) |
| resetDiscoveryURLs | Allows to call the resetDiscoveryURLs operation. (ApiUserPermission is not sufficient to call the operation.) |
| transform_keyedReferences | Allows to call the transform_keyedReferences operation. (ApiUserPermission is not sufficient to call the operation.) |
| rebuild_cache | Allows to call the rebuild_cache operation. (ApiUserPermission is not sufficient to call the operation.) |
| replaceURL | Allows to call the replaceURL operation. (ApiUserPermission is not sufficient to call the operation.) |

**Table 10. Category API (org.systinet.uddi.client.category.v3.CategoryApi)**

| operation (action) | Description |
|---|---|
| set_category | Allows to call the set_category operation. (ApiUserPermission is not sufficient to call the operation.) |
| add_category | Allows to call the add_category operation. (ApiUserPermission is not sufficient to call the operation.) |
| move_category | Allows to call the move_category operation. (ApiUserPermission is not sufficient to call the operation.) |
| delete_category | Allows to call the delete_category operation. (ApiUserPermission is not sufficient to call the operation.) |
| find_category | Not used. |
| get_category | Not used. |
| get_rootCategory | Not used. |
| get_rootPath | Not used. |

**Table 11. Custody API (org.systinet.uddi.client.custody.v3.UDDI_CustodyTransfer_PortType)**

| operation (action) | Description |
|---|---|
| get_transferToken | Allows to call the get_transferToken operation on foreign entities. |
| discard_transferToken | Allows to call the discard_transferToken operation on foreign tokens. |

**Table 12. Group API (org.systinet.uddi.group.GroupApi)**

| **operation (action)** | **Description** |
|---|---|
| find_group | Allows to find foreign private groups. |
| get_group | Allows to get foreign private groups. |
| save_group | Allows to save/update foreign groups. |
| delete_group | Allows to delete foreign groups. |
| where_amI | Not used. |
| find_user | Not used. |
| add_user | Not used. |
| remove_user | Not used. |

**Table 13. Inquiry V1 API (org.systinet.uddi.client.v1.InquireSoap)**

| **operation (action)** | **Description** |
|---|---|
| find_binding | Allows to find all bindingTemplates despite ACL rights. |
| find_business | Allows to find all businessEntities despite ACL rights. |
| find_services | Allows to find all services despite ACL rights. |
| find_tModel | Allows to find all tModels despite ACL rights. |
| get_bindingDetail | Allows to get any bindingTemplate despite ACL rights. |
| get_businessDetail | Allows to get any businessEntity despite ACL rights. |
| get_businessDetailExt | Not used. |
| get_serviceDetail | Allows to get any businessService despite ACL rights. |
| get_tModelDetail | Allows to get any tModel despite ACL rights. |

**Table 14. Inquiry V2 API (org.systinet.uddi.client.v2.Inquire)**

| **operation (action)** | **Description** |
|---|---|
| find_binding | Allows to find all bindingTemplates despite ACL rights. |
| find_business | Allows to find all businessEntities despite ACL rights. |
| find_relatedBusinesses | Allows to find all related businessEntities despite ACL rights. |
| find_services | Allows to find all services despite ACL rights. |
| find_tModel | Allows to find all tModels despite ACL rights. |
| get_bindingDetail | Allows to get any bindingTemplate despite ACL rights. |
| get_businessDetail | Allows to get any businessEntity despite ACL rights. |
| get_businessDetailExt | Not used. |
| get_serviceDetail | Allows to get any businessService despite ACL rights. |
| get_tModelDetail | Allows to get any tModel despite ACL rights. |

**Table 15. Inquiry V3 API (org.systinet.uddi.client.v3.UDDI_Inquiry_PortType)**

| **operation (action)** | **Description** |
|---|---|
| find_binding | Allows to find all bindingTemplates despite ACL rights. |
| find_business | Allows to find all businessEntities despite ACL rights. |
| find_relatedBusinesses | Allows to find all related businessEntities despite ACL rights. |
| find_services | Allows to find all services despite ACL rights. |
| find_tModel | Allows to find all tModels despite ACL rights. |
| get_bindingDetail | Allows to get any bindingTemplate despite ACL rights. |
| get_businessDetail | Allows to get any businessEntity despite ACL rights. |
| get_operationalInfo | Not used. |
| get_serviceDetail | Allows to get any businessService despite ACL rights. |
| get_tModelDetail | Allows to get any tModel despite ACL rights. |

**Table 16. Permission API (org.systinet.uddi.permission.PermissionApi)**

| operation (action) | Description |
|---|---|
| get_permission | Allows to call the get_permission operation on foreign accounts and groups. |
| set_permission | Allows to call the set_permission operation. (ApiUserPermission is not sufficient to call the operation.) |
| who_hasPermission | Allows to call the who_hasPermission operation. (ApiUserPermission is not sufficient to call the operation.) |
| find_principal | Allows to call the find_principal operation. (ApiUserPermission is not sufficient to call the operation.) |

**Table 17. Publishing V1 API (org.systinet.uddi.client.v1.PublishSoap)**

| operation (action) | Description |
|---|---|
| delete_binding | Allows deletion of any bindingTemplate despite ACL rights. |
| delete_business | Allows deletion of any businessEntity despite ACL rights |
| delete_service | Allows deletion of any businessService despite ACL rights |
| delete_tModel | Allows deletion of any tModel despite ACL rights |
| save_binding | * Allows to update any bindingTemplate or create new bindingTemplate in any businessService despite ACL rights. * Skips bindings limit checking. |
| save_business | * Allows to update any businessEntity despite ACL rights. * Skips businesses limit checking. |
| save_service | * Allows to update any businessService or create new businessService in any businessEntity despite ACL rights. * Skips services limit checking. |
| save_tModel | * Allows to update any tModel despite ACL rights. * Skips tModels limit checking. |
| get_authToken | Default in system#everyone group. When removed, only other authentication methods will work. |
| discard_authToken | Default in system#everyone group. |
| get_registeredInfo | Not used. |
| validate_categorization | Not used. |

**Table 18. Publishing V2 API (org.systinet.uddi.client.v2.Publish)**

| operation (action) | Description |
|---|---|
| delete_binding | Allows deletion of any bindingTemplate despite ACL rights. |
| delete_business | Allows deletion of any businessEntity despite ACL rights |
| delete_service | Allows deletion of any businessService despite ACL rights |
| delete_tModel | Allows deletion of any tModel despite ACL rights |
| save_binding | * Allows to update any bindingTemplate or create new bindingTemplate in any businessService despite ACL rights. * Skips bindings limit checking. |
| save_business | * Allows to update any businessEntity despite ACL rights. * Skips businesses limit checking. |
| save_service | * Allows to update any businessService or create new businessService in any businessEntity despite ACL rights. * Skips services limit checking. |
| save_tModel | * Allows to update any tModel despite ACL rights. * Skips tModels limit checking. |
| add_publisherAssertions | Skips assertions limit checking in add_publisherAssertions operation. |
| set_publisherAssertions | Skips assertions limit checking in set_publisherAssertions operation. |
| delete_publisherAssertions | Not used. |
| get_publisherAssertions | Not used. |
| get_assertionStatusReport | Not used. |
| get_authToken | Default in system#everyone group. When removed, only other authentication methods will work. |
| discard_authToken | Default in system#everyone group. |
| get_registeredInfo | Not used. |

**Table 19. Publishing V3 API (org.systinet.uddi.client.v3.UDDI_Publication_PortType)**

| operation (action) | Description |
|---|---|
| delete_binding | Allows deletion of any bindingTemplate despite ACL rights. |
| delete_business | Allows deletion of any businessEntity despite ACL rights |
| delete_service | Allows deletion of any businessService despite ACL rights |
| delete_tModel | Allows deletion of any tModel despite ACL rights |
| save_binding | * Allows to update any bindingTemplate or create new bindingTemplate in any businessService despite ACL rights. * Skips bindings limit checking. |
| save_business | * Allows to update any businessEntity despite ACL rights. * Skips businesses limit checking. |
| save_service | * Allows to update any businessService or create new businessService in any businessEntity despite ACL rights. * Skips services limit checking. |
| save_tModel | * Allows to update any tModel despite ACL rights. * Skips tModels limit checking. |
| add_publisherAssertions | Skips assertions limit checking in add_publisherAssertions operation. |
| set_publisherAssertions | Skips assertions limit checking in set_publisherAssertions operation. |
| delete_publisherAssertions | Not used. |
| get_publisherAssertions | Not used. |
| get_assertionStatusReport | Not used. |
| get_registeredInfo | Not used. |

**Table 20. Replication V3 API (org.systinet.uddi.replication.v3.ReplicationApi)**

| operation (action) | Description |
|---|---|
| replicate | Allows to call the replicate operation. (ApiUserPermission is not sufficient to call the operation.) |

**Table 21. Statistics API (org.systinet.uddi.statistics.StatisticsApi)**

| operation (action) | Description |
|---|---|
| get_accessStatistics | Allows to call the get_accessStatistics operation. (ApiUserPermission is not sufficient to call the operation.) |
| reset_accessStatistics | Allows to call the reset_accessStatistics operation. (ApiUserPermission is not sufficient to call the operation.) |
| get_structureStatistics | Allows to call the get_structureStatistics operation. (ApiUserPermission is not sufficient to call the operation.) |

**Table 22. Subscription V3 API (org.systinet.uddi.client.subscription.v3.UDDI_Subscription_PortType)**

| operation (action) | Description |
|---|---|
| delete_subscription | Allows to delete any subscription despite the caller is not a subscription owner. |
| save_subscription | * Allows to update any subscription despite the caller is not a subscription owner. * Skips subscription limit checking. |
| get_subscriptionResults | Allows to get result of any subscription despite the caller is not a subscription owner. |
| get_subscriptions | Allows to get any subscription despite the caller is not a subscription owner. |

**Table 23. Taxonomy API (com.systinet.uddi.taxonomy.v3.TaxonomyApi)**

| operation (action) | Description |
|---|---|
| get_taxonomy | Allows to obtain all categories in the taxonomy. |
| find_taxonomy | Not used. |
| save_taxonomy | Allows to call the save_taxonomy operation. (ApiUserPermission is not sufficient to call the operation.) |
| delete_taxonomy | Allows to call the delete_taxonomy operation. (ApiUserPermission is not sufficient to call the operation.) |
| download_taxonomy | Allows to call the download_taxonomy operation. (ApiUserPermission is not sufficient to call the operation.) |
| upload_taxonomy | Allows to call the upload_taxonomy operation. (ApiUserPermission is not sufficient to call the operation.) |

## PStore Tool

The PStoreTool provides HP SOA Registry Foundation Protected Store management. It provides functionality to:

- Import and export trusted certificates locally to or from a file.
- Create new security identities in the HP SOA Registry Foundation configuration file.
- Copy identities between protected stores.

Use SSL Tool on page 412 to import and export a key entry to or from HP SOA Registry Foundation protected store.

Remote protected store management via SOAP is not supported with HP SOA Registry Foundation.

The general usage is:
`PStoreTool` [command [options]]

You can perform operations from the command line or start up a GUI interface.

## Commands

The PStore tool has the following commands (see also Options on page 405):

- **new** - Creates a new security identity in the local protected store. The configuration file of the protected store can be specified using the `-config` parameter.
- **newServer** - Creates a new security identity on HP SOA Registry Foundation. The location of the server is specified with the `-url` parameter.
- **copy** - Copies the existing security identity from one protected source to another or to the HP SOA Registry Foundation protected store.
- **add** - Adds a trusted X.509 certificate to the local protected store. The X.509 certificate can be supplied as a local file.

  This command can also add mapping between the security identity alias and the X.509 certificate to the user store part of the protected store. (The certificate is needed only for the server-side protected store.) This can be requested by using `-user` with the `-alias` option.
- **addServer** - Adds a trusted certificate to HP SOA Registry Foundation. This command also adds the mapping between the security identity alias and its X.509 certificate to the user store part of the HP SOA Registry Foundation protected store. The certificate can be given in the local file or can be fetched from the local protected store. The configuration file can be specified using the `-config` option.
- **remove** - Removes the given alias from the local protected store. This command can also remove an alias from the user store part of the protected store using the `-user` option. When removing a mapping from the user store, the X.509 certificates mapped to the given alias are also removed from the key store.
- **removeServer** - Removes a given alias from the protected store. The alias is removed from the user store part of the protected store if it is not found in the key store. When removing mapping from the user store part, the X.509 certificates mapped to the given alias are also removed from the key store.
- **lsTrusted** - Displays a list of the trusted certificate's Subject-distinguished names from the local protected store.

- **lsTrustedServer** - Displays a list of the trusted certificate's Subject distinguished names from the server.
- **list** - Displays all aliases contained in the key store part of the local protected store.
- **listServer** - Displays all aliases contained in the key store part of the HP SOA Registry Foundation protected store.
- **export** - Exports the X.509 certificate chain stored in the key store or in the user store of the local protected store with the given alias.
- **exportServer** - Exports the X.509 certificate chain stored in the key store or in the user store of the protected store with the given alias.
- **gui** - Launches the graphical version of this tool.

## Options

The PStore tool has the following options:

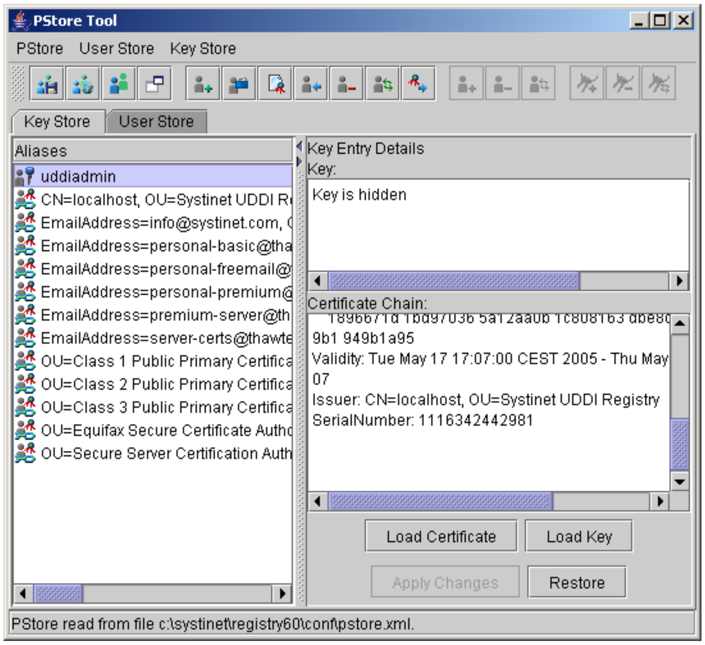
- **-alias** ***`alias`*** - This option must be used with a command that refers to an alias.
- **-keyPassword** ***`password`*** - Password for encrypting/decrypting the security identity private key.
- **-subject** ***`subjectDN`*** - Subject-distinguished name to be used in the generated X.509 certificate.
- **-config** ***`configPath`*** - File and path to the configuration file to be used during command execution for the source of the local protected store.
- **-username** ***`username`*** - Username for authentication process. Not required if the HP SOA Registry Foundation server is unsecured.
- **-password** ***`password`*** - Password for authentication process. Not required if the server is unsecured.
- **-secprovider** ***`provider`*** - Authentication mechanism used during the authentication process. Not required if the server is unsecured.
- **-certFile** ***`certPath`*** - File and path to the X.509 certificate stored in a local file.
- **-user** - Indicates that a command should be executed only with the contents of the user store of the protected store.

- **-config2** ***`secondConfigPath`*** - Path to the second configuration file. Used for the copy command, when copying an identity from one local protected store to another.

## PStore Tool - GUI Version

You can add, edit, or remove any user properties in the user store. You can also add, edit, and remove certificates and identities in the key store. You can do all of this with a local file containing the protected store.

**Figure 137. PStore Tool**



```
uddiadmin
CN=localhost, OU=Systinet UDDI R
EmailAddress=info@systinet.com, (
EmailAddress=personal-basic@tha
EmailAddress=personal-freemail@
EmailAddress=personal-premium@
EmailAddress=premium-server@th
EmailAddress=server-certs@thawte
OU=Class 1 Public Primary Certifica
OU=Class 2 Public Primary Certifica
OU=Class 3 Public Primary Certifica
OU=Equifax Secure Certificate Autho
OU=Secure Server Certification Auth
```

```
Key is hidden
```

```
 189667fd fbd97036 5a12aa0b 1c808163 dbe8c
9b1 949b1a95
Validity: Tue May 17 17:07:00 CEST 2005 - Thu May
07
Issuer: CN=localhost, OU=Systinet UDDI Registry
SerialNumber: 1116342442981
```

```
PStore read from file c:\systinet\registry60\conf\pstore.xml.
```

### Running the GUI PStore Tool

To run the graphical version of this tool, use *`gui`* as parameter with the `PStoreTool` command.
`PStoreTool` gui

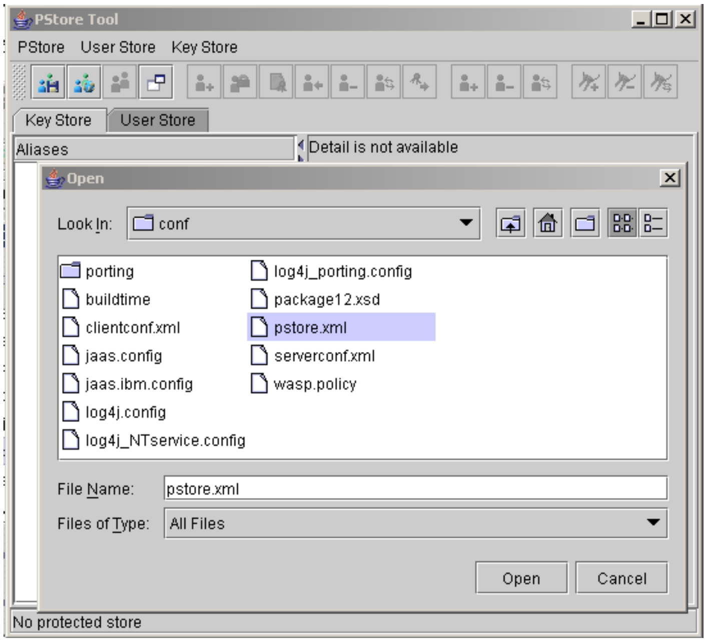
## Opening and Closing the Protected Store

### Opening Protected Store from a File

The GUI PStore Tool can manipulate every protected store in a file. To manipulate the client's protected store, open `clientconf.xml`. To open the server protected store, open `pstore.xml`.

To open protected store from file, select **Open From File...** from the PStore menu. This returns the file chooser dialog. Select the file you want to open as shown in Figure 138.

**Figure 138. Open Protected Store from a File**



### Closing Protected Store

To close the protected store, select **Close** from the **PStore** menu.

## Open Next Protected Store

In some cases you need to work with more than one protected store at the same time. Typically you want to copy certificates from one protected store to another. To open another protected store, select the **New Window** from the **PStore** menu. New windows appear. Now you can open the protected store from a file.

## Copy Data Between Protected Stores

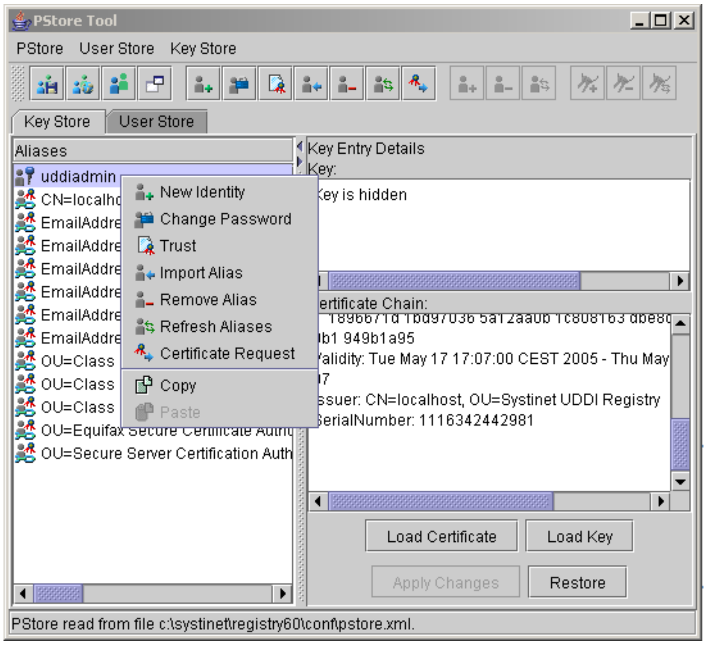
With the PStore Tool, you can manipulate more than one protected store at the same time. You can simply copy identities, certificates, users, and user properties from one protected store to another using the Copy and Paste actions located in context menus of the Aliases, Users, and Properties panels.

When you copy data from one area to another, the Paste action is disabled for some categories of data. This means that data may be copied, but cannot be pasted to the selected area. For example, the `password` property from the user store cannot be pasted to the key store.

## Key Store

To work with the key store, select the **Key Store** tab. This tab has two panels. The left side has a list of all entries. The right has detailed information for the selected entry.

**Figure 139. Key Store Tab**



```
Key is hidden
```

```
 f89667fd fbd97036 5a12aa0b 1c808163 dbe8c
0b1 949b1a95
Validity: Tue May 17 17:07:00 CEST 2005 - Thu May
17
Issuer: CN=localhost, OU=Systinet UDDI Registry
SerialNumber: 1116342442981
```

PStore read from file c:\systinet\registry60\conf\pstore.xml.

## Create New Identity

To create a new identity, select **New Identity...** from the **Key Store** menu. This opens a dialog for information such as Alias, Distinguished Name, and Password. (The Distinguished Name is not mandatory.) If the specified information is valid, the new identity will be added to the key store with the specified Alias. Otherwise an error dialog will be returned.

## Key Store Trust

If you want to trust a key entry, select **Trust** from the **Key Store** menu. This action is available only for the key entry type.

## Import Alias

To import a certificate from a file into the key store, select **Import Alias** from the **Key Store** menu. This opens a dialog in which you can specify Alias, Type, and value that depend on the entry type. In the current implementation, you can import only the certificate chain entry type.

## Remove Alias

To remove an alias from the key store, select the alias you want to remove and select **Remove Alias** from the **Key Store** menu. You can remove several aliases at once.

## Refresh Aliases

To synchronize information shown in this tool with the original key store source, perform a refresh by selecting **Refresh Aliases** from the **Key Store** menu.

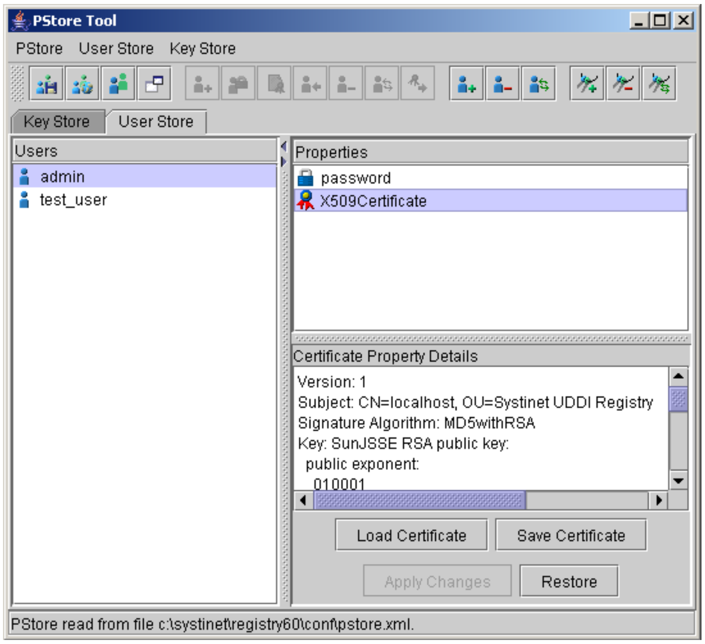
## Alias Details Panel

It is not surprising that the **Details** panel has more details about the selected alias. This panel shows details that depend on the entry type. You can also change this value. If you want to store a new value, press the **Apply Changes** button. To return to the original value, press **Restore**.

## User Store

There are three panels on the User Store tab. The left side has a list of all entries. On the right top are properties available for the selected user. On the right bottom is detailed information for the selected user property.

**Figure 140. User Store Tab**



```
Version: 1
Subject: CN=localhost, OU=Systinet UDDI Registry
Signature Algorithm: MD5withRSA
Key: SunJSSE RSA public key:
  public exponent:
    010001
```

PStore read from file c:\systinet\registry60\conf\pstore.xml.

## Add User

To add a new user, select **Add User** from the **User Store** menu. This opens a dialog for entering the Username. Press **OK** when done.

## Remove User

To remove a user from the user store, select the user you want to remove and choose **Remove User** from the **User Store** menu. You can remove several users at once.

## Refresh Users

Refresh synchronizes information shown in this tool with the original user store source. To refresh, select **Refresh Users** from the **User Store** menu.

### Add Property

To add a new user property, select **Properties** and **Add Property** from the **User Store** menu. This returns a dialog for the property you want to create and its value.

### Remove Property

To remove one or more user properties from the user store, select them and select **Properties** and **Remove Property** from the **User Store** menu.

### Refresh Properties

To synchronize information on the Properties panel with the original user store source, perform a refresh. Select **Properties** and **Refresh Properties** from the **User Store** menu.

### User Properties Details Panel

The **Details** panel has more information about user properties that depend on the property type. Select the property you want to see. You can also change this value. If you want to store a new value press **Apply Changes**.

To return to the original value, press **Restore**.

## SSL Tool

The sslTool helps with setup of SSL on the client side of HP SOA Registry Foundation. The general usage is:
`sslTool` [command [options]]

The SSL tool has the following commands:

- **serverInfo** - Prints out security requirements of an SSL server and saves a server certificate to a file.
- **encrypt** - Prints out the encrypted form of a password supplied as plain text. Encrypted passwords are used in the configuration files of HP SOA Registry Foundation.
- **pstoreEI** - Exports and imports a java keystore to or from the HP SOA Registry Foundation Protected Store. Both `PKCS12` and `JKS` keystores are supported. The type of a supplied keystore is automatically detected during import.

Running the sslTool with a command followed by a **--help** option prints out a complete help for the command. See SSL Tool Examples on page 413 for the most typical usage.

## SSL Tool Examples

To print out security requirements of an SSL server:

```
sslTool serverInfo --url https://localhost:8443
```

To print out security requirements of an SSL server and save server certificates:

```
sslTool serverInfo --url https://localhost:8443 --certFile /tmp/sever.cer
```

To print out an encrypted password for use in HP SOA Registry Foundation configuration files:

```
sslTool encrypt --password changeit
```

To import a key entry from a java keystore to HP SOA Registry Foundation client Protected Store:

```
sslTool pstoreEI -i --keystore /tmp/java.keystore
                       --storepass changeit --alias mykey --keypass changeit
                    --pstore ../conf/clientconf.xml
                       --pstoreAlias registryclient --pstoreKeypass changeit2
```

To export a key entry from HP SOA Registry Foundation Protected Store to a java keystore:

```
sslTool pstoreEI -e --keystore /tmp/java.keystore2
                       --storepass changeit --alias mykey --keypass changeit
                    --pstore ../conf/clientconf.xml
                       --pstoreAlias registryclient --pstoreKeypass changeit2
```

## Associating an SSL client identity with a registry client

Instructions on how to associate an SSL client identity with a registry client are explained in Example Client on page 548. In this case, a key entry must be imported to registry's client protected store, which is the conf/clientconf.xml file of the registry installation directory and a few system properties must be added to a script that runs the client application.

There are also cases where a registry acts as a client to another registry. These include:

- Communication between nodes in a clustered HP SOA Registry Foundation.

Associating an SSL client identity with a HP SOA Registry Foundation server can be done in the app/uddi/conf/security.xml file of a registry installation directory (or deployed package for a deployed registry) by adding the destinationConfig elements. A fragment of the security.xml with example destinationConfig elements is shown in Example 1 on page 414.

## Example 1: Association of client identities with a registry server

```
<?xml version="1.0" encoding="UTF-8"?>
<config name="security" savingPeriod="5000">
    ...
    <security>
       ...
    </security>
    <!-- For communication with other nodes in the cluster -->
    <destinationConfig>
      <alias>clusterClient</alias>
      <password_coded>gNFDFWMNdkU=</password_coded>
      <destination proxyName="com.systinet.uddi.configurator.cluster.ConfiguratorManagerStub"/>
      <destination proxyName="com.systinet.uddi.configurator.cluster.ConfiguratorListenerStub"/>
    </destinationConfig>
    <!-- For communication via registry client to services accessible
      at URLs that start with https://pc1.mycom.com or https://pc2.mycom.com -->
    <destinationConfig>
      <alias>otherClient</alias>
      <password_coded>Vr+i+UzC2WLJXWg0ih6J+Q==</password_coded>
      <destination url="https://pc1.mycom.com/*"/>
      <destination url="https://pc2.mycom.com/*"/>
    </destinationConfig>
</destinationConfig>

</config>
```

There can be more destinationConfig elements. A destinationConfig element is used to associate a particular SSL client identity with a set of destinations. It contains:

- `alias` in the server protected store. A key entry with the same name as the alias must exist in a server's Protected Store. This key entry represents security material used to establish SSL with a destination server. The HP SOA Registry Foundation server Protected Store is in the `conf/pstore.xml` file of a registry deployment package. Use this file when importing a key entry from a java keystore, as shown in SSL Tool Examples on page 413.

- `password_coded` element, which contains the encrypted password that is used to access a private key stored under the alias supplied. See SSL Tool Examples on page 413 for an example that prints out the encrypted form of a password supplied in plain text.

- One or more `destination` elements each specify a rule. The rule can contain `url` or `proxyName` attributes. The rule matches when a client use a proxy class specified by the `proxyName` attribute or connects to a URL that is specified by the `url` attribute. The value of the `url` can end with a wildcard `*` to specify a match of all URLs that start with the string specified before the wildcard. The whole `destinationConfig` element matches if at least one rule matches.

The first matching `destinationConfig` is used.

# 5 Developer's Guide

The Developer's Guide is divided into the following main parts:

- Mapping of Resources covers registering various XML resources in HP SOA Registry Foundation including WSDL definitions, schemas, and transformations.
- Client-Side Development describes the basic principles of using HP SOA Registry Foundation APIs. For each client API, there is a comprehensive description of data structures and operations including links to JavaDoc, XML Schemas and WSDL documents.
- Server-Side Development discusses how to access server-side APIs, including custom modules, interceptors, external validation services, and subscription notification services. The HP SOA Registry Foundation web framework is also described in this section.
- UDDI From Developer Tools discusses how to access UDDI from HP Developer for Eclipse and Microsoft Visual Studio .NET.
- How to debug describes logging and using the SOAPSpy tool.

## Mapping of Resources

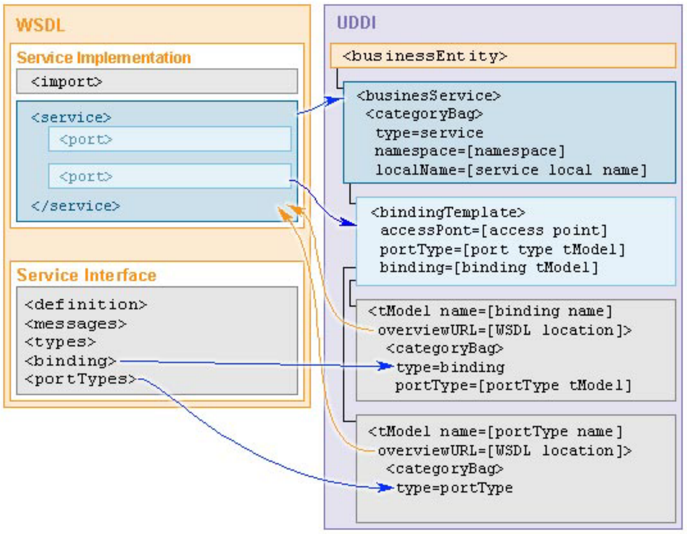
HP SOA Registry Foundation provides you with functionality to register the following resources:

- WSDL definition
- XML Schema (XSD)

### WSDL

This describes how to publish a WSDL file to HP SOA Registry Foundation. The implementation reflects the OASIS UDDI technical note Using WSDL in a UDDI Registry, Version 2.0 [http://www.oasis-open.org/committees/uddi-spec/doc/tn/uddi-spec-tc-tn-wsdl-v202-20040631.htm]. As shown in Figure 141, the technical note suggests a mapping between WSDL and UDDI.

**Figure 141. WSDL TO UDDI**



## WSDL PortTypes

As shown in Table 24, each WSDL portType maps to a tModel having the the same name as the local name of the portType in the WSDL specification. The overviewURL of the tModel becomes the URL of the WSDL specification. The tModel contains a categoryBag with a keyedReference for the type of WSDL artifact and the namespace of the WSDL definitions element containing the portType, as follows:

- The type is categorized as portType.
- The namespace is categorized as the WSDL binding namespace.

**Table 24. WSDL portType:UDDI Mapping**

| **WSDL** | **UDDI** |
|---|---|
| portType | tModel (categorized as portType) |
| Namespace of portType | keyedReference in categoryBag |
| Local name of portType | tModel name |
| WSDL location | overviewURL |

## WSDL Bindings

In similar fashion, as summarized in Table 25, WSDL bindings are mapped to tModels created for each binding, with name of the tModel gathered from the WSDL binding local name and the overviewURL again being the URL of the WSDL specification. Again, the tModel contains a categoryBag, this time with the following keyedReferences:

- The type is categorized as binding.
- The namespace is categorized as the WSDL binding namespace.
- A portType category on the binding is used to refer to the portType tModel that was created for the WSDL portType (as described above).
- The protocol and transport categories are set to the same attributes as described in the WSDL binding, such as SOAP and HTTP, respectively.

**Table 25. wsdl binding:UDDI mapping**

| **WSDL** | **UDDI** |
|---|---|
| Binding | tModel (categorized as binding and wsdlSpec) |
| Namespace of binding | keyedReference in categoryBag |
| Local name of binding | tModel name |
| WSDL location | overviewURL |
| portType binding | keyedReference in categoryBag |
| Protocol | keyedReference in categoryBag |
| Transport | keyedReference in categoryBag |

## WSDL Service

WSDL services are represented as UDDI businessServices. The name is a human readable name. The tModel again contains a categoryBag which this time contains the following keyedReferences:

- The type is categorized as service
- The namespace is again categorized as the WSDL binding namespace.
- The local name is categorized as the local name of the service.

The businessService also contains a bindingTemplate:

- The access type is categorized as the access point of the service.
- The portType is categorized as the tModel of the portType.
- The binding is categorized as the tModel of the binding information.
- The local name is categorized as the local name of the port.

**Table 26. wsdl service:UDDI mapping**

| WSDL | UDDI |
|---|---|
| Service | businessService (categorized as service) |
| Namespace of service | keyedReference in categoryBag |
| Local name of service | keyedReference in categoryBag; optionally used name of service |

## Use Cases

HP SOA Registry Foundation supports the following use cases:

- **Publishing a WSDL file.** You can also specify how artifacts of the WSDL file will be mapped to the existing UDDI structures.
- **Search for a WSDL.** You can search for the WSDL file by WSDL location (URI).
- **Unpublish and republish the WSDL.** You can unpublish and republish the WSDL

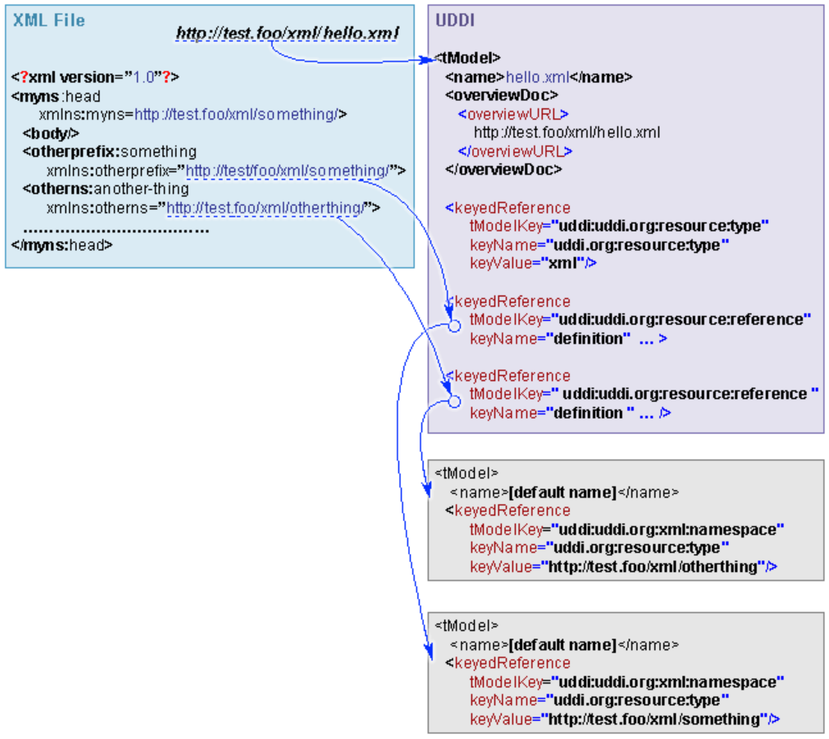
**For more information, also see:.**

- User's Guide, Publishing WSDL Documents on page 316
- User's Guide, Find WSDL on page 294
- Developer's Guide, WSDL Publishing on page 479

## XML

As shown in Figure 142, an XML file is mapped to a tModel. The location of the XML file is added to the tModel's overviewURL element. Namespaces are mapped to keyedReferences in the tModel categoryBag. Each namespace is mapped to a tModel.

**Figure 142. XML TO UDDI**



```
<?xml version="1.0"?>
<myns:head
    xmlns:myns=http://test.foo/xml/something/>
  <body/>
  <otherprefix:something
      xmlns:otherprefix="http://test/foo/xml/something/">
  <otherns:another-thing
      xmlns:otherns="http://test.foo/xml/otherthing/">
  ..................................
</myns:head>
```

```
<tModel>
  <name>hello.xml</name>
  <overviewDoc>
    <overviewURL>
      http://test.foo/xml/hello.xml
    </overviewURL>
  </overviewDoc>

  <keyedReference
      tModelKey="uddi:uddi.org:resource:type"
      keyName="uddi.org:resource:type"
      keyValue="xml"/>

  <keyedReference
      tModelKey="uddi:uddi.org:resource:reference"
      keyName="definition" ... >

  <keyedReference
      tModelKey=" uddi:uddi.org:resource:reference "
      keyName="definition " ... />
```

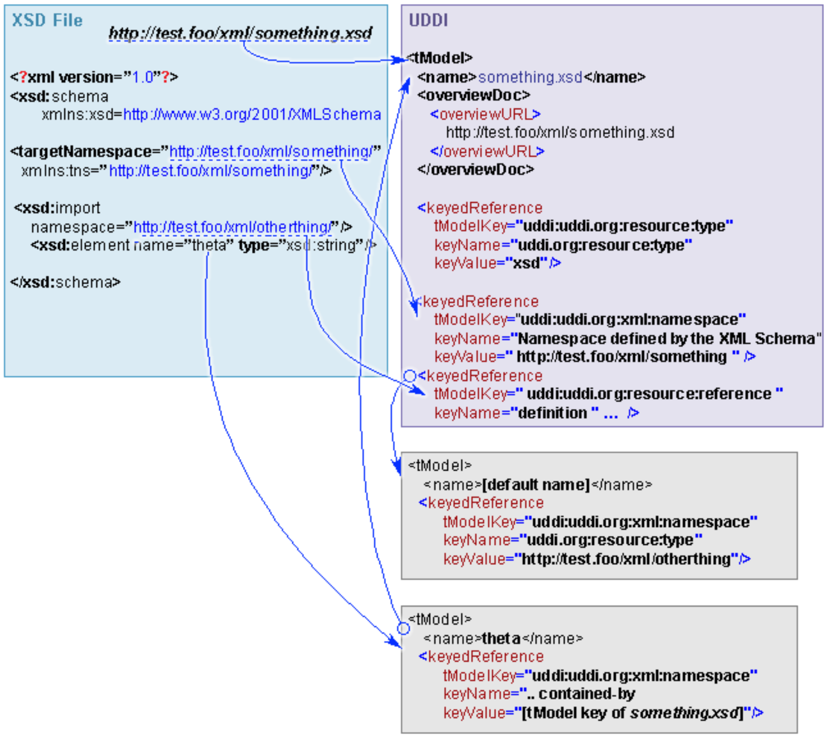
```
<tModel>
  <name>[default name]</name>
  <keyedReference
      tModelKey="uddi:uddi.org:xml:namespace"
      keyName="uddi.org:resource:type"
      keyValue="http://test.foo/xml/otherthing"/>
```

```
<tModel>
  <name>[default name]</name>
  <keyedReference
      tModelKey="uddi:uddi.org:xml:namespace"
      keyName="uddi.org:resource:type"
      keyValue="http://test.foo/xml/something"/>
```

## XSD

As shown in Figure 143, an XML Schema file is mapped to a tModel. The location URI of the XSD file is put to the tModels overviewURL element and the target namespace is mapped to a keyedReference in the tModel category bag. xsd:types, xsd:elements and xsd:imports are mapped to the tModel keyedReferences. For each type, element or import, a new tModel is created.

**Figure 143. XSD to UDDI**



```
http://test.foo/xml/something.xsd

<?xml version="1.0"?>
<xsd:schema
      xmlns:xsd=http://www.w3.org/2001/XMLSchema

<targetNamespace="http://test.foo/xml/something/"
   xmlns:tns="http://test.foo/xml/something/"/>

 <xsd:import
    namespace="http://test.foo/xml/otherthing/"/>
    <xsd:element name="theta" type="xsd:string"/>

</xsd:schema>
```

```
<tModel>
  <name>something.xsd</name>
  <overviewDoc>
    <overviewURL>
      http://test.foo/xml/something.xsd
    </overviewURL>
  </overviewDoc>

  <keyedReference
     tModelKey="uddi:uddi.org:resource:type"
     keyName="uddi.org:resource:type"
     keyValue="xsd"/>

  <keyedReference
     tModelKey="uddi:uddi.org:xml:namespace"
     keyName="Namespace defined by the XML Schema"
     keyValue=" http://test.foo/xml/something " />
  <keyedReference
     tModelKey=" uddi:uddi.org:resource:reference "
     keyName="definition " ... />
```

```
<tModel>
  <name>[default name]</name>
  <keyedReference
     tModelKey="uddi:uddi.org:xml:namespace"
     keyName="uddi.org:resource:type"
     keyValue="http://test.foo/xml/otherthing"/>
```

```
<tModel>
  <name>theta</name>
  <keyedReference
     tModelKey="uddi:uddi.org:xml:namespace"
     keyName=".. contained-by
     keyValue="[tModel key of something.xsd]"/>
```

## Use Cases

HP SOA Registry Foundation supports the following use cases:

- **Publish an XML Schema .** You can also specify how artifacts of the XML Schema file will be mapped to existing UDDI structures
- **Search for an XML schema:.**

    - Search for an XML Schema that imports artifacts declared in the specified XSD file.
    - Search for an XML Schema located in a specified server or folder.
    - Search for all XSL transformations that can process documents using a specified XSD.
    - Search for all XSL transformations producing documents that use the specified XSD.

- **Unpublish and republish the XML Schema.** You can unpublish and republish the XML Schema

**For more information, also see:.**

- User's Guide, Find XSD on page 295
- User's Guide, Publish XSD on page 321
- Developer's Guide, XSD Publishing on page 494

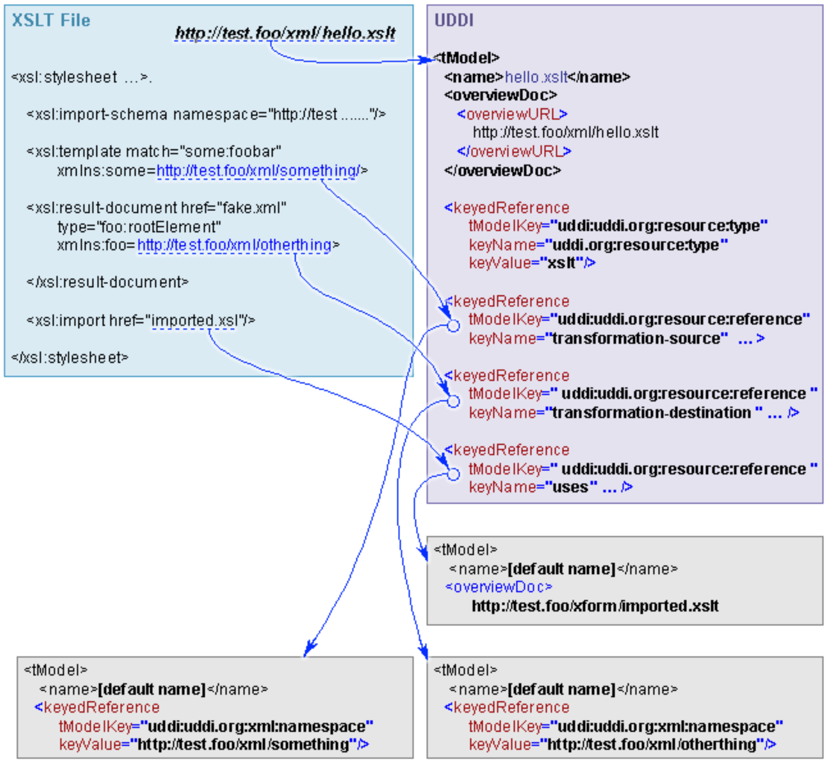
## XSLT

As shown in Figure 144 an XSL Transformation is mapped to a tModel:

- The location URI of the XSLT file is added to the tModel's overviewURL element.
- Namespaces are mapped to keyedReferences in the tModel's categoryBag.
- The xsl:import elements are also mapped to keyedReferences in the tModel's categoryBag.

For each import and namespace, a new tModel is created.

**Figure 144. XSLT TO UDDI**



```
<xsl:stylesheet ...>.

  <xsl:import-schema namespace="http://test ......"/>

  <xsl:template match="some:foobar"
       xmlns:some=http://test.foo/xml/something/>

  <xsl:result-document href="fake.xml"
       type="foo:rootElement"
       xmlns:foo=http://test.foo/xml/otherthing>

  </xsl:result-document>

  <xsl:import href="imported.xsl"/>

</xsl:stylesheet>
```

```
<tModel>
  <name>hello.xslt</name>
  <overviewDoc>
    <overviewURL>
      http://test.foo/xml/hello.xslt
    </overviewURL>
  </overviewDoc>

  <keyedReference
     tModelKey="uddi:uddi.org:resource:type"
     keyName="uddi.org:resource:type"
     keyValue="xslt"/>

  <keyedReference
     tModelKey="uddi:uddi.org:resource:reference"
     keyName="transformation-source"  ... >

  <keyedReference
     tModelKey=" uddi:uddi.org:resource:reference "
     keyName="transformation-destination " ... />

  <keyedReference
     tModelKey=" uddi:uddi.org:resource:reference "
     keyName="uses" ... />
```

```
<tModel>
  <name>[default name]</name>
  <overviewDoc>
    http://test.foo/xform/imported.xslt
```

```
<tModel>
  <name>[default name]</name>
  <keyedReference
     tModelKey="uddi:uddi.org:xml:namespace"
     keyValue="http://test.foo/xml/something"/>
```

```
<tModel>
  <name>[default name]</name>
  <keyedReference
     tModelKey="uddi:uddi.org:xml:namespace"
     keyValue="http://test.foo/xml/otherthing"/>
```

## Client-Side Development

Client-Side Development includes the following sections:

- UDDI APIs - Describes the principles of how to use HP SOA Registry Foundation APIs. The UDDI API set can be split by typical use case into two parts. The **Inquiry API** set is used to locate and obtain details on entries in the UDDI registry. For example to find out endpoint of given web service. The **publication API** set is used to publish and update information in the UDDI registry.

- Advanced APIs - Advanced APIs cover the following APIs: Validation API, Taxonomy API, Category APIs, Administration Utilities API, Replication API, Statistics API, Inquiry UI API, Subscription Ext Api, and Publishing API for resources:
  - WSDL Publishing
  - XSD Publishing
- Security APIs - Security APIs cover the following APIs: Account API, Group API, Permission API.
- Registry Client - This section describes how to prepare your own client distribution. A client created this way allows you to access the HP SOA Registry Foundation API through a SOAP interface.
- Client authentication - describes how to create a client that autheticates thru HTTP Basic.

## UDDI APIs

UDDI (Universal Description Discovery and Integration) is set of Web service that supports the description and discovery of Web service providers, Web services and technical fingerprints of those Web service.

The UDDI API set can be split by typical use case into two parts. The Inquiry API set is used to locate and obtain details on entries in the UDDI registry. For example to find out endpoint of given web service. The publication API set is used to publish and update information in the UDDI registry.

### Principles To Use UDDI API

This section will show you how to use the HP SOA Registry Foundation API. Examples are based on UDDI version 3 Specification [http://uddi.org/pubs/uddi-v3.00-published-20020719.htm].

To use Inquiry APIs you can follow these steps. The complete code fragment is shown in Example 1 on page 429.

1 Get API implementation from stub

```
String url = "http://localhost:8080/uddi/inquiry";
UDDI_Inquiry_PortType inquiry = UDDIInquiryStub.getInstance(url);
```

2 Collect inquiry parameters

```
String serviceKey = "uddi:systinet.com:demo:hr:employeesList";
String tModelKey = "uddi:systinet.com:demo:employeeList:binding";
Find_binding find_binding = new Find_binding();
find_binding.setServiceKey(serviceKey);
find_binding.addTModelKey(tModelKey);
find_binding.setMaxRows(new Integer(10));
```

3 Call inquiry method

```
BindingDetail bindingDetail = inquiry.find_binding(find_binding);
```

4 Operate with inquiry result

```
ListDescription listDescription = bindingDetail.getListDescription();
if (listDescription != null) {
    int includeCount = listDescription.getIncludeCount();
    int actualCount = listDescription.getActualCount();
    int listHead = listDescription.getListHead();
    System.out.println("Displaying " + includeCount + " of " +
        actualCount+ ", starting at position " + listHead);
}
```

If you get the `java.lang.reflect.UndeclaredThrowableException` exception, check whether HP SOA Registry Foundation is running.

To use the publishing API, follow these steps. The complete code fragment is shown in Example 2 on page 431.

1 Get API of security stub

```
String securityUrl = "http://localhost:8080/uddi/security";
UDDI_Security_PortType security = UDDISecurityStub.getInstance(securityUrl);
String publishingUrl = "http://localhost:8080/uddi/publishing";
UDDI_Publication_PortType publishing = UDDIPublishStub.getInstance(publishingUrl);
```

2 Get authentication token

```
AuthToken authToken = security.get_authToken(new Get_authToken(userName, password));
String authInfo = authToken.getAuthInfo();
```

3 Create save object

```
String businessKey = "uddi:systinet.com:demo:it";
String serviceKey = ""; // serviceKey is optional
int count = 1;
String[] serviceNames = new String[count];
String[] languageCodes = new String[count];
languageCodes[0] = null; // can set an array of language codes
serviceNames[0] = "Requests Service"; //service name
String serviceDescription = "Saved by Example"; //service description
BusinessService businessService = new BusinessService();
businessService.setBusinessKey(businessKey);
if (serviceKey != null && serviceKey.length() > 0)
    businessService.setServiceKey(serviceKey);
businessService.addName(new Name(serviceNames[0], languageCodes[0]));
businessService.addDescription(new Description(serviceDescription));
Save_service save = new Save_service();
save.addBusinessService(businessService);
save.setAuthInfo(authInfo);
```

4 Call publishing method

```
ServiceDetail serviceDetail = publishing.save_service(save);
```

5 Operate with publishing result

```
BusinessServiceArrayList
     businessServiceArrayList = serviceDetail.getBusinessServiceArrayList();
int position = 1;
for (Iterator iterator = businessServiceArrayList.iterator();
  iterator.hasNext();) {
    BusinessService service = (BusinessService) iterator.next();
    System.out.println("Service " + position + " : " + service.getServiceKey());
    System.out.println(service.toXML());
    position++;
}
```

6 Discard the authentication token

```
security.discard_authToken(new Discard_authToken(authInfo));
```

## Example 1: FindBinding v3

```
// (c) Copyright 2001-2009 Hewlett-Packard Development Company, L.P.
// Use is subject to license terms.

package example.inquiry;

import org.systinet.uddi.client.v3.UDDIInquiryStub;
import org.systinet.uddi.client.v3.UDDI_Inquiry_PortType;
import org.systinet.uddi.client.v3.struct.*;

import java.util.Iterator;

public class PrincipleFindBinding {

    public static void main(String args[]) throws Exception {

        //1. Get API implementation from stub
        String url = "http://localhost:8080/uddi/inquiry";
        System.out.print("Using Inquiry at url " + url + " ..");
        UDDI_Inquiry_PortType inquiry = UDDIInquiryStub.getInstance(url);
        System.out.println(" done");

        //2. Collect inquiry parameters
        String serviceKey = "uddi:systinet.com:demo:hr:employeesList";
        String tModelKey = "uddi:systinet.com:demo:employeeList:binding";
        Find_binding find_binding = new Find_binding();
        find_binding.setServiceKey(serviceKey);
        find_binding.addTModelKey(tModelKey);
        find_binding.setMaxRows(new Integer(10));

        //3. Call inquiry method
        System.out.print("Search in progress ..");
        BindingDetail bindingDetail = inquiry.find_binding(find_binding);
        System.out.println(" done");

        //4. Operate with result
        ListDescription listDescription = bindingDetail.getListDescription();
        if (listDescription != null) {
            int includeCount = listDescription.getIncludeCount();
            int actualCount = listDescription.getActualCount();
            int listHead = listDescription.getListHead();
            System.out.println("Displaying " + includeCount + " of " + actualCount
               + ", starting at position " + listHead);
        }
        BindingTemplateArrayList bindingTemplateArrayList
           = bindingDetail.getBindingTemplateArrayList();
        if (bindingTemplateArrayList == null) {
            System.out.println("Nothing found");
            return;
        }

        int position = 1;
        for (Iterator iterator = bindingTemplateArrayList.iterator();
          iterator.hasNext();) {
            BindingTemplate bindingTemplate = (BindingTemplate) iterator.next();
            System.out.println("Binding " + position + " : " +
                  bindingTemplate.getBindingKey());
            System.out.println(bindingTemplate.toXML());
            position++;
        }
    }
}
```

## Example 2: SaveService v3

```
// (c) Copyright 2001-2009 Hewlett-Packard Development Company, L.P.
// Use is subject to license terms.

package example.publishing;

import org.systinet.uddi.InvalidParameterException;
import org.systinet.uddi.client.v3.UDDIException;
import org.systinet.uddi.client.v3.UDDIPublishStub;
import org.systinet.uddi.client.v3.UDDISecurityStub;
import org.systinet.uddi.client.v3.UDDI_Publication_PortType;
import org.systinet.uddi.client.v3.UDDI_Security_PortType;
import org.systinet.uddi.client.v3.struct.AuthToken;
import org.systinet.uddi.client.v3.struct.BusinessService;
import org.systinet.uddi.client.v3.struct.BusinessServiceArrayList;
import org.systinet.uddi.client.v3.struct.Description;
import org.systinet.uddi.client.v3.struct.Discard_authToken;
import org.systinet.uddi.client.v3.struct.DispositionReport;
import org.systinet.uddi.client.v3.struct.Get_authToken;
import org.systinet.uddi.client.v3.struct.Name;
import org.systinet.uddi.client.v3.struct.Save_service;
import org.systinet.uddi.client.v3.struct.ServiceDetail;

import javax.xml.soap.SOAPException;
import java.util.Iterator;

public class PrincipleSaveService {

    public static void main(String[] args) throws UDDIException,
             InvalidParameterException, SOAPException {

        String userName = "demo_john";
        String password = "demo_john";

        //1. Get API implementation from stub
        String securityUrl = "http://localhost:8080/uddi/security";
        System.out.print("Using Security at url " + securityUrl + " ..");
        UDDI_Security_PortType security = UDDISecurityStub.getInstance(securityUrl);
        System.out.println(" done");
        String publishingUrl = "http://localhost:8080/uddi/publishing";
        System.out.print("Using Publishing at url " + publishingUrl + " ..");
        UDDI_Publication_PortType publishing = UDDIPublishStub.getInstance(publishingUrl);
        System.out.println(" done");
```

```
//2. Get authentication token
System.out.print("Logging in ..");
AuthToken authToken =
    security.get_authToken(new Get_authToken(userName, password));
System.out.println(" done");
String authInfo = authToken.getAuthInfo();

//3. Create save object
String businessKey = "uddi:systinet.com:demo:it";
String serviceKey = ""; // serviceKey is optional
int count = 1;
String[] serviceNames = new String[count];
String[] languageCodes = new String[count];
languageCodes[0] = null; // can set an array of language codes
serviceNames[0] = "Requests Service"; //service name
String serviceDescription = "Saved by Example"; //service description
BusinessService businessService = new BusinessService();
businessService.setBusinessKey(businessKey);
if (serviceKey != null && serviceKey.length() > 0)
    businessService.setServiceKey(serviceKey);
businessService.addName(new Name(serviceNames[0], languageCodes[0]));
businessService.addDescription(new Description(serviceDescription));

Save_service save = new Save_service();
save.addBusinessService(businessService);
save.setAuthInfo(authInfo);

//4. Call publishing method
System.out.print("Save in progress ...");
ServiceDetail serviceDetail = publishing.save_service(save);
System.out.println(" done");

//5. Operate with publishing result
BusinessServiceArrayList businessServiceArrayList =
     serviceDetail.getBusinessServiceArrayList();
int position = 1;
for (Iterator iterator = businessServiceArrayList.iterator();
  iterator.hasNext();) {
    BusinessService service = (BusinessService) iterator.next();
    System.out.println("Service " + position + " : "
       + service.getServiceKey());
    System.out.println(service.toXML());
    position++;
}
//6. Discard authentication token
System.out.print("Logging out ..");
security.discard_authToken(new Discard_authToken(authInfo));
```

```
        System.out.println(" done");
    }
}
```

## UDDI Version 1

The UDDI version 1 Specification [http://www.oasis-open.org/committees/uddi-spec/doc/contribs.htm#uddiv1] has provided a foundation for next versions.

### Inquire

- WSDL: inquire_v1.wsdl [http://www.hp.com/go/hpsoftwaresupport/wsdl/inquire_v1.wsdl]
- API endpoint: `http://<host name>:<port>/uddi/inquiry`
- Java API: `org.systinet.uddi.client.v1.InquireSoap`
- Demos: Inquiry demos v1

### Publish

- WSDL: publish_v1.wsdl [http://www.hp.com/go/hpsoftwaresupport/wsdl/publish_v1.wsdl]
- API endpoint: `http://<host name>:<port>/uddi/publishing`
- Java API: `org.systinet.uddi.client.v1.PublishSoap`
- Demos: Publishing demos v1

## UDDI Version 2

The UDDI version 2 Specification [http://uddi.org/pubs/ProgrammersAPI-V2.04-Published-20020719.htm] has introduced many improvements of existing concepts and new features like service projections.

### Inquiry

- Specification: Inquiry API functions [http://uddi.org/pubs/ProgrammersAPI-V2.04-Published-20020719.htm#_Toc25137711]
- WSDL: inquire_v2.wsdl [http://www.hp.com/go/hpsoftwaresupport/wsdl/inquire_v2.wsdl]

- API endpoint: `http://<host name>:<port>/uddi/inquiry`
- Java API: `org.systinet.uddi.client.v2.Inquire`
- Demos: Inquiry demos v2

### Publish

- Specification: Publishing API Function [http://uddi.org/pubs/ProgrammersAPI-V2.04-Published-20020719.htm#_Toc25137730]
- WSDL: publish_v2.wsdl [http://www.hp.com/go/hpsoftwaresupport/wsdl/publish_v2.wsdl]
- API endpoint: `http://<host name>:<port>/uddi/publishing`
- Java API: `org.systinet.uddi.client.v2.Publish`
- Demos: Publishing demos v2

## UDDI Version 3

The UDDI version 3 Specification [http://uddi.org/pubs/uddi-v3.00-published-20020719.htm] is a major step in providing industry standard for building and querying XML web services registries useful in both public and private deployments.

### Inquiry

- Specification: Inquiry API set [http://uddi.org/pubs/uddi-v3.00-published-20020719.htm#_Toc42047277]
- API endpoint: `http://<host name>:<port>/uddi/inquiry`
- Java API: `org.systinet.uddi.client.v3.UDDI_Inquiry_PortType`
- Demos: Inquiry demos v3

### Publication

- Specification: Publication API set [http://uddi.org/pubs/uddi-v3.00-published-20020719.htm#_Toc42047296]

- API endpoint: `http://<host name>:<port>/uddi/publishing`
- Java API: `org.systinet.uddi.client.v3.UDDI_Publication_PortType`
- Demos: Publishing demos v3

## Security

- Specification: Security API set [http://uddi.org/pubs/uddi-v3.00-published-20020719.htm#_Toc42047316]
- API endpoint: `http://<host name>:<port>/uddi/security`
- Java API: `org.systinet.uddi.client.v3.UDDI_Security_PortType`

## Custody

The Custody and Ownership Transfer API is used to transfer UDDI structures between UDDI nodes and to change their ownership. One use case is when the publisher wishes to transfer responsibility for a selected UDDI structure to another user, typically after a business reorganization.

- Specification: Custody and Ownership Transfer API Set [http://uddi.org/pubs/uddi-v3.00-published-20020719.htm#_Toc42047319]
- API endpoint: `http://<host name>:<port>/uddi/custody`
- Java API: `org.systinet.uddi.client.custody.v3.UDDI_CustodyTransfer_PortType`
- Demos: Custody Demos

## Subscription

The Subscription API is a service that asynchronously sends notification to users who have registered an interest in changes to a registry. These users have a range of options in specifying matching criteria so that they receive only the information in which they are interested.

- Specification: Subscription API Set [http://uddi.org/pubs/uddi-v3.00-published-20020719.htm#_Toc42047327]
- API endpoint: `http://<host name>:<port>/uddi/custody`

- Java API: `org.systinet.uddi.client.subscription.v3.UDDI_Subscription_PortType`
- Demos: Subscription Demos

## UDDI Version 3 Extension

UDDI Version 3 Extensions are HP extensions of the UDDI Version 3 Specification [http://www.oasis-open.org/committees/uddi-spec/doc/tcspecs.htm#uddiv3]. The following data structures are used by APIs for the Registry Console and APIs that will be approved as official technical notes of the UDDI specification.

### Data Structures

#### businessEntityExt

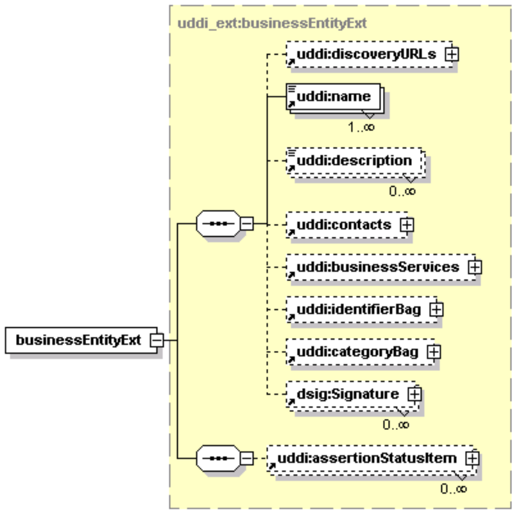
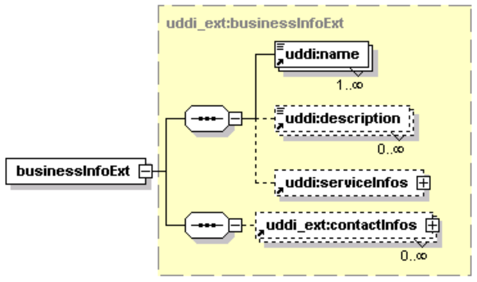


**Table 27. Attributes**

| Name | Required |
|---|---|
| `businessKey` | Optional |

This structure is used by the Registry Console for performance enhancements. The structure is an extension of businessEntity [http://uddi.org/pubs/uddi-v3.0.1-20031014.htm#_Toc53709226], the added element is uddi:assertionStatusItem [http://uddi.org/pubs/uddi-v3.0.1-20031014.htm#_Toc53709302] that points to the related businessEntity,

## businessInfoExt

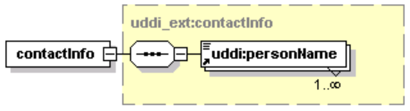


### Table 28. Attributes

| Name | Required |
|---|---|
| `businessKey` | Optional |

This structure is an extension of the `businessInfo` structure; the added element is `uddi_ext:contactInfos`.

## contactInfo



### Table 29. Attributes

| Name | Required |
|---|---|
| `useType` | Optional |

This structure represents a person name for the businessInfoExt.

## contactInfos

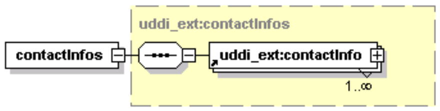


**Table 30. Attributes**

| Name | Required |
|---|---|
| `useType` | Optional |

This structure holds a list of contactInfos.

## operationalInfoExt

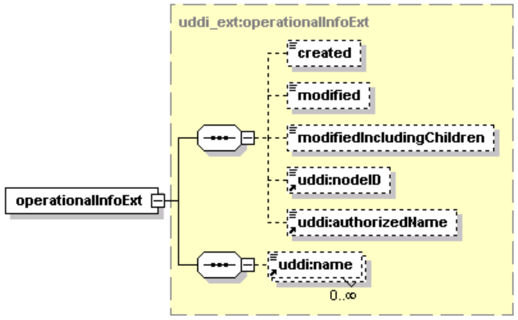
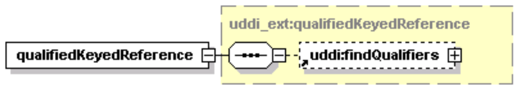


**Table 31. Attributes**

| Name | Required |
|---|---|
| `entityKey` | Required |
| `entityKeyV2` | Optional |

This structure is an extension of the `operationalInfo` [http://uddi.org/pubs/uddi-v3.0.1-20031014.htm#_Toc53709242] structure, the added element is `uddi:name`. The `entityKeyV2` holds UDDI v2 key values.

## qualifiedKeyedReference

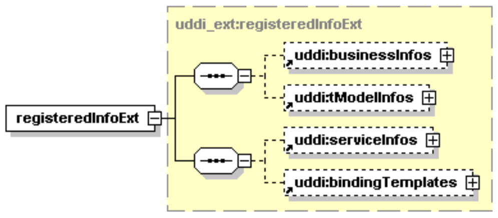


### Table 32. Attributes

| Name | Required |
|---|---|
| `tModelKey` | Required |
| `keyName` | Optional |
| `keyValue` | Required |

This structure holds findQualifiers that are used in Range Queries.

## registeredInfoExt



### Table 33. Attributes

| Name | Required |
|---|---|
| `truncated` | Optional |

This structure is used by ACL functionality. The added elements are `uddi:serviceInfos` and `uddi:bindingTemplates` that point to UDDI entities the user does not own but has privileges to modify.

## serviceInfoExt

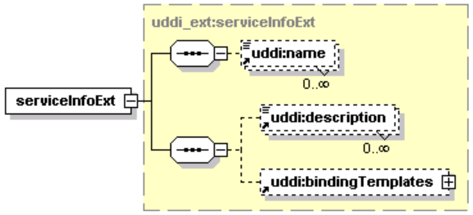


**Table 34. Attributes**

| Name | Required |
|---|---|
| `serviceKey` | Required |
| `businessKey` | Required |

This structure is an extension of `serviceInfo`. It is used by the web interface for performance enhancements. The added elements are `uddi:description` and `uddi:bindingTemplates`.

## Find Qualifiers

UDDI V3 Specification [http://uddi.org/pubs/uddi-v3.0.1-20031014.htm#_Toc53709434] permits vendors to define new find qualifiers. Table 35 summarizes the additional find qualifiers in HP SOA Registry Foundation and the find_xx operations that support them. See Inquiry on page 434 for more information on inquiry API operations.

Each short name in Table 35 links to a subsection that follows. Note that the tModel key is the short name prefixed with `uddi:systinet.com:findQualifier:`.

**Table 35. Summary of Additional Find Qualifiers in HP SOA Registry Foundation**

| Short Name | Supporting Operations | | | | |
|---|---|---|---|---|---|
| | find_business | find_service | find_binding | find_tModel | find_relatedBusinesses |
| deletedTModels | | | | ✓ | |
| foreignEntities | ✓ | ✓ | ✓ | ✓ | |
| keyNameMatch | ✓ | ✓ | ✓ | ✓ | ✓ |
| myEntities | ✓ | ✓ | ✓ | ✓ | |
| omitKeyNameMatch | ✓ | ✓ | ✓ | ✓ | ✓ |
| omitKeyValueMatch | ✓ | ✓ | ✓ | ✓ | ✓ |
| omitTModelKeyMatch | ✓ | ✓ | ✓ | ✓ | ✓ |
| tModelKeyApproximateMatch | ✓ | ✓ | ✓ | ✓ | ✓ |

## deletedTModels

This find qualifier returns only hidden tModels, hence enabling administrators to locate and permanently delete garbage tModels.

Note that the registry settings determine whether delete_tModel:

- just hides the tModel from find_tModel operations (default behaviour required by the specification);
- really deletes the tModel, provided there are no dependencies on it;

See Administrator's Guide, Node on page 381.

| | |
|---|---|
| tModel Key | `uddi:systinet.com:findQualifier:deletedTModels` |
| Supporting Operations | find_tModel. |

## foreignEntities

This find qualifier restricts results to entities that do not belong to the caller.

This qualifier does not make any sense for an anonymous caller because all entities will be returned in the query.

| | |
|---|---|
| tModel Key | `uddi:systinet.com:findQualifier:foreignEntities` |
| Supporting Operations | All find_xx operations except find_relatedBusinesses. |

## keyNameMatch

This find qualifier changes default rules for matching keyedReferences. By default keyNames are only compared when the General Keywords tModelKey is specified. This find qualifier enforces comparison of keyNames.

The keyNameMatch and omitKeyNameMatch findQualifiers are mutually exclusive.

| | |
|---|---|
| tModel Key | `uddi:systinet.com:findQualifier:keyNameMatch` |
| Supporting Operations | All find_xx operations. |

## myEntities

This find qualifier restricts results to entities that belong to the caller.

This qualifier does not make any sense for an anonymous caller. All entities would be returned in that case.

| | |
|---|---|
| tModel Key | `uddi:systinet.com:findQualifier:myEntities` |
| Supporting Operations | All find_xx operations except find_relatedBusinesses. |

## omitKeyNameMatch

This find qualifier changes default rules for matching keyedReferences. By default keyNames are only compared when the General Keywords tModelKey is specified. This find qualifier skips comparison of keyNames.

The keyNameMatch and omitKeyNameMatch findQualifiers are mutually exclusive.

| | |
|---|---|
| tModel Key | `uddi:systinet.com:findQualifier:omitKeyNameMatch` |
| Supporting Operations | All find_xx operations. |

### omitKeyValueMatch

This find qualifier changes default rules for matching keyedReferences. By default keyValues are compared. This find qualifier skips comparison of keyValues.

The omitKeyValueMatch and omitTModelKeyMatch findQualifiers are mutually exclusive.

| | |
|---|---|
| tModel Key | `uddi:systinet.com:findQualifier:omitKeyValueMatch` |
| Supporting Operations | All find_xx operations. |

### omitTModelKeyMatch

This find qualifier changes default rules for matching keyedReferences. By default tModelKeys are compared. This find qualifier skips comparison of tModelKeys.

The omitKeyValueMatch and omitTModelKeyMatch findQualifiers are mutually exclusive.

| | |
|---|---|
| tModel Key | `uddi:systinet.com:findQualifier:omitTModelKeyMatch` |
| Supporting Operations | All find_xx operations. |

### tModelKeyApproximateMatch

This find qualifier changes the default rules for matching keyedReferences. By default tModelKeys are compared without wildcards and case insensitively. This find qualifier enables a tModelKey in a query to include wildcards:

- '%' interpreted as zero or more arbitrary characters;
- '_' interpreted as an arbitrary character.

The behavior is similar to the approximateMatch find qualifier.

| | |
|---|---|
| tModel Key | `uddi:systinet.com:findQualifier:tModelKeyApproximateMatch` |

| | |
|---|---|
| Supporting Operations | All find_xx operations. |

## Advanced APIs

Advanced APIs cover the following APIs:

- Validation API - The Valueset Validation API is used to validate values in keyedReferences involved in save operations that reference checked taxonomies. Valueset validation is defined in the UDDI version 3 specification [http://uddi.org/pubs/uddi_v3.htm]. Every checked taxonomy requires a Web service that implements this API.
- Taxonomy API - The Systinet Taxonomy API provides a high-level view of taxonomies and makes them easy to manage and query. This API was designed according to the UDDI technical note Providing A Value Set For Use In UDDI Version 3 [http://oasis-open.org/committees/uddi-spec/doc/tn/uddi-spec-tc-tn-valuesetprovider-20030212.htm].
- Category APIs - The Systinet Category API complements the Systinet Taxonomy API. It is used to query and to manipulate Internal taxonomies in HP SOA Registry Foundation. More information on the subject of internal taxonomies can be found in the API documentation. The categories may be hierarchically organized. Each category may be top-level (without parent), it may have children, or it may be a child of another category. You can drill down through this pattern In the Registry Console.
- Administration Utilities API - The Systinet Administration Utilities API provides an interface to perform several low level administrative tasks in HP SOA Registry Foundation.
- Replication API - The Replication API is used to launch replications in HP SOA Registry Foundation.
- Statistics API - The Systinet Statistics API provides useful information about HP SOA Registry Foundation usage.
- WSDL Publishing API - HP SOA Registry Foundation WSDL-to-UDDI mapping is compliant with OASIS's Technical Note, Using WSDL in a UDDI registry Version 2.0 [http://www.oasis-open.org/committees/uddi-spec/doc/tn/uddi-spec-tc-tn-wsdl-v2.htm]. It enables the automatic publishing of WSDL documents to UDDI, enables precise and flexible UDDI queries based on specific WSDL artifacts and metadata, and provides a consistent mapping for UDDI v2 and UDDI v3.
- Resources Publishing APIs - XSD2UDDI. These API sets allow you to manipulate with resources in HP SOA Registry Foundation. XML Schemas are supported.

- Inquiry UI API - The Inquiry UI API has been implemented for improving the performance of the Business Service Console. The basic idea is to retrieve data that appear in the Business Service Console using a single API call.

## Validation

The Valueset validation API is used to validate values in keyedReferences involved in save operations that reference checked taxonomies. Valueset validation is defined in the UDDI version 3 specification [http://uddi.org/pubs/uddi_v3.htm]. Every checked taxonomy requires a Web service that implements this API. The API is defined by the `uddi:uddi.org:v3_valueSetValidation` tModel for UDDI version 3, `uddi:systinet.com:v2_validateValues` for UDDI version 2 and `uddi:systinet.com:v1_validateValues` for UDDI version 1.

HP SOA Registry Foundation is built according to the UDDI technical note Providing A Value Set For Use In UDDI Version 3 [http://oasis-open.org/committees/uddi-spec/doc/tn/uddi-spec-tc-tn-valuesetprovider-20030212.htm]. To function correctly, checked taxonomies must be categorized with `uddi-org:validatedBy` taxonomy pointing to the bindingTemplate with the valueset validation Web service accessPoint. This Web service is called whenever the checked taxonomy occurs within a keyedReference during a save operation.

If the Web service is accessible by HP SOA Registry Foundation's classloader, the validation Web service does not need to be invoked over SOAP, but it may run inside the registry's Java Virtual Machine.

The accessPoint value must be in a special form: It must start with the *class:* prefix and continue with fully qualified class name. For example, the internal validation service endpoint is defined as follows: `class:com.systinet.uddi.publishing.v3.validation.service.AclValidator`.

For more information, consult the UDDI version 3 specification, section 5.6 [http://uddi.org/pubs/uddi_v3.htm#_Toc53709335] .

## SOAP

- Specification: uddi_vs_v3.wsdl [http://www.hp.com/go/hpsoftwaresupport/wsdl/uddi_vs_v3.wsdl]

## Java

- Java API: `org.systinet.uddi.client.valueset.validation.v3.UDDI_ValueSetValidation_PortType`

- Demos: Validation demos

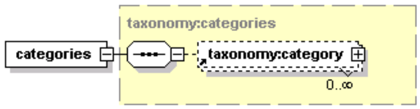
## Taxonomy

The Systinet Taxonomy API provides high-level view of taxonomies and makes them easy to manage and query. This API was built according to the UDDI technical note Providing A Value Set For Use In UDDI Version 3 [http://oasis-open.org/committees/uddi-spec/doc/tn/uddi-spec-tc-tn-valuesetprovider-20030212.htm].

### Data Structures

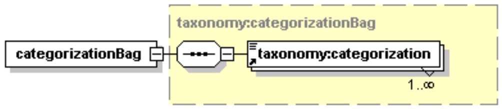
The following structures are used by the Systinet Taxonomy API:

#### Categories



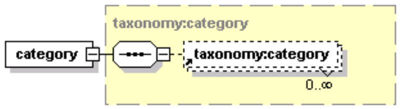
This structure is a container for zero or more `category` structures. If the taxonomy is internal, then categories are used to hold possible values of its keyedReferences.

#### categorizationBag



This structure is a container for one or more `categorizations`. It defines the containers (categoryBag, keyedReferenceGroup, identifierBag and Publisher Assertion) in which this taxonomy can be used. Possible values are categorization, categorizationGroup, identifier, and relationship. A save operation containing a keyedReference referencing a taxonomy in the wrong container will be denied with E_valueNotAllowed UDDI exception.

#### Category

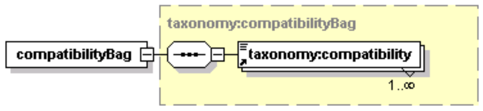


This structure corresponds to the keyedReference. It defines the keyedReference of the taxonomy in which it is used. The `keyValue` must be unique. The `disabled` attribute is used to mark the category as either helper or deprecated, so it cannot be used as a valid option in keyedReferences. The `keyName` attribute serves as a label for this category.

### Table 36. Attributes

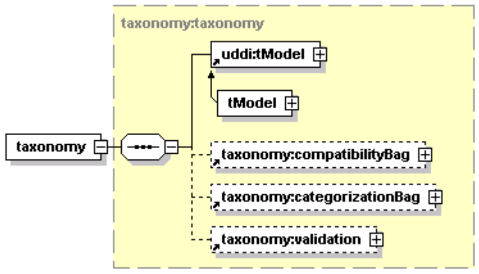
| Name | Required |
|---|---|
| `keyName` | Yes |
| `keyValue` | Yes |
| `disabled` | No |

### compatibilityBag



This structure is a container for one or more compatibilities. It defines the compatibility of the taxonomy with the four basic UDDI data structures - tModel, businessEntity, businessService and bindingTemplate. If the taxonomy is not compatible with one of these UDDI structures, then a save operation containing a keyedReference referencing this taxonomy in this structure will be denied with E_valueNotAllowed UDDI exception.

### taxonomy



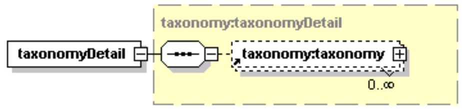
### Table 37. Attributes

| Name | Required |
|---|---|
| `check` | No |
| `unvalidatable` | No |
| `brief` | No |

Each taxonomy is identified by its tModel.

- The optional `check` attribute is used to define whether the taxonomy is checked or not. If the tModel is checked, then a validation structure must be present.
- The `unvalidatable` attribute is used to mark the checked taxonomy as unvalidatable. Unvalidatable taxonomies cannot be used in keyedReferences.
- The `brief` attribute is related to categories structure and its meaning depends on context, in which it is used.

## taxonomyDetail



### Table 38. Attributes

| Name | Required |
|---|---|
| `truncated` | No |

This structure is a container for zero or more `taxonomies`. The `truncated` attribute indicates whether the list of taxonomies is truncated.

## taxonomyInfo

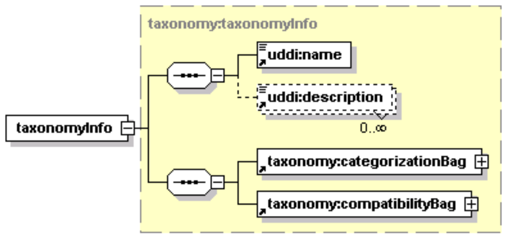


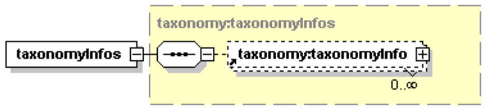
**Table 39. Attributes**

| Name | Required |
|---|---|
| `check` | Yes |
| `unvalidatable` | No |

The taxonomyInfo is an extension of the tModelInfo structure.

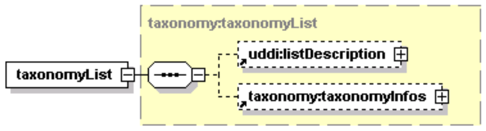
- The `check` attribute indicates whether or not the taxonomy is checked.
- The `unvalidatable` attribute is used to mark the checked taxonomy as unvalidatable. Unvalidatable taxonomies cannot be used in keyedReferences.

## taxonomyInfos



This structure is a container for zero or more `taxonomyInfo` structures.

## taxonomyList

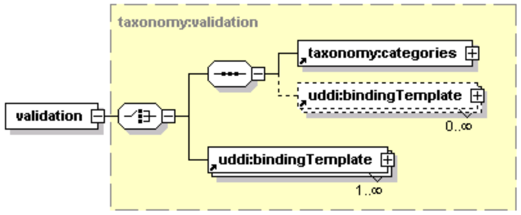


This structure serves as a container for optional `listDescription` and optional `taxonomyInfos` structures. The `truncated` attribute indicates whether the list of taxonomies is truncated.

**Table 40. Attributes**

| Name | Required |
|---|---|
| `truncated` | No |

## validation

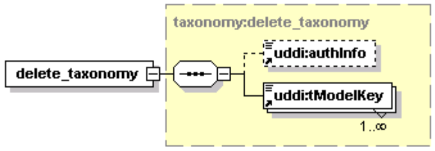


This structure is used to hold information for validating a checked taxonomy. The `categories` structure defines the list of available values for keyedReferences checked by the Internal validation service. `Binding templates` contains the valueset validation Web service endpoint.

## Operations

## delete_taxonomy

The delete_taxonomy API call is used to delete one or more taxonomies from HP SOA Registry Foundation. The taxonomy consists of a tModel and optional business services and categories.



## Arguments

- `uddi:authInfo` - This optional argument is an element that contains an authentication token.
- `uddi:tModelKey` - One or more required uddiKey values that represent existing taxonomy tModels.

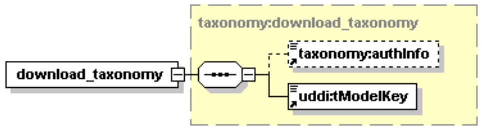
Upon successful completion, a disposition report is returned with a single success indicator.

### Permissions

This API call requires API manager permission with the name `org.systinet.uddi.client.taxonomy.v3.TaxonomyApi` and the action delete_taxonomy.

## download_taxonomy

The download_taxonomy API call is used to fetch a selected taxonomy from HP SOA Registry Foundation. This call is stream oriented and is useful for fetching the content of very large taxonomies.



### Arguments

- `taxonomy:authInfo` - This optional argument is an element that contains an authentication token.

- `uddi:tModelKey` - required uddiKey value that represents an existing taxonomy tModel.

### Returns

This API call returns a ResponseMessageAttachment with the selected taxonomy upon success.

### Permissions

This API call requires the API manager permission with name `org.systinet.uddi.client.taxonomy.v3.TaxonomyApi` and the action download_taxonomy.

## find_taxonomy

The find_taxonomy API call is used to find all taxonomies in a registry that match given criteria. This call is an extension of the UDDI v3 find_tModel API call.

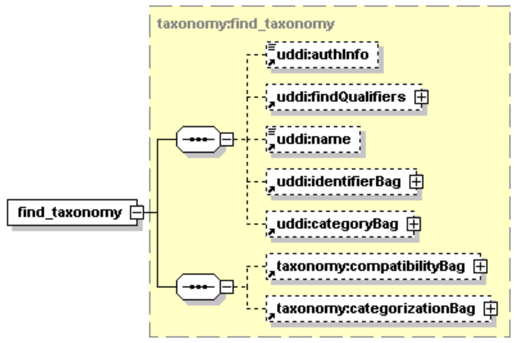


**Table 41. Attributes**

| Name | Required |
|---|---|
| `check` | No |
| `unvalidatable` | No |

## Arguments

- `uddi:authInfo` - This optional argument is an element that contains an authentication token.
- `uddi:findQualifiers` - The collection of findQualifier used to alter default behavior.
- `uddi:name` - The string value represents the name of tModel to be found.
- `uddi:identifierBag` - The list of keyedReferences from tModel IdentifierBag.
- `uddi:categoryBag` - The list of keyedReferences from tModel categoryBag.
- `taxonomy:compatibilityBag` - An optional list of Compatibilities.
- `taxonomy:categorizationBag` - An optional list of Categorizations.
- `check` - Optional boolean value that limits returned data to checked (or unchecked) taxonomies only.
- `unvalidatable` - Optional boolean value that limits returned data to unvalidatable taxonomies only.

The `unvalidatable` attribute of the tModel of a checked taxonomy will be set to true, if one of the following rules is met:

- The tModel of a checked taxonomy does not contain the validatedBy keyedReference
- The bindingTemplate from keyedReferences does not exists or is not readable because of ACLs.

### Returns

This API call returns the TaxonomyList upon success.

### Permissions

This API call requires API user permission `org.systinet.uddi.client.taxonomy.v3.TaxonomyApi` and the action find_taxonomy.

## get_taxonomy

The get_taxonomy API call returns the Taxonomy structure corresponding to each of the tModelKey values specified.

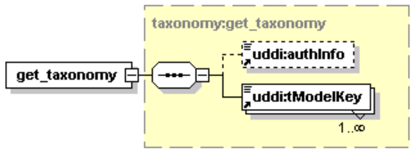


**Table 42. Attributes**

| Name | Required |
|---|---|
| `brief` | No |

### Arguments

- `uddi:authInfo` - This optional argument is an element that contains an authentication token.

- `uddi:tModelKey` - Required uddiKey value representing an existing taxonomy tModel.
- `brief` - Requests not to fetch the `categories` element. Note that only the API manager can set this attribute to false.

### Returns

This API call returns the TaxonomyList on success.

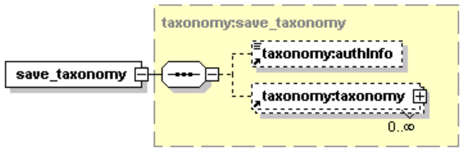
➤ If the tModel of a checked taxonomy does not contain the validatedBy keyedReference, the taxonomy's `unvalidatable` attribute will be set to true and the validation structure will be missing.

### Permissions

This API call requires the API user permission `org.systinet.uddi.client.taxonomy.v3.TaxonomyApi` and the action get_taxonomy.

## save_taxonomy

The save_taxonomy API call is used to publish taxonomies to HP SOA Registry Foundation.



The taxonomy properties (checked, unvalidatable, compatibilityBag, and categorizationBag) are first combined with their counterparts in the tModel's categoryBag.

➤ It is an error to specify a validation structure for an unchecked taxonomy. If the taxonomy contains a validation structure, it is automatically set to be checked. If the taxonomy is neither checked nor unchecked, it will be saved as unchecked. If a checked taxonomy does not have a validation structure, the taxonomy is saved with the `unvalidatable` attribute set to true.

If the categories structure is defined in the validation structure, then the taxonomy will be checked by the Internal validation service. The bindingTemplates are optional; if they are specified, then their AccessPoint must point to the Internal validation service's Web service endpoint.

If the categories structure is not defined in the validation structure, then there must be at least one bindingTemplate. The bindingTemplate must implement valueset validation API (either `uddi:uddi.org:v3_valueSetValidation`, `uddi:systinet.com:v2_validateValues` or `uddi:systinet.com:v1_validateValues`). There must be a valid AccessPoint.

If the serviceKey is given, then this businessService must be part of the Operational business entity (`uddi:systinet.com:uddinodebusinessKey`). During the save_taxonomy operation, the businessService will be overwritten.

### Arguments

- `taxonomy:authInfo` - This optional argument is an element that contains an authentication token.
- `taxonomy:taxonomy` - A list of taxonomies to be saved.

### Returns

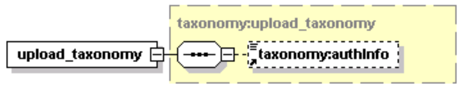
This API call returns the TaxonomyDetail on success.

### Permissions

This API call requires the API manager permission `org.systinet.uddi.client.taxonomy.v3.TaxonomyApi` and the action save_taxonomy.

## upload_taxonomy

The upload_taxonomy API call is used to publish a Taxonomy into HP SOA Registry Foundation. This call is stream oriented and is useful for publishing very large taxonomies.



## Permissions

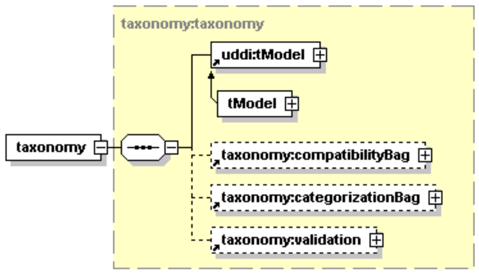
This API call requires the API manager permission named `org.systinet.uddi.client.taxonomy.v3.TaxonomyApi` and the action upload_taxonomy.

## Persistence Format

The taxonomy persistence format is used by taxonomy Download/Upload operations. Following is an example of the taxonomy persistence format:

```
<taxonomy xmlns="http://systinet.com/uddi/taxonomy/v3/5.0"
    xmlns:uddi="urn:uddi-org:api_v3"
         check="true">
    <tModel tModelKey="uddi:foo.com:demo:myTaxonomy">
        <uddi:name>My taxonomy</uddi:name>
        <uddi:description>Category system</uddi:description>
    </tModel>
    <compatibilityBag>
        <compatibility>businessEntity</compatibility>
    </compatibilityBag>
    <categorizationBag>
        <categorization>categorization</categorization>
    </categorizationBag>
    <validation>
        <bindingTemplate bindingKey="" serviceKey="" xmlns="urn:uddi-org:api_v3">
            <accessPoint useType="endPoint">
               http://www.foo.com/MyValidationService.wsdl
            </accessPoint>
            <tModelInstanceDetails>
                <tModelInstanceInfo
                    tModelKey="uddi:uddi.org:v3_valueSetValidation"/>
                <tModelInstanceInfo
                    tModelKey="uddi:systinet.com:demo:myTaxonomy"/>
            </tModelInstanceDetails>
        </bindingTemplate>
    </validation>
</taxonomy>
```

This format reflects the taxonomy.xsd [http://www.hp.com/go/hpsoftwaresupport/wsdl/taxonomy.xsd] XML Schema Definition file. For more information, see the data structure of taxonomy on page 447.



## WSDL

You can find the WSDL specification in the file taxonomy.wsdl [http://www.hp.com/go/hpsoftwaresupport/wsdl/taxonomy.wsdl].

## API Endpoint

You can find the Taxonomy API endpoint at `http://<host name>:<port>/uddi/taxonomy`.

## Java

Systinet Java API is generated from Taxonomy WSDL. You are encouraged to browse `org.systinet.uddi.client.taxonomy.v3.TaxonomyApi` and to read and try Taxonomy demos.

## Taxonomy 5.5 Extension

This section describes the taxonomy 5.5. extension intended for Range queries functionality implementation.

## Data Structures

The following structures are used by the Systinet Taxonomy 5.5 API:

## Taxonomy

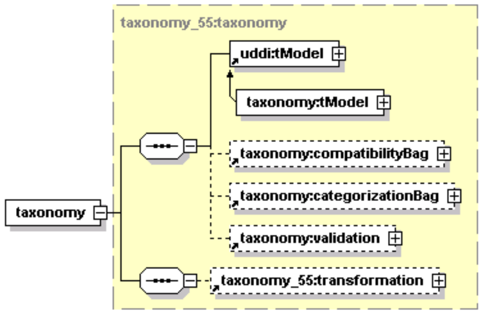

taxonomy_55:taxonomy
uddi:tModel
taxonomy:tModel
taxonomy:compatibilityBag
taxonomy:categorizationBag
taxonomy:validation
taxonomy_55:transformation
taxonomy

**Table 43. Attributes**

| Name | Required |
|---|---|
| `check` | No |
| `unvalidatable` | No |
| `brief` | No |

This structure is almost identical to taxonomy, except that the transformation argument has been added

## taxonomyInfo

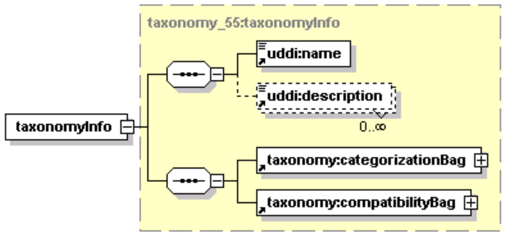
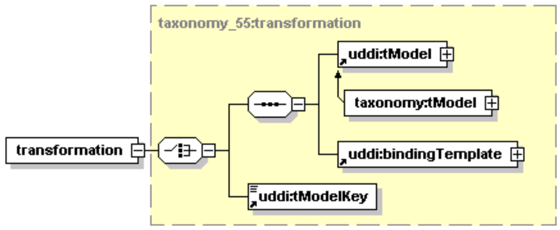


**Table 44. Attributes**

| Name | Required |
|---|---|
| `check` | Yes |
| `tModelKey` | yes |
| `unvalidatable` | No |
| `isOrderedBy` | No |

This structure is almost identical to taxonomyInfo, except that the optional attribute `isOrderedBy` was added to contain the name of the comparator tModel.

## transformation



This structure holds a reference to a transformation service implementation. For more information about the transformation service, please see Administrator's Guide, Custom Ordinal Types on page 251.

- `uddi:tModel` - The tModel that represents a comparator taxonomy.
- `uddi:bindingTemplate` - This argument holds the reference of the transformation service implementation. The `accessPoint` element of the bindingTemplate includes the name of the java class implementation of the sevice with the prefix `class:`.
- `uddi:tModelKey` The key of the tModel that represents the transformation.

## API Endpoint

You can find the Taxonomy 5.5 API endpoint at `http://<host name>:<port>/uddi/taxonomy55`.

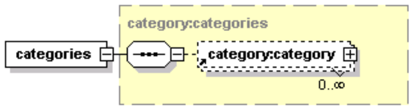
## Category

The Systinet Category API complements the Systinet Taxonomy API. It is used to query and to manipulate Internal taxonomies in HP SOA Registry Foundation. The categories may be hierarchically organized. Each category may be top-level (without parent), it may have children, or it may be a child of another category. You can drill down through this pattern in the Registry Console.

### Data Structures

The following structures are used by the Systinet Category API:

#### Categories



This structure is a container for zero or more `category` elements.

#### category

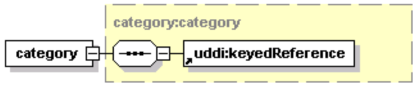


**Table 45. Attributes**

| Attribute | Required |
|---|---|
| `disabled` | No |
| `leaf` | No |

This element contains a single `keyedReference` element that defines value of the category.

The `disabled` attribute is used to indicate that a category cannot be used as a valid option in keyedReferences. Either it has been deprecated or it is only a parent for other categories. The tModel key value in the uddi-org:types taxonomy is one such disabled category.

The `leaf` attribute indicates whether this category is a leaf in the category tree.

## categoryList

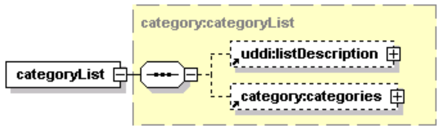


**Table 46. Attributes**

| Attribute | Required |
|---|---|
| `truncated` | No |

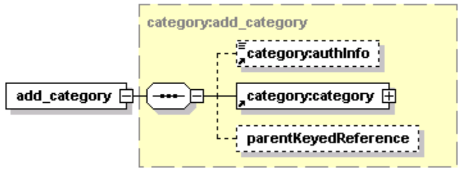
This structure serves as a container for optional `listDescription` and `categories` structures. The `truncated` attribute indicates whether a returned list of categories is truncated.

## Operations

### add_category

The `add_category` API call is used to add a new category to the Internal taxonomy identified by the tModelKey in the keyedReference. The `parentKeyedReference` element is used to define the parent category of new category to be saved. If the `parentKeyedReference` element is missing, then the new category will have no parent.

#### Syntax



#### Arguments

- `category:authInfo` - This optional argument is an element that contains an authentication token.
- `category:category` - Category to be added.
- `parentKeyedReference` - Optional keyedReference; serves as parent of the new category.

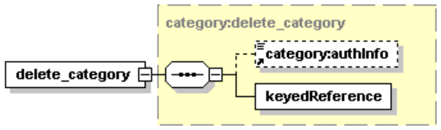
### Permissions

This API call requires API manager permission for `org.systinet.uddi.client.category.v3.CategoryApi` and for the action `add_category`.

## delete_category

The `delete_category` API call deletes the selected category from HP SOA Registry Foundation.

### Syntax



### Arguments

- `category:authInfo` - This optional argument is an element that contains an authentication token.
- `keyedReference` - Category to be deleted.

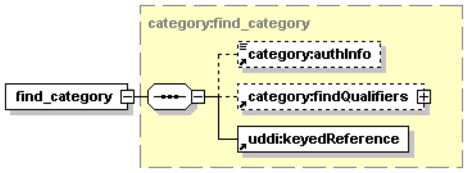
### Permissions

This API call requires API manager permission for `org.systinet.uddi.client.category.v3.CategoryApi` and the action `delete_category`.

## find_category

The `find_category` API call is used to query HP SOA Registry Foundation for categories that match given criteria.

### Syntax



### Arguments

- `category:authInfo` - This optional argument is an element that contains an authentication token.
- `category:findQualifiers` - Optional list of findQualifiers, that modifies default behavior.
- `uddi:keyedReference` - The category containing search arguments.

### Behavior

FindByName and findByValue findQualifiers are used to distinguish whether the call will search by keyName or keyValue from the keyedReference that is the argument of the call. The default is to search by value.

The caseSensitiveMatch and caseInsensitiveMatch findQualifiers are used to control whether the search will be case sensitive; the default is case sensitive.

The ApproximateMatch findQualifier is used to search with SQL wildcards. The default findQualifier, exactMatch, instructs the search to perform an exact comparison.

Finally there are four findQualifiers that affect the order in which categories are returned:

- sortByNameAsc
- sortByNameDesc
- sortByValueAsc (default)
- sortByValueDesc

These find qualifiers are exclusive. If you combine them, an exception is thrown.

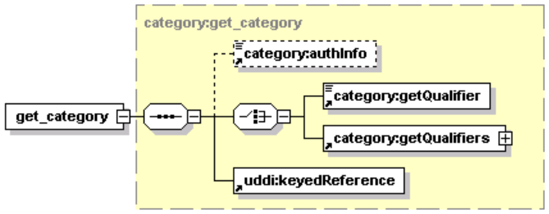
### Returns

This API call returns a CategoryList upon success.

### get_category

The `get_category` API call is used to get categories having a relation, identified by getQualifier, to the category identified by given keyedReference. If the getQualifier is childCategories, then the call returns categories that have the selected category as their parent. If the siblingCategories getQualifier is used, then categories having same parent as selected category are returned.

### Syntax



### Arguments

- `category:authInfo` - This optional argument is an element that contains an authentication token.
- `category:getQualifier` and `category:getQualifier` - Control search behavior.
- `uddi:keyedReference` - The category whose relatives shall be received.

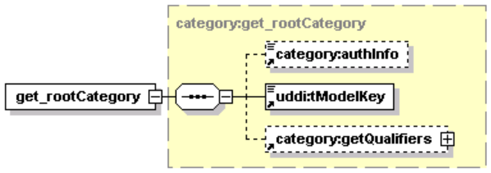
### Returns

This API call returns a CategoryList upon success.

## get_rootCategory

The `get_rootCategory` API call returns all categories of the Internal taxonomy identified by given tModelKey that have no parent.

### Syntax



### Arguments

- `category:authInfo` - This optional argument is an element that contains an authentication token.
- `uddi:tModelKey` - Required uddiKey value that represents an existing taxonomy tModel.
- `category:getQualifiers` - Control search behavior.

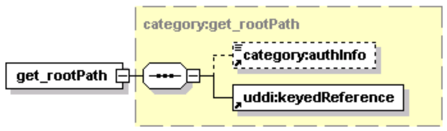
### Returns

This API call returns a CategoryList upon success.

## get_rootPath

The `get_rootPath` API call returns categories from root category, then its child categories until the selected category in this order: root category, parent's parent, parent and the selected category.

### Syntax



### Arguments

- `category:authInfo` - This optional argument is an element that contains an authentication token.
- `uddi:keyedReference` - Category to be searched

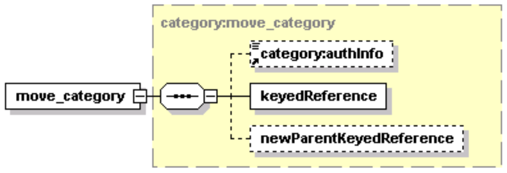
### Returns

This API call returns a CategoryList upon success.

## move_category

The `move_category` API call is used to move selected category from current parent (if any) to a new parent category. If the newParentKeyedReference is not defined, then the category will have no parent.

### Syntax



### Arguments

- `category:authInfo` - This optional argument is an element that contains an authentication token.
- `keyedReference` - Category to be deleted.
- `newParentKeyedReference` - Optional category, that becomes new parent of the category.

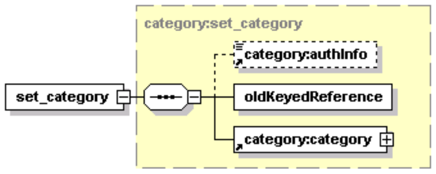
### Permissions

This API call requires API manager permission for `org.systinet.uddi.client.category.v3.CategoryApi` and the action `move_category`.

## set_category

The `set_category` API call is used to update the selected category in HP SOA Registry Foundation.

### Syntax



### Arguments

- `category:authInfo` - This optional argument is an element that contains an authentication token.
- `oldKeyedReference` - Current category to be updated.
- `category:category` - New category, that will replace selected category.

### Permissions

This API call requires API manager permission for `org.systinet.uddi.client.category.v3.CategoryApi` and the action `set_category`.

### WSDL

You can find this API's WSDL specification in the file category.wsdl [http://www.hp.com/go/hpsoftwaresupport/wsdl/category.wsdl].

### API Endpoint

You can find the Category API at `http://<host name>:<port>/uddi/category`.

### Java

Systinet Java API is generated from Category WSDL. You are encouraged to browse `org.systinet.uddi.client.category.v3.CategoryApi` and to read and try Category demos.

## Administration Utilities

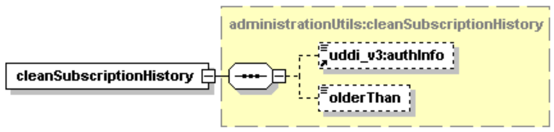
The Systinet Administration Utilities API provides an interface to perform several low level administration tasks in HP SOA Registry Foundation.

### Operations

#### cleanSubscriptionHistory

This utility removes subscription histories from HP SOA Registry Foundation. If the `olderThan` value is not specified, the utility deletes all historical data; otherwise it deletes data older than the specified value.

#### Syntax



## Arguments

- `uddi_v3:authInfo` - This optional argument is an element that contains an authentication token.
- `olderThan` - Optional argument specifying the date before which subscription history is deleted.

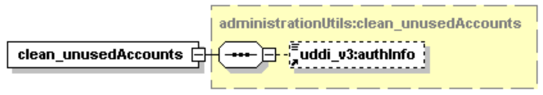
## Permissions

This API call requires API manager permissions for `org.systinet.uddi.admin.AdministrationUtilsApi` and for the cleanSubscriptionHistory action.

## clean_unusedAccounts

This utility is useful when LDAP is used as a user store. HP SOA Registry Foundation treats LDAP as read-only and all data from LDAP is mirrored to the registry's database. After you remove users from LDAP using LDAP tools, data removed from LDAP stays in the database. To remove the orphan data from the database, execute the clean_unusedAccounts operation.

## Syntax



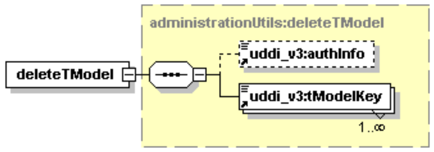
## Permissions

This API call requires API manager permissions for `org.systinet.uddi.admin.AdministrationUtilsApi` and for the clean_unusedAccounts action.

## deleteTModel

The delete_tModel API removes one or more tModels from HP SOA Registry Foundation. Note that the delete_tModel call in the UDDI version 3 specification does not physically remove the tModel from the database; it marks the tModel as deprecated. The delete_tModel call from Administration Utilities can be used to delete such deprecated tModels from the database.

### Syntax



### Arguments

- `uddi_v3:authInfo` - This optional argument is an element that contains an authentication token.
- `uddi_v3:tModelKey` - One or more required uddiKey values that represent existing tModels.

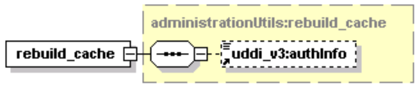
### Permissions

This API call requires API manager permission for `org.systinet.uddi.admin.AdministrationUtilsApi` and the action deleteTModel.

### rebuild_cache

Database cache stores v3 UDDI structures in database as objects. Using this cache increases performance of v3 inquiry get_business, get_service, get_binding, get_tModel and find_binding operations. On the other hand the cache synchronization take some time mainly in v1 and v2 publishing API operations. The cache can be enabled or disabled by Registry Console. By default, the cache is enabled. Each time caching is switched on, the cache is rebuilt. After the initial rebuild the cache is incrementally synchronized each time save_xxx or delete_xxx operation is performed on v1, v2, v3 publishing API. Explicit rebuild is enabled by rebuild_cache operation. This operation is suitable when data is changed by an administrator in a SQL console (note that such data changing is not recommended).

### Syntax



### Arguments

- `uddi_v3:authInfo` - This optional argument is an element that contains an authentication token.

### Permissions

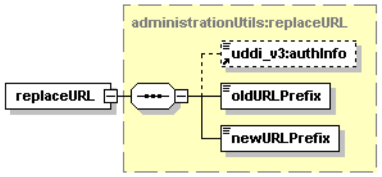
This API call requires API manager permissions for `org.systinet.uddi.admin.AdministrationUtilsApi` and for the rebuild_cache action.

## replaceURL

The replaceURL API call is used to replace URL prefixes in the following entities:

- tModel - OverviewDoc URL
- tModelInstanceInfo - overviewDoc URL and DiscoveryURL
- binding template - accessPoint URL

### Syntax



### Arguments

- `uddi_v3:authInfo` - This optional argument is an element that contains an authentication token.
- `oldURLPrefix` - old value of URL prefix
- `newURLPrefix` - new value of URL prefix

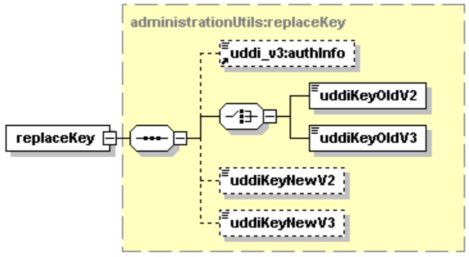
### Permissions

This API call requires API manager permission for `org.systinet.uddi.admin.AdministrationUtilsApi` and the action replaceURL.

## replaceKey

The replaceKey API call is used to change the uddiKey of a selected UDDI structure in HP SOA Registry Foundation. The key must be specified in either UDDI version 3 format or UDDI version 2 format. The optional elements `uddiKeyNewV2` and`uddiKeyNewV3` hold new values of uddiKeys for the selected UDDI structure.

### Syntax



### Arguments

- `uddi_v3:authInfo` - This optional argument is an element that contains an authentication token.
- `uddiKeyOldV2` - Value of the uddiKey of an existing UDDI structure in UDDI version 2 format.
- `uddiKeyOldV3` - Value of a uddiKey of an existing UDDI structure in UDDI version 3 format.
- `uddiKeyNewV2` - New value of the uddiKey in UDDI version 2 format.
- `uddiKeyNewV3` - New value of the uddiKey in UDDI version 3 format.

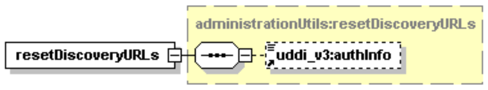
### Permissions

This API call requires API manager permission for `org.systinet.uddi.admin.AdministrationUtilsApi` and the action replaceKey.

## resetDiscoveryURLs

Sets the discoveryURL value of each businessEntity in HP SOA Registry Foundation to its default value.

### Syntax



### Arguments

- `uddi_v3:authInfo` - This optional argument is an element that contains an authentication token.

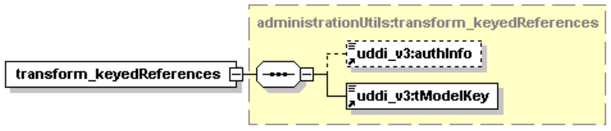
### Permissions

This API call requires API manager permission for `org.systinet.uddi.admin.AdministrationUtilsApi` and the action resetDiscoveryURLs.

## transform_keyedReferences

This operation is necessary when the type of taxonomy keyValues or the implementation of the taxonomy transformation service have been changed. For more information see, User's Guide, Taxonomy: Principles, Creation and Validation on page 247.

### Syntax


administrationUtils:transform_keyedReferences
transform_keyedReferences
uddi_v3:authInfo
uddi_v3:tModelKey

### Arguments

- `uddi_v3:authInfo` - This optional argument is an element that contains an authentication token.
- `uddi_v3:tModelKey`

### Permissions

This API call requires API manager permission for `org.systinet.uddi.admin.AdministrationUtilsApi` and the action transform_keyedReferences.

## WSDL

You can find the WSDL specification for this API in administrationUtils.wsdl [http://www.hp.com/go/hpsoftwaresupport/wsdl/administrationUtils.wsdl].

## API Endpoint

You can find the Administration Utilities API endpoint at `http://<host name>:<port>/uddi/administrationUtils`.

## Java

The Systinet Java API is generated from Administration Utils WSDL. You are encouraged to browse `org.systinet.uddi.admin.AdministrationUtilsApi` for more information.

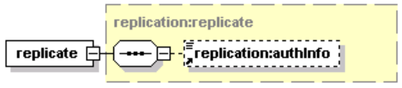
## Replication

The Replication API is used to launch replications in HP SOA Registry Foundation.

## Operations

### Replicate

The `replicate` API call is used to immediately start replications.



#### Arguments

- `authInfo` - This optional argument is an element that contains an authentication token.

#### Behavior

When this API call is invoked, it stops the scheduling of replications and, if needed, waits until the completion of current replications. It then starts a new replication process in which replications are rescheduled from this time with the normal replication interval. This results in one of two scenarios:

- If no replications are in process when the `replicate` call is made, the call stops the replication schedule, runs the replication, and restarts the schedule from the time the call was made. For example, if replications had been scheduled on the hour, and the call is made at 9:15, replications will then occur at 10:15, 11:15, and so forth.

- If there is a replication in process when the `replicate` call is made, scheduling is stopped, the call waits for the current process to conclude, runs the replication, and restarts schedule from the time the call was made as in the previous scenario.

### WSDL

You can find the WSDL specification in the file replication_v3.wsdl [http://www.hp.com/go/hpsoftwaresupport/wsdl/replication_v3.wsdl].

### API Endpoint

You can find the Replication API endpoint at `http://<host name>:<port>/uddi/replication`.

### Java

The Systinet Java API is generated from the Replication WSDL. You are encouraged to browse its `org.systinet.uddi.replication.v3.ReplicationApi`.

## Statistics

The Systinet Statistics API provides useful information about HP SOA Registry Foundation usage.

### Data Structures

The following structures are used by the Systinet Statistics API:

#### accessStatisticsDetail

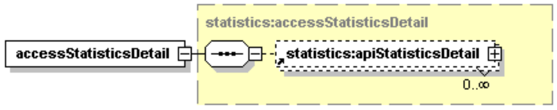

accessStatisticsDetail
statistics:accessStatisticsDetail
statistics:apiStatisticsDetail
0..∞

**Table 47. Attributes**

| Attribute | Required |
|---|---|
| `enable` | yes |

This structure is a container for zero or more `apiStatisticsDetail` elements. The `enable` attribute is used to distinguish whether the returned data is consistent or not. If set to false, the Statistics interceptor has been configured not to run and returned data will be outdated.

## apiStatisticsDetail

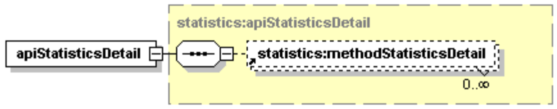

statistics:apiStatisticsDetail
apiStatisticsDetail
statistics:methodStatisticsDetail
0..∞

**Table 48. Attributes**

| Attribute | Required |
|---|---|
| `apiName` | Yes |
| `requestCount` | Yes |
| `exceptionCount` | Yes |
| `lastCall` | Yes |

This structure contains information about usage of the API specified in the attribute `apiName` and its methods. It also serves as a container for `methodStatisticsDetail` elements.

The `requestCount` attribute holds a number indicating how many times this API has been used since its last reset or since HP SOA Registry Foundation installation.

The `exceptionCount` attribute indicates the number of exceptions that have interrupted execution of the API's methods.

The `lastCall` attribute contains the time this API was last invoked.

### methodStatisticsDetail

**Table 49. Attributes**

| Attribute | Required |
|---|---|
| `methodName` | Yes |
| `requestCount` | Yes |
| `exceptionCount` | Yes |
| `lastCall` | Yes |

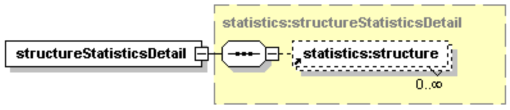
This element contains information about usage of the method specified in the attribute `methodName`.

The `requestCount` attribute holds a number indicating how many times this method has been called since its last reset or since HP SOA Registry Foundation installation.

The `exceptionCount` attribute indicates the number of exceptions that have interrupted execution of this method.

The `lastCall` attribute contains the time this method was last invoked.

### structureStatisticsDetail


statistics:structureStatisticsDetail
structureStatisticsDetail
statistics:structure
0..∞

This structure serves as a container for the `structure` element.

### Structure

**Table 50. Attributes**

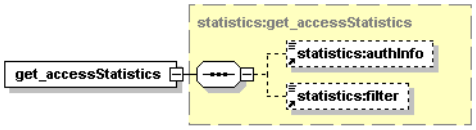
| Attribute | Required |
|---|---|
| `name` | Yes |
| `count` | Yes |

The `structure` element indicates how many UDDI structures of the type given by the `name` attribute are stored in the registry.

## Operations

### get_accessStatistics

The get_accessStatistics API call is used to fetch information about usage of selected UDDI APIs in HP SOA Registry Foundation. The `filter` element is used to specify which APIs' statistics will be returned. If it is empty, the statistics for all APIs are returned.



#### Arguments

- `statistics:authInfo` - This optional argument is an element that contains an authentication token.
- `statistics:filter` - Optional regular expression to match selected APIs by their name. The wildcard characters `?` and `*` are supported.

#### Returns

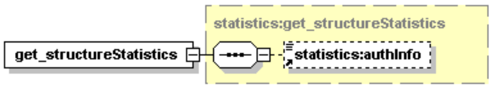
Upon successful completion, an accessStatisticsDetail structure is returned.

#### Permissions

This API call requires API manager permission for `org.systinet.uddi.statistics.StatisticsApi` and the action get_accessStatistics.

### get_structureStatistics

The get_structureStatistics API call is used to get overview information about how many UDDI structures is stored within HP SOA Registry Foundation.



### Arguments

- `statistics:authInfo` - This optional argument is an element that contains an authentication token.

### Returns

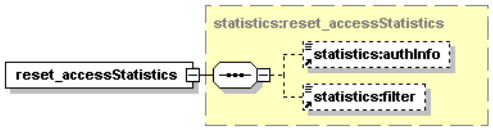
Upon successful completion, an structureStatisticsDetail structure is returned.

### Permissions

This API call requires API manager permission for `org.systinet.uddi.statistics.StatisticsApi` and the action get_structureStatistics.

## reset_accessStatistics

The reset_accessStatistics API call is used to reset API usage statistics in HP SOA Registry Foundation. The optional `filter` element is used to limit affected APIs, if it is not set, statistics for all APIs is removed.



### Arguments

- `statistics:authInfo` - This optional argument is an element that contains an authentication token.
- `statistics:filter` - Optional regular expression to match selected APIs by their name. The wildcard characters `?` and `*` are supported.

### Permissions

This API call requires API manager permission for `org.systinet.uddi.statistics.StatisticsApi` and the action reset_accessStatistics.

### WSDL

You can find the WSDL specification in the file statistics.wsdl [http://www.hp.com/go/hpsoftwaresupport/wsdl/statistics.wsdl].

## API Endpoint

You can find the Statistics API endpoint at `http://<host name>:<port>/uddi/statistics`.

## Java

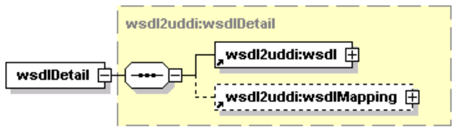
Systinet Java API is generated directly from WSDL. You are encouraged to browse `org.systinet.uddi.statistics.StatisticsApi`.

## WSDL Publishing

HP SOA Registry Foundation WSDL-to-UDDI mapping is compliant with OASIS's Technical Note, Using WSDL in a UDDI registry Version 2.0 [http://www.oasis-open.org/committees/uddi-spec/doc/tn/uddi-spec-tc-tn-wsdl-v2.htm]. It enables the automatic publishing of WSDL documents to UDDI, enables precise and flexible UDDI queries based on specific WSDL artifacts and metadata, and provides a consistent mapping for UDDI v2 and UDDI v3.

## Data Structures

### wsdlDetail

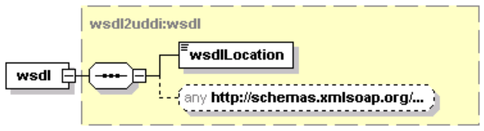


wsdlDetail completes information about the WSDL to be mapped.

### Arguments

- `wsdl2uddi:wsdl` - Contains URI or physical location of mapped WSDL.
- `wsdl2uddi:wsdlMapping` - Describes `wsdl:types` to be mapped.

### wsdl

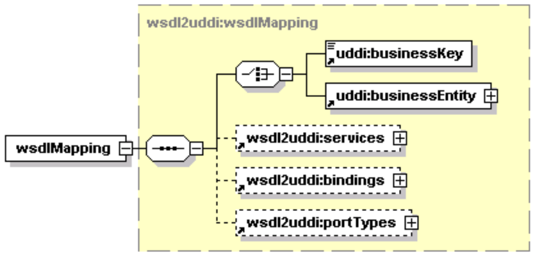


WSDL contains information about location of a mapped WSDL.

## Arguments

- `wsdlLocation` - The URI or physical location of a mapped WSDL.
- `any` - Used to make extensible documents (see XML schema [http://www.w3.org/TR/xmlschema-1/]). It is generally used as the DOM pattern of a mapped WSDL.

## wsdlMapping



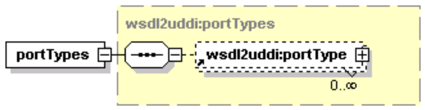
WsdlMapping describes the `wsdl:types` to be mapped. It is used to alter the default behavior of mapping the specified WSDL. In contained structures, it is possible to describe each mapped `wsdl:type` correctly. This is to ensure exact mapping and prevent duplication of data in the registry.

## Arguments

- `uddi:businessKey` - Represents the businessKey of an existing `uddi:businessEntity` to which the assigned `wsdl:types` will be mapped.
- `uddi:businessEntity` - Represents an existing businessEntity to which the assigned `wsdl:types` will be mapped.
- `wsdl2uddi:porttypes` - Represents the container of `wsdl:portTypes` to be mapped. `wsdl2uddi:porttypes` makes it possible map a `uddi:tModel` to its corresponding `wsdl:portType` .
- `wsdl2uddi:bindings` - Represents the container of `wsdl:bindings` to be mapped. `wsdl2uddi:bindings` makes it possible to map a `uddi:tModel` to its corresponding `wsdl:binding`.
- `wsdl2uddi:services` - Represents the container of `wsdl:services` to be mapped. `wsdl2uddi:services` makes it possible to map a `uddi:businessService` to its corresponding `wsdl:service`.

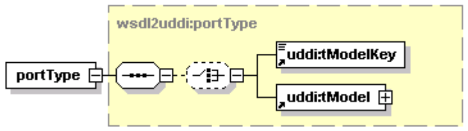
Note that `uddi:businessKey` and `uddi:businessEntity` are mutually exclusive.

## portTypes



The portTypes structure is a simple container of one or more `wsdl2uddi:portTypes`.

## portType



PortType represents a mapping of `wsdl:portType` in UDDI. It contains information necessary to map the `wsdl:portType` to a corresponding `uddi:tModel` accurately.

### Arguments

- `uddi:tModelKey` - Represents the tModelKey of an existing `uddi:tModel` which will be reused or rewritten (depending on the publishingMethod selected by the user) with data from `wsdl:portType`.

- `uddi:tModel` - Represents an existing `uddi:tModel` which will be reused or rewritten (depending on the publishingMethod selected by the user) with data from `wsdl:portType`.

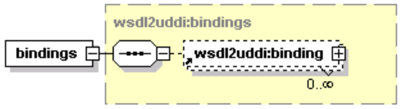
Note that uddi:tModelKey and uddi:tModel are mutually exclusive.

**Table 51. Attributes**

| Name | Required |
|---|---|
| `name` | optional |
| `namespace` | optional |
| `publishingMethod` | optional |

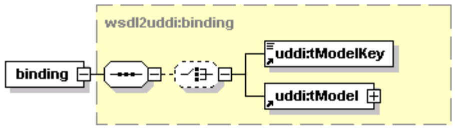
These attributes describe the `wsdl:portType` of the appropriate WSDL. `Name` and `namespace` represent the `wsdl:portType` QName. `publishingMethod` represents an enumeration of available mapping use cases. It can be set to `rewrite`, `create`, `reuse`, or `ignore`. The default publishingMethod is `reuse`.

## Bindings



The bindings structure is a simple container of one or more `wsdl2uddi:bindings`.

## binding



A binding represents a mapping of `wsdl:binding` in UDDI. It contains information necessary for the precise mapping of a `wsdl:binding` to the appropriate `uddi:tModel`.

## Arguments

- `uddi:tModelKey` - Represents the tModelKey of an existing `uddi:tModel` which will be reused or rewritten (depending on the publishingMethod selected by the user) with data from `wsdl:binding`.
- `uddi:tModel` - Represents an existing `uddi:tModel` which will be reused or rewritten (depending on the publishingMethod selected by the user) with data from `wsdl:binding`.

➤ Note that uddi:tModelKey and uddi:tModel are mutually exclusive.

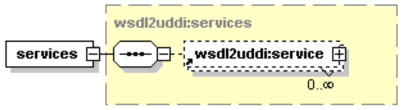
### Table 52. Attributes

| Name | Required |
|---|---|
| name | optional |
| namespace | optional |
| publishingMethod | optional |

These attributes describe the wsdl:binding from the appropriate WSDL. Name and namespace represent the wsdl:binding QName.

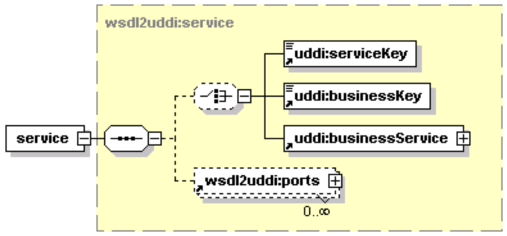
publishingMethod represents an enumeration of the available mapping use cases. It can be set to rewrite, create, reuse, or ignore. The default publishingMethod is reuse.

## Services



The services structure is a simple container of one or more wsdl2uddi:services.

## service



Service represents the mapping of wsdl:service in UDDI. It contains information necessary to map a wsdl:service to the appropriate uddi:businessService precisely.

## Arguments

- uddi:businessKey - represents businessKey of an existing uddi:businessEntity to which the translated wsdl:service will be stored.
- uddi:serviceKey - represents the serviceKey of an existing uddi:businessService which will be reused or rewritten (depending on the publishingMethod selected by user) with data from wsdl:service.
- uddi:businessService - represents an existing uddi:businessService which will be reused or rewritten (depending on the publishingMethod selected by user) with data from wsdl:service.
- wsdl:ports - represents existing uddi:bindingTemplates which will be reused or rewritten (depending on the publishingMethod selected by user) with data from wsdl:service ports.

Note that uddi:serviceKey and uddi:businessService are mutually exclusive.

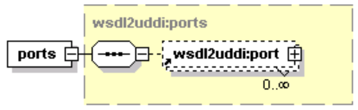
**Table 53. Attributes**

| Name | Use |
|---|---|
| name | optional |
| namespace | optional |
| publishingMethod | optional |

These attributes describe the wsdl:service from an appropriate WSDL. Name and namespace represents the wsdl:service QName.

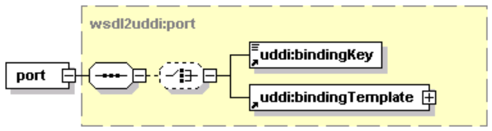
publishingMethod represents an enumeration of available mapping use cases. It can be set to rewrite, create, reuse, or ignore. The default publishingMethod is reuse.

### ports



The ports structure is a simple container for one or more wsdl2uddi:ports.

## port



Port represents a mapping of `wsdl:port` in UDDI. It contains information necessary to map the `wsdl:port` to the appropriate `uddi:bindingTemplate` precisely.

### Arguments

- `uddi:bindingKey` - Represents the bindingKey of an existing `uddi:bindingTemplate` which will be reused or rewritten (depending on the publishingMethod selected by user) with data from `wsdl:port`.

- `uddi:bindingTemplate` - Represents an existing `uddi:bindingTemplate` which will be reused or rewritten (depending on the publishingMethod selected by user) with data from `wsdl:service`.

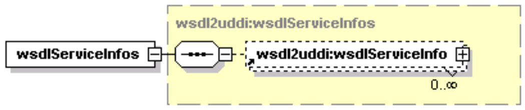
Note that `uddi:bindingKey` and `uddi:bindingTemplate` are mutually exclusive.

**Table 54. Attributes**

| Name | Required |
|---|---|
| `name` | optional |
| `publishingMethod` | optional |

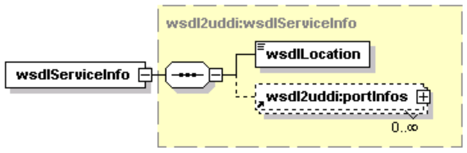
These attributes describe the `wsdl:port` from an appropriate WSDL.`Name` represents the `wsdl:port` name. `publishingMethod` represents an enumeration of available mapping use cases. It can be set to `rewrite`, `create`, or `reuse`. The default publishingMethod is `reuse`.

## wsdlServiceInfos



The wsdlServiceInfo structure is a simple container of one or more `wsdl2uddi:wsdlServiceInfos`.

## wsdlServiceInfo



The wsdlServiceInfo completes information about the wsdlLocation and `uddi:businessService` being searched.

## Arguments

- `wsdlLocation` - The URI or physical location of a WSDL.
- `wsdl2uddi:portInfos` - Container for wsdl2uddi:ports which contain the `wsdl:port` mapped to the appropriate `uddi:bindingTemplate`.

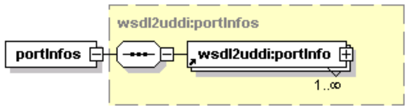
**Table 55. Attributes**

| Name | Required |
|---|---|
| `name` | required |
| `namespace` | required |
| `serviceKey` | required |

These attributes describes how the `wsdl:service` is mapped from the appropriate WSDL. `Name` and `namespace` represent the `wsdl:service` QName.

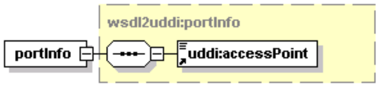
The `serviceKey` represents the `uddi:businessService` on which the `wsdl:service` is mapped.

## PortInfos



The portInfos structure is a simple container of one or more `wsdl2uddi:portInfos`.

## portInfo



The portInfo completes information about `uddi:bindingTemplates` used in the `uddi:businessService` being searched.

## Arguments

- `uddi:accessPoint` contains information about accessing the `uddi:businessService` being searched.

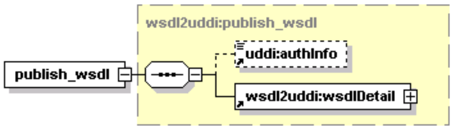
**Table 56. Attributes**

| Name | Required |
|---|---|
| `name` | required |
| `bindingKey` | required |

These attributes describe how the `wsdl:port` is mapped from the appropriate WSDL. `Name` represents the `wsdl:port` name. `BindingKey` represents the `uddi:bindingTemplate` on which the `wsdl:port` is mapped.

## Operations

## publish_wsdl



Publish_wsdl ensures the publishing of a WSDL to a UDDI registry. It uses the Publishing API to store translated `wsdl:types` to the UDDI registry. For more information about the Publishing API, please see UDDI v3 - publishing API [http://uddi.org/pubs/uddi_v3.htm#_Toc53709290]).

By default UDDI entities are rewritten by data contained in `wsdl:types` as follows: Each `wsdl:type` is first searched on the specified registry. The found UDDI entity is rewritten, or a new entity is created if one is not found. However, the user can specify how the `wsdl:types` will be published to the registry.

You can alter the default publish behavior and define which `wsdl:types` will be mapped on the appropriate UDDI entity and, naturally, whether the UDDI entity will be created, rewritten, or reused.

For more information about publish behavior and its use cases, see publishingMethod. Below are some rules by which `wsdl:types` are assigned to the appropriate UDDI entities depending on whether the `wsdl:type` is found on the user account or on a foreign account. Note that `wsdl:services` are searched only on the user's account, unlike `wsdl:portType` or `wsdl:binding`. This is because it is preferable to use tModels from a foreign account rather then tModels translated from a WSDL.

## publishingMethod

PublishingMethod describes the behavior of the publish operation. In accordance with the set behavior, the corresponding `wsdl:type` will be mapped to the UDDI registry.

Note that publish_wsdl is set to `reuse` by default. However, if a user wants to rewrite an entity or a create a new entity, the default behavior can be changed from "reuse" to "rewrite" or "create" to ensure unique mapping.

`Use cases`

- `rewrite` - `wsdl:type` is searched on the registry and the found UDDI structure is redrawn by data of that `wsdl:type`. If the `wsdl:type` is not found, a new one will be created.
- `reuse` - The default behavior of the publish operation. Using this behavior, the user is able to reuse an entire existing UDDI structure. The found UDDI entity will not be redrawn by data of that `wsdl:type`. Note that when using this method, inconsistencies may occur between the published `wsdl:type` and the corresponding UDDI entity. This behavior should be helpful when we need to use existing tModels instead of tModels mapped from `wsdl:portTypes` or `wsdl:bindings` (For example, `uddi:hostingRedirectors`).
- `create` - This method is used mainly for testing purposes. By using this behavior a new UDDI entity is created from the `wsdl:type` regardless of whether the UDDI entity already exists on the registry.

  When using this behavior, undesirable duplications may occur. It is necessary to use this behavior carefully.

- `ignore` - This method is used when you do not want to publish the UDDI entity. You can restrict which parts of the WSDL document will be published.

## Arguments

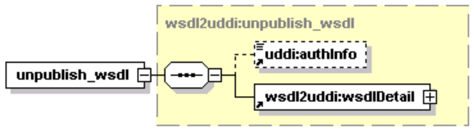
- `uddi:authInfo` - This required argument is the string representation of the `uddi:authToken`.
- `wsdl2uddi:wsdlDetail` - Completes WSDL location and user-defined WSDL mapping rules. For more information, please see wsdl2uddi:wsdlDetaill.

  Here the user can specify which `wsdl:type` from the WSDL corresponds to the entity on the target registry and how the specified `wsdl:type` will be mapped. For more information, please see wsdl2uddi:publishingMethod.

## Returns

`wsdl2uddi:wsdlDetail` - Contains detailed information about how the individual `wsdl:types` are published. For more information, please see wsdl2uddi:wsdlDetaill.

## unpublish_wsdl



Unpublish_wsdl ensures unpublishing of WSDL from UDDI registry. It uses the Publishing API to delete UDDI entities corresponding to `wsdl:types` from a UDDI registry. For more information about the Publishing API, please see UDDI v3 - publishing API [http://uddi.org/pubs/uddi_v3.htm#_Toc53709290].

Each `wsdl:type` is first searched on the specified registry. The found UDDI entity is deleted or if the entity is not found it is simply omitted. Found tModels are either physically deleted or only marked as `deprecated` in accordance with configuration. (When tModels are deleted by their owners, they are generally marked as deprecated. Usually only the administrator can permanently delete deprecated tModels from the registry. )

## Arguments

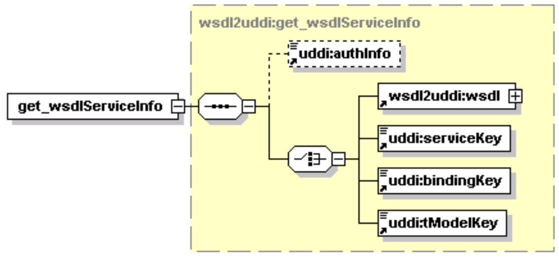
- `uddi:authInfo` - This required argument is the string representation of the `uddi:authToken`.
- `wsdl2uddi:wsdlDetail` - completes the WSDL location and user-defined WSDL unpublish rules. For more information, please see wsdl2uddi:wsdlDetaill. Here the user can specify which `wsdl:type` from a WSDL

corresponds to the UDDI entity existing on the target registry. This is because that `wsdl:type` can occur more than once on a registry.

### Returns

`wsdl2uddi:wsdlDetail` - Contains detailed information about how individual `wsdl:types` are unpublished from a target registry. For more information, please see wsdl2uddi:wsdlDetaill.

## get_wsdlServiceInfo



Get_wsdlServiceInfo discovers `uddi:businessServices` corresponding to `wsdl:services` from a particular WSDL. It uses the Inquiry API to get UDDI entities matching `wsdl:types`. For more information about the Inquiry API, please see UDDI-inquiry API [http://uddi.org/pubs/uddi_v3.htm#_Toc53709271].

This operation discovers corresponding UDDI entities either on the user's account or on the foreign account (in accordance with the specified `uddi:authInfo`). In consideration with multiple occurrences of UDDI entities corresponding to `wsdl:types`, the search algorithm optimizes output in accordance with relations between individual `wsdl:types` from the given WSDL. Only the wsdl2uddi:wsdlServiceInfo corresponding exactly to the `wsdl:service` from the WSDL (that is, that contains all `wsdl:types` from the appropriate WSDL) will be returned.

### Arguments

- `uddi:authInfo` - This optional argument is the string representation of the `uddi:authToken`.
- `wsdl2uddi:wsdl` - An argument used to discover wsdl2uddi:wsdlServiceInfos. This argument ensures that only the `uddi:businessService` corresponding exactly to the `wsdl:service` from that WSDL will be returned. For more information, please see wsdl2uddi:wsdl ).

- `uddi:serviceKey` - `uddi:serviceKey` of `uddi:businessService` existing on the target registry. Note that only `uddi:businessServices` containing a "WSDL Type Category System" (that is, the `uddi:categoryBag` of a found `uddi:businessService` must contain a `uddi:keyedReference` with a `uddi:tModelKey` representing "WSDL Type Category System" and the keyValue "service") will be returned.

- `uddi:bindingKey` - `uddi:bindingKey` of `uddi:bindingTemplate` existing on the target registry. For UDDI v3 holds that only uddi:businessServices which contain `uddi:bindingTemplate` corresponding to a given `uddi:bindingKey` with the "WSDL Type" Category System. (that is, the `uddi:categoryBag` of a found `uddi:bindingTemplate` must contain `uddi:keyedReference` with `uddi:tModelKey` representing "WSDL Type Category System" and the keyValue "binding") will be returned. Naturally this "WSDL Type Category System" must also be contained in the appropriate `uddi:businessService`.

  Note that `uddi:bindingTemplates` in v2 do not contain `uddi:categoryBag`. Even though the found `uddi:bindingTemplate` must contain `uddi:tModels` compliant with "WSDL Type Category System" in its uddi:tModelInstanceDetails.

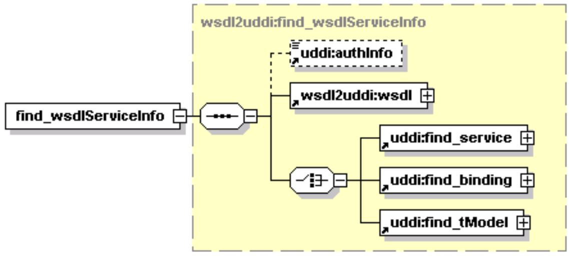
- `uddi:tModelKey` - the `uddi:tModelKey` of the `uddi:tModel` existing on the target registry. Note that only uddi:businessServices which use uddi:tModels compliant with "WSDL Type Category System" will be returned. That is, the `uddi:categoryBag` of the found `uddi:tModel` must contain `uddi:keyedReference` with `uddi:tModelKey` representing "WSDL Type Category System" and the keyValue "binding" or "portType"). Naturally, this "WSDL Type Category System" must also be contained in the appropriate `uddi:businessService`.

Note that `wsdl2uddi:wsdl`, `uddi:serviceKey`, `uddi:bindingKey` and `uddi:tModelKey` are mutually exclusive.

### Returns

`wsdl2uddi:wsdlServiceInfos` - Contains UDDI entities corresponding to `wsdl:types` from the specified WSDL. For more information, please see wsdl2uddi:wsdlServiceInfos.

## find_wsdlServiceInfo



This operation is a bit more complex than wsdl2uddi:get_wsdlServiceInfo. Find_wsdlServiceInfo discovers `uddi:businessServices` corresponding to `wsdl:services` from a particular WSDL. It uses the Inquiry API to find UDDI entities matching `wsdl:types`. For more information about the Inquiry API, please see UDDI-inquiry API [http://uddi.org/pubs/uddi_v3.htm#_Toc53709271]).

This operation discovers corresponding UDDI entities either on the user's account or on a foreign account (in accordance with the specified `uddi:authInfo`). In consideration for multiple occurrence of UDDI entities corresponding to `wsdl:types`, the search algorithm optimizes output in accordance with relations between individual `wsdl:types` from the specified WSDL and the `uddi:find_xx` structure specified by the user. Only the wsdl2uddi:wsdlServiceInfo corresponding exactly to the wsdl:service from the WSDL will be returned, that is, the wsdl2uddi:wsdlServiceInfo containing all `wsdl:types` from the appropriate WSDL at once, and satisfying the user's defined `uddi:find_xx`.

### Arguments

- `uddi:authInfo` - This optional argument is the string representation of the `uddi:authToken`.
- `wsdl2uddi:wsdl` - required argument used to discover wsdl2uddi:wsdlServiceInfos. This argument ensures that only the `uddi:businessService` corresponding exactly to the `wsdl:service` from that WSDL will be returned. For more information, please see wsdl2uddi:wsdl.
- `uddi:find_service` - Argument used for a more detailed description of search criteria. For more information, see uddi:find_service [http://uddi.org/pubs/uddi_v3.htm#_Toc53709283]. Found `uddi:businessServices` must follow the same rules as in the case of wsdl2uddi:get_wsdlServiceInfo.
- `uddi:find_binding` - Argument used for a more detailed description of search criteria. For more information, see uddi:find_binding [http://uddi.org/pubs/uddi_v3.htm#_Toc53709280]. Found `uddi:businessServices` and `uddi:bindingTemplates` must follow the same rules as in the case of wsdl2uddi:get_wsdlServiceInfo.

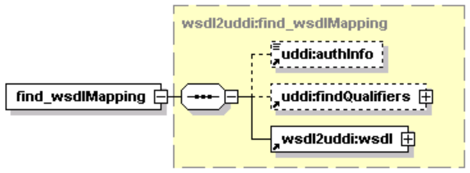
- `uddi:find_tModel` - Argument used for a more detailed description of search criteria. For more information, see uddi:find_tModel [http://uddi.org/pubs/uddi_v3.htm#_Toc53709284]. Found UDDI entities must follow the same rules as in the case of wsdl2uddi:get_wsdlServiceInfo.

Note that `uddi:find_service`, `uddi:find_binding` and `uddi:find_tModel` are mutually exclusive.

### Returns

`wsdl2uddi:wsdlServiceInfos` - Contains UDDI entities corresponding to `wsdl:types` from the specified WSDL. For more information, please see wsdl2uddi:wsdlServiceInfos.

## find_wsdlMapping



This operation finds mapping of the WSDL document.

### Arguments

- `uddi:authInfo` - This argument is the string representation of the `uddi:authToken`.
- `uddi:findQualifiers` - See Find Qualifiers [http://uddi.org/pubs/uddi-v3.0.1-20031014.htm#_Toc53709275]
- wsdl2uddi:wsdl

### Returns

This operation returns wsdl2uddi:wsdlMapping.

### WSDL

wsdl2uddi_v2.wsdl.wsdl [http://www.hp.com/go/hpsoftwaresupport/wsdl/wsdl2uddi_v2.wsdl]

wsdl2uddi_v3.wsdl.wsdl [http://www.hp.com/go/hpsoftwaresupport/wsdl/wsdl2uddi_v3.wsdl]

## API Endpoint

You can find the WSDL2UDDI API endpoint at `http://<host name>:<port>/uddi/wsdl2uddi`.

## Java

`org.systinet.uddi.client.wsdl2uddi.v3.Wsdl2uddiApi`

Demos v2: WSDL2UDDI demos

Demos v3: WSDL2UDDI demos

## XSD Publishing

Systinet XSD-to-UDDI mapping enables the automatic publishing of XML Schema Documents into UDDI and enables precise, flexible UDDI queries based on specific XML schema metadata.

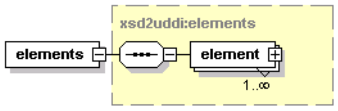
The mapping of XML Schema Document information to UDDI covers:

- XML types - Types declared at the global level in the XML Schema Document. These types are mapped to tModels in UDDI.
- XML elements - XML elements declared at the global level in the XML Schema Document. These elements are mapped to tModels in UDDI.
- References to other XML namespaces - Information about imported schemas are stored in the registry.

The API allows the user to search for an schema's tModels based on the namespace they define, or the elements and types they declare within that namespace. The API can also extract the published information back from the registry, so it can be accessed as a list of elements, types, and schemas rather than tModels and other UDDI entities.

### Data Structures

#### Elements

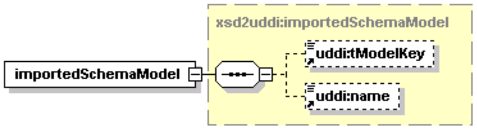


This structure represents elements declared by the published XML Schema Document.

### Arguments

- `element` - This argument represents an element declared by the published XML Schema Document.

## importedSchemaModel

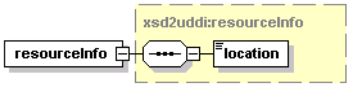


This structure contains the basics of the imported XML Schema tModel.

### Arguments

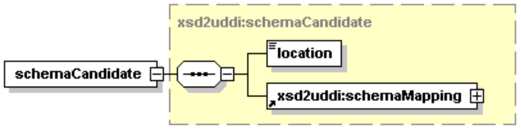
- `uddi:tModelKey` - The key of the tModel of the schema of the imported XML namespace.
- `uddi:name` - The name of that schema's tModel.

## resourceInfo



This structure describes the location of the XML Schema Document.

## schemaCandidate



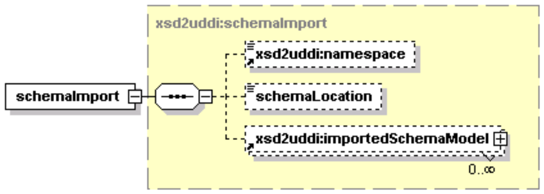
This structure holds possible mappings of how the XML Schema Document can be published.

### Arguments

- `location` - The location of the candidate XML Schema Document.

- `xsd2uddi:schemaMapping` - The mapping of the candidate XML Schema Document contents

## schemaImport

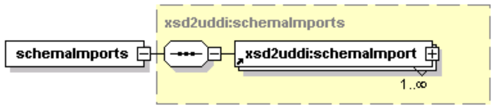


This structure holds the imported namespace, that is, the list of possible mappings for this `xsd:import`, for an `xsd:import` clause in the XML Schema Document. If a specific location is specified in the XML Schema Document text for the imported XML Schema Document, it is also present.

## Arguments

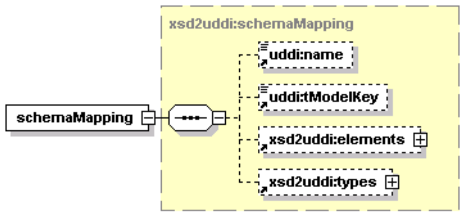
- `xsd2uddi:namespace` - The imported namespace. If missing, a no-namespaced XML schema is imported
- `schemaLocation` - The location for the XML Schema Document, if given explicitly. If the imported XML Schema Document does not specify an exact schema location, this value is null.
- `xsd2uddi:importedSchemaModel` - The tModel information of the candidates for this import.

## schemaImports



This structure describes a list of `xs:imports` in the schema.

## schemaMapping

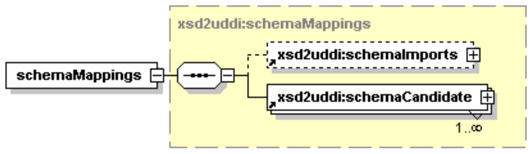


This structure describes a mapping of the XSD contents to an individual XSD tModel and its contents.

### Arguments

- `uddi:name` - Name of the XML Schema tModel.
- `uddi:tModelKey` - tModelKey for the XML Schema tModel
- `xsd2uddi:elements` - Mapping for contained XML elements
- `xsd2uddi:types` - Mapping for contained XML types.

## schemaMappings

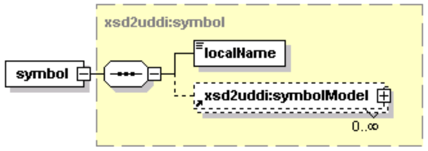


This structure describes a mapping from the contents of a XML Schema Document to UDDI entities. There are two parts. The first part describes possible matches for `xs:imports` specified by the XML Schema Document; the second, individual candidates that may match the XML Schema Document contents. The candidate structure then contains a mapping of the XML Schema Document onto the particular candidate tModel and the related UDDI entities.

### Arguments

- `xsd2uddi:schemaImports` - mapping for referenced (imported) XML Schema Documents.
- `xsd2uddi:schemaCandidate` - an individual mapping candidate.

## symbol

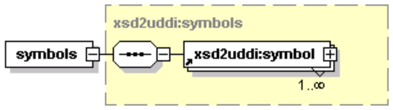


This structure holds mapping of an individual symbol (XSD element and type) to the registry.

### Arguments

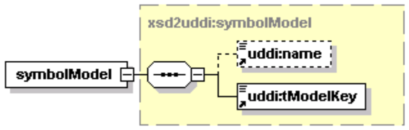
- `localName` - Local name of the mapped symbol.
- `xsd2uddi:symbolModel` - The basics of the tModel that represents the symbol.

## symbols



A common structure for mapping types and elements.

## symbolModel

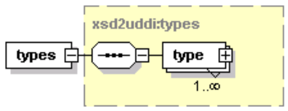


Basic information about a tModel that represents an element or a type declared by the XML Schema Document

### Arguments

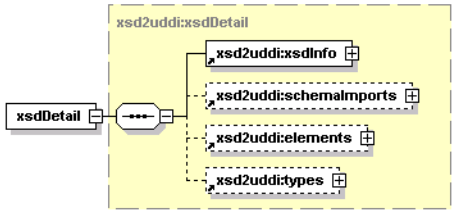
- `uddi:name` - Name of the symbol's tModel. This argument is optional when publishing a XML Schema Document; it is always filled in API responses.
- `uddi:tModelKey` - tModelKey of the symbol's model

## types



Mapping of types declared by the XML Schema Document being mapped

## xsdDetail

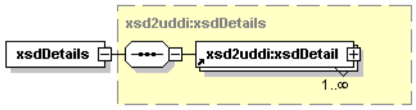


The structure provides detailed information about a specific XML Schema Document, its contents and its references.

## Arguments

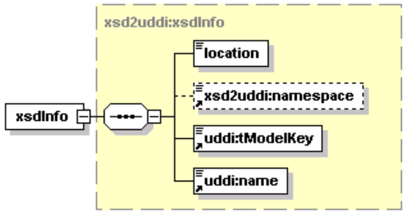
- `xsd2uddi:xsdInfo` - General information about the XML Schema Document itself
- `xsd2uddi:schemaImports` - Information about XML namespaces imported into the XML Schema Document
- `xsd2uddi:elements` - List of elements in the schema
- `xsd2uddi:types` - List of types in the schema

## xsdDetails



Details of the XSD

## xsdInfo



This structure holds general information about the XML Schema Document.

### Arguments

- `location` - The location of the XML Schema Document. This location can be used to retrieve the contents
- `xsd2uddi:namespace` - The URI of the XML namespace defined by the XML Schema Document
- `uddi:tModelKey` - tModel key for the schema's tModel
- `uddi:name` - tModel name for the schema's tModel

## xsdResourceList

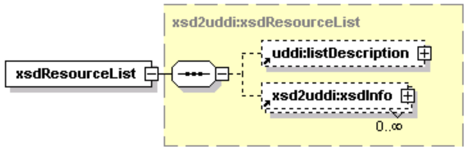


**Table 57. Attributes**

| Name | Required |
|---|---|
| `truncated` | optional |

This structure holds a list of XSDs, returned from a find_xsd call.

### Arguments

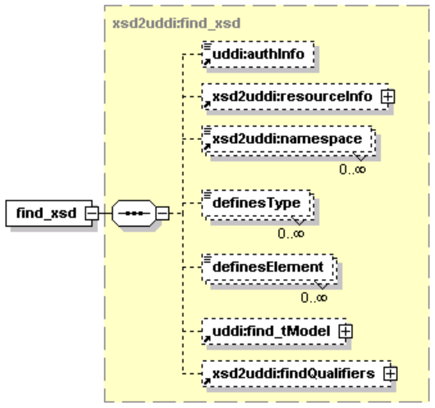
- `uddi:listDescription` - holds a list of descriptions as specified in UDDI's API documentation.

- `xsd2uddi:xsdInfo` - holds information about individual registered XSD models.

## Operations

### find_xsd

#### Syntax



This operation finds the XML Schema Document. The caller can limit the number of search results to be returned and can iterate through the search results using the `listHead` and `maxRows` arguments.

The name and URI lists passed as the input search criteria may use wildcard characters provided that the `approximateMatch` findQualifier is present. If the `ownEntities` findQualifier is used, the operation returns only entities owned by the authenticated user. Other entities are not returned even though they match the other search criteria.

**Table 58. Attributes**

| Name | Required |
|---|---|
| `listHead` | optional |
| `maxRows` | optional |

#### Arguments

- `uddi:authInfo` - This optional argument is the string representation of the uddi:authToken.

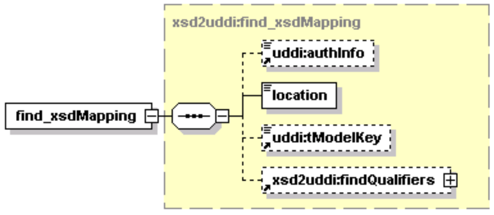
- `xsd2uddi:resourceInfo` - URI location of the published XML Schema Document. The registry does not read from the location, it is used as a search criteria for the current UDDI contents only.
- `xsd2uddi:namespace` - Allows to search by the namespace defined by a XML Schema Document. Contains a list of XML namespace URIs. An XML Schema Document satisfies this condition if its `targetNamespace` attribute is among the URIs.
- `definesType` - Allows the user to search by defined type. Contains a list of type names. An XML Schema Document satisfies this condition if it defines a global type with a name passed in the list.
- `definesElement` - The returned schemas must define the named element.
- `uddi:find_tModel` - An argument used for a more detailed description of search criteria. For more information, see uddi:find_tModel [http://uddi.org/pubs/uddi_v3.htm#_Toc53709284]. These criteria are combined with the other criteria specified by the `find_xsd` structure. In the case of a conflict, the criteria in `find_xsd` take precedence.

### Returns

This API call returns thexsdResourceList on success. If the caller specifies the `maxRows` attribute, the returned `xsdResourceList` will contain, at most, that many results. Note that the search may yield a tModel, which does not entirely comply with the XSD-to-UDDI mapping specification, such as when the tModel information is altered manually. In these cases, an attempt to use get_xsdDetail on such a tModel will produce an exception.

## find_xsdMapping

### Syntax



This operation finds a suitable mapping for contents of the given XML Schema Document. The operation downloads and parses the XML Schema Document at the given location, and matches the contents against the information already published in the registry. It will produce zero or more possible mappings for the given XML Schema Document.

The caller may request that the mapping is attempted only against a specific tModel that represents an XML Schema Document. In that case, only one mapping will be returned.

If the document at the specified location, or one of its dependencies (for example, schemas for XML namespaces which the document imports) are not accessible to the registry, an exception will be raised. If the document is not an XML schema or contains errors, the operation will throw an exception.

### Arguments

- `uddi:authInfo` - (Optional) - authentication
- `xsd2uddi:resourceInfo` - The XSD identification (location)
- `uddi:tModelKey` - (Optional), the proposed schema tModel whose contents should be matched. If set, only published contents of that XML Schema Document will be considered for mapping.

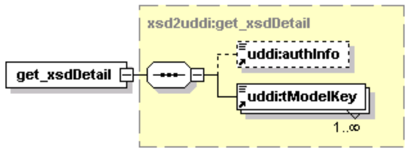
### Returns

This API call returns `xsd2uddi:schemaMapping` upon success. The structure contains possible matches for the XML Schema Document at the specified location, which are already stored in the UDDI. There are also possible matches for the XML Schema Documents for XML namespaces imported into the main XML Schema Document.

The call will fail if it cannot access the XML Schema Document or one of its dependencies.

## get_xsdDetail

### Syntax



Gets the detail about a published XML Schema Document tModels.

## Arguments

- `uddi:authInfo` - This optional argument is the string representation of the `uddi:authToken`.
- `uddi:tModelKey` - Required uddiKey value representing an existing XML Schema Document tModel.

## Returns

This API call returns the xsd2uddi:xsdDetails.

If the passed tModelKey does not exist, or identifies a tModel that does not represent an XML Schema Document, an exception is raised.

## publish_xsd

## Syntax

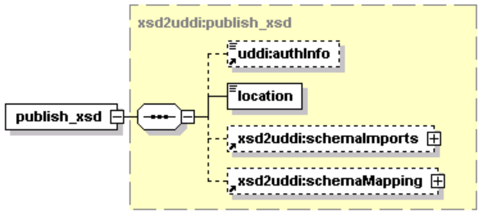


**Table 59. Attributes**

| Name | Required |
|---|---|
| `importPolicy` | optional |
| `contentPolicy` | optional |
| `publishingMethod` | optional |
| `contentPublishingMethod` | optional |
| `importPublishingMethod` | optional |

Request to publish XML schema information to the registry. The user may pass only minimal information and rely on the matching algorithm used internally to find the appropriate mapping for the published XML Schema Document.

Using the `importPolicy` and `contentPolicy`, the caller may limit the scope of the published data. By the`publishingMethod`, `contentPublishingMethod` and `importPublishingMethod` attributes, the caller may specify the default behavior for publishing - whether an existing UDDI entity is reused and possibly updated, or a new UDDI entity is created, or the particular kind of information is ignored at all.

The registry will need to read the XML Schema Document during the call as well as any resources referenced (imported) by it. If a XML Schema Document or a referenced resource is not available, the operation will fail.

If the caller does not specify a mapping for some element, type, or XML namespace import and there will be more possible matching UDDI entities, the call will fail because the mapping of that XML schema entity is considered ambiguous. It is the responsibility of the caller to provide specific directions for the publishing in such cases.

If the `schemaMapping` entry for a type, an element or an import specifies a publishingMethod `reuse`, the API will try to find a suitable UDDI entity. If such an entity is not found, the API will create one. If the caller provides a specific tModelKey with the `reuse` publishingMethod, the tModelKey must exist and that tModel will be updated with the element, type or import data.

If the `schemaMapping` entry for a type, an element or an import specifies a publishing method `create`, the API will always create a new UDDI entity for that XML Schema Document piece. If the caller specifies the tModelKey in the schemaMapping entry, the new UDDI entity will be assigned that tModelKey. The caller may specify a name for the new tModel, too.

If the caller specifies `ignore` publishing method for an element, a type or an import, that particular XML Schema Document piece will not be published at all. If the publishing operation updates an existing entity in the registry that contains a reference to the element, type or an import, the reference will be purged. When an element or type is ignored, the matching UDDI entity will be deleted from the registry as well by the publish operation.

## Arguments

- `uddi:authInfo` - (Optional) - authentication
- `location` - XSD identification (location).
- `xsd2uddi:schemaImports` - Mapping for referenced (imported) XML Schema Documents
- `xsd2uddi:schemaMapping` - (Optional) customized mapping for the schema contents and references

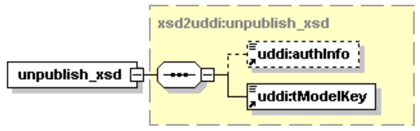
- `importPolicy` - attribute specifying which imports will be published
- `contentPolicy` - attribute specifying which content will be published
- `publishingMethod` - attribute specifying the default publishing method for the contents (elements, types) declared by the schema; default = update
- `contentPublishingMethod` - The default publishing method for elements and types (ignore, create, reuse); default = reuse. This publishing method will be used for all elements or types unless the `schemaMapping` contains an entry for the element or type that provides a different value.
- `contentPublishingMethod` - The default publishing method for imports (ignore, create, reuse); default = reuse. This publishing method will be used for all imported XML namespaces unless the `schemaMapping` contains an entry for the XML namespace that provides a different value.

### Returns

This API call returns the `xsdDetail` with the published XML Schema Document information on success.

## unpublish_xsd

### Syntax



Unpublish the XML Schema Document. The operation checks whether the XML Schema Document is referenced from other data published in the UDDI. If so, the operation fails as the semantics of the referencing data might break if the XML Schema Document information is removed from the UDDI registry.

### Arguments

- `uddi:authInfo` - This optional argument is the string representation of the `uddi:authToken`.
- `uddi:tModelKey` - tModelKey of the tModel that represents the XML Schema Document.

## Returns

This API call returns the `xsdDetail` on success.

## WSDL

xsd2uddi_v3.wsdl [http://www.hp.com/go/hpsoftwaresupport/wsdl/xsd2uddi_v3.wsdl]

## API Endpoint

You can find the XSD2UDDI API endpoint at `http://<host name>:<port>/uddi/xsd2uddi`.

## Java

`org.systinet.uddi.client.xsd2uddi.v3.Xsd2uddiApi`

## Inquiry UI

The Inquiry UI API has been implemented for improving the performance of the Business Service Console. The basic idea is to retrieve data that appear in the Business Service Console using a single API call.

This API contains only one operation get_entityDetail. Its input includes a query specification and an output format:

- The **query specification** comprises one of the standard UDDI v3 API data structures: find_business, find_services, find_binding, find_tModel, get_businessDetail, get_serviceDetail, get_bindingDetail and get_tModelDetail.
- The **output format** defines which data structures will be returned and how they will be pruned.

The operation get_entityDetail returns a list of UDDI data structures. ACLs are also applied to retrieved data.

For example, if you specify the following inquiry:

```
<get_entityDetail xmlns="http://systinet.com/uddi/inquiryUI/6.0">
  <outputFormat>
    <businessEntityMask descriptionIncluded="true" identifierBagIncluded="true"/>
    <businessServiceMask descriptionIncluded="true"/>
  </outputFormat>
  <find_binding serviceKey="uddi:systinet.com:demo:hr:employeesList"
```

```
     xmlns="urn:uddi-org:api_v3"/>
</get_entityDetail>
```

You will receive the following output:

```
<entityDetail xmlns="http://systinet.com/uddi/inquiryUI/6.0">
  <businessEntity businessKey="uddi:systinet.com:demo:hr"
        xmlns="urn:uddi-org:api_v3">
    <name>HR</name>
    <description>HR department</description>
    <businessServices>
      <businessService serviceKey="uddi:systinet.com:demo:hr:employeesList"
            businessKey="uddi:systinet.com:demo:hr">
        <name>EmployeeList</name>
        <description>wsdl:type representing service</description>
      </businessService>
    </businessServices>
    <identifierBag>
      <keyedReference tModelKey="uddi:systinet.com:demo:departmentID"
            keyName="department id" keyValue="002"/>
    </identifierBag>
  </businessEntity>
</entityDetail>
```

If there are matching bindingTemplates accessible while associated businessServices are not (because of ACLs), such bindingTemplates will be included in the result in a separate list of bindingTemplates. The same behavior applies to accessible businessServices of inaccessible businessEntities.

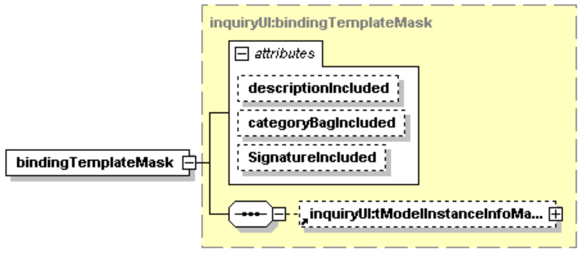
## Data Structures

The following structures are used by the Systinet Inquiry UI API:

- bindingTemplateMask on page 509
- businessEntityMask on page 509
- businessServiceMask on page 510
- contactMask on page 511
- entityDetail on page 511
- outputFormat on page 512

- tModelInstanceInfoMask on page 512
- tModelMask on page 513

## bindingTemplateMask



### Table 60. Attributes

| Attribute | Required |
|---|---|
| `descriptionIncluded` | No |
| `categoryBagIncluded` | No |
| `SignatureIncluded` | No |

The `bindingTemplateMask` structure specifies the mask of the binding template of the outputFormat. Optional attributes define which elements will be returned in the entityDetail

## businessEntityMask

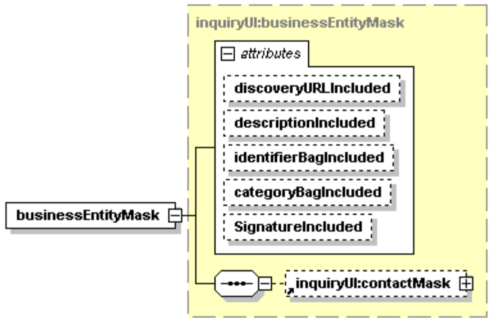


**Table 61. Attributes**

| Attribute | Required |
|---|---|
| `discoveryURLIncluded` | No |
| `descriptionIncluded` | No |
| `identifierBagIncluded` | No |
| `categoryBagIncluded` | No |
| `SignatureIncluded` | No |

The `businessEntityMask` structure specifies the mask of the business entity of the outputFormat. It also include a contactMask. Optional attributes define which elements will be returned in the entityDetail.

## businessServiceMask

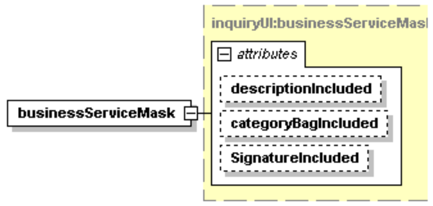
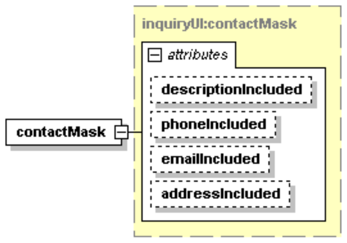


**Table 62. Attributes**

| Attribute | Required |
|---|---|
| `descriptionIncluded` | No |
| `categoryBagIncluded` | No |
| `SignatureIncluded` | No |

The `businessServiceMask` structure specifies the mask of the business service of the outputFormat. Optional attributes define which elements will be returned in the entityDetail.

## contactMask

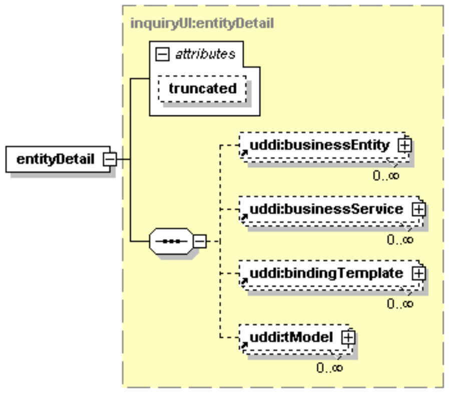


The `contactMask` structure specifies the submask of the business entity mask of the outputFormat. Optional attributes define which elements will be returned in the entityDetail

### Table 63. Attributes

| Attribute | Required |
|---|---|
| `descriptionIncluded` | No |
| `phoneIncluded` | No |
| `emailIncluded` | No |
| `addressIncluded` | No |

## entityDetail

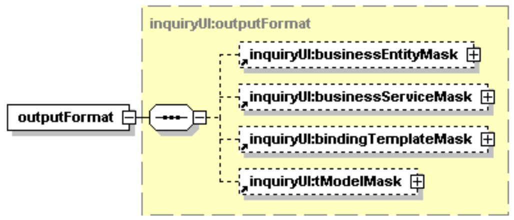


The `entityDetail` structure is returned by the get_entityDetail operation. The attribute `truncated` indicates a truncated result list.

**Table 64. Attributes**

| Attribute | Required |
|---|---|
| `uddi:truncated` | No |

## outputFormat

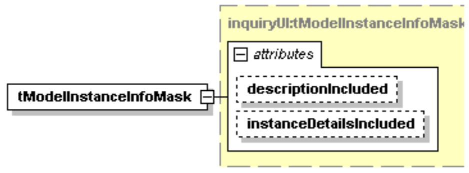

inquiryUI:outputFormat
outputFormat
inquiryUI:businessEntityMask
inquiryUI:businessServiceMask
inquiryUI:bindingTemplateMask
inquiryUI:tModelMask

The `outputFormat` is a mask for data to be returned and can prune returned structures. The output format is defined by the following arguments.

## Arguments

- inquiryUI:businessEntityMask
- inquiryUI:businessServiceMask
- inquiryUI:bindingTemplateMask
- inquiryUI:tModelMask

## tModelInstanceInfoMask

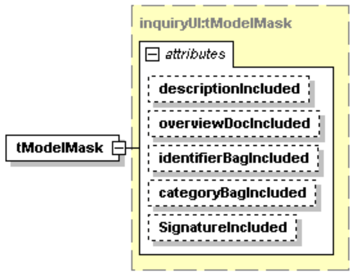


The `tModelInstanceInfoMask` structure specifies the mask of the tModel instance info of the outputFormat. Optional attributes define which elements will be returned in the entityDetail

**Table 65. Attributes**

| Attribute | Required |
|---|---|
| `descriptionIncluded` | No |
| `instanceDetailsIncluded` | No |

## tModelMask



The `tModelMask` structure specifies the mask of the tModel of the outputFormat. Optional attributes define which elements will be returned in the entityDetail

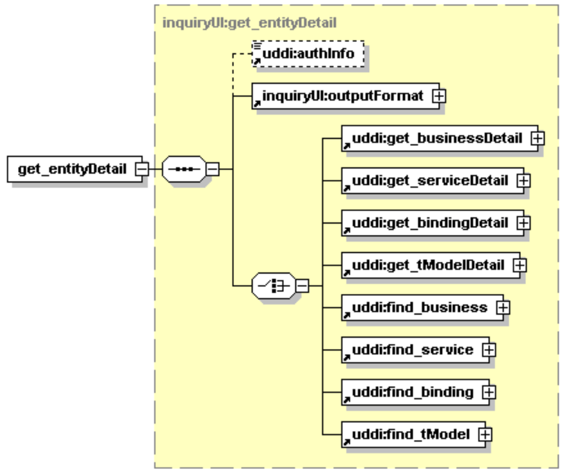
**Table 66. Attributes**

| Attribute | Required |
|---|---|
| `descriptionIncluded` | No |
| `overviewDocIncluded` | No |
| `identifierBagIncluded` | No |
| `categoryBagIncluded` | No |
| `SignatureIncluded` | No |

## Operations

### get_entityDetail

This is the core operation of the Inquiry UI API.



### Arguments

- uddi:authInfo - This optional argument is an element that contains an authentication token.
- inquiryUI:outputFormat
- uddi:get_businessDetail, uddi:get_bindingDetail, uddi:get_tModelDetail, uddi:find_business, uddi:find_service, uddi:find_binding, uddi:find_tModel - standard UDDI v3 structures.

### Returns

Upon successful completion, an entityDetail structure is returned.

### WSDL

You can find the WSDL specification in the file inquiryUI.wsdl [http://www.hp.com/go/hpsoftwaresupport/wsdl/inquiryUI.wsdl].

### API Endpoint

You can find the Inquiry UI API endpoint at `http://<host name>:<port>/uddi/inquiryUI`.

### Java

Systinet Java API is generated directly from WSDL. You are encouraged to browse `org.systinet.uddi.client.v3.ui.InquiryUIApi`.

## Security APIs

Security APIs cover the following APIs:

- Account API - Systinet Account API is used to query and manage user accounts in HP SOA Registry Foundation.
- Group API - Systinet Group API is used to query and manage user groups in HP SOA Registry Foundation.
- Permission API - Systinet Permission API is used to query and manage permissions in HP SOA Registry Foundation.

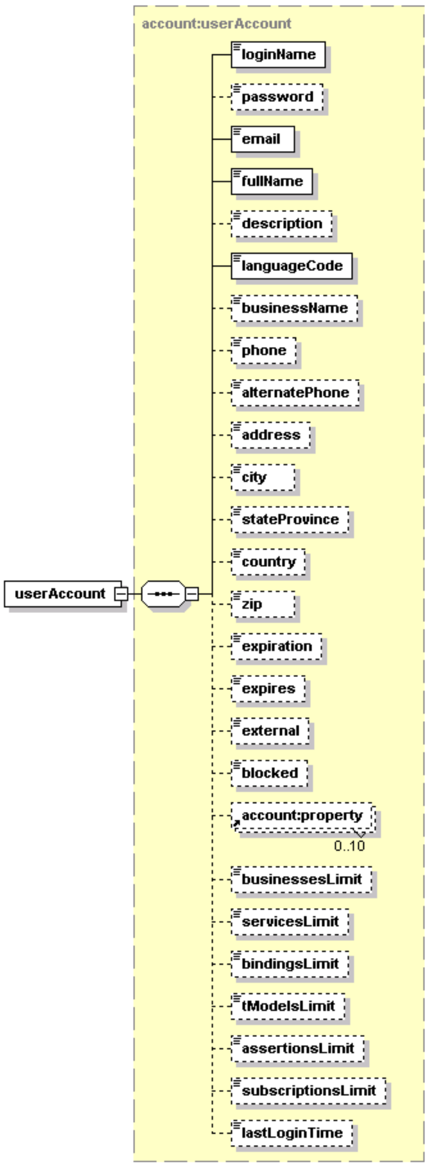
### Account

Systinet Account API is used to query and manage user accounts in HP SOA Registry Foundation.

#### Data Structures

The following structures are used by the Systinet Account API:

## userAccount



account:userAccount
userAccount
loginName
password
email
fullName
description
languageCode
businessName
phone
alternatePhone
address
city
stateProvince
country
zip
expiration
expires
external
blocked
account:property
0..10
businessesLimit
servicesLimit
bindingsLimit
tModelsLimit
assertionsLimit
subscriptionsLimit
lastLoginTime

The `userAccount` element is container that holds the attributes of a user account in the HP SOA Registry Foundation. The required elements are:

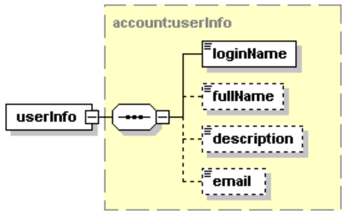
- `loginName`
- `email`
- `fullName`
- `languageCode`

All other elements are optional.

| Element | Description |
|---|---|
| `loginName` | contains the login name of the user account |
| `password` | contains the password used to authorize the user |
| `email` | holds the user's email address |
| `fullName` | holds the user's full name |
| `description` | use for describing the user or the user's role |
| `languageCode` | the language the user speaks |
| `businessName` | name of organization where the user is employed |
| `phone` | telephone number used to contact the user |
| `alternatePhone` | second telephone number used to contact the user |
| `address` | |
| `city` | |
| `stateProvince` | |
| `country` | |
| `zip` | |
| `expiration` | may hold the time when the user account expires |
| `expires` | indicates whether the account may expire over time |

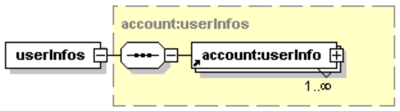
| | |
|---|---|
| `external` | a flag indicating whether the user account is external or stored in the UDDI registry |
| `blocked` | a flag indicating whether the user is blocked |
| `account:property` | an unspecified string; its meaning depends on UserStore type |
| `businessesLimit` | specifies how many business entities the user account may save |
| `servicesLimit` | specifies maximum number of business services within a single business entity that the user account may own |
| `bindingsLimit` | specifies how many bindingTemplates the user account may save within a single businessService |
| `tModelsLimit` | specifies the number of tModels the user account may save |
| `assertionsLimit` | specifies the number of publisherAssertions the user account may save |
| `subscriptionsLimit` | specifies the number of subscriptions the user account may save |
| `lastLoginTime` | contains information regarding when the user last logged into the registry |

## userInfo



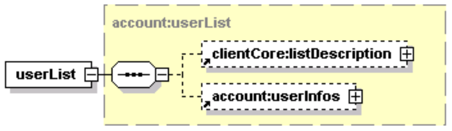
This element serves as a container for short information about single userAccount. It contains the required element `loginName`, and the optional elements `fullName`, `description`, and `email`.

## userInfos



This element holds one or more `userInfo` elements.

## userList



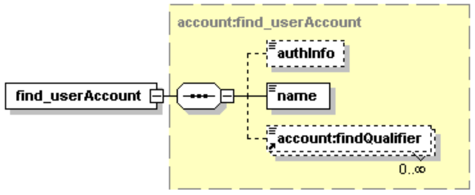
This element contains optional `listDescription` and `userInfos` elements.

## Operations

## find_userAccount

The find_userAccount API call is used to find user accounts in HP SOA Registry Foundation that match given criteria.

## Syntax



## Arguments

- `authInfo` - This optional argument is an element that contains an authentication token.
- `name` - Name to be searched.
- `account:findQualifier` - The collection of findQualifier used to alter default behavior.

## Behavior

The following findQualifiers affect behavior of the call:

- The findByLoginName findQualifier (default) is used to specify that user accounts shall be searched by loginName.
- With the findByFullName findQualifier, user accounts are searched by the fullName property.
- If the exactMatch findQualifier is present, an exact match is required.
- The default approximateMatch findQualifier enables SQL wildcard queries.
- If the findBlockedAccount findQualifier is present, only blocked accounts are returned.
- The sortByNameAsc (default) and sortByNameDesc findQualifiers controls the order in which the data is returned.

## Returns

This API call returns the userList upon success.

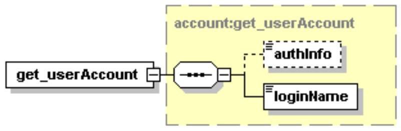
## Permissions

This API call requires the API user permission for org.systinet.uddi.account.AccountApi and the action find_userAccount.

## get_userAccount

The get_userAccount API call returns userAccount structure of selected user.

## Syntax



### Arguments

- `authInfo` - This optional argument is an element that contains an authentication token.
- `loginName` - This required argument uniquely identifies the user account.

### Returns

This API call returns userAccount upon success.

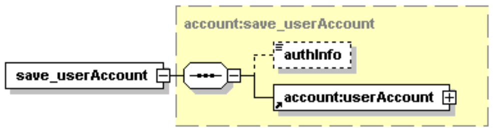
### Permissions

This API call requires the API user permission for org.systinet.uddi.account.AccountApi and the action get_userAccount to get user's own account detail and API manager permission for org.systinet.uddi.account.AccountApi and the action get_userAccount to get other users' accounts.

## save_userAccount

The save_userAccount API call is used to save or update userAccount in HP SOA Registry Foundation. Whether public registration is allowed or not depends on the HP SOA Registry Foundation configuration. It may be also configured to block registered account until it is enabled by code sent by email.

### Syntax



### Arguments

- `authInfo` - This optional argument is an element that contains an authentication token.
- `account:userAccount` - The user account to be saved.

### Returns

This API call returns userAccount upon success.

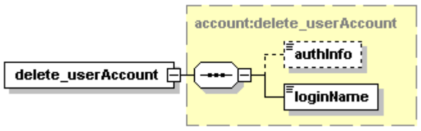
### Permissions

This API call requires the API user permission for org.systinet.uddi.account.AccountApi and the action save_userAccount to save user's own account or register new account and API manager permission for org.systinet.uddi.account.AccountApi and the action save_userAccount to save other users' accounts.

## delete_userAccount

The delete_userAccount API call causes selected user account to be removed from HP SOA Registry Foundation.

### Syntax



### Arguments

- `authInfo` - This optional argument is an element that contains an authentication token.
- `loginName` - This required argument uniquely identifies the user account.

### Returns

This API call returns UserAccount upon success.

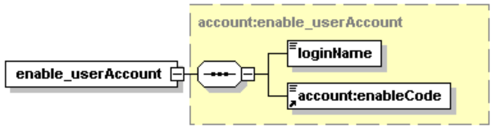
### Permissions

This API call requires the API user permission for org.systinet.uddi.account.AccountApi and the action delete_userAccount to delete user's own account and API manager permission for org.systinet.uddi.account.AccountApi and the action delete_userAccount to delete other users' accounts.

## enable_userAccount

The enable_userAccount API call is used to activate user account identified by loginName argument in HP SOA Registry Foundation.

## Syntax



## Arguments

- `loginName` - This required argument uniquely identifies the user account.
- `account:enableCode` - Confirmation string.

## WSDL

You can find the WSDL specification in the file account.wsdl [http://www.hp.com/go/hpsoftwaresupport/wsdl/account.wsdl].

## API Endpoint

You can find the Account API endpoint at `http://<host name>:<port>/uddi/account` .

## Java

The Systinet Java API is generated from Account WSDL. You are encouraged to browse `org.systinet.uddi.account.AccountApi` and to read and try Account demos.

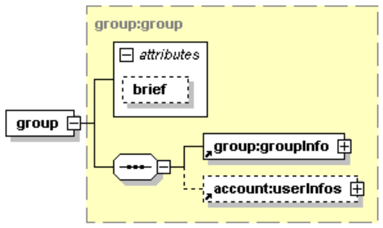
## Group

Systinet Group API is used to query and manage user groups in HP SOA Registry Foundation.

## Data Structures

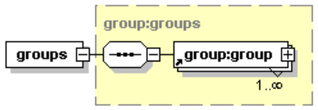
The following structures are used by the Systinet Group API:

## group



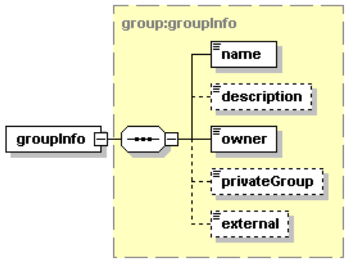
This element serves as a container for `groupInfo` and `userInfos` structures.

## groups



This element serves as a container for one or more `group` structures.

## groupInfo

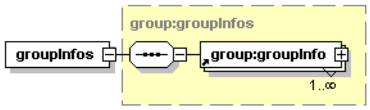


This element contains information about one user group:

- The required `name` element holds the name of the group.
- The optional `description` element is used to describe group and its usage.
- The `owner` element contains the loginName of the user who created this group.
- The `privateGroup` element indicates whether the group is public or private.

- The `external` element indicates whether the group is external (For example, in LDAP) or not.

### groupInfos



This element serves as a container for one or more `groupInfo` elements.

### groupList

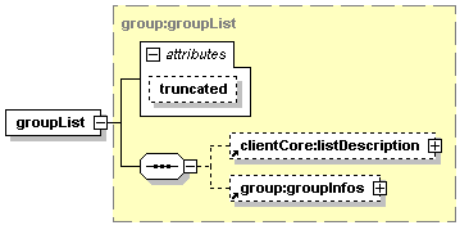


**Table 67. Attributes**

| Attribute | Required |
|---|---|
| `truncated` | No |

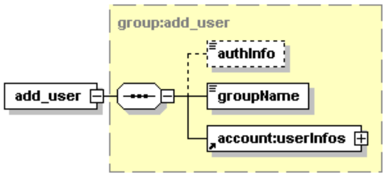
This structure server as a container for optional `listDescription` and optional `groupInfos` structures. The `truncated` attribute indicates whether the list of groupInfos is truncated.

## Operations

### add_user

The add_user API call is used to add a user to a user group.

## Syntax



## Arguments

- `authInfo` - This optional argument is an element that contains an authentication token.
- `groupName` - the group to which the user will be added.
- `account:userInfos` - user that will be added to the group.

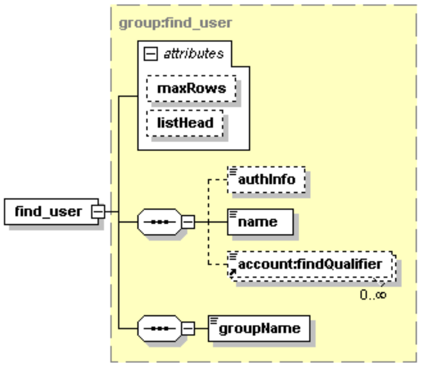
## Permissions

This API call requires API user or manager permission for `org.systinet.uddi.client.group.GroupApi` and the action add_user.

## find_user

The find_user API call is used to find user within the user group.

## Syntax



## Arguments

- `authInfo` - This optional argument is an element that contains an authentication token.
- `name` - login name of the user
- `account:findQualifier` - find qualifier
- `groupName` - the group in which the user will be searched.

## Permissions

This API call requires API user or manager permission for `org.systinet.uddi.client.group.GroupApi` and the action find_user.

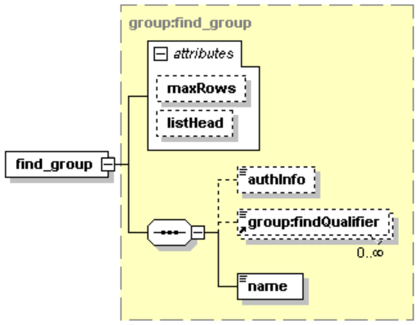
## Returns

Upon successful completion, the UserList structure is returned.

## find_group

The find_group API call is used to search groups in HP SOA Registry Foundation.

## Syntax



## Arguments

- `authInfo` - This optional argument is an element that contains an authentication token.

- `group:findQualifier` - The collection of findQualifier used to alter default behavior.
- `name` - The required value contains name of the group to be searched.

### Behavior

The following findQualifiers affect behavior of the call. The exactMatch findQualifier causes that exact match on group name is required, while default approximateMatch findQualifier enables SQL wildcard query. The findPrivateGroups findQualifier enables search between private groups, findPublicGroups enables search between public groups and findMyGroups will cause the search to be performed only between groups owned by the user who executed this call. The sortByNameAsc and sortByNameDesc findQualifiers controls order, in which the data is returned.

If no findQualifier is defined, default findQualifier set contains approximateMatch, findPrivateGroups, findPublicGroups and sortByNameAsc findQualifiers.

### Returns

Upon successful completion, the groupList structure is returned.

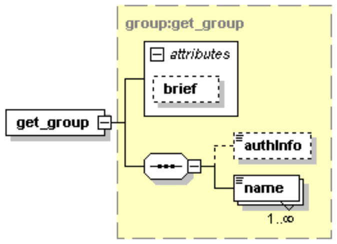
### Permissions

This API call requires API user or manager permission for `org.systinet.uddi.client.group.GroupApi` and the action find_group.

## get_group

The get_group API call is used to get details for one or more groups in HP SOA Registry Foundation.

### Syntax



## Arguments

- `authInfo` - This optional argument is an element that contains an authentication token.
- `name` - The required value contains name of the group to be returned.
- `brief` - if you set this attribute, the result will not contain members of the group. Setting the attribute is useful when working with large groups with thousands of members.

## Returns

Upon successful completion, the groups structure is returned.

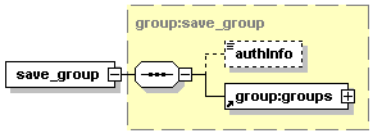
## Permissions

This API call requires API user or manager permission for `org.systinet.uddi.client.group.GroupApi` and the action get_group. The user permission is needed to get user's own groups, the manager permission is required to get other users' groups.

## save_group

The save_group API call is used to save collection of groups to HP SOA Registry Foundation.

## Syntax



## Arguments

- `authInfo` - This optional argument is an element that contains an authentication token.
- `group:groups` - The groups to be saved.

## Returns

Upon successful completion, the groups structure is returned.

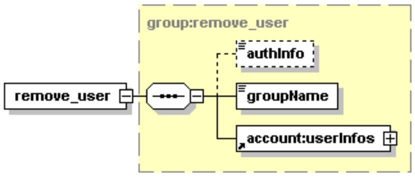
### Permissions

This API call requires API user or manager permission for `org.systinet.uddi.client.group.GroupApi` and the action save_group. The user permission is needed to save user's own groups, the manager permission is required to update other users' groups.

## remove_user

The remove_user API call removes user from the group.

### Syntax



### Arguments

- `authInfo` - This optional argument is an element that contains an authentication token.
- `name` - login name of the user
- `groupName` - the group from which the user will be removed

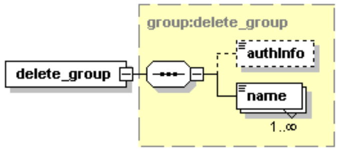
### Permissions

This API call requires API user or manager permission for `org.systinet.uddi.client.group.GroupApi` and the action remove_user.

## delete_group

The delete_group API call causes that groups identified by their names will be removed from HP SOA Registry Foundation.

## Syntax



## Arguments

- `authInfo` - This optional argument is an element that contains an authentication token.
- `name` - The required value contains names of the groups to be deleted.

## Returns

Upon successful completion, the groups structure is returned.

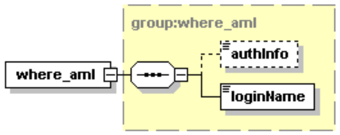
## Permissions

This API call requires API user or manager permission for `org.systinet.uddi.client.group.GroupApi` and the action delete_group. The user permission is needed to delete user's own groups, the manager permission is required to delete other users' groups.

## where_aml

The where_amI API call is there to return list of groups where the user executing this call is member. The call returns both private and public groups.

## Syntax



## Arguments

- `authInfo` - This optional argument is an element that contains an authentication token.

- `loginName` - This required argument uniquely identifies the user account.

### Returns

Upon successful completion, the groupList structure is returned.

### Permissions

This API call requires API user or manager permission for `org.systinet.uddi.client.group.GroupApi` and the action where_amI. The user permission is needed to get groups for the user himself, the manager permission is required to get groups for other user.

### WSDL

You can find the WSDL specification in the file group.wsdl [http://www.hp.com/go/hpsoftwaresupport/wsdl/group.wsdl].

### API Endpoint

You can find the Group API endpoint at `http://<host name>:<port>/uddi/group`.

### Java

The Systinet Java API is generated from Group WSDL. You are encouraged to browse `org.systinet.uddi.group.GroupApi` and to read and try Group demos.

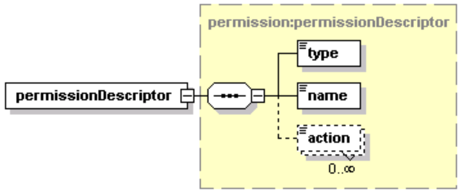
## Permission

The Systinet Permission API is used to query and manage permissions in HP SOA Registry Foundation.

### Data Structures

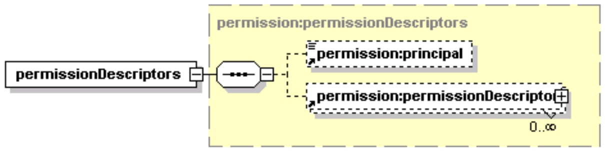
The following structures are used by the Systinet Permission API:

## permissionDescriptor



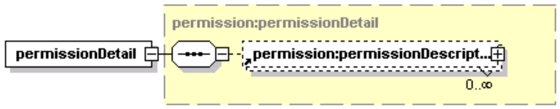
This structure serves as a container for one `permission` and its actions. The `type` element contains the type of the permission. The `name` element contains the permission's name. Optional `action` elements are used to provide finer granularity to the permission and contain individual actions of this permission.

## permissionDescriptors


permission:permissionDescriptors
permissionDescriptors
permission:principal
permission:permissionDescriptor
0..∞

This structure holds an optional `principal` element and zero or more `permissionDescriptor` structures.

## permissionDetail

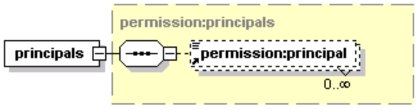


This structure is a container for zero or more `permissionDescriptors` structures.

## principal

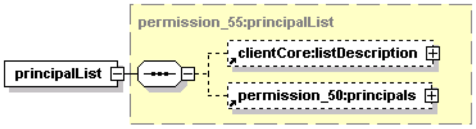
This element contains the optional attribute`principalType`, which may be assigned to a user or group. The element's text contains the loginName of the user, or the group name, depending on the principalType value.

### principals



This structure serves as a container for zero or more `principal` elements.

### principalList



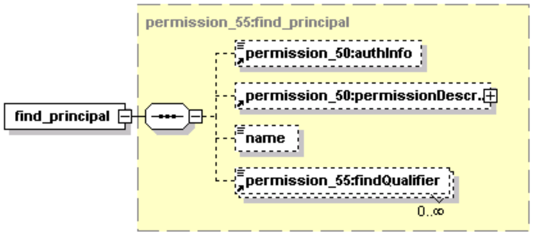
This structure serves as a list principals returned from the operation find_principal.

## Operations

### find_principal

This operation is used to find principals, it replaces the deprecared operation who_hasPermission .

### Syntax


permission_55:find_principal
find_principal
permission_50:authInfo
permission_50:permissionDescr.
name
permission_55:findQualifier
0..∞

### Arguments

- `permission:authInfo` - This optional argument is an element that contains an authentication token.
- `permissionDescriptor`
- `name` - name of the principal

- `findQualifier`

### Returns

Upon successful completion, the principalList structure is returned.

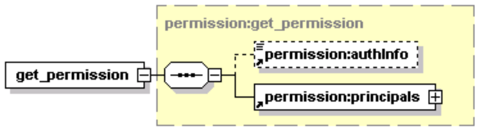
### Permissions

This API call requires API user or manager permission for `org.systinet.uddi.permission.PermissionApi` and the action get_permission. The user permission is needed to get permissions for the user himself, the manager permission is required to get permissions for other users.

## get_permission

The get_permission API call is used to get permissions in HP SOA Registry Foundation, that have been assigned to users or groups identified by the principal's structure.

### Syntax



### Arguments

- `permission:authInfo` - This optional argument is an element that contains an authentication token.
- `permission:principals` - This mandatory structure contains list of users or groups to be searched.

### Returns

Upon successful completion, the permissionDetail structure is returned.

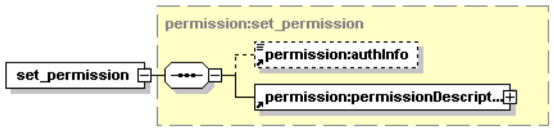
### Permissions

This API call requires API user or manager permission for `org.systinet.uddi.permission.PermissionApi` and the action get_permission. The user permission is needed to get permissions for the user himself, the manager permission is required to get permissions for other users.

## set_permission

The set_permission API call serves to set permissions in HP SOA Registry Foundation. Existing permissions for users or groups referenced in permissionDescriptors are overwritten by this call.

### Syntax



### Arguments

- `permission:authInfo` - This optional argument is an element that contains an authentication token.
- `permission:permissionDescriptors` - This mandatory structure holds permissions to be set.

### Permissions

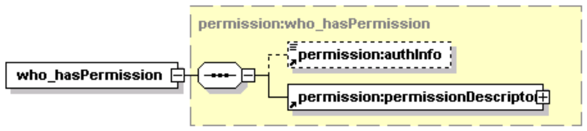
This API call requires API manager permission for `org.systinet.uddi.permission.PermissionApi` and the action set_permission.

## who_hasPermission

The `who_hasPermission` operation is deprecated. We recommend to use the operation `find_principal` instead.

The who_hasPermission API call is used to find out which users or groups have the specified permissions.

### Syntax



### Arguments

- `permission:authInfo` - This optional argument is an element that contains an authentication token.
- `permission:permissionDescriptor` - This argument contains a description of permissions to be searched.

### Returns

Upon successful completion, the principals structure is returned.

### Permissions

This API call requires API manager permission for `org.systinet.uddi.permission.PermissionApi` and the action who_hasPermission.

### WSDL

You can find the WSDL specification in the file permission.wsdl [http://www.hp.com/go/hpsoftwaresupport/wsdl/permission.wsdl].

### API Endpoint

You can find the Permission API endpoint at `http://<host name>:<port>/uddi/permission`.

### Java

The Systinet Java API is generated from Permission WSDL. You are encouraged to browse its `org.systinet.uddi.permission.PermissionApi` and to read and try the Permission demos.

## Registry Client

This section describes how to prepare your own client distribution. A client created this way allows you to access the HP SOA Registry Foundation API through a SOAP interface.

### Client Package

`CLIENT_HOME` refers to the directory in which the HP SOA Registry Foundation Client distribution will be created.

REGISTRY_HOME refers to the directory in which HP SOA Registry Foundation is installed

To create a client application distribution follow these steps:

1 Make sure HP SOA Registry Foundation is successfully installed.

2 In the CLIENT_HOME directory, create a subdirectory named lib.

  Copy the following files from REGISTRY_HOME/lib to CLIENT_HOME/lib

```
activation.jar
builtin-serialization.jar
core_services_client.jar
jaas.jar
jaxm.jar
jaxrpc.jar
jetty.jar
runner.jar
saaj.jar
security-ng.jar
security2-ng.jar
security_providers_client.jar
wasp.jar
wsdl_api.jar
xercesImpl.jar
xml-apis.jar
xmlParserApis.jar
```

3 In the CLIENT_HOME directory, create a subdirectory named dist.

  Copy the following files from REGISTRY/dist to CLIENT_HOME/dist:

```
account_client.jar
admin_utils_client.jar
category_client_v3.jar
configurator_client.jar
configurator_cluster_client.jar
group_client.jar
permission_client.jar
replication_client_v3.jar
statistics_client.jar
```

```
taxonomy_client_v3.jar
taxonomy_client_v31.jar
transformer_kr_client.jar
uddiclient_api_ext.jar
uddiclient_api_v1.jar
uddiclient_api_v2.jar
uddiclient_api_v3.jar
uddiclient_api_v3_ext.jar
uddiclient_core.jar
uddiclient_custody_v3.jar
uddiclient_subscription_listener_v3.jar
uddiclient_subscription_v3.jar
uddiclient_validate_values_v1.jar
uddiclient_validate_values_v2.jar
uddiclient_value_set_caching_v3.jar
uddiclient_value_set_validation_v3.jar
wsdl2uddi_client_v2.jar
wsdl2uddi_client_v3.jar
xsd2uddi_client_v3.jar
```

4 In the `CLIENT_HOME` directory, create a subdirectory named `conf`. Copy the following files from REGISTRY_HOME/conf to CLIENT_HOME/conf:

```
clientconf.xml
log4j.config
```

➤ If you want to use the https connection in HP SOA Registry Foundation, you must import the certificate file into `clientconf.xml` using the `PStoreTool`. This file contains the certificate of the HP SOA Registry Foundation installation by default.

➤ You do not have to copy client files to directories that have specific names (`lib`, `dist`, and `conf`). All client files can be copied to the flat directory `CLIENT_HOME`, for example. If you do this, however, replace `CONF_DIRECTORY`, `DIST_DIRECTORY`, and `LIB_DIRECTORY` with `CLIENT_HOME` in this section's instructions.

## JARs on the Client Classpath

For each client package, the associated .jar files must be added to the classpath. These .jar files are listed in the appropriate sections below.

## HP SOA Registry Foundation Runtime

To enable the HP SOA Registry Foundation Runtime client package, add these .jar files to the classpath.

```
activation.jar
builtin-serialization.jar;
core_services_client.jar;
jaas.jar;
jaxm.jar;
jaxrpc.jar
runner.jar
saaj.jar;
security-ng.jar;
security2-ng.jar;
security_providers_client.jar;
wasp.jar;
wsdl_api.jar
xercesImpl.jar;
xml-apis.jar;
xmlParserApis.jar;
```

## UDDI API Client v1

To enable the UDDI API (v1) client package, add these .jar files to the classpath. For more information on this client package, please see UDDI Version 1 on page 433

```
uddiclient_api_v1.jar
uddiclient_core.jar
```

## UDDI API Client v2

To enable the UDDI API (v2) client package, add these .jar files to the classpath. For more information on this client package, please see UDDI Version 2 on page 433.

```
uddiclient_api_v2.jar
uddiclient_core.jar
```

### UDDI API Client v3

To enable the UDDI API (v3) client package, add these .jar files to the classpath. For more information on this client packages, please see UDDI Version 3 on page 434.

```
uddiclient_api_v3.jar
uddiclient_core.jar
```

### UDDI API Client v3 ext X

To enable the UDDI API (v3, ext X) client package, add these .jar files to the classpath.

```
uddiclient_api_v3_ext.jar
uddiclient_api_v3.jar
uddiclient_core.jar
```

### Account Client

To enable the Account client package, add these .jar files to the classpath. For more information on this client package, please see Account on page 515.

```
account_client.jar
uddiclient_core.jar
```

### Admin Utilities Client

To enable the Admin Utilities client package, add these .jar files to the classpath. For more information on this client package, please see Administration Utilities on page 467.

```
admin_utils_client.jar
uddiclient_api_v3.jar
uddiclient_core.jar
```

## Category Client v3

To enable the Category (v3) client package, add these .jar files to the classpath. For more information on this client package, please see Category on page 460

```
category_client_v3.jar
uddiclient_api_v3.jar
uddiclient_core.jar
```

## Group Client

To enable the Group client package, add these .jar files to the classpath. For more information on this client package, please see Group on page 524.

```
group_client.jar
account_client.jar
uddiclient_core.jar
```

## Permission Client

To enable the Permission client package, add these .jar files to the classpath. For more information on this client package, please see Permission on page 533.

```
permission_client.jar
account_client.jar
uddiclient_core.jar
```

## Replication Client v3

To enable the Replication (v3) client package, add these .jar files to the classpath. For more information on this client package, please see Replication on page 473.

```
replication_client_v3.jar
uddiclient_core.jar
```

## Statistics Client

To enable the Statistics client package, add these .jar files to the classpath. For more information on this client package, please see Statistics on page 474.

```
statistics_client.jar
uddiclient_core.jar
```

## Taxonomy Client v3

To enable the v3 Taxonomy client package, add these .jar files to the classpath. For more information on this client package, please see Taxonomy on page 446.

```
taxonomy_client_v3.jar
taxonomy_client_v31.jar
uddiclient_api_v3.jar
uddiclient_core.jar
```

## UDDI Custody Client v3

To enable the v3 UDDI Custody client package, add these .jar files to the classpath. For more information on this client package, please see Custody on page 435.

```
uddiclient_custody_v3.jar
uddiclient_api_v3.jar
uddiclient_core.jar
```

## UDDI Subscription Client v3

To enable the v3 UDDI Subscription client package, add these .jar files to the classpath. For more information on this client package, please see Subscription on page 435.

```
uddiclient_subscription_v3.jar
uddiclient_api_v3.jar
uddiclient_core.jar
```

## UDDI Subscription Listener Client v3

To enable the v3 UDDI Subscription Listener client package, add these .jar files to the classpath. For more information on this client package, please see Subscription on page 435.

```
uddiclient_subscription_listener_v3.jar
uddiclient_subscription_v3.jar
uddiclient_api_v3.jar
uddiclient_core.jar
```

## UDDI Validate Values Client v1

To enable the UDDI Validate Values (v1) client package, add these .jar files to the classpath. For more information on this client package, please see Validation on page 445.

```
uddiclient_validate_values_v1.jar
uddiclient_api_v1.jar
uddiclient_core.jar
```

## UDDI Validate Values v2

To enable the UDDI Validate Values (v2) client package, add these .jar files to the classpath. For more information on this client package, please see Validation on page 445.

```
uddiclient_validate_values_v2.jar
uddiclient_api_v2.jar
uddiclient_core.jar
```

## UDDI Value Set Caching Client v3

To enable the UDDI Value Set Caching (v3) client package, add these .jar files to the classpath.

```
uddiclient_value_set_caching_v3.jar
uddiclient_api_v3.jar
uddiclient_core.jar
```

## UDDI Value Set Validation Client v3

To enable the UDDI Value Set Validation (v3) client package, add these .jar files to the classpath. For more information on this client package, please see Validation on page 445.

```
uddiclient_value_set_validation_v3.jar
uddiclient_api_v3.jar
uddiclient_core.jar
```

## WSDL2UDDI Client v2

To enable the WSDL2UDDI (v2) client package, add these .jar files to the classpath. For more information on this client package, please see WSDL Publishing on page 479

```
wsdl2uddi_client_v2.jar
uddiclient_api_v2.jar
uddiclient_core.jar
```

## WSDL2UDDI Client v3

To enable the WSDL2UDDI (v3) client package, add these .jar files to the classpath. For more information on this client package, please see WSDL Publishing on page 479

```
wsdl2uddi_client_v3.jar
uddiclient_api_v3.jar
uddiclient_core.jar
```

## Resources publishing (XSD) Client

To enable the client package, add these .jar files to the classpath.

```
uddiclient_api_v3.jar
uddiclient_core.jar
xsd2uddi_client_v3.jar
```

## Classpath Examples

To run your HP SOA Registry Foundation client code you must add a config directory, wasp.jar, and client's jars to the classpath.

➤

```
CLIENT_HOME=. CONF_DIRECTORY=CLIENT_HOME\conf  DIST_DIRECTORY=CLIENT_HOME\dist
LIB_DIRECTORY=CLIENT_HOME\lib
```

- If you want to use only UDDI Version 3:

```
CONF_DIRECTORY;LIB_DIRECTORY\wasp.jar;DIST_DIRECTORY\uddiclient_api_v3.jar
```

- If you want to use only UDDI Version 3 and UDDI Subscription Version 3:

```
CONF_DIRECTORY;LIB_DIRECTORY\wasp.jar;DIST_DIRECTORY\uddiclient_api_v3.jar%;
DIST_DIRECTORY\uddiclient_subscription_v3.jar
```

- If you want to use only UDDI Version 3, UDDI Subscription Version 3, and Taxonomy:

```
CONF_DIRECTORY;LIB_DIRECTORY\wasp.jar;DIST_DIRECTORY\uddiclient_api_v3.jar%;
DIST_DIRECTORY\uddiclient_subscription_v3.jar;DIST_DIRECTORY\taxonomy_client_v3.jar
```

## Client Authentication

By default, all exposed registry APIs use the UDDI authentication scheme, where an authentication token is passed with every call to identify a remote user. This is shown in registry demos such as Publishing v3 on page 648. The UDDI authentication scheme can be replaced.

In this section, we will show you an example client that publishes a new business entity using HTTP-Basic or SSL client authentication.

## Example Client

For simplicity, the example client uses a SOAP stack provided with HP SOA Registry Foundation. You can use a SOAP stack of your choice to communicate with the registry.

**Example 3: ExampleClient.java**

```
// (c) Copyright 2001-2009 Hewlett-Packard Development Company, L.P.
// Use is subject to license terms.

import org.systinet.uddi.client.v3.UDDIPublishStub;
import org.systinet.uddi.client.v3.UDDI_Publication_PortType;
import org.systinet.uddi.client.v3.struct.*;

public class ExampleClient {
    public static void main(String[] args) {
        String registryBaseUrl = System.getProperty("registry.base.url","http://localhost:8080");
        String urlPublishing = registryBaseUrl+ "/uddi/publishing";
        System.out.print("Using publishing URL "+urlPublishing + " .");

        try {
            UDDI_Publication_PortType publish = UDDIPublishStub.getInstance(urlPublishing);
            System.out.println(publish.save_business(new Save_business
                    (new BusinessEntityArrayList(new BusinessEntity(new NameArrayList
                            (new Name("Created by Client Authentication Example")))))));

            System.out.println(" done");
        } catch (Exception e) {
            e.printStackTrace();
        }
    }
}
```

The client is created as follows:

1. Create the directory `CLIENT_HOME`.
2. Create a client class in the `CLIENT_HOME` directory. The example client is shown in Example 3 on page 548. It has no security calls or structures internally. Client-side security will be configured later using properties supplied to the java command that runs the client.

3 Create the `lib` subdirectory of CLIENT_HOME. Copy the jar files required for compilation and client execution to this directory. All the jars are in the HP SOA Registry Foundation installation directory. They are:

- `lib/activation.jar`
- `lib/builtin_serialization.jar`
- `lib/core_services_client.jar`
- `lib/jaxm.jar`
- `lib/jaxrpc.jar`
- `lib/jetty.jar`
- `lib/log4j.jar`
- `lib/saaj.jar`
- `lib/security-ng.jar`
- `lib/security2-ng.jar`
- `lib/security_providers_client.jar`
- `lib/wasp.jar`
- `lib/wsdl_api.jar`
- `lib/xalan.jar`
- `lib/xercesImpl.jar`
- `lib/xml-apis.jar`
- `dist/uddiclient_core.jar`
- `dist/uddiclient_api_ v3.jar`

4 Create the `conf` subdirectory of CLIENT_HOME. Copy configuration files required to run the client to this directory. These files are are also in the HP SOA Registry Foundation installation directory:

- `conf/clientconf.xml`
- `conf/package12.xml`
- `conf/package13.xml`
- `conf/jaas.config`

5 Compile the example client class using a CLASSPATH that includes all jar files in the `lib` subdirectory of `CLIENT_HOME`

Before running the client, configure registry for a particular authentication scheme, as explained in HTTP Basic on page 181 or SSL Client authentication on page 185. If you want to configure a deployed registry for SSL client authentication, follow instructions given in J2EE Server Authentication on page 189

To run the client:

1 Use a classpath that includes all jar files from the `CLIENT_HOME/lib` directory, and the directory containing the compiled example class.

2 Add the following property definitions to the `java` command line:

- `-Dwasp.location=CLIENT_HOME`
- `-Djava.security.auth.login.config=CLIENT_HOME/conf/jaas.config`

3 To run the client with HTTP Basic authentication also add the following:

- `-Dwasp.username=USERNAME`
- `-Dwasp.password=PASSWORD`
- `-Dwasp.securityMechanism=HttpBasic`
- `-Dregistry.base.url=http://HOST:PORT/CONTEXT`

Use the credentials of a registered user instead of `USERNAME` and `PASSWORD`. To register a new user, start with the main page of registry console. See Registry Console on page 231 for details. You may also use the demo user `demo_john` with password `demo_john` if you imported demo data during installation.

The base URL of registry is specified using the `registry.base.url` property as shown in Example 3 on page 548. Replace `HOST`,`PORT` and `CONTEXT` to match your registry deployment; for example `http://pc1.mycomp.com:8080`.

4 To run the client with SSL client authentication add the following:

- `-Dwasp.username=USERNAME`
- `-Dwasp.password=PASSWORD`
- `-Dwasp.securityMechanism=SSL`
- `-Dregistry.base.url=https://HOST:PORT/CONTEXT`

Unlike HTTP Basic authentication, `USERNAME` and `PASSWORD` are used to obtain the client identity from a local protected store. You have to import the client identity using instructions provided in SSL Tool on page 412. The protected store of the example client is in the file `CLIENT_HOME/conf/clientconf.xml`. You also have to import a server certificate (or the certificate of a certification authority that issued the server certificate) in the same protected store using instructions provided in PStore Tool on page 403.

Use an alias in the protected store instead of `USERNAME`. `PASSWORD` stands for the password that is used to protect the private key stored under that alias.

The base URL of registry is specified using the `registry.base.url` System property as shown in Example 3 on page 548. Replace `HOST`,`PORT` and `CONTEXT` to match your registry deployment; for example `https://pc1.mycomp.com:8443`.

## Server-Side Development

This chapter focuses on the server-side development of HP SOA Registry Foundation extensions. Possible ways of accessing HP SOA Registry Foundation are discussed including examples.

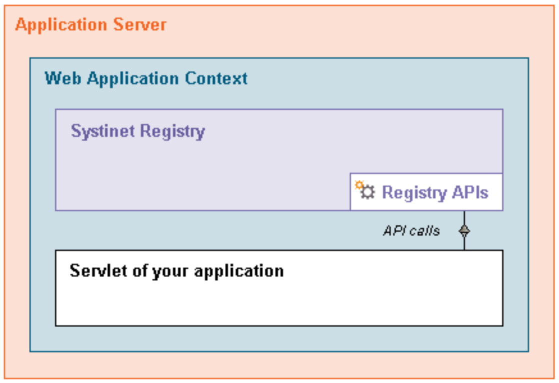
- Accessing backend APIs via servlet deployed on an application server.

- Custom HP SOA Registry Foundation Modules - how to create and deploy custom HP SOA Registry Foundation modules.
- Interceptors can monitor or modify the requests and responses of HP SOA Registry Foundation. Interceptors are at the lowest level of HP SOA Registry Foundation API call processing.
- Writing custom Validation services - HP SOA Registry Foundation provides several ways to define and use validation services for taxonomies or identifier systems inluding remotely and locally deployed validation services and an internal validation service. For details, please see User's Guide, Taxonomy: Principles, Creation and Validation on page 247. This chapter focuses how to create a validation service.
- Writing subscription notification services - How to implement subscription notification service deployed on Systinet Server for Java.
- JSP Framework - This section covers the Systinet Web Framework.
- Business Service Console Framework - This section covers the Business Service Console Framework.

## Accessing Backend APIs

This section will show you how to integrate HP SOA Registry Foundation with your application. Your application can be deployed as a servlet to the same context of the application server as the registry. In this case, the servlet of your application can access instances of HP SOA Registry Foundation APIs as shown in Figure 145.

**Figure 145. Accessing Backend Registry APIs - Architecture View**



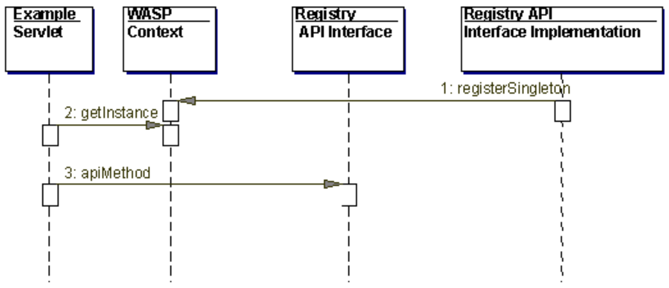
The sequence of steps that precedes access to the HP SOA Registry Foundation API is shown in Figure 146.

1 HP SOA Registry Foundation's API implementations are registered in the `WASP` context during the boot of the registry.

2 The example servlet deployed in the `WASP` context calls the `getInstance()` method with the required UDDI Registry interface as a parameter to obtain a reference of the interface implementation.

3 The example servlet can call the API methods of HP SOA Registry Foundation.

**Figure 146. Accessing Backend Registry APIs - Sequence Diagram**



➤ We assume HP SOA Registry Foundation is deployed to Tomcat. `TOMCAT_HOME` refers to the directory in which the application server is installed. The step-by-step procedure has been tested on Tomcat 5.0.28.

Follow these steps to create and deploy the example servlet:

1 Create the example servlet class shown in Example 4 on page 556.

  Compile the `ExampeServlet.java` using:

```
javac -classpath %REGISTRY_HOME%\dist\uddiclient_api_v3.jar;
%REGISTRY_HOME%\dist\uddiclient_core.jar;
%REGISTRY_HOME%\lib\wasp.jar;
%TOMCAT_HOME%\common\lib\servet-api.jar ExampleServlet.java
```

2 Copy `ExampleServlet.class` to the directory `TOMCAT_HOME/webapps/wasp/Web-inf/classes/com/systinet/example/servlet`.

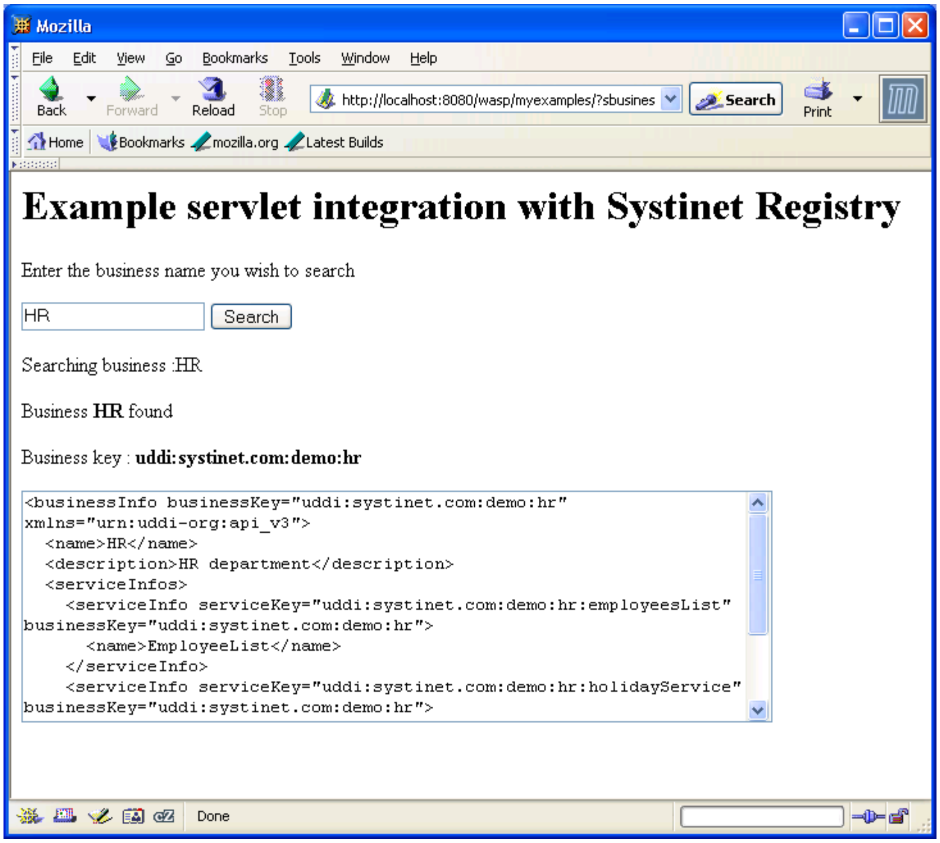
3 Add the example servlet to `TOMCAT_HOME/webapps/wasp/Web-inf/web.xml` as shown in Example 5 on page 558.

4 Restart the Tomcat application server.

The example servlet will be available at `http://localhost:8080/wasp/myexamples`.

You can test it as shown at Figure 147.

**Figure 147. Example Servlet Output**


Mozilla
File Edit View Go Bookmarks Tools Window Help
Back Forward Reload Stop
http://localhost:8080/wasp/myexamples/?sbusines
Search
Print
Home Bookmarks mozilla.org Latest Builds
Done

Example servlet integration with Systinet Registry

Enter the business name you wish to search

HR Search

Searching business :HR

Business **HR** found

Business key : **uddi:systinet.com:demo:hr**

```
<businessInfo businessKey="uddi:systinet.com:demo:hr"
xmlns="urn:uddi-org:api_v3">
  <name>HR</name>
  <description>HR department</description>
  <serviceInfos>
    <serviceInfo serviceKey="uddi:systinet.com:demo:hr:employeesList"
businessKey="uddi:systinet.com:demo:hr">
      <name>EmployeeList</name>
    </serviceInfo>
    <serviceInfo serviceKey="uddi:systinet.com:demo:hr:holidayService"
businessKey="uddi:systinet.com:demo:hr">
```

**Example 4:** **`ExampleServet.java`**

```
            package com.systinet.example.servlet;

import org.idoox.wasp.Context;
import org.idoox.wasp.InstanceNotFoundException;
import org.systinet.uddi.InvalidParameterException;
import org.systinet.uddi.client.v3.UDDIException;
import org.systinet.uddi.client.v3.UDDI_Inquiry_PortType;
import org.systinet.uddi.client.v3.struct.*;

import javax.servlet.ServletException;
import javax.servlet.http.HttpServlet;
import javax.servlet.http.HttpServletRequest;
import javax.servlet.http.HttpServletResponse;
import java.io.IOException;
import java.io.PrintWriter;
import java.util.Iterator;

public class ExampleServlet extends HttpServlet {

    public void doGet(HttpServletRequest request, HttpServletResponse response)
        throws IOException, ServletException {
        try {
            String searchedBusiness = request.getParameter("sbusiness");
            if (searchedBusiness == null) searchedBusiness = "";
            response.setContentType("text/html");
            PrintWriter out = response.getWriter();
            out.println("<HTML>");
            out.println("<HEAD>");
            out.println("<H1>Example servlet integration with HP SOA Registry</H1>");
            out.println("<P>Enter the business name you wish to search");
            out.println("<FORM METHOD=GET ACTION=/wasp/myexamples/>");
            out.println("<INPUT NAME=sbusiness SIZE=20 VALUE=" + searchedBusiness + ">");
            out.println("<INPUT TYPE=SUBMIT VALUE=Search>");
            out.println("</FORM>");

            // get UDDI API V3 Inquiry implementation
            UDDI_Inquiry_PortType inquiry =
                (UDDI_Inquiry_PortType) Context.getInstance(UDDI_Inquiry_PortType.class);

            // prepare find_business call
            Find_business find_business = new Find_business();
            if (searchedBusiness.length() > 0) {
                find_business.addName(new Name(searchedBusiness));
                out.println("<P>Searching business :" + searchedBusiness);
                // call find_business
                BusinessList businessList = inquiry.find_business(find_business);
                // process the result
                BusinessInfoArrayList businessInfoArrayList
                    = businessList.getBusinessInfoArrayList();
                if (businessInfoArrayList == null) {
                    out.println("<P><B>Nothing found</B>");
                } else {

                    out.println("<P>Business <B>"+searchedBusiness+"</B> found");
                    for (Iterator iterator =
                       businessInfoArrayList.iterator(); iterator.hasNext();) {
                        BusinessInfo businessInfo = (BusinessInfo) iterator.next();
                        out.println("<P>Business key : <B>" +
                            businessInfo.getBusinessKey()+"</B>");
                        out.println("<P><TEXTAREA ROWS=10 COLS=70>");
                        out.println(businessInfo.toXML());
                        out.println("</TEXTAREA");

                    }

                }
            }
            out.println("</HTML>");
        } catch (InvalidParameterException e) {
        } catch (InstanceNotFoundException e) {
        } catch (UDDIException e) {
        }

    }
}
```

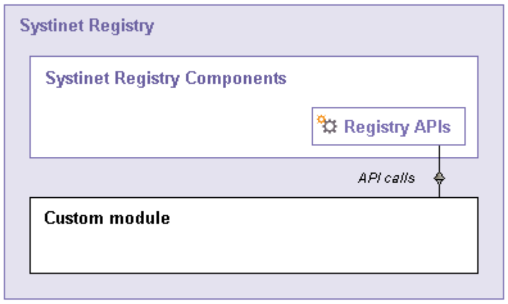
**Example 5: Example Servlet's `web.xml`**

```
            <servlet>
    <servlet-name>ExampleServlet</servlet-name>
    <servlet-class>com.systinet.example.servlet.ExampleServlet</servlet-class>
</servlet>

<servlet-mapping>
    <servlet-name>ExampleServlet</servlet-name>
    <url-pattern>/myexamples/*</url-pattern>
</servlet-mapping>
```

## Custom Registry Modules

In this section, we will show you how to extend HP SOA Registry Foundation functionality with your custom modules. Custom modules can be added to HP SOA Registry Foundation as shown in Figure 148.

**Figure 148. Custom Registry Module - Architecture View**



To create and deploy a registry module, follow these steps:

1 Write a class that implements `org.systinet.uddi.module.Module`.

2 Copy your module implementation class to the directory `REGISTRY_HOME/app/uddi/services/WASP-INF/classes`.

3 Create a configuration file for the module in `REGISTRY_HOME/app/uddi/conf`.

4 Shutdown HP SOA Registry Foundation, delete the `REGISTRY_HOME/work` directory, and restart the registry.

The main class of the custom module must implement `org.systinet.uddi.module.Module` interface that has these methods:

- `load()` is invoked as the first method of the module. You can put reading of the configuration file in here.
- `init()` is invoked after the `load()` method. Put the core implementation of your module in here. Write non-blocking code or start a new thread.
- `destroy()` is invoked just before the HP SOA Registry Foundation shutdown.

## Accessing Registry APIs

To access the HP SOA Registry Foundation API you must obtain the API stub using the `getApiInstance()` method of the API implementation class. For example to obtain the stub of the Statistics API use:

```
StatisticsApi statapi = StatisticsApiImpl.getApiInstance();
```

Mapping between API interface classes and implementation classes is stored in the `REGISTRY_HOME/app/uddi/services/WASP-INF/package.xml` file. See Table 68.

**Table 68. Mapping API Interface and Implemenation Classes**

| Interface class | Implementation class |
|---|---|
| org.systinet.uddi.client.v1.InquireSoap | com.systinet.uddi.inquiry.v1.InquiryApiImpl |
| org.systinet.uddi.client.v1.PublishSoap | com.systinet.uddi.publishing.v1.PublishingApiImpl |
| org.systinet.uddi.client.v2.Publish | com.systinet.uddi.publishing.v2.PublishingApiImpl |
| org.systinet.uddi.client.v2.Inquire | com.systinet.uddi.inquiry.v2.InquiryApiImpl |
| org.systinet.uddi.client.v3.UDDI_Security_PortType | com.systinet.uddi.v3.SecurityApiImpl |
| org.systinet.uddi.client.v3.UDDI_Publication_PortType | com.systinet.uddi.publishing.v3.PublishingApiImpl |
| org.systinet.uddi.client.v3.UDDI_Inquiry_PortType | com.systinet.uddi.inquiry.v3.InquiryApiImpl |
| org.systinet.uddi.client.subscription.v3.UDDI_Subscription_PortType | com.systinet.uddi.subscription.v3.SubscriptionApiImpl |
| org.systinet.uddi.client.custody.v3.UDDI_CustodyTransfer_PortType | com.systinet.uddi.custody.v3.CustodyApiImpl |
| org.systinet.uddi.replication.v3.ReplicationApi | com.systinet.uddi.replication.v3.ReplicationApiImpl |
| org.systinet.uddi.client.wsdl2uddi.v3.Wsdl2uddiApi | com.systinet.uddi.wsdl2uddi.v3.Wsdl2uddiApiImpl |
| org.systinet.uddi.client.wsdl2uddi.v2.Wsdl2uddiApi | com.systinet.uddi.wsdl2uddi.v2.Wsdl2uddiApiImpl |
| org.systinet.uddi.client.category.v3.CategoryApi | com.systinet.uddi.category.v3.CategoryApiImpl |
| org.systinet.uddi.client.taxonomy.v3.TaxonomyApi | com.systinet.uddi.taxonomy.v3.TaxonomyApiImpl |
| org.systinet.uddi.statistics.StatisticsApi | com.systinet.uddi.statistics.StatisticsApiImpl |
| org.systinet.uddi.admin.AdministrationUtilsApi | com.systinet.uddi.admin.AdministrationUtilsApiImpl |
| org.systinet.uddi.permission.PermissionApi | com.systinet.uddi.permission.PermissionApiImpl |
| org.systinet.uddi.group.GroupApi | com.systinet.uddi.group.GroupApiImpl |
| org.systinet.uddi.account.AccountApi | com.systinet.uddi.account.AccountApiImpl |
| org.systinet.uddi.configurator.ConfiguratorApi | com.systinet.uddi.configurator.cluster.ConfiguratorApiImpl |

## Custom Module Sample

This section includes step-by-step instructions how to create a registry module that counts the number of restarts of HP SOA Registry Foundation and saves the result to a configuration file.

Follow these steps:

1 Create Java file `ExampleModule.java` as shown in Example 6 on page 562

2 Compile the module using **java -classpath "%REGISTRY_HOME%\app\uddi\services\WASP-INF\lib\application_ core.jar; %REGISTRY_HOME%\lib\wasp.jar" ExampleModule.java**

3 Copy all module classes (`ExampleModule.class`, `ExampleModule$RestartConfig$Counter.class`, `ExampleModule$RestartConfig.class`) to the `REGISTRY_HOME/app/uddi/services/WASP-INF/classes/com/systinet/example/module` directory.

4 Create the configuration file `mymodule.xml` in `REGISTRY_HOME/app/uddi/conf` folder. For details, please see Example 7 on page 563.

5 Shutdown HP SOA Registry Foundation, delete the `REGISTRY_HOME/work` directory, and restart the registry.

The number of restarts will be printed in the window console in which you started HP SOA Registry Foundation. See also the configuration file of the module where a new element `counter` is created.

## Example 6: `ExampleModule.java`

```
package com.systinet.example.module;

import org.idoox.config.Configurable;
import org.systinet.uddi.module.Module;

public class ExampleModule implements Module {
    private long restart = 0;
    private RestartConfig.Counter counter;

    interface RestartConfig {
        public Counter getCounter();
        public void setCounter(Counter counter);
        public Counter newCounter();
        interface Counter {
            public long getRestart();
            public void setRestart(long restart);
        }
    }

    public void load(Configurable config) {
        System.out.println("MY MODULE CONFIG READING");
        RestartConfig restartConfig = (RestartConfig) config.narrow(RestartConfig.class);
        if (restartConfig != null) {
            counter = restartConfig.getCounter();
            if (counter == null) {
                counter = restartConfig.newCounter();
                restartConfig.setCounter(counter);
            }
            try {
                restart = counter.getRestart();
            } catch (Exception e) {
                counter.setRestart(0);
            }
        }
    }

    public void init() {
        System.out.println("MY MODULE STARTED");
        counter.setRestart(++restart);
        System.out.println("UDDI REGISTRY: number of restarts = " + restart);
    }

    public void destroy() {
    }
}
```

### Example 7: Example configuration file for custom module

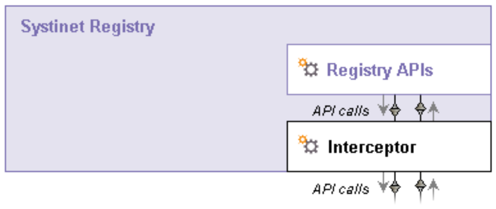
```
<?xml version="1.0" encoding="UTF-8"?>
<config name="myconf">
    <module loader="com.systinet.example.module.ExampleModule" name="MyModule">
    </module>
</config>
```

## Interceptors

Interceptors can monitor or modify the requests and responses of HP SOA Registry Foundation as shown in Figure 149. They are at the lowest level of HP SOA Registry Foundation API call processing, and can be used for:

- Logging requests. See Logging Interceptor Sample on page 564.
- Computing message statistics. See Request Counter Interceptor Sample on page 568.
- Changing request arguments (adding default values)
- Prohibiting some API calls

### Figure 149. Registry Interceptors



There are three types of HP SOA Registry Foundation interceptor:

- **Request Interceptor.** Monitors or modifies request arguments, stops processing requests, or throws an exception. This type of interceptor accepts a called method object and its arguments.
- **Response Interceptor.** Monitors or modifies response values or throws an exception. This interceptor accepts a called method object and its response value.
- **Exception Interceptor.** Monitors, modifies, or changes an exception. This interceptor accepts a called method object and its thrown exception.

If you want to directly access the HP SOA Registry Foundation API see Accessing Registry APIs on page 559 for more information.

## Creating and Deploying Interceptors

To create an Interceptor, follow these steps:

1 Write a class that implements the `org.systinet.uddi.interceptor` interface.

2 Copy your interceptor implementation class to the directory `REGISTRY_HOME/app/uddi/services/Wasp-inf/classes`.

3 Create a configuration file for your interceptor in the `REGISTRY_HOME/app/uddi/conf` directory. See Interceptor Configuration on page 567.

4 Shutdown HP SOA Registry Foundation, delete the `REGISTRY_HOME/work` directory, and restart the registry.

## Logging Interceptor Sample

This section includes step-by-step instructions how to create the interceptor that logs requests.

To create a logging interceptor:

1 Create Java file `LoggingInterceptor.java` as shown in Example 8 on page 566.

2 Compile the interceptor using **Java -classpath "%REGISTRY_HOME%\app\uddi\services\Wasp-inf\lib\application_core.jar; %REGISTRY_HOME%\lib\wasp.jar" LoggingInterceptor.java**

3 Copy `LoggingInterceptor.class` to the `REGISTRY_HOME/app/uddi/services/Wasp-inf/classes/interceptor` directory.

4. Create the configuration file `Myinterceptor.xml` in `REGISTRY_HOME/app/uddi/conf` folder. For details, please see Example 9 on page 567.

5. Shutdown HP SOA Registry Foundation, delete the `REGISTRY_HOME/work` directory, and restart the registry.

## Example 8: Logging Interceptor Class

```
package interceptor;

import org.idoox.config.Configurable;
import org.idoox.wasp.WaspInternalException;
import org.idoox.wasp.interceptor.InterceptorChain;
import org.systinet.uddi.interceptor.ExceptionInterceptor;
import org.systinet.uddi.interceptor.RequestInterceptor;
import org.systinet.uddi.interceptor.ResponseInterceptor;
import org.systinet.uddi.interceptor.StopProcessingException;
import java.lang.reflect.Method;


public class LoggingInterceptor implements RequestInterceptor,
                     ResponseInterceptor, ExceptionInterceptor {

    public void load(Configurable config)
        throws WaspInternalException {
        // no initialization required
    }

    public void destroy() {
        // no destroy required
    }

    public void intercept(Method method,
                          Object[] args,
                          InterceptorChain chain,
                          int position)
        throws StopProcessingException, Exception {
        System.out.println("request: " + method.getName());
    }

    public Object intercept(Method method,
                            Object returnValue,
                            InterceptorChain chain,
                            int position)
        throws Exception {
        System.out.println("response: " + method.getName());
        return returnValue;
    }

    public Exception intercept(Method method,
                               Exception e,
                               InterceptorChain chain,
                               int position) {
        System.out.println("exception: " + method.getName());
        return e;
    }
}
```

## Example 9: Logging Interceptor Configuration File

```
<?xml version="1.0" encoding="UTF-8"?>
<config name="MyInterceptorConfig">
  <UDDIInterceptorInstance name="LoggingInterceptorInstance"
    instancePerCall="false"
    className="interceptor.LoggingInterceptor"/>
  <UDDIInterceptor name="LoggingInterceptor"
    instanceName="LoggingInterceptorInstance"
    interceptorChain="inquiry_v3"
    request="true"
    response="true"
    fault="true" />
</config>
```

## Interceptor Configuration

The configuration file must be present in the `REGISTRY_HOME/app/uddi/conf` directory. For details please see Example 9 on page 567. Interceptors are called in the same order as they appear in the configuration file.

- config name - the unique (unambiguous) name of the configuration.
- `UDDIInterceptorInstance` - contains information about the implementation class and its instantiation.
  - `name` - The name of interceptor instance. This name is used as a link to the UDDIInterceptor/instanceName section of the configuration.
  - `instancePerCall` - If the `instancePerCall` attribute is set to true, then the class will be instantiated once per API call. Otherwise, this interceptor instantiates only once for all calls.
  - `className` - name of the class that implements the interceptor.
- `UDDIInterceptor` - The UDDIInterceptor contains references to UDDI Interceptors and their types.

- `name` - name of the interceptor.
- `instanceName` - this attribute contains the name of the UDDIInterceptorInstance section of the configuration file.
- `interceptorChain` - UDDIInterceptorChains are defined for each API in their configuration files. This attribute contains a reference to the required API.
- `request` - when set true, the interceptor catches requests.
- `response` - when set true, the interceptor catches responses.
- `fault` - when set true, the interceptor catches faults.

### Request Counter Interceptor Sample

In this section, we will create an interceptor that counts requests and stores the number of request to a configuration file. The steps required to create a Request Counter Interceptor are the same as those in the Logging Interceptor Sample on page 564.

Interceptor implementation is shown in Example 10 on page 569; the configuration file is shown in Example 11 on page 570.

## Example 10: Request Counter Interceptor Class

```
package interceptor;

import org.idoox.config.Configurable;
import org.idoox.wasp.WaspInternalException;
import org.idoox.wasp.interceptor.InterceptorChain;
import org.systinet.uddi.interceptor.RequestInterceptor;
import org.systinet.uddi.interceptor.StopProcessingException;
import java.lang.reflect.Method;

public class RequestCounterInterceptor implements RequestInterceptor {

    private long request = 0;
    private RequestCounterInterceptorConfig.Counter counter;

    /**
    * RequestCounterInterceptor config interface
    */
    interface RequestCounterInterceptorConfig {
        public Counter getCounter();
        public void setCounter(Counter counter);
        public Counter newCounter();
        interface Counter {
            public long getRequest();
            public void setRequest(long request);
        }
    }
    public void intercept(Method method,
                          Object[] args,
                          InterceptorChain chain,
                          int position)
        throws StopProcessingException, Exception {
        counter.setRequest(++request);
        System.out.println("request: " + request);
    }

    public void load(Configurable config)
        throws WaspInternalException {
        RequestCounterInterceptorConfig intinterceptorConfig =
                          (RequestCounterInterceptorConfig)
                           config.narrow(RequestCounterInterceptorConfig.class);
        if (intinterceptorConfig != null) {
            counter = intinterceptorConfig.getCounter();
            if (counter == null) {
                counter = intinterceptorConfig.newCounter();
                intinterceptorConfig.setCounter(counter);
            }
            try {
                request = counter.getRequest();
            } catch (Exception e) {
            counter.setRequest(0);
            }
        }
    }

    /**
    * Destroys the interceptor.
    */
    public void destroy() {
        // no destroy required
    }
}
```

**Example 11: Request Counter Interceptor Configuration File**

```
<?xml version="1.0" encoding="UTF-8"?>
<config name="myInterceptors">
    <UDDIInterceptorInstance className="interceptor.RequestCounterInterceptor"
        instancePerCall="false" name="RequestCounterInterceptorSampleInstance">
    </UDDIInterceptorInstance>
    <UDDIInterceptor fault="false"
        instanceName="RequestCounterInterceptorSampleInstance"
        interceptorChain="inquiry_v3" name="RequestCounter" request="true"
        response="false"/>
</config>
```

## Writing a Custom Validation Service

HP SOA Registry Foundation provides several ways to define and use validation services for taxonomies or identifier systems. For details about HP SOA Registry Foundation taxonomies, please see User's Guide, Taxonomy: Principles, Creation and Validation on page 247. This chapter focuses on custom validation services that you can deploy:

- Locally on HP SOA Registry Foundation - Local validation service.
- Remotely to a SOAP server, for example the Systinet Server for Java - External validation service.

There are three different Java interfaces for validation services, one for each of the main UDDI data structures. These interfaces correspond to the WSDL Port Types of the Validation Service defined in the UDDI specification.

- UDDI v3 validation services must implement `org.systinet.uddi.client.valueset.validation.v3.UDDI_ValueSetValidation_PortType`.
- UDDI v2 validation services must implement `org.systinet.uddi.client.vv.v2.ValidateValues`.
- UDDI v1 validation services must implement `org.systinet.uddi.client.vv.v1.ValidateValues`.

These interfaces are similar enough that we will only describe v3 validation. Your validation service must implement the interface `UDDI_ValueSetValidation_PortType`. This interface only has the `validate_values` method which has only one parameter, Validate_values. This parameter is a wrapper for real parameters: optional authInfo and basic UDDI data structures (businessEntities, businessServices, bindingTemplates, tModels and publisherAssertions) to validate. The `validate_values` method returns `org.systinet.uddi.client.v3.struct.DispositionReport`. If validation passes successfully, the DispositionReport should contain only one `org.systinet.uddi.client.v3.struct.Result` with errNo equals `org.systinet.uddi.client.UDDIErrorCodes`.

## Deploying Validation Service

Once the validation service is implemented, you can deploy the validation service locally on HP SOA Registry Foundation. To deploy the validation service on HP SOA Registry Foundation

1. Create a `classes` subdirectory under `REGISTRY_HOME/app/uddi/services/WASP-INF` and copy the class file into this directory (with respect to subdirectories corresponding to packages).

2. Shutdown HP SOA Registry Foundation, delete the `REGISTRY/work` directory, and restart HP SOA Registry Foundation.

For more information, please see the Demos, Validation on page 676. For details about the configuration of Validation Services, please see Administrator's Guide, Taxonomy Management on page 347

To deploy an external validation service, you must create a deployment package.

## External Validation Service

This section shows you how to implement and package an external validation service that will be deployed to Systinet Server for Java 5.5. We show you how to package and deploy the ISBN validation service from the validation demo described in Validation on page 676. We assume you have already built the Validation demo.

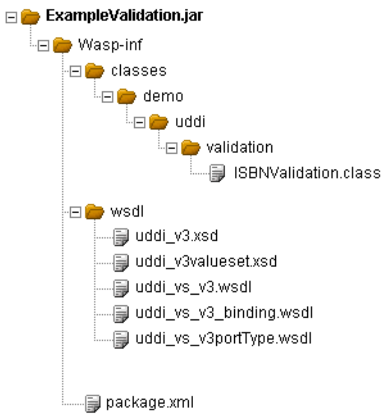
We also assume HP SOA Registry Foundation is installed in the `REGISTRY_HOME` folder and running at `http://localhost:8080/` and that

Systinet Server for Java is installed in `WASP_HOME` folder and running at `http://localhost:6060/`

To package and deploy a validation service to Systinet Server for Java:

1 Create a deployment package.

Create the jar file `ExampleValidation.jar` with the following structure:



```
ExampleValidation.jar
  Wasp-inf
    classes
      demo
        uddi
          validation
            ISBNValidation.class
    wsdl
      uddi_v3.xsd
      uddi_v3valueset.xsd
      uddi_vs_v3.wsdl
      uddi_vs_v3_binding.wsdl
      uddi_vs_v3portType.wsdl
    package.xml
```

Copy `ISBNValidation.class` from `REGISTRY_HOME/demos/advanced/validation/build/classes` to the package.

Copy the wsdl and xsd files from `REGISTRY_HOME/doc/wsdl` to the package.

Copy the `package.xml` file shown at Example 12 on page 574 to the package.

2 Deploy the validation package with required HP SOA Registry Foundation client packages into Systinet Server for Java 5.5.

   a **copy %REGISTRY_HOME%\dist\uddiclient_api_v3.jar %WASP_HOME%\app\system\uddi**

   b **copy %REGISTRY_HOME%\dist\uddiclient_value_set_validation_v3.jar %WASP_HOME%\app\system\uddi**

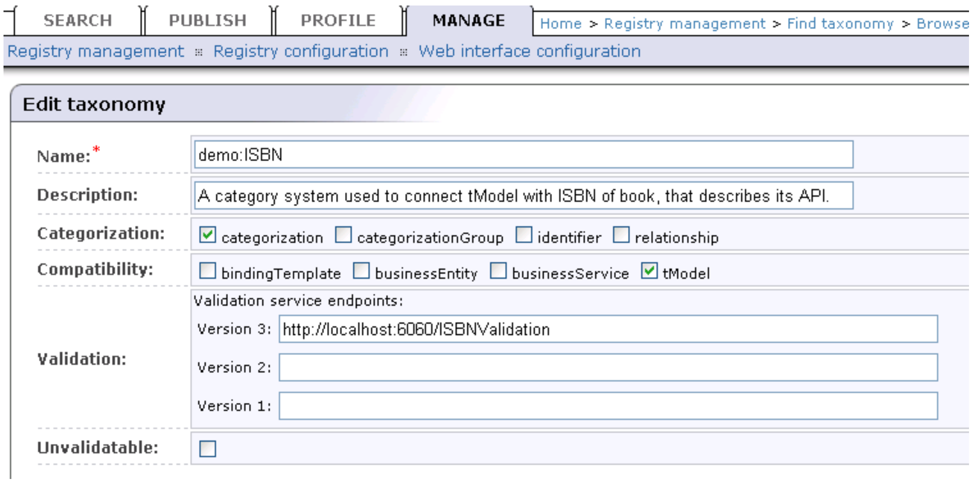
   c **copy ExampleValidation.jar %WASP_HOME%\app\system\uddi**

3 Shutdown the Systinet Server for Java, delete the WASP_HOME/work directory, and restart the Systinet Server for Java

Now you can upload the checked taxonomy from `REGISTRY/demos/advanced/validation/data`. For more information, please see User's Guide Uploading Taxonomies on page 352.

Modify the validation service endpoint as shown in Figure 150

## Figure 150. Validation for Checked Taxonomy


SEARCH
PUBLISH
PROFILE
MANAGE
Home > Registry management > Find taxonomy > Browse
Registry management :: Registry configuration :: Web interface configuration

Edit taxonomy

| | |
|---|---|
| Name:* | demo:ISBN |
| Description: | A category system used to connect tModel with ISBN of book, that describes its API. |
| Categorization: | ✓ categorization ☐ categorizationGroup ☐ identifier ☐ relationship |
| Compatibility: | ☐ bindingTemplate ☐ businessEntity ☐ businessService ✓ tModel |
| Validation: | Validation service endpoints: Version 3: http://localhost:6060/ISBNValidation Version 2: Version 1: |
| Unvalidatable: | ☐ |

You can run and test the validation service using Validation demo described in Validation on page 676.

### Sample Files

**Example 12:** **`package.xml`**

```
<?xml version="1.0" encoding="UTF-8"?>
<package xmlns="http://systinet.com/wasp/package/1.2"
    xsi:schemaLocation=
       "http://systinet.com/wasp/package/1.2 http://systinet.com/wasp/package/1.2"
    targetNamespace="http://my.org" version="1.0"
    name="ISBNValidation" client-package="false" library="false"
    xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
    xmlns:tns="http://my.org"

    xmlns:UDDIClient-value-set-validation-v3=
        "http://systinet.com/uddi/client/value-set-validation/v3/5.0">

<dependency ref="UDDIClient-value-set-validation-v3:UDDIClient-value-set-validation-v3"
   version="5.0"/>
    <service-endpoint name="ISBNValidation"
        path="/ISBNValidation"
        service-instance="tns:ISBNValidationInstance"
    processing="UDDIClient-value-set-validation-v3:UDDIClientProcessing">
        <wsdl uri="uddi_vs_v3.wsdl" xmlns:wsdl="urn:uddi-org:vs_v3_binding"
           service="wsdl:UDDI_ValueSetValidation_SoapService"/>
    </service-endpoint>
    <service-instance name="ISBNValidationInstance"
        implementation-class="demo.uddi.validation.ISBNValidation"
        preload="false" ttl="600" instantiation-method="shared"/>
</package>
```

## Writing a Subscription Notification Service

This section will show you how to implement a subscription notification service. When you create a HP SOA Registry Foundation subscription you can specify a notification listener service endpoint as described in Subscriptions in HP SOA Registry Foundation on page 229. In this chapter, we describe the following use case: The user wants to create a service that will be executed when a subscription notification is sent. The listener notification service will be deployed on the Systinet Server for Java.

The procedure of creating and deploying the subscription notification consist of the following steps:

1. Create subscription notification service class. Package the notification service class with necessary wsdl, schema, and deployment descriptor files.
2. Deploy the service notification package with the required HP SOA Registry Foundation client packages into Systinet Server for Java.
3. Create a subscription using the Registry Console.

➤ We assume HP SOA Registry Foundation is installed in `REGISTRY_HOME` folder and running at `http://localhost:8080/`, and that

Systinet Server for Java is installed in `WASP_HOME` folder and running at `http://localhost:6060/`.

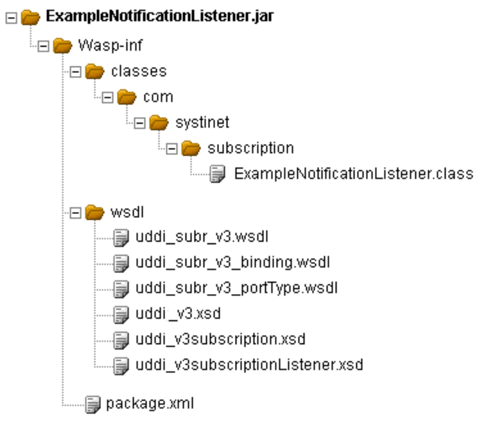
Now we will describe the process in detail:

1. Create the subscription notification service class shown in Example 13 on page 578
2. Compile the `ExampleNotificationListener.java` using:

```
javac -classpath%REGISTRY_HOME%\dist\uddiclient_api_v3.jar;
%REGISTRY_HOME%\dist\uddiclient_core.jar;
%REGISTRY_HOME%\dist\uddiclient_subscription_listener_v3.jar;
%REGISTRY_HOME%\dist\uddiclient_subscription_v3.jar ExampleNotificationListener.java
```

3. Package the `ExampleNotificationListener.class` with necessary wsdl, schema and deployment descriptor file as follows:

   a. Create a jar file `ExampleNotificationListener.jar` with the following structure:



```
ExampleNotificationListener.jar
  Wasp-inf
    classes
      com
        systinet
          subscription
            ExampleNotificationListener.class
    wsdl
      uddi_subr_v3.wsdl
      uddi_subr_v3_binding.wsdl
      uddi_subr_v3_portType.wsdl
      uddi_v3.xsd
      uddi_v3subscription.xsd
      uddi_v3subscriptionListener.xsd
    package.xml
```

b  Copy the wsdl and schema files from `REGISTRY_HOME/doc/wsdl` to the package.

c  Copy the `package.xml` file shown in Example 14 on page 579 to the package.

4  Deploy the service notification package with required HP SOA Registry Foundation client packages into Systinet Server for Java 5.5.

a  **copy %REGISTRY_HOME%\dist\uddiclient_api_v3.jar %WASP_HOME%\app\system\uddi**

b  **copy %REGISTRY_HOME%\dist\uddiclient_subscription_v3.jar %WASP_HOME%\app\system\uddi**

c  **copy %REGISTRY_HOME%\dist\uddiclient_subscription_listener_v3.jar %WASP_HOME%\app\system\uddi**

d  **copy ExampleNotificationListener.jar %WASP_HOME%\app\system\uddi**

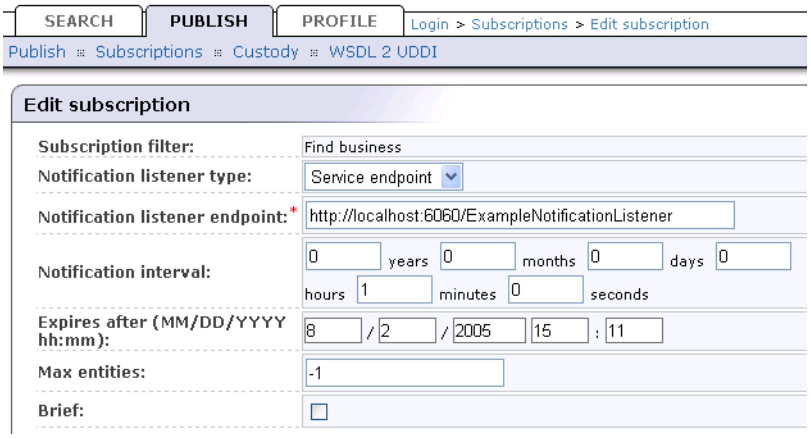
5  Shutdown the Systinet Server for Java, delete the WASP_HOME/work directory, and restart the Systinet Server for Java

6 Create a subscription using the Registry Console.

See Publishing Subscriptions on page 309 for instructions on how to create a subscription.

7 Publish the subscription with the Notification listener type Service endpoint. Enter the Notification listener endpoint as `http://your.computer.name.com:6060/ExampleNotificationListener` as shown in Figure 151

**Figure 151. Create Subscription**


SEARCH
PUBLISH
PROFILE
Login > Subscriptions > Edit subscription
Publish :: Subscriptions :: Custody :: WSDL 2 UDDI

Edit subscription

| | |
|---|---|
| Subscription filter: | Find business |
| Notification listener type: | Service endpoint |
| Notification listener endpoint:* | http://localhost:6060/ExampleNotificationListener |
| Notification interval: | 0 years 0 months 0 days 0 hours 1 minutes 0 seconds |
| Expires after (MM/DD/YYYY hh:mm): | 8 / 2 / 2005 15 : 11 |
| Max entities: | -1 |
| Brief: | ☐ |

**Example 13:** **`ExampleNotificationListener.java`**

```
package com.systinet.subscription;

import org.systinet.uddi.client.subscription.listener.v3.UDDI_SubscriptionListener_PortType;
import org.systinet.uddi.client.subscription.listener.v3.struct.Notify_subscriptionListener;
import org.systinet.uddi.client.v3.UDDIException;
import org.systinet.uddi.client.v3.struct.DispositionReport;

public class ExampleNotificationListener implements UDDI_SubscriptionListener_PortType{

    public DispositionReport notify_subscriptionListener(Notify_subscriptionListener body)
       throws UDDIException {
            System.out.println(body.toXML());
            DispositionReport result = DispositionReport.DISPOSITION_REPORT_SUCCESS;
            return result;
    }
}
```

**Example 14:** `package.xml`

```
<?xml version="1.0" encoding="UTF-8"?>
<package xmlns="http://systinet.com/wasp/package/1.2"
    xsi:schemaLocation="http://systinet.com/wasp/package/1.2 http://systinet.com/wasp/package/1.2"
    targetNamespace="http://my.org" version="1.0"
    name="ExampleNotificationListener" client-package="false" library="false"
    xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
    xmlns:tns="http://my.org"

    xmlns:uddi_subr_v3="urn:uddi-org:subr_v3_binding"
    xmlns:uddiclient_subscription_listener_v3=
       "http://systinet.com/uddi/client/subscription/listener/v3/5.0">

    <dependency ref=
       "uddiclient_subscription_listener_v3:UDDIClient-subscription-listener-v3" version="5.0"/>

    <service-endpoint name="ExampleNotificationListener"
        path="/ExampleNotificationListener"
        service-instance="tns:ExampleNotificationListenerInstance"
        processing="uddiclient_subscription_listener_v3:UDDIClientProcessing">
        <wsdl uri="uddi_subr_v3.wsdl"
            service="uddi_subr_v3:UDDI_SubscriptionListener_SoapService"/>
    </service-endpoint>
    <service-instance name="ExampleNotificationListenerInstance"
        implementation-class="com.systinet.subscription.ExampleNotificationListener"
        preload="false" ttl="600" instantiation-method="shared"/>
</package>
```

## Systinet Web Framework

This section describes HP SOA Registry Foundation from the developer's point of view. It describes the HP SOA Registry Foundation Framework architecture and configuration.

- Architecture Description on page 580
- Directory Structure on page 587
- Framework Configuration on page 589
- syswf JSP tag library on page 593

- Typical Customization Tasks on page 600

## Architecture Description

The framework uses the Jasper engine, a part of the Tomcat server. It is able to run on Jasper1 from Tomcat version 4.1 (Servlet API 2.3/JSP spec 1.2) or Jasper2 from Tomcat version 5 (Servlet API 2.4/JSP spec 2.0). It also uses a customized JSTL 1.0 tag library implementation which is based on Apache tag libraries from the Jakarta project [http://jakarta.apache.org/].

Applications using the Systinet Web Framework are composed of pages. Every page of the web has a URI where it can be accessed. In the Systinet Web Framework, we call each page of the web as a task.

The Systinet Web Framework uses a component model to build up the web application. Every task is assigned to a component which is the real entity behind the process that generates the resulting HTML page displayed to the user. Thus, every task references a component, but components need not be associated with tasks, as we will see later.

Each component is built from two parts:

- a JSP part
- a Java part

The JSP part serves as a template and takes care of parsing and visualization of the data that comes in a session, or in a request to which they are stored in the Java part of a component.

The framework functionality is accessible from the JSP parts of components through the Systinet custom JSP tag library. This library contains tags for creating references to tasks, nesting components, and tags for creating HTML form elements that support dynamic behavior.

Sometimes, a component is purely JSP-based as the one associated with this documentation page. But when the page must process user-entered information, or when data must be modified before presentation, you must use the Java part of the component.

To switch from one page to a another, use the `syswf:control` custom tag in the JSP part of the source task component. The `syswf:control` tag's `targetTask` attribute defines the task (that is, the page) the user should be transferred to. The custom tag is translated into a piece of JavaScript code responsible for correct page submitting.

Tasks can be accessed directly using a web browser. For example, if the registry's web interface runs on the address `http://localhost:8080/uddi/web`, a task with the URI `/findBusiness` can be accessed directly from the client browser at `http://localhost:8080/uddi/web/findBusiness`.

## Component Java Interface Part

The Java part of the component must implement the `com.systinet.webfw.Component` interface from the Web Framework library. However, it usually extends its default implementation: `com.systinet.webfw.ComponentImpl`. For those components that do not declare their Java part, this default implementation is automatically used.

The interface consists of two methods:

- `void process(String action, Map params)`
- `void populate(String action, Map params)`

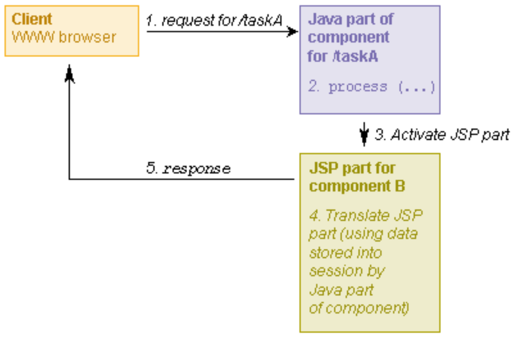
The `process()` method is called just before the translation of the component's JSP part is started, so it should take care of data preparation and it should also handle the actions requested by the user (react to pressed buttons, etc.).

The `populate()` method is called only when the POST request to the URI comes from the same URI , so it's a perfect place to modify the way data from a web page is populated back into objects. Actually, the target objects are always Java Beans which simplify their handling quite a bit.

## Request Diagram

The diagram shown in Figure 152 demonstrates how requests for the page are handled by the Web Framework:

**Figure 152. Request Diagram**


Client
WWW browser
1. request for /taskA
Java part of component for /taskA
2. process (...)
3. Activate JSP part
5. response
JSP part for component B
4. Translate JSP part (using data stored into session by Java part of component)

1 The request is sent by the client browser from a different page than the page requested.

2 The `process()` method is called on taskA component's Java part. This method should perform actions triggered by controls in the web page and/or prepare data for taskA component's JSP part.

3 Processing of taskA component's JSP part is initialized.

4 While taskA component's JSP part is being processed, the resulting HTML is generated.

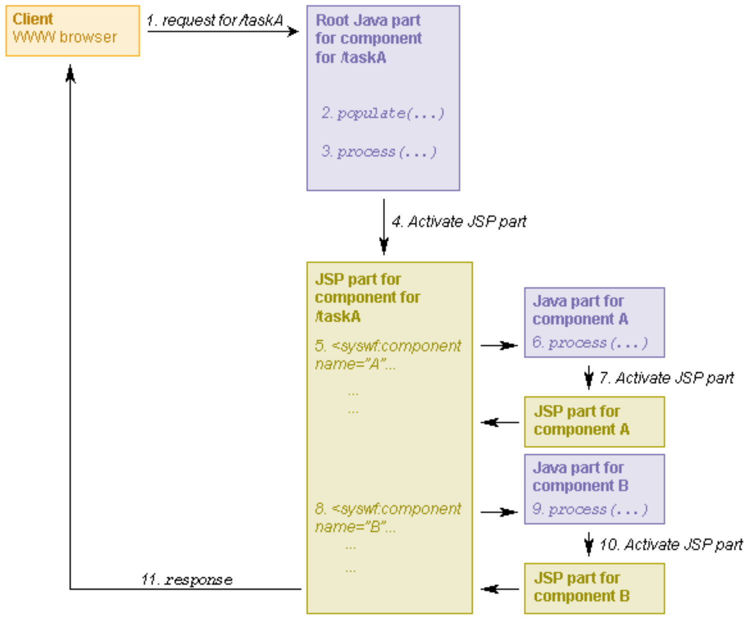
5 Processing of taskA component's JSP part finishes; the response is returned to the client's browser.

If the request is sent by the client browser from the same page as the page requested (meaning the source and target tasks are the same), then the `populate()` method is called on the task component's Java part before the `process()` method.

## Nesting Components

As we noted above, the component JSP part can include other components using the `syswf:component` custom tag right in the JSP code. The diagram shown in Figure 153 presents how a request is handled when there are such nested components. Note that now the request comes from the same task it is targeted to:

**Figure 153. Nesting Components Diagram**



1 The request is sent by the client browser from the same page as the page requested.

2 The `populate()` method is called on taskA component's Java part. This method is responsible for the transfer of data from web page form elements (input fields, radio buttons, etc.) to JavaBeans objects on the server.

3 The `process()` method is called on taskA component's Java part. This method should perform actions triggered by controls in the web page and/or prepare data for taskA component's JSP part.

4 Processing of taskA component's JSP part is initialized.

5 Request for insertion of component A is found.

6 The `process()` method is called on the Java part of component A. This method should prepare data for component presentation.

7 Processing of the JSP part of component A is performed. Once finished, the result is included in the parent JSP page.

8 Request for insertion of component B is found.

9 The `process()` method is called on the Java part of component B. This method should prepare data for component presentation.

10 Processing of the JSP part of component B is performed. Once finished, the result is included in the parent JSP page.

11 Processing of taskA component's JSP part finishes. The response is returned in the client's browser.

## Component JSP Part

### Example 15: Skeleton of the JSP Page

The following example displays the WSDL URL for a WSDL service.

```
<%@ taglib prefix="c" uri="http://java.sun.com/jstl/core" %>
<%@ taglib prefix="syswf" uri="http://systinet.com/jsp/syswf" %>

<syswf:page headerTemplate="pageHeader.jsp" footerTemplate="pageFooter.jsp">

    <syswf:wrap headerTemplate="design/pageHeader.jsp"
        footerTemplate="design/pageFooter.jsp">
    ...
    </syswf:wrap>

</syswf:page>
```

The core of the JSTL (standard tag library) together with the Registry Web Framework custom tag library are imported. The beginning of the page is declared ( `syswf:page` tag); page header and footer represented as JSP pages are passed as attributes. These pages contain the basic HTML tags and declaration of Java Scripts that will be used in the page.

To enable automatic wrapping and resizing, all of the page's content is packed into the `syswf:wrap` tag to which page header and footer JSP pages are passed as attributes. The header and footer pages contain:

- The design part - the logo and menu, such as the labels at the top of this page under the product name
- The navigation path - shown in the top right corner of this page
- Text that should be displayed in the bottom of the page, such as copyright information.

## Implicit Objects

Implicit objects allow you to interact with various framework parts, from Java code or JSP pages. A reference to an implicit object should be obtained from the `com.systinet.uddi.util.CallContext` class, or by using simple getter methods from `com.systinet.webfw.ComponentImpl`.

- **request.** HTTP request interface; here you can read, for example, http headers included in user's request. Using request attributes is the preferred way to transfer data from Java to JSP pages.
- **response.** HTTP response interface; can be used, for example, to set content type and other response header data or to send binary data back to client.
- **localSession.** Contains the `java.util.Map` object, which is accessible from the current task only. For example, when you have tasks A and B in navigation history, each has a separate local session. When you return from task B to task A, the whole local session content of task B is discarded.
- **globalSession.** Contains the `java.util.Map` object, which is shared among all tasks; this session can be used, for example, to store the current user's authToken, or other application-wide data.

## Data Types

Data type classes are responsible for converting values between web page HTML form fields and underlying Java Beans objects. The Data type class must implement the simple interface `com.systinet.webfw.datatype.DataType` with two methods:

- `String objectToWeb(Object value)` provides conversion from arbitrary Java type to String usable in web pages.
- `Object webToObject(String value)` provides conversion in the opposite direction.

There are predefined implementations of this object for converting the simple Java data types string, int, long, and boolean.

## Client-side Validators

Validators can be used to validate user input before a web page is submitted to a server. The validation is invoked by a specific page control (a button or a link). There is a predefined set of validators for common input field checks.

**Table 69. Predefined Validators**

| Name | Description |
|---|---|
| required | Checks if the field is not empty. |
| uddiKey | Checks if the field content starts with the `uddi:` prefix. |
| length50, length80, length255, length4096, length8192 | Checks if the field contains no more than the specified number of characters. |
| email | Checks if the field contains an email address. |
| long | Checks if the field contains a number of type long. |
| int | Checks if the field contains a number of type int. |

To add a validator to an input field or a text area, use the sysfw:checker tag. To trigger the validation control, use the syswf:validate tag.

### Example 16: Validators Usage

```
<syswf:input name="businessKey" value="">
    <syswf:checker name="required" action="viewBusinessV3"/>
    <syswf:checker name="uddiKey" action="viewBusinessV3"/>
</syswf:input>
...
<syswf:control action="viewBusiness" caption="View business" mode="button">
    <syswf:validate action="viewBusinessV3"/>
</syswf:control>
```

The Example 16 on page 586 shows an input field with two checkers, the first one checks if the field is not empty and the second one checks if the field contains a string starting with the prefix `uddi:` (uddi key). Both checkers are invoked when a user clicks the **View business** button.

Validation is performed using a JavaScript function. The validator name is required to be defined in the JavaScript function with the name check_required. The return value from the validator is of the boolean type: true when the field content is valid, and false when content is invalid. In case of error, the validator displays an error message with the description of the allowed field content. This validator is also responsible for transferring the focus to the field with an error.

**Example 17: Required Validator Implementation**

```
// is required checker
function check_required (formID, fieldID)
{
  var value = getFieldValue(formID, fieldID);
  if (isEmpty(value))
  {
    alertRequired();
    setFocus(formID, fieldID);
    return false;
  }
  return true;
}
```

Custom validators should be can be added to the file `REGISTRY_HOME/app/uddi/web.jar/webroot/script/uddi.js`. Many functions for validation are defined in the file `REGISTRY_HOME/app/uddi/web.jar/webroot/script/wf.js`.

## Directory Structure

JSP pages for the HP SOA Registry Foundation user interface are placed in the `REGISTRY_HOME/app/uddi/web.jar/jsp` directory. Static content, such as scripts and images, is stored in the `REGISTRY_HOME/app/uddi/web.jar/webroot` directory.

**Table 70. Root Files**

| File | Description |
|---|---|
| `error.jsp` | skeleton for error page |
| `home.jsp` | main page with welcome text |
| `login.jsp` | login page |
| `management.jsp` | page with buttons for all registry management tasks |
| `pageFooter.jsp` | page header containing required JavaScripts and HTML form. Do not write any design here; use `design/pageFooter.jsp` instead |
| `pageHeader.jsp` | contains mainly page hidden fields. Do not write any design here; use `design/pageHeader.jsp` instead |
| `uddiErrorComponent.jsp` | component responsible for displaying error messages |

**Table 71. Content of Page Directories**

| Directory | Description |
|---|---|
| `account` | All pages related to account management |
| `admin` | Administration tools for tModel deletion and key replacement |
| `configuration` | Registry and web configuration pages |
| `custody` | User interface for custody transfer |
| `design` | Contains various design elements such as frames and tabs |
| `group` | Group management |
| `inquiry` | UDDI inquiry pages |
| `permission` | Permission management |
| `publishing` | UDDI publishing pages |
| `replication` | Replication management |
| `statistics` | Shows registry statistics |
| `subscription` | UDDI subscription pages |
| `taxonomy` | Taxonomy browsing and management |
| `util` | Various page components |
| `wsdl2uddi` | WSDL-to-UDDI mapping pages |
| `xsd2uddi` | Inquiry and publishing pages for mapping of XML schemas to UDDI |

## Framework Configuration

All needed configuration settings are stored in the file `REGISTRY_HOME/app/uddi/conf/web.xml`

## Component

Specifies configuration of page components.

**Table 72. Component Attributes**

| Attribute | Description | Required |
|---|---|---|
| `name` | Unique component identification | yes |
| `className` | Fully qualified class name of the component implementation class | no |
| `page` | Path to JSP page with component design; path is relative to root JSP directory. | no |

### Task

Contains definition of tasks.

**Table 73. Task Attributes**

| Attribute | Description | Required |
|---|---|---|
| `URI` | Unique string used to call a task from controls or directly using http URL; the URI must start with a forward slash (/) character. | yes |
| `caption` | task description to be displayed, for example as page title | no |
| `component` | Name of task root component | yes |

**Table 74. Subelement**

| Element | Description | Required |
|---|---|---|
| `param` | Additional parameters to be passed to the root component; each parameter is specified as name-value pair. | no |

### Data Type

Contains the definition of the data types.

**Table 75. Data Type Attributes**

| Attribute | Description | Required |
|---|---|---|
| `typeName` | Unique name of the data type; this name is used to reference a data type, for example from the syswf:input tag. | yes |
| `className` | Name of data type implementation class | yes |

## Other Configuration

**Table 76. Configuration Elements**

| Element | Description |
|---|---|
| `url` | First part of the URL used to access HP SOA Registry Foundation without encryption (plain HTTP); this part should contain the http protocol prefix, hostname, and port. |
| `secureUrl` | First part of the URL used to access HP SOA Registry Foundation using encryption. This part should contain https protocol prefix, hostname and port. |
| `context` | Context part of the URL, used to access HP SOA Registry Foundation tasks; the default value is `uddi/web` for standalone registries and `wasp/uddi/web` for registries deployed to an application server. |
| `dataContext` | Context part of the URL, used to access HP SOA Registry Foundation's static content, for example, images and cascading style sheets. The default value is `uddi/webdata` for standalone registries and `wasp/uddi/webdata` for registries deployed to an application server. |
| `serverSessionTimeout` | Default timeout of server-side sessions (measured in seconds). |
| `uploadTempDir` | Directory used to store temporary files during the upload process; this path should be relative to service context directory. |
| `maxUploadSize` | Maximum size of uploaded files; larger files are rejected. |
| `jspDir` | Directory with JSP pages; the path should be relative to service context directory. |
| `jspEngine` | Contains JSP engine initialization parameters and the compilation classpath. A complete list of available Jasper initialization parameters can be found below. |

**Table 77. Jasper init Configuration Parameters**

| Parameter name | Default value | Description |
|---|---|---|
| `checkInterval` | 300 | If the `development` parameter is false and `reloading` parameter is true, background compiles are enabled. `checkInterval` is the time in seconds between checks to see if a JSP page needs to be recompiled. |
| `compiler` | javac | Which compiler Ant should be used to compile JSP pages. See the Ant documentation for more information. |
| `classdebuginfo` | true | Indicates whether the class file should be compiled with debugging information |
| `development` | true | Indicates whether Jasper is used in development mode; checks for JSP modification on every access. |
| `enablePooling` | true | Determines whether tag handler pooling is enabled |
| `ieClassId` | clsid:8AD9C840-044E-11D1-B3E9-00805F499D93 | The class-id value sent to Internet Explorer when using >jsp:plugin< tags. |
| `fork` | true | Tells Ant to fork compiles of JSP pages so that a separate JVM is used for JSP page compiles from the JVM in which Tomcat is running. |
| `javaEncoding` | UTF8 | Java file encoding to use for generating java source files. |
| `keepgenerated` | true | Indicates whether generated Java source code for each page is kept or deleted. |
| `logVerbosityLevel` | WARNING | The level of detailed messages to be produced by this servlet. Increasing levels cause the generation of more messages. Valid values are FATAL, ERROR, WARNING, INFORMATION, and DEBUG. |
| `mappedfile` | false | Indicates whether the static content is generated with one print statement per input line, to ease debugging. |
| `reloading` | true | Indicates whether Jasper checks for modified JSPs. |

## syswf JSP tag library

A JSP page using the syswf tag library must include this header `<%@ taglib prefix="syswf" uri="http://systinet.com/jsp/syswf" %>`

### syswf:component

Includes the component with specified parameters.

**Table 78. `syswf:component` Attributes**

| Attribute | Description | Required |
|---|---|---|
| `prefix` | All parameter names in component will be prefixed with this prefix; the prefix must be unique within each JSP page. | yes |
| `name` | Name of component, as written in the config file. | yes |

**Table 79. `syswf:component` Subelements**

| Element | Description | Required |
|---|---|---|
| `param` | When this parameter value is passed into a component, it will be accessible in the request scope in the component Java class and in the JSP page. | optional |

The value of the parameter should be specified in two ways: As a value attribute or as a content of the value tag.

---

**Example 18: Component Parameters**

```
<syswf:component prefix="names" name="nameList">
   <syswf:param name="color1" value="white"/>
   <syswf:param name="color2">black</syswf:param>
</syswf:component>
```

## syswf:page

Creates an HTML page form with all required internal fields. This must be the root element of all components used as tasks.

**Table 80. `syswf:page` Attributes**

| Attribute | Description | Required |
|---|---|---|
| `headerTemplate` | The filename of the JSP page containing the page header, this file is designed to create elements required for framework functionality. Note that there should be no graphic design. | yes |
| `footerTemplate` | The filename of the JSP page containing the page footer, this file is designed to create elements required for framework functionality. Note that there should be no graphic design. | yes |

## syswf:wrap

This tag helps you to separate page functionality from its design. It includes specified header and footer templates before and after the body element. Header and footer templates should be parametrized using `syswf:param` tags.

**Table 81. `syswf:wrap` Attributes**

| Attribute | Description | Required |
|---|---|---|
| `headerTemplate` | File name of JSP page containing the header. | no |
| `footerTemplate` | File name of JSP page containing the footer. | no |

**Table 82. `syswf:wrap` Subelements**

| Element | Description | Required |
|---|---|---|
| `param` | When you pass the parameter value into a component, this parameter will be accessible in the request scope in the component Java class and JSP page. | no |

## syswf:control

Creates a button or link, which should be used to trigger actions and transfers to other tasks.

**Table 83. `syswf:control` Attributes**

| Attribute | Description | Required |
|---|---|---|
| `action` | Action to be passed to a control's parent component. | no |
| `mode` | Allowed values are `button`, `anchor`, `script`, or `image`. The script generates the `submit JavaScript` command, which can be used, for example, as a value for the HTML onClick attribute. Image is a graphic button. | yes |
| `targetTask` | URI of task to be called. | no |
| `targetDepth` | Specifies level in navigation path to be used. | no |
| `targetUrl` | Specifies the URL to be used to submit data; usable, for example, when you need to switch from http to https. | no |
| `caption` | control caption | required in anchor and button mode |
| `hint` | Help text, displayed as tooltip. | no |
| `disabled` | If set to `true`, button is disabled and link cannot be clicked. | no |
| `redirect` | If set to `true`, the task is only redirected to another task. This means that task data stored in a local session will also be accessible from the target task. Normal behavior is that a local session is not transferred between tasks. | no |
| `src` | Path to the image file used as graphic button. | required in image mode |

**Table 84. `syswf:control` Subelements**

| Element | Description | Required |
|---|---|---|
| `param` | Adds action parameters. | no |
| `attribute` | Adds attributes to created input or an HTML tag. | no |

## syswf:input

Inserts input field into JSP page.

**Table 85. `syswf:input` Attributes**

| Attribute | Description | Required |
|---|---|---|
| `name` | Specifies the name of the accessible value of this input field. | yes |
| `value` | Specifies a value which appears in the input field, or a base object for the property attribute. | yes |
| `property` | Contains the property name of the object specified by the expression in the value attribute. | no |
| `hint` | Help text, displayed as a tooltip. | no |
| `dataType` | Data type which will be used to transform values between the underlying Java Bean object and the input field. | no |
| `disabled` | If set to `true`, the input field will be disabled. | no |
| `mode` | A possible value is password, used for password fields. | no |

**Table 86. `syswf:input` Subelements**

| Element | Description | Required |
|---|---|---|
| `attribute` | Appends a name and value pair as attribute to the resulting HTML tag; usable, for example, for the CSS class specification for an input field. | no |

## syswf:selectOne

Displays controls which enable the user to select one value from a list of available values.

**Table 87. `syswf:selectOne` Attributes**

| Attribute | Description | Required |
|---|---|---|
| `name` | Specifies the name under which this value will be accessible; select one element. | yes |
| `mode` | Specifies visual style; possible values are `radio`, `check box`, and `menu`. | no |
| `value` | Specifies a value which will be selected, or a base object for the property attribute. | yes |
| `property` | Contains the property name of the object specified by expression in the value attribute. | no |
| `optionValues` | Specifies a comma-delimited list of available values, the expression of which evaluates either to String[], or to an array of object for the optionValuesProperty attribute. | yes |
| `optionValuesProperty` | Contains property name of objects specified by expression in the optionValues attribute. | no |
| `optionCaptions` | Specifies a comma-delimited list of available captions, the expression of which evaluates either to String[], or to an array of object for the optionCaptionsProperty attribute. | no |
| `optionCaptionsProperty` | Contains property name of objects specified by expression in the optionCaptions attribute. | no |
| `hint` | Help text, displayed as tooltip. | no |
| `dataType` | Data type which will be used to transform values between the underlying Java Bean object and the selected element. | no |

**Table 88. `syswf:selectOne` Subelements**

| Element | Description | Required |
|---|---|---|
| `attribute` | Appends a name/value pair as an attribute to resulting HTML tags. | no |

## syswf:selectMany

Displays controls which enable the user to select multiple values from list of available values.

**Table 89. `syswf:selectMany` Attributes**

| Attribute | Description | Required |
|---|---|---|
| `name` | Specifies the name under which the value of this selectMany element will be accessible. | yes |
| `mode` | Specifies visual style possible values `check`, `box` and `menu`. | no |
| `value` | Specifies an array of values which will be selected, or base objects, for the property attribute. | yes |
| `property` | Contains property name of objects specified by expression in the value attribute. | no |
| `optionValues` | Specifies a comma-delimited list of available values the expression of which evaluates to String[], or to an array of object for the optionValuesProperty attribute. | yes |
| `optionValuesProperty` | Contains the property name of objects specified by expression in the optionValues attribute. | no |
| `optionCaptions` | Specifies a comma-delimited list of available captions, the expression of which evaluates to either String[], or to an array of object for the `optionCaptionsProperty` attribute. | no |
| `optionCaptionsProperty` | Contains a property name for objects specified by expression in the `optionCaptions` attribute. | no |
| `hint` | Help text, displayed as tooltip. | no |

**Table 90. `syswf:selectMany` Subelements**

| Element | Description | Required |
|---|---|---|
| `attribute` | Appends a name/value pair as an attribute to result HTML tags. | no |

## syswf:textArea

Creates a text area HTML component.

**Table 91. `syswf:textArea` Attributes**

| Attribute | Description | Required |
|---|---|---|
| `name` | Specifies the name under which the value of this text area will be accessible. | yes |
| `value` | Specifies a value which appears in the text area, or a base object for the property attribute. | yes |
| `property` | Contains a property name of an object specified by expression in the value attribute. | no |
| `hint` | Help text, displayed as tooltip. | no |
| `dataType` | Data type which will be used to transform values between underlying the Java Bean object and the text area. | no |
| `disabled` | If set to `true`, the text area will be disabled. | optional |

**Table 92. `syswf:textArea` Subelements**

| Element | Description | Required |
|---|---|---|
| `attribute` | Appends a name/value pair as an attribute to the result HTML tag; usable, for example, for CSS class specification for the text area. | no |

## syswf:value

Evaluates the given expression and transform result using data type.

**Table 93. `syswf:value` Attributes**

| Attribute | Description | Required |
|---|---|---|
| `value` | Specifies the expression which will be evaluated. | yes |
| `hint` | Help text, displayed as tooltip. | no |
| `dataType` | Data type which will be used to transform value. | no |

## syswf:size

This tag will fill the page attribute with size of given List, UDDIList, StringArrayList or Array.

**Table 94. `syswf:size` Attributes**

| Attribute | Description | Required |
|---|---|---|
| `var` | Name of variable to store the size of a given list or array. | yes |
| `value` | Specifies an expression to be evaluated; the result must be List, UDDIList, StringArrayList or Array. | yes |
| `scope` | Scope of the variable to store the size of a given list or array. Allowed values are `request`, `session`, `application`, or `default`. | no |

## navigationPath

This component renders the history path (bread crumbs links)

navigationPath component in action

**Example 19: Component Parameters**

```
<syswf:component name="navigationPath" prefix="path"/>
```

## Typical Customization Tasks

- **Q: Where can I find the code which generates the page header?.** A: It is defined in the file `design/pageHeader.jsp`.
- **Q: How do I change the text displayed on a page's title bar?.** A: Modify content of <title> tag in the file `pageHeader.jsp`.
- **Q: Where is the right place to include my own JavaScript files?.** A: Reference to your files should be placed in `pageHeader.jsp`. Place your script files in the `REGISTRY_HOME/app/uddi/web.jar/webroot/script` directory.

- **Q: Where is it possible to change the text displayed in the page footer?.** A: The page footer is defined in the file `design/pageFooter.jsp`.

## UDDI from Developer Tools

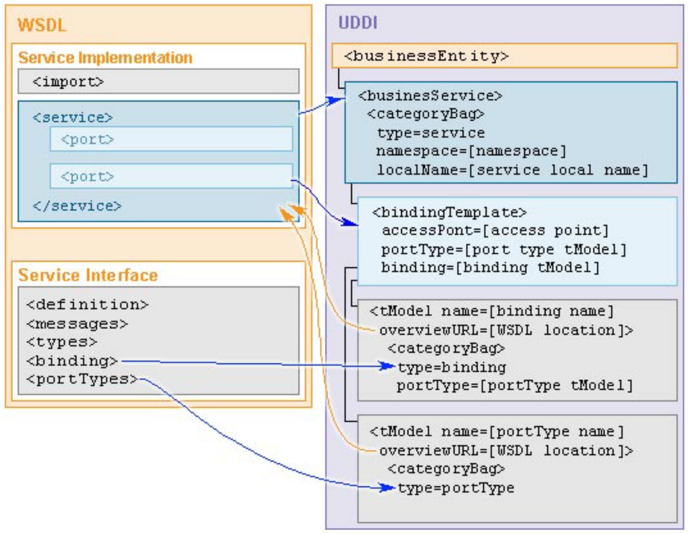
In this section, we will show you how to access UDDI from the following tools:

- HP Developer for Eclipse
- Microsoft Visual Studio .NET

Developer tools include wizards for searching a UDDI registry and publishing to a UDDI registry. We can say that UDDI searching and publishing rely on getting and publishing WSDL files.

Figure 154 shows how a WSDL is mapped to UDDI. For more information, see OASIS Technical Note "Using WSDL in a UDDI Registry" [http://www.oasis-open.org/committees/uddi-spec/doc/tns.htm#WSDLTNV2]

**Figure 154. WSDL Mapping to UDDI**



## UDDI from HP Developer for Eclipse

Eclipse is an open source platform for tool integration. HP Developer for Eclipse, 5.5 extends the Eclipse IDE to support Web services creation, debugging, and deployment. Systinet Developer provides a simple point-and-click code generation experience that can turn any existing Java application into a Web service. HP Developer for Eclipse provides support for:

- Getting data from a UDDI registry for creating Web services and their clients, and for retrieving WSDL files to your project.
- Publishing WSDL definition to a UDDI registry

### Getting Data from UDDI

UDDI searching wizards support the following use cases:

- Retrieving a WSDL document from a UDDI registry into your project.
- Creating Web service client applications from the WSDL document retrieved from a UDDI registry.
- Creating Web service implementations from a WSDL document retrieved from a UDDI registry.

As you see, the core is to retrieve the WSDL document from a UDDI registry. Then, the WSDL document can be used for generating a Web service implementation or a Web service client.

You can obtain the WSDL file by the following methods:

- You can get the WSDL file by WSDL service key or binding keys as shown in Figure 155. In this case, you must know exact UDDI keys. You can get these keys by searching a UDDI registry using a web interface. For searching HP SOA Registry Foundation, you can use both the Registry Console and the Business Service Console.

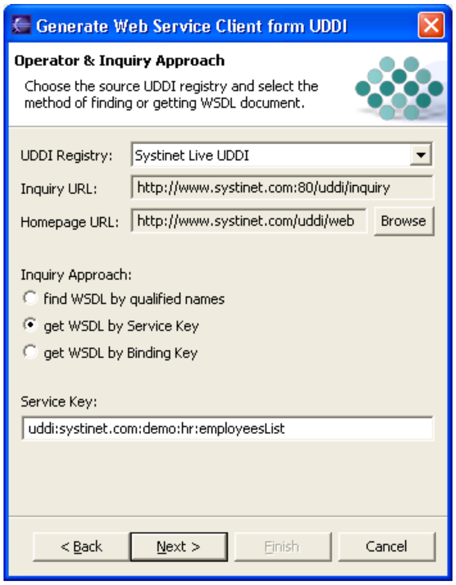
  HP SOA Registry Foundation is fully compliant with the latest UDDI Specification version 3. One of the benefits of the UDDI Specification version 3 is the option to use human readable UDDI keys. The first step of the UDDI inquiry wizard is selection of the version of UDDI Specification that you wish to use for accessing the UDDI registry. HP Developer for Eclipse 5.5 supports version 2 and version 3 of the UDDI Specification.

- You can search by qualified names of the following sections of the WSDL definition:

- WSDL portType (interface)
- WSDL binding (transport)
- WSDL service (endpoint)

You can specify a target namespace for these qualified names as shown in Figure 156. You can also combine searching the UDDI registry with searching via HP SOA Registry Foundation Business Service Console that use names as `interface`, `transport` and `endpoint` for sections of a WSDL file.

**Figure 155. UDDI Search by Keys**


Generate Web Service Client form UDDI

**Operator & Inquiry Approach**

Choose the source UDDI registry and select the method of finding or getting WSDL document.

UDDI Registry: Systinet Live UDDI

Inquiry URL: http://www.systinet.com:80/uddi/inquiry

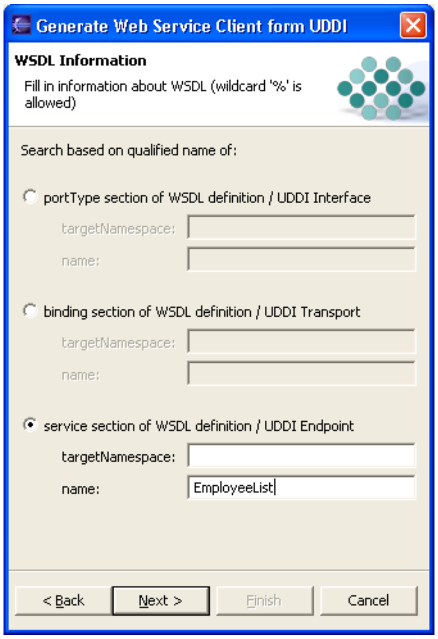
Homepage URL: http://www.systinet.com/uddi/web

Inquiry Approach:

find WSDL by qualified names [✓ get WSDL by Service Key] get WSDL by Binding Key

Service Key: uddi:systinet.com:demo:hr:employeesList

**Figure 156. UDDI Search by Qualified Names**



**WSDL Information**

Fill in information about WSDL (wildcard '%' is allowed)

Search based on qualified name of:

( ) portType section of WSDL definition / UDDI Interface

targetNamespace:

name:

( ) binding section of WSDL definition / UDDI Transport

targetNamespace:

name:

(●) service section of WSDL definition / UDDI Endpoint

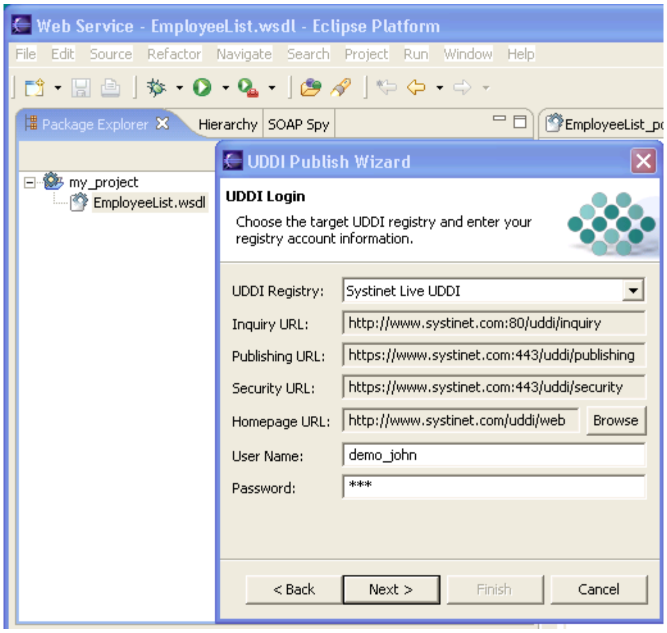
targetNamespace:

name: EmployeeList

## Publishing WSDL to UDDI

UDDI publishing wizards allows you to publish the WSDL representing the Web service to a UDDI registry. The publishing wizard supports both version 2 and version 3 of the UDDI Specification. The selected WSDL file from your project will be published to the UDDI registry under the user account you provide in the publishing wizards as shown in Figure 157. Note that before you can publish a WSDL to a UDDI registry, you must create a business entity under which the WSDL definition representing the Web service will be published as shown in Figure 154.

**Figure 157. UDDI Publish Wizard**



UDDI Login

Choose the target UDDI registry and enter your registry account information.

UDDI Registry: Systinet Live UDDI

Inquiry URL: http://www.systinet.com:80/uddi/inquiry

Publishing URL: https://www.systinet.com:443/uddi/publishing

Security URL: https://www.systinet.com:443/uddi/security

Homepage URL: http://www.systinet.com/uddi/web

User Name: demo_john

Password: ***

## UDDI from MS Visual Studio

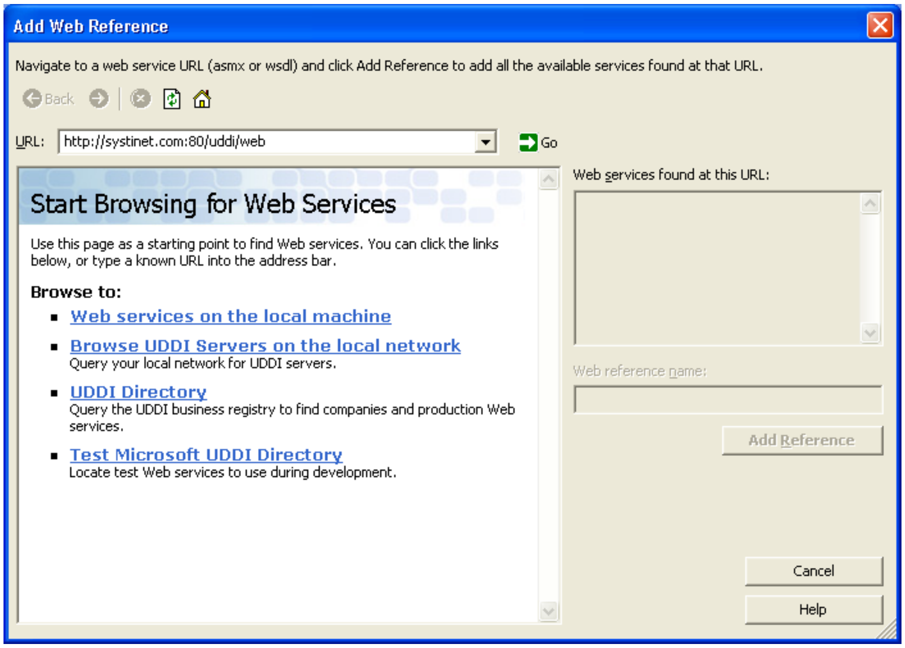
Microsoft Visual Studio .NET 2003 includes a wizard for accessing a UDDI registry that allows you to find a WSDL/ASMX file in the UDDI registry. Once you have found a WSDL, you can add a web reference to the Web service definition file to your project.

To start the Web Reference Wizard:

1 On the **Project** menu in Visual Studio .NET, click **Add Web Reference**.

2 The **Add Web Reference** dialog box shown in Figure 158 appears. Enter the URI of a UDDI registry or the URI of a WSDL document representing the Web service. To browse the Live HP SOA Registry Foundation at HP's web site, enter `http://systinet.com/uddi/web` or `http://systinet.com/uddi/bsc/web`.

**Figure 158. Add Web Reference Default**



Add Web Reference

Navigate to a web service URL (asmx or wsdl) and click Add Reference to add all the available services found at that URL.

URL: http://systinet.com:80/uddi/web

## Start Browsing for Web Services

Use this page as a starting point to find Web services. You can click the links below, or type a known URL into the address bar.

**Browse to:**

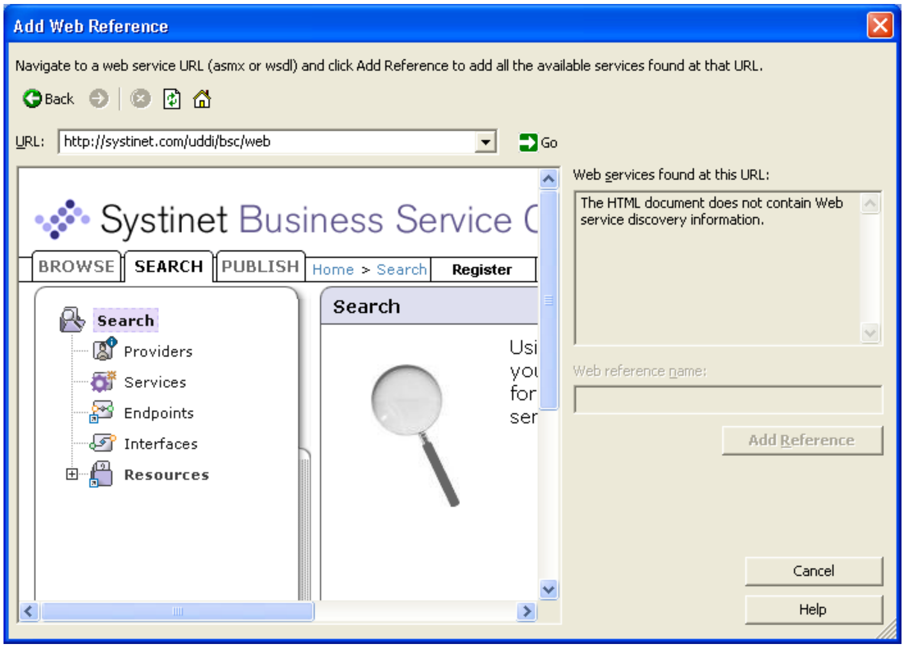
- Web services on the local machine
- Browse UDDI Servers on the local network
  Query your local network for UDDI servers.
- UDDI Directory
  Query the UDDI business registry to find companies and production Web services.
- Test Microsoft UDDI Directory
  Locate test Web services to use during development.

Web services found at this URL:

Web reference name:

Figure 159 shows how to browse/search HP SOA Registry Foundation via the **Add Web Reference Wizard**.

**Figure 159. Searching HP SOA Registry Foundation via Web Reference Wizard**



Add Web Reference

Navigate to a web service URL (asmx or wsdl) and click Add Reference to add all the available services found at that URL.

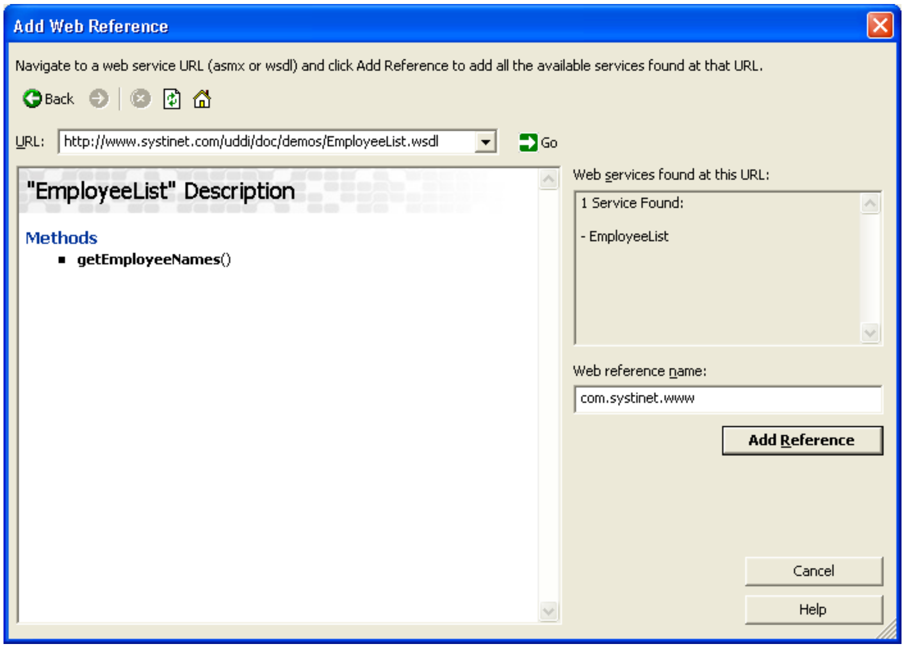
URL: http://systinet.com/uddi/bsc/web

Web services found at this URL:

The HTML document does not contain Web service discovery information.

Web reference name:

**Figure 160. Add Web Reference - Found Web service**



Navigate to a web service URL (asmx or wsdl) and click Add Reference to add all the available services found at that URL.

URL: http://www.systinet.com/uddi/doc/demos/EmployeeList.wsdl

"EmployeeList" Description

Methods

- getEmployeeNames()

Web services found at this URL:

1 Service Found:

- EmployeeList

Web reference name:

com.systinet.www

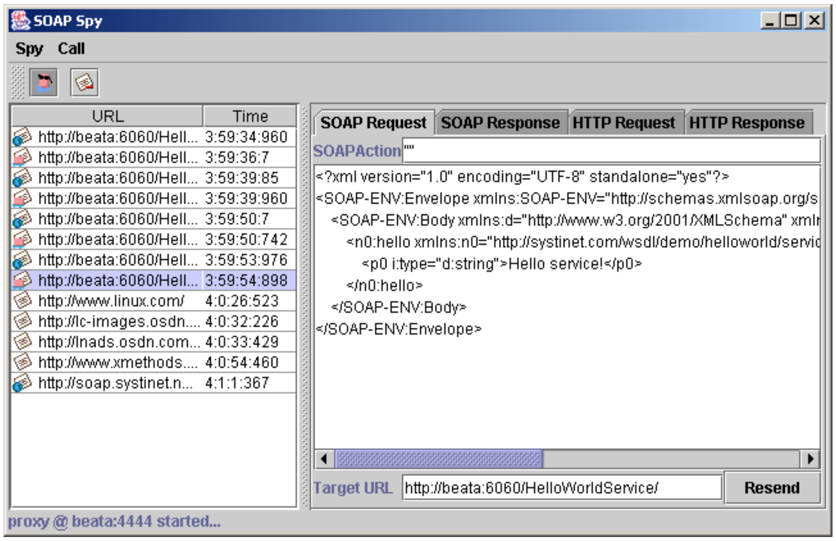
If you find a WSDL file, the wizard shown in Figure 160 parses the WSDL file displaying Web service method. Then, you can click **Add Reference** button to add the reference to your project.

## How to Debug

### SOAPSpy Tool

When debugging, it can be useful to track communication between the client and server. SOAPSpy allows the inspection of messages that the client and server exchange. Messages, or more precisely, requests and responses, are coupled to calls. Figure 161 shows the SOAPSpy dialog box.

**Figure 161. SOAPSpy Tool**



| URL | Time |
|---|---|
| http://beata:6060/Hell... | 3:59:34:960 |
| http://beata:6060/Hell... | 3:59:36:7 |
| http://beata:6060/Hell... | 3:59:39:85 |
| http://beata:6060/Hell... | 3:59:39:960 |
| http://beata:6060/Hell... | 3:59:50:7 |
| http://beata:6060/Hell... | 3:59:50:742 |
| http://beata:6060/Hell... | 3:59:53:976 |
| http://beata:6060/Hell... | 3:59:54:898 |
| http://www.linux.com/ | 4:0:26:523 |
| http://lc-images.osdn.... | 4:0:32:226 |
| http://lnads.osdn.com... | 4:0:33:429 |
| http://www.xmethods.... | 4:0:54:460 |
| http://soap.systinet.n... | 4:1:1:367 |

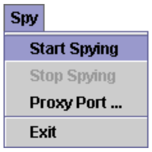
```
<?xml version="1.0" encoding="UTF-8" standalone="yes"?>
<SOAP-ENV:Envelope xmlns:SOAP-ENV="http://schemas.xmlsoap.org/s
  <SOAP-ENV:Body xmlns:d="http://www.w3.org/2001/XMLSchema" xmlr
    <n0:hello xmlns:n0="http://systinet.com/wsdl/demo/helloworld/servic
      <p0 i:type="d:string">Hello service!</p0>
    </n0:hello>
  </SOAP-ENV:Body>
</SOAP-ENV:Envelope>
```

SOAPSpy works as an HTTP proxy server. It accepts HTTP requests from clients and resends them to their final destinations, or to another HTTP proxy server. SOAPSpy can track not only SOAP and WSDL messages, but also any other documents (HTML pages, binary data, etc.). However, the binary data is shown only schematically; all invalid text characters are translated into question mark (?) characters. SOAPSpy can also work as an HTTP server client: you can make it contact another proxy server instead of connecting to the final destination.

## Running SOAPSpy

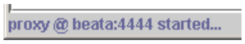
This tool is placed in the `bin` subdirectory of your HP SOA Registry Foundation server distribution. To start SOAPSpy, enter the command **SoapSpy.bat** on Windows platforms, or **./SoapSpy.sh** on UNIX machines.

**Figure 162. Start Spying**



Spying must be started first by selecting **Start Spying** from the **Spy** menu or by clicking the spy icon in the main panel, shown in Figure 162.

**Figure 163. Status Line**


proxy @ beata:4444 started...

The lower part of the window contains a status bar, shown in Figure 163, with information about the state of the tool. Once started, the status line displays the proxy host and port number.

The following options can be used on the command line when activating SOAPSpy:

- **--port [PORT]**

  Starts SOAPSpy at the given port

- **--help**

  Shows the help screen on the console

- **--version**

  shows the version of SOAPSpy on the console

To make SOAPSpy contact another proxy server instead of making a direct connection to the destination, use the standard Java system properties for HTTP proxies:

- **-Dhttp.proxyHost=PROXY_HOST** - The host name of the proxy server
- **-Dhttp.proxyPort=PROXY_PORT** - The port of the proxy server

There are two possible ways to load the tool:

1. **./SoapSpy**
2. **./SoapSpy --port PROXY_PORT**

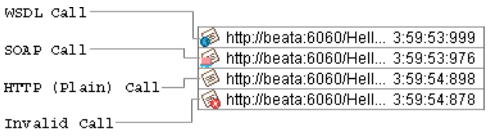
## Using SOAPSpy

The program consists of a call list and a message viewer.

Received calls are stored in a list on the left side of the window. Calls can be selected and examined. Unwanted calls can by removed from the list using the **Call** menu or context pop-up.

The message viewer displays the selected call, as shown in Figure 164. Every call contains HTTP Request and HTTP Response tabs, which contain raw data caught by SOAPSpy. SOAP calls contain two specific panels, SOAP Request and SOAP Response, for advanced manipulation of SOAP messages. The same applies for WSDL calls.

**Figure 164. Call Types**

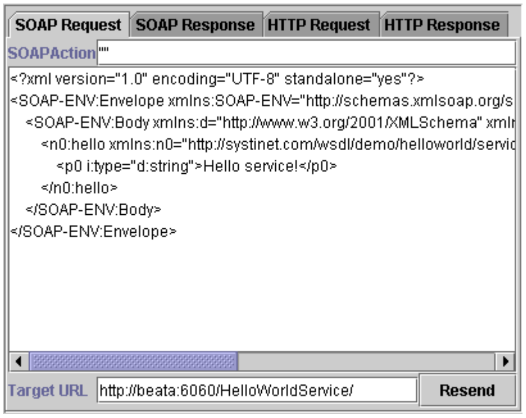


```
http://beata:6060/Hell...  3:59:53:999
http://beata:6060/Hell...  3:59:53:976
http://beata:6060/Hell...  3:59:54:898
http://beata:6060/Hell...  3:59:54:878
```

## SOAP Request Tab

The SOAP Request tab, shown in Figure 165, consists of the SOAP Action, SOAP message and Target URL where the original request was sent. Every file can be edited. Click the **Resend** to produce a new HTTP request. The resent request appears in the call list.

**Figure 165. Request Tab**



SOAPAction ""

```
<?xml version="1.0" encoding="UTF-8" standalone="yes"?>
<SOAP-ENV:Envelope xmlns:SOAP-ENV="http://schemas.xmlsoap.org/s
  <SOAP-ENV:Body xmlns:d="http://www.w3.org/2001/XMLSchema" xmln
    <n0:hello xmlns:n0="http://systinet.com/wsdl/demo/helloworld/servic
      <p0 i:type="d:string">Hello service!</p0>
    </n0:hello>
  </SOAP-ENV:Body>
</SOAP-ENV:Envelope>
```

Target URL http://beata:6060/HelloWorldService/

## How to Run Clients Using SOAPSpy

Java system properties `http.proxyHost` and `http.proxyPort` need to be set. Use the command **java -Dhttp.proxyHost=CLIENT_COMPUTER_NAME -Dhttp.proxyPort=4444...** before running SoapSpy. E.g.:

```
java -Dhttp.proxyHost=%CLIENT_COMPUTER_NAME% -Dhttp.proxyPort=4444 org.my.FooClient
```

Because SoapSpy works with the `java.net` proxy classes, it will not work with a `localhost` address. This applies to the endpoint URL that your client calls. If you do not see any activity when using SoapSpy, this is a likely cause. If you want to try running a service locally, simply obtain the machine's hostname via the `java.net.InetAddress` class.

## Logging

HP SOA Registry Foundation wraps the Log4j [http://logging.apache.org/log4j/docs/index.html] logging service to log errors, warnings, and other information. By default:

- All such events are logged to `REGISTRY_HOME\log\logEvents.log`.
- All errors including stack traces are logged to `REGISTRY_HOME\log\errorEvents.log`.
- Behavior descriptions are configured in `REGISTRY_HOME\conf\log4j.config`.

To use the same logging mechanism in custom server code (such as the Custom Validation Service):

1 Import `com.idoox.debug.Category` to your java class:

```
import com.idoox.debug.Category;
```

2 Create static instance with name of the category:

```
private static Category log = Category.getCategory("com.company.MyValidationService");
```

3 It is a good habit to name the category according to its class name. You can use the category

```
...
try{
      ...
} catch(Exception e){
   log.error("Fatal error", e);
    }
...
```

# 6 Demos

The HP SOA Registry Foundation demos suite is used to teach the capabilities of the HP SOA Registry Foundation APIs and how to make use of these to interact with the registry over a SOAP interface.

If you want to run demos on HP SOA Registry Foundation deployed to an application server, make sure you have properly imported the SSL certificate of the application server to the HP SOA Registry Foundation configuration. For more information see Installation Guide, Deployment to an Application Server on page 147. You may also need to modify the HP SOA Registry Foundation URLs used in demos as shown in the demos property file, `REGISTRY_HOME/demos/env.properties`.

If you get the `java.lang.reflect.UndeclaredThrowableException`, check whether HP SOA Registry is running

The demos are divided into the following categories:

**Basic Demos**

The Basic demos cover inquiry and publishing for versions 1, 2, and 3 of the UDDI specification and WSDL2UDDI for versions 2 and 3.

**Advanced Demos**

The Advanced demos discuss custody, subscriptions, validation, and taxonomies.

**Security Demos**

In the Security demos, we cover accounts, groups, permissions, and access control lists (ACLs).

**Resources Demos**

In the resources demos, we cover publishing of WSDL and XSD.

## Basic Demos

Basic Demos section includes the following demos:

- UDDI v1 demos
- UDDI v2 demos
- UDDI v3 demos

## UDDI v1

- UDDI v1 Inquiry demos
- UDDI v1 Publishing demos

### Inquiry v1

The HP SOA Registry Foundation basic inquiry demo set is used to demonstrate the HP SOA Registry Foundation application programming interface's capabilities and to teach the reader how to use this API to perform basic inquiry calls to a UDDI registry. This documentation covers the UDDI Version 1 Specification [http://www.oasis-open.org/committees/uddi-spec/doc/contribs.htm#uddiv1].

You will learn how to use the HP SOA Registry Foundation client API to contact and get information from a UDDI registry over a SOAP interface. There is one demo for each UDDI call, from `find_business` to `get_tModelDetail`.

The HP SOA Registry Foundation basic inquiry demo set contains following demos to assist you in learning the HP SOA Registry Foundation client API.

**FindBinding.** Demonstrates how to construct and fill the `Find_binding` object, get an Inquiry stub for the UDDI registry, perform a `find_binding` call, and display the results.

**FindBusiness.** Demonstrates how to construct and fill a `Find_business` object, get an Inquiry stub for the UDDI registry, perform a `find_business` call and display the results.

**FindService.** Demonstrates how to construct and fill a `Find_service` object, get an Inquiry stub for the UDDI registry, perform a `find_service` call and display the results.

**FindTModel.** Demonstrates how to construct and fill a `Find_tModel` object, get an Inquiry stub for the UDDI registry, perform a `find_tModel` call and display the results.

**GetBindingDetail.** Demonstrates how to create a `Get_bindingDetail` object, set the bindingKey of the bindingTemplate to be fetched, get an Inquiry stub for the UDDI registry, perform a `get_bindingDetail` call, and display the result.

**GetBusinessDetail.** Demonstrates how to create a `Get_businessDetail` object, set the businessKey of the businessEntity to be fetched, get an Inquiry stub for the UDDI registry, perform a `get_businessDetail` call, and display the result.

**GetServiceDetail.** Demonstrates how to create a `Get_serviceDetail` object, set the serviceKey of the business service to be fetched, get an Inquiry stub for the UDDI registry, perform a `get_serviceDetail` call, and display the result.

**GetTModeDetail.** Demonstrates how to create a `Get_tModelDetail` object, set the tModelKey of the tModel to be fetched, get an Inquiry stub for the UDDI registry, perform a `get_tModelDetail` call, and display the result.

## Prerequisites and Preparatory Steps: Code

We expect, that you have already installed the HP SOA Registry Foundation and set the REGISTRY_HOME environment variable to its installation location.

To run the HP SOA Registry Foundation's demos, your UDDI registry must be running. To start the registry, execute the **serverstart** script:

| | |
|---|---|
| Windows: | %REGISTRY_HOME%\bin\serverstart.bat |
| UNIX: | $REGISTRY_HOME/bin/serverstart.sh |

It is necessary to configure the demos. The configuration system has two levels: global and local. The properties defined at the global level may be overwritten at the local level. The global properties are located in the file:

| | |
|---|---|
| Windows: | %REGISTRY_HOME%\demos\env.properties |
| UNIX: | $REGISTRY_HOME/demos/env.properties |

The values set during the installation of the HP SOA Registry Foundation work out of box, and their modification affects all demos. If you need to redefine a property's value for a single demo (that is, at the local level), edit the file `env.properties` in the directory where `run.bat` (`run.sh`) is located. Local properties for Basic/Inquiry demos are loaded in the file:

| | |
|---|---|
| Windows: | %REGISTRY_HOME%\demos\basic\inquiry\v1\env.properties |
| UNIX: | $REGISTRY_HOME/demos/basic/inquiry/v1/env.properties |

**Table 95. Properties Used in Demos**

| Name | Default Value | Description |
|---|---|---|
| uddi.demos.result.max_rows | 5 | limit on data returned from registry |
| uddi.demos.url.inquiry | `http://localhost:8080/uddi/inquiry` | the inquiry Web service port URL |

## Presentation and Functional Presentation

This section describes programing pattern used in all demos using the FindTModel demo as an example. You can find its source code in the file:

| | |
|---|---|
| Windows: | %REGISTRY_HOME%\demos\basic\inquiry\src\demo\uddi\v1\inquiry\FindTModel.java |
| UNIX: | $REGISTRY_HOME/demos/basic/inquiry/src/demo/uddi/v1/inquiry/FindTModel.java |

The main method is straightforward. It gathers user's input (tModel name), calls a method to initialize the `Find_tModel` object, executes the `find_tModel` UDDI call, and displays the list of found tModels:

```
String name = UserInput.readString("Enter name", "demo%");
Find_tModel find_tModel = createFindByTModel(name, findQualifier);
TModelList result = findTModel(find_tModel);
printTModelList(result);
```

The `createFindTModel()` method is used to create a new instance of the `Find_tModel` class and initialize it with values from parameters:

```
public static Find_tModel createFindByTModel(String name)
  throws InvalidParameterException {
    System.out.println("name = " + name);
    Find_tModel find = new Find_tModel();
    find.setName(name);
    find.setMaxRows(new Integer(MAX_ROWS));
    find.setGeneric(Constants.GENERIC_1_0);
    return find_tModel;
}
```

The helper method `getInquiryStub()` returns the UDDI Inquiry stub of the web service listening at the URL specified in the `URL_INQUIRY` property.

```
public static InquireSoap getInquiryStub()
  throws SOAPException {
    // you can specify your own URL in property - uddi.demos.url.inquiry
    String url = DemoProperties.getProperty(URL_INQUIRY, "http://localhost:8080/uddi/inquiry");
    System.out.print("Using Inquiry at url " + url + " ..");
    InquireSoap inquiry = UDDIInquiryStub.getInstance(url);
    System.out.println(" done");
    return inquiry;
}
```

The UDDI API call `find_tModel` is performed in the method `findTModel`:

```
public static TModelList findTModel(Find_tModel find_tModel)
  throws UDDIException, SOAPException {
    InquireSoap inquiry = getInquiryStub();
    System.out.print("Search in progress ..");
    TModelList tModelList = inquiry.find_tModel(find_tModel);
    System.out.println(" done");
    return tModelList;
}
```

The list of found tModels is printed with the method `printTModelList`. One interesting aspect of the HP SOA Registry Foundation client API is that each UDDIObject contains the method `toXML()`, which returns a human-readable, formatted listing of its XML representation.

```
public static void printTModelList(TModelList tModelList) {
    System.out.println();

    TModelInfoArrayList tModelInfoArrayList = tModelList.getTModelInfoArrayList();
        if (tModelInfoArrayList==null) {
        System.out.println("Nothing found");
        return;
    }

    int position = 1;
    for (Iterator iterator = tModelInfoArrayList.iterator(); iterator.hasNext();) {
        TModelInfo tModelTemplate = (TModelInfo) iterator.next();
        System.out.println("TModel "+position+" : "+tModelTemplate.getTModelKey());
        System.out.println(tModelTemplate.toXML());
        System.out.println();
        System.out.println("***********************************************************");
        position++;
    }
}
```

## Building and Running Demos

This section shows how to build and run the HP SOA Registry Foundation Basic Inquiry demo set. Our example continues with the FindTModel demo.

1 Be sure that the demos are properly configured and the HP SOA Registry Foundation is up and running.

2 Change your working directory to:

| | |
|---|---|
| Windows: | %REGISTRY_HOME%\demos\basic\inquiry\v1 |
| UNIX: | $REGISTRY_HOME/demos/basic/inquiry/v1 |

3 Build all demos using:

| | |
|---|---|
| Windows: | run.bat make |
| UNIX: | ./run.sh make |

When compiling demos on Windows platforms, you may see the following text:

```
A subdirectory or file ..\..\common\.\build\classes already exists.
```

This is expected and does not indicate a problem.

4 To get list of all available demos, run

| | |
|---|---|
| Windows: | run.bat help |
| UNIX: | ./run.sh help |

5 Run a selected demo by executing the **run** command with the name of the demo as a parameter. For example, to run the FindTModel demo, invoke

| | |
|---|---|
| Windows: | run.bat FindTModel |
| UNIX: | ./run.sh FindTModel |

The output of this demo will resemble the following:

```
Running FindTModel demo...
****************************************************************************
***        HP SOA Registry Demo - FindTModelDemo                        ***
****************************************************************************

Searching for tModel where
Enter name [demo%]:
name = demo%
Using Inquiry at url http://mycomp.com:8080/uddi/inquiry .. done
Search in progress .. done

TModel 1 : uuid:13aee5be-8531-343c-98f8-d2d3a9308329
<tModelInfo tModelKey="uuid:13aee5be-8531-343c-98f8-d2d3a9308329" xmlns="urn:uddi-org:api_v1">
<name>demo:departmentID</name>
</tModelInfo>

**********************************************************
TModel 2 : uuid:8af5f49e-e793-3719-92f3-6ab8998eb5a9
<tModelInfo tModelKey="uuid:8af5f49e-e793-3719-92f3-6ab8998eb5a9" xmlns="urn:uddi-org:api_v1">
<name>demo:hierarchy</name>
</tModelInfo>

**********************************************************
TModel 3 : uuid:5c1d5d80-a4d4-11d8-91cd-5c1d367091cd
<tModelInfo tModelKey="uuid:5c1d5d80-a4d4-11d8-91cd-5c1d367091cd" xmlns="urn:uddi-org:api_v1">
<name>Demo identifier</name>
</tModelInfo>

                    **********************************************************
```

6 To rebuild demos, execute `run.bat clean` (`./run.sh clean`) to delete the classes directory and `run.bat make` (`./run.sh make`) to rebuild the demo classes.

## Publishing v1

The HP SOA Registry Foundation basic publishing demo set demonstrates the HP SOA Registry Foundation application programming interface's capabilities and teaches how to use this API to perform basic publishing calls to a UDDI registry.

The HP SOA Registry Foundation basic publishing demos cover the publication aspect of the UDDI Version 1 Specification [http://www.oasis-open.org/committees/uddi-spec/doc/contribs.htm#uddiv1]. You will learn, how to use the HP SOA Registry Foundation client API to publish information to a UDDI registry over a SOAP interface. There is one demo for each UDDI call, from `delete_binding` to `save_business`.

The HP SOA Registry Foundation basic publishing demo set contains the following demos to assist you in learning the HP SOA Registry Foundation client API.

**DeleteBinding.** Demonstrates how to construct and fill the `Delete_binding` object, get a Publishing stub for the UDDI registry, get an authToken, and perform the `delete_binding` call.

**DeleteBusiness.** Demonstrates how to construct and fill the `Delete_business` object, get Publishing stub for the UDDI registry, get an authToken, and perform the `delete_business` call.

**DeleteService.** Demonstrates how to construct and fill the `Delete_service` object, get Publishing stub for the UDDI registry, get an authToken, and perform the `delete_service` call.

**DeleteTModel.** Demonstrates how to construct and fill the `Delete_tModel` object, get a Publishing stub for the UDDI registry, get an authToken, and perform the `delete_tModel` call.

**GetRegisteredInfo.** Demonstrates how to construct and fill the `Get_registeredInfo` object, get a Publishing stub for the UDDI registry, get an authToken, and perform the `get_registeredInfo` call.

**SaveBinding.** Demonstrates how to construct and fill the `Save_binding` object, get a Publishing stub for the UDDI registry, get an authToken, and perform the `save_binding` call.

**SaveBusiness.** Demonstrates how to construct and fill the `Save_business` object, get a Publishing stub for the UDDI registry, get an authToken, and perform the `save_business` call.

**SaveService.** Demonstrates how to construct and fill the `Save_service` object, get a Publishing stub for the UDDI registry, get an authToken, and perform the `save_service` call.

**SaveTModel.** Demonstrates how to construct and fill the `Save_tModel` object, get a Publishing stub for the UDDI registry, get an authToken, and perform the `save_tModel` call.

## Prerequisites and Preparatory Steps: Code

We expect that you have already installed the HP SOA Registry Foundation and set the `REGISTRY_HOME` environment variable to its installation location.

To run the HP SOA Registry Foundation's demos, your UDDI registry must be running. To start the registry, execute the **serverstart** script:

| | |
|---|---|
| Windows: | %REGISTRY_HOME%\bin\serverstart.bat |
| UNIX: | $REGISTRY_HOME/bin/serverstart.sh |

It is necessary to configure the demos. The configuration system has two levels: global and local. The properties defined at the global level may be overwritten at the local level. The global properties are located in the file:

| | |
|---|---|
| Windows: | %REGISTRY_HOME%\demos\env.properties |
| UNIX: | %REGISTRY_HOME/demos/env.properties |

The values set during the installation of the HP SOA Registry Foundation work out of the box, and their modification affects all demos. If you need to redefine a property's value for a single demo (that is, at the local level), edit the file `env.properties` in the directory where `run.sh`(`run.bat`) is located. Local level properties for the `Basic/Inquiry` demos are loaded from the file:

| | |
|---|---|
| Windows: | %REGISTRY_HOME%\demos\basic\publishing\v1\env.properties |
| UNIX: | $REGISTRY_HOME/demos/basic/publishing/v1/env.properties |

**Table 96. Properties Used in the demos**

| Name | Default Value | Description |
|---|---|---|
| uddi.demos.user.john.name | demo_john | First user's name |
| uddi.demos.user.john.password | demo_john | First user's password |
| uddi.demos.user.jane.name | demo_jane | Second user's name |
| uddi.demos.user.jane.password | demo_jane | Second user's password |
| uddi.demos.url.publishing | `http://localhost:8080/uddi/publishing` | The publication Web service port URL |
| uddi.demos.url.security | `http://localhost:8080/uddi/security` | The security Web service port URL |

## Presentation and Functional Presentation

This section describes the programming pattern used in all demos using the SaveBusiness demo as an example. You can find this demo's source code in the file:

| | |
|---|---|
| Windows: | %REGISTRY_HOME%\demos\basic\publishing\src\demo\uddi\v1\publishing\SaveBusiness.java |
| UNIX: | $REGISTRY_HOME/demos/basic/publishing/src/demo/uddi/v1/publishing/SaveBusiness.java |

The main method is easy to understand:

1. It gathers the user's input: an optional publisher-assigned businessKey, an array of business entity names with their language codes, and the business' description.

2. The next step is to get the security stub and authorize the user. The resulting authInfo string is a secret key passed in all requests.

3. Next, the `Save_business` object is created, filled, and passed to the `saveBusiness` method as a parameter.

   When successful, the `BusinessDetail` object is returned from the UDDI registry and printed.

4. The last step is to discard the authInfo string, so that no malicious user can use it to compromise a user's account.

```
String name = UserInput.readString("Enter business name", "Marketing");
String description = UserInput.readString("Enter description", "Saved by SaveBusiness demo");
System.out.println();

UDDI_Security_PortType security = getSecurityStub();
String authInfo = getAuthInfo(user, password, security);
Save_business save = createSaveBusiness(businessKey, names, languageCodes, description, authInfo);
BusinessDetail result = saveBusiness(save);
printBusinessDetail(result);
discardAuthInfo(authInfo, security);
```

The helper method, `getSecurityStub()` returns the UDDI Security stub of the web service listening at the URL specified by the `URL_SECURITY` property.

```
public static UDDI_Security_PortType getSecurityStub()
  throws SOAPException {
  // you can specify your own URL in property - uddi.demos.url.security
  String url = DemoProperties.getProperty(URL_SECURITY, "http://localhost:8080/uddi/security");
  System.out.print("Using Security at url " + url + " ..");
  UDDI_Security_PortType security = UDDISecurityStub.getInstance(url);
  System.out.println(" done");
  return security;
}
```

Similarly, the helper method `getPublishingStub()` returns the UDDI Publication stub of the Web service listening at the URL specified by the `URL_PUBLISHING` property.

```
public static UDDI_Publication_PortType getPublishingStub()
  throws SOAPException {
    // you can specify your own URL in property - uddi.demos.url.publishing
    String url = DemoProperties.getProperty(URL_PUBLISHING,
        "http://localhost:8080/uddi/publishing");
    System.out.print("Using Publishing at url " + url + " ..");
    UDDI_Publication_PortType inquiry = UDDIPublishStub.getInstance(url);
    System.out.println(" done");
    return inquiry;
}
```

The `getAuthInfo()` method is used to authorize the user against the UDDI registry and to get the secret key authInfo.

```
public static String getAuthInfo(String userName,
     String password, UDDI_Security_PortType security)
  throws InvalidParameterException, UDDIException {
    System.out.print("Logging in ..");
    AuthToken authToken = security.get_authToken(new Get_authToken(userName, password));
    System.out.println(" done");
    return authToken.getAuthInfo();
}
```

The `discardAuthInfo()` method invalidates the secret key authInfo, so it cannot be reused.

```
public static DispositionReport discardAuthInfo(String authInfo,
       UDDI_Security_PortType security)
  throws InvalidParameterException, UDDIException {
    System.out.print("Logging out ..");
    DispositionReport dispositionReport = security.discard_authToken(new Discard_authToken(authInfo));
    System.out.println(" done");
    return dispositionReport;
}
```

The `createSaveBusiness()` method is used to create a new instance of the `Save_business` class and initialize it with values from parameters:

```
public static Save_business createSaveBusiness(String name,
            String description, String authInfo)
  throws InvalidParameterException {
    System.out.println("name = " + name);
    System.out.println("description = " + description);

    BusinessEntity businessEntity = new BusinessEntity();
    businessEntity.setBusinessKey("");
    businessEntity.setName(name);
    businessEntity.addDescription(new Description(description));

    Save_business save = new Save_business();
    save.addBusinessEntity(businessEntity);
    save.setAuthInfo(authInfo);
    save.setGeneric(Constants.GENERIC_1_0);
    return save;
}
```

The UDDI API call `save_business` is performed in the `saveBusiness()` method:

```
public static BusinessDetail saveBusiness(Save_business save)
  throws UDDIException, SOAPException {
    UDDI_Publication_PortType publishing = getPublishingStub();
    System.out.print("Save in progress ...");
    BusinessDetail businessDetail = publishing.save_business(save);
    System.out.println(" done");
    return businessDetail;
}
```

The saved businessEntity is displayed by the `printBusinessDetail()` method. One interesting aspect of the HP SOA Registry Foundation client API is that each UDDIObject contains the `toXML()`, which returns a human-readable formatted listing of the XML representation.

```
public static void printBusinessDetail(BusinessDetail businessDetail) {
    System.out.println();
    BusinessEntityArrayList businessEntityArrayList = businessDetail.getBusinessEntityArrayList();
    int position = 1;
    for (Iterator iterator = businessEntityArrayList.iterator(); iterator.hasNext();) {
        BusinessEntity entity = (BusinessEntity) iterator.next();
        System.out.println("Business " + position + " : " + entity.getBusinessKey());
        System.out.println(entity.toXML());
        System.out.println();
        System.out.println("**********************************************************");
        position++;
    }
}
```

## Building and Running Demos

This section shows how to build and run the HP SOA Registry Foundation Basic Publishing demo set. Let us continue with our SaveBusiness demo.

1 Be sure that the demos are properly configured and the HP SOA Registry Foundation is up and running.

2 Change your working directory to

| | |
|---|---|
| Windows: | %REGISTRY_HOME%\demos\basic\publishing\v1 |
| UNIX: | $REGISTRY_HOME/demos/basic/publishing/v1 |

3 Build all demos using:

| | |
|---|---|
| Windows: | run.bat make |
| UNIX: | ./run.sh make |

When compiling demos on Windows platforms, you may see the following text:

```
subdirectory or file ..\..\common\.\build\classes already exists.
```

This is expected and does not indicate a problem.

4 To get list of all available demos, run

| | |
|---|---|
| Windows: | run.bat help |
| UNIX: | ./run.sh help |

5 The selected demo can be executed via the **run** command using the name of demo as a parameter. For example, to run the SaveBusiness demo, invoke

| | |
|---|---|
| Windows: | run.bat SaveBusiness |
| UNIX: | ./run.sh SaveBusiness |

The output of this demo will resemble the following:

```
Running SaveBusiness demo...
***************************************************************************
              HP SOA Registry Demo - SaveBusiness
***************************************************************************

Saving business entity where
Enter business name [Marketing]:
Enter description [Saved by SaveBusiness demo]:

Using Publishing at url https://mycomp.com:8443/uddi/publishing .. done
Logging in .. done
name = Marketing
description = Saved by SaveBusiness demo
Save in progress ... done

Business 1 : 79596f30-a5a9-11d8-91cd-5c1d367091cd
<businessEntity businessKey="79596f30-a5a9-11d8-91cd-5c1d367091cd" operator="Systinet"
  authorizedName="demo_john" xmlns="urn:uddi-org:api">
    <name>Marketing</name>
    <description>Saved by SaveBusiness demo</description>
</businessEntity>

*********************************************************
Logging out .. done
```

6. To rebuild demos, execute `run.bat clean` (`./run.sh clean`) to delete the classes directory and `run.bat make` (`./run.sh make`) to rebuild the demo classes.

## UDDI v2

- UDDI v2 Inquiry demos
- UDDI v2 Publishing demos

### Inquiry v2

The HP SOA Registry Foundation basic inquiry demo set is used to demonstrate the HP SOA Registry Foundation application programming interface's capabilities and to teach the reader how to use this API to perform basic inquiry calls to a UDDI registry.

The HP SOA Registry Foundation basic inquiry demos cover inquiry aspects of the UDDI Version 2.0.4 Specification [http://www.oasis-open.org/committees/uddi-spec/doc/tcspecs.htm#uddiv2]. You will learn how to use the HP SOA Registry Foundation client API to contact and get information from a UDDI registry over a SOAP interface. There is one demo for each UDDI call, from `find_business` to `get_tModelDetail`.

The HP SOA Registry Foundation basic inquiry demo set contains following demos to assist you in learning the HP SOA Registry Foundation client API.

**FindBinding.** Demonstrates how to construct and fill the `Find_binding` object, get an Inquiry stub for the UDDI registry, perform a `find_binding` call, and display the results.

**FindBusiness.** Demonstrates how to construct and fill a `Find_business` object, get an Inquiry stub for the UDDI registry, perform a `find_business` call and display the results.

**FindRelatedBusiness.** Demonstrates how to construct and fill a `Find_relatedBusiness` object, get an Inquiry stub for the UDDI registry, perform a `find_relatedBusiness` call and display the results.

**FindService.** Demonstrates how to construct and fill a `Find_service` object, get an Inquiry stub for the UDDI registry, perform a `find_service` call and display the results.

**FindTModel.** Demonstrates how to construct and fill a `Find_tModel` object, get an Inquiry stub for the UDDI registry, perform a `find_tModel` call and display the results.

**GetBindingDetail.** Demonstrates how to create a `Get_bindingDetail` object, set the bindingKey of the bindingTemplate to be fetched, get an Inquiry stub for the UDDI registry, perform a `get_bindingDetail` call, and display the result.

**GetBusinessDetail.** Demonstrates how to create a `Get_businessDetail` object, set the businessKey of the businessEntity to be fetched, get an Inquiry stub for the UDDI registry, perform a `get_businessDetail` call, and display the result.

**GetServiceDetail.** Demonstrates how to create a `Get_serviceDetail` object, set the serviceKey of the business service to be fetched, get an Inquiry stub for the UDDI registry, perform a `get_serviceDetail` call, and display the result.

**GetTModeDetail.** Demonstrates how to create a `Get_tModelDetail` object, set the tModelKey of the tModel to be fetched, get an Inquiry stub for the UDDI registry, perform a `get_tModelDetail` call, and display the result.

## Prerequisites and Preparatory Steps: Code

We expect, that you have already installed the HP SOA Registry Foundation registry and set the REGISTRY_HOME environment variable to its installation location.

To run HP SOA Registry Foundation's demos, your UDDI registry must be running. To start the registry, execute the **serverstart** script:

| | |
|---|---|
| Windows: | %REGISTRY_HOME%\bin\serverstart.bat |
| UNIX: | $REGISTRY_HOME/bin/serverstart.sh |

It is necessary to configure the demos. The configuration system has two levels: global and local. The properties defined at the global level may be overwritten at the local level. The global properties are located in the file:

| | |
|---|---|
| Windows: | %REGISTRY_HOME%\demos\env.properties |
| UNIX: | $REGISTRY_HOME/demos/env.properties |

The values set during the installation of the HP SOA Registry Foundation work out of box, and their modification affects all demos. If you need to redefine the value of some property for a single demo (that is, at the local level), edit the file `env.properties` in the directory where `run.bat` ( `run.sh`) is located. Local level properties for Basic/Inquiry demos are loaded in the file:

| | |
|---|---|
| Windows: | %REGISTRY_HOME%\demos\basic\inquiry\v2\env.properties |
| UNIX: | $REGISTRY_HOME/demos/basic/inquiry/v2/env.properties |

**Table 97. Properties Used in Demos**

| Name | Default Value | Description |
|---|---|---|
| uddi.demos.result.max_rows | 5 | limit of data returned from registry |
| uddi.demos.url.inquiry | `http://localhost:8080/uddi/inquiry` | the inquiry Web service port URL |

## Presentation and Functional Presentation

This section describes the programing pattern used in all demos using the FindTModel demo as an example. You can find its source code in the file:

| | |
|---|---|
| Windows: | %REGISTRY_HOME%\demos\basic\inquiry\src\demo\uddi\v2\inquiry\FindTModel.java |
| UNIX: | $REGISTRY_HOME/demos/basic/inquiry/src/demo/uddi/v2/inquiry/FindTModel.java |

The main method is straightforward. It gathers user's input (tModel name), calls a method to initialize the `Find_tModel` object, executes the `find_tModel` UDDI call, and displays the list of found tModels:

```
String name = UserInput.readString("Enter name", "demo%");
Find_tModel find_tModel = createFindByTModel(name, findQualifier);
TModelList result = findTModel(find_tModel);
printTModelList(result);
```

The `createFindTModel()` method is used to create new instance of the `Find_tModel` class and initialize it with values from parameters:

```
public static Find_tModel createFindByTModel(String name)
  throws InvalidParameterException {
    System.out.println("name = " + name);
    Find_tModel find = new Find_tModel();
    find.setName(new Name(name));
    find.setMaxRows(new Integer(MAX_ROWS));
    find.setGeneric(Constants.GENERIC_2_0);
    return find_tModel;
}
```

The helper method `getInquiryStub()` returns the UDDI Inquiry stub of the web service listening at the URL specified in the `URL_INQUIRY` property.

```
public static UDDI_Inquiry_PortType getInquiryStub()
  throws SOAPException {
    // you can specify your own URL in property - uddi.demos.url.inquiry
    String url = DemoProperties.getProperty(URL_INQUIRY, "http://localhost:8080/uddi/inquiry");
    System.out.print("Using Inquiry at url " + url + " ..");
    UDDI_Inquiry_PortType inquiry = UDDIInquiryStub.getInstance(url);
    System.out.println(" done");
    return inquiry;
}
```

The UDDI API call `find_tModel` is performed in the method `findTModel`:

```
public static TModelList findTModel(Find_tModel find_tModel)
  throws UDDIException, SOAPException {
    UDDI_Inquiry_PortType inquiry = getInquiryStub();
    System.out.print("Search in progress ..");
    TModelList tModelList = inquiry.find_tModel(find_tModel);
    System.out.println(" done");
    return tModelList;
}
```

The list of found tModels is printed with the method `printTModelList`. One interesting aspect of the HP SOA Registry Foundation client API is that each UDDIObject contains method `toXML()`, which returns a human-readable, formatted listing of its XML representation.

```
public static void printTModelList(TModelList tModelList) {
    System.out.println();

    TModelInfoArrayList tModelInfoArrayList = tModelList.getTModelInfoArrayList();
        if (tModelInfoArrayList==null) {
        System.out.println("Nothing found");
        return;
    }

    int position = 1;
    for (Iterator iterator = tModelInfoArrayList.iterator(); iterator.hasNext();) {
        TModelInfo tModelTemplate = (TModelInfo) iterator.next();
        System.out.println("TModel "+position+" : "+tModelTemplate.getTModelKey());
        System.out.println(tModelTemplate.toXML());
        System.out.println();
        System.out.println("********************************************************");
        position++;
    }
}
```

## Building and Running Demos

This section shows how to build and run the HP SOA Registry Foundation Basic Inquiry demo set. Our example continues with the FindTModel demo.

1 Be sure that the demos are properly configured and the HP SOA Registry Foundation is up and running.

2 Change your working directory to:

| | |
|---|---|
| Windows: | %REGISTRY_HOME%\demos\basic\inquiry\v2 |
| UNIX: | $REGISTRY_HOME/demos/basic/inquiry/v2 |

3 Build all demos using:

| | |
|---|---|
| Windows: | run.bat make |
| UNIX: | ./run.sh make |

When compiling demos on Windows platforms, you may see the following text:

```
A subdirectory or file ..\..\common\.\build\classes already exists.
```

This is expected and does not indicate a problem.

4 To get list of all available demos, run

| | |
|---|---|
| Windows: | run.bat help |
| UNIX: | ./run.sh help |

5 Run a selected demo by executing the **run** command with the name of the demo as a parameter. For example, to run the FindTModel demo, invoke

| | |
|---|---|
| Windows: | run.bat FindTModel |
| UNIX: | ./run.sh FindTModel |

The output of this demo will resemble the following:

```
Running FindTModel demo...
**************************************************************************
***        HP SOA Registry Demo - FindTModelDemo                       ***
**************************************************************************

Searching for tModel where
Enter name [demo%]:
name = demo%
Using Inquiry at url http://mycomp.com:8080/uddi/inquiry .. done
Search in progress .. done

TModel 1 : uuid:13aee5be-8531-343c-98f8-d2d3a9308329
<tModelInfo tModelKey="uuid:13aee5be-8531-343c-98f8-d2d3a9308329" xmlns="urn:uddi-org:api_v2">
<name>demo:departmentID</name>
</tModelInfo>

********************************************************
TModel 2 : uuid:8af5f49e-e793-3719-92f3-6ab8998eb5a9
<tModelInfo tModelKey="uuid:8af5f49e-e793-3719-92f3-6ab8998eb5a9" xmlns="urn:uddi-org:api_v2">
<name>demo:hierarchy</name>
</tModelInfo>

********************************************************
TModel 3 : uuid:5c1d5d80-a4d4-11d8-91cd-5c1d367091cd
<tModelInfo tModelKey="uuid:5c1d5d80-a4d4-11d8-91cd-5c1d367091cd" xmlns="urn:uddi-org:api_v2">
<name>Demo identifier</name>
</tModelInfo>

                    ********************************************************
```

6 To rebuild demos, execute `run.bat clean` (`./run.sh clean`) to delete the classes directory and `run.bat make` (`./run.sh make`) to rebuild the demo classes.

## Publishing v2

The HP SOA Registry Foundation basic publishing demo set demonstrates the HP SOA Registry Foundation application programming interface's capabilities and teaches how to use this API to perform basic publishing calls to a UDDI registry.

The HP SOA Registry Foundation basic publishing demos cover the publication aspect of the UDDI Version 2 Specification [http://www.oasis-open.org/committees/uddi-spec/doc/tcspecs.htm#uddiv2]. You will learn how to use the HP SOA Registry Foundation client API to publish information to a UDDI registry over a SOAP interface. There is one demo for each UDDI call, from `add_publisherAssertion` through `get_registeredInfo` to `save_business`.

The HP SOA Registry Foundation basic publishing demo set contains the following demos. They will assist you in learning the HP SOA Registry Foundation client API.

**AddAssertion.** Demonstrates how to construct and fill the `Add_publisherAssertion` object, get a Publishing stub for the UDDI registry, get an authToken, and perform the `add_publisherAssertion` call.

**DeleteAssertion.** Demonstrates how to construct and fill the `Delete_publisherAssertion` object, get a Publishing stub for the UDDI registry, get an authToken, and perform the `delete_publisherAssertion` call.

**DeleteBinding.** Demonstrates how to construct and fill the `Delete_binding` object, get a Publishing stub for the UDDI registry, get an authToken, and perform the `delete_binding` call.

**DeleteBusiness.** Demonstrates how to construct and fill the `Delete_business` object, get Publishing stub for the UDDI registry, get an authToken, and perform the `delete_business` call.

**DeleteService.** Demonstrates how to construct and fill the `Delete_service` object, get Publishing stub for the UDDI registry, get an authToken, and perform the `delete_service` call.

**DeleteTModel.** Demonstrates how to construct and fill the `Delete_tModel` object, get a Publishing stub for the UDDI registry, get an authToken, and perform the `delete_tModel` call.

**GetAssertionStatusReport.** Demonstrates how to construct and fill the `Get_assertionStatusReport` object, get a Publishing stub for the UDDI registry, get an authToken, and perform the `get_assertionStatusReport` call.

**GetPublisherAssertions.** Demonstrates how to construct and fill the `Get_publisherAssertions` object, get a Publishing stub for the UDDI registry, get an authToken, and perform the `get_publisherAssertions` call.

**GetRegisteredInfo.** Demonstrates how to construct and fill the `Get_registeredInfo` object, get a Publishing stub for the UDDI registry, get an authToken, and perform the `get_registeredInfo` call.

**SaveBinding.** Demonstrates how to construct and fill the `Save_binding` object, get a Publishing stub for the UDDI registry, get an authToken, and perform the `save_binding` call.

**SaveBusiness.** Demonstrates how to construct and fill the `Save_business` object, get a Publishing stub for the UDDI registry, get an authToken, and perform the `save_business` call.

**SaveService.** Demonstrates how to construct and fill the `Save_service` object, get a Publishing stub for the UDDI registry, get an authToken, and perform the `save_service` call.

**SaveTModel.** Demonstrates how to construct and fill the `Save_tModel` object, get a Publishing stub for the UDDI registry, get an authToken, and perform the `save_tModel` call.

**SetAssertions.** Demonstrates how to construct and fill the `Set_publisherAssertions` object, get a Publishing stub for the UDDI registry, get an authToken, and perform the `set_publisherAssertions` call.

## Prerequisites and Preparatory Steps: Code

We expect that you have already installed the HP SOA Registry Foundation and set the `REGISTRY_HOME` environment variable to its installation location.

To run the HP SOA Registry Foundation's demos, your UDDI registry must be running. To start the registry, execute the **serverstart** script:

| | |
|---|---|
| Windows: | %REGISTRY_HOME%\bin\serverstart.bat |
| UNIX: | cd $REGISTRY_HOME/bin/serverstart.sh |

It is neccessary to configure the demos. The configuration system has two levels: global and local. The properties defined at the global level may be overwritten at the local level. The global properties are located in the file:

| | |
|---|---|
| Windows: | %REGISTRY_HOME%\demos\env.properties |
| UNIX: | $REGISTRY_HOME/demos/env.properties |

The values set during the installation of the HP SOA Registry Foundation work out of the box, and their modification affects all demos. If you need to redefine a property's value for a single demo (that is, at the local level), edit the file `env.properties` in the directory where `run.sh`( `run.bat`) is located. Local level properties for the `Basic/Inquiry` demos are loaded from the file:

| | |
|---|---|
| Windows: | %REGISTRY_HOME%\demos\basic\publishing\v2\env.properties |
| UNIX: | $REGISTRY_HOME/demos/basic/publishing/v2/env.properties |

**Table 98. Properties Used in the Demos**

| Name | Default Value | Description |
|---|---|---|
| uddi.demos.user.john.name | demo_john | First user's name |
| uddi.demos.user.john.password | demo_john | First user's password |
| uddi.demos.user.jane.name | demo_jane | Second user's name |
| uddi.demos.user.jane.password | demo_jane | Second user's password |
| uddi.demos.url.publishing | `http://localhost:8080/uddi/publishing` | The publication Web service port URL |
| uddi.demos.url.security | `http://localhost:8080/uddi/security` | The security Web service port URL |

## Presentation and Functional Presentation

This section describes the programming pattern used in all demos using the SaveBusiness demo as an example. You can find this demo's source code in the file:

| | |
|---|---|
| Windows: | %REGISTRY_HOME%\demos\basic\publishing\src\demo\uddi\v2\publishing\SaveBusiness.java |
| UNIX: | $REGISTRY_HOME/demos/basic/publishing/src/demo/uddi/v2/publishing/SaveBusiness.java |

The main method is easy to understand. First it gathers the user's input. Namely optional publisher assigned businessKey, then an array of business entity names with their language codes and finally a description of the business.

The next step is to get the security stub and authorize the user. The resulting authInfo string is a secret key passed in all requests.

Next, the `Save_business` object is created, filled, and passed to the `saveBusiness` method as a parameter.

When successful, the `BusinessDetail` object is returned from the UDDI registry and printed. The last step is to discard the authInfo string, so it cannot be used to compromise a user's account.

```
int count = UserInput.readInt("Enter count of names", 1);
String[] names = new String[count];
String[] languageCodes = new String[count];
for (int i = 0; i < count; i++) {
    String tmp = UserInput.readString("Enter language code", "");
    languageCodes[i] = (tmp.length() > 0) ? tmp : null;
    names[i] = UserInput.readString("Enter name in language " + tmp, "Marketing");
}
String description = UserInput.readString("Enter description",
                                 "Saved by SaveBusiness demo");
System.out.println();

UDDI_Security_PortType security = getSecurityStub();
String authInfo = getAuthInfo(user, password, security);
Save_business save = createSaveBusiness(businessKey, names, languageCodes, description, authInfo);
BusinessDetail result = saveBusiness(save);
printBusinessDetail(result);
discardAuthInfo(authInfo, security);
```

The helper method, `getSecurityStub()` returns the UDDI Security stub of the Web service listening at the URL specified by the `URL_SECURITY` property.

```
public static UDDI_Security_PortType getSecurityStub()
  throws SOAPException {
    // you can specify your own URL in property - uddi.demos.url.security
    String url = DemoProperties.getProperty(URL_SECURITY, "http://localhost:8080/uddi/security");
    System.out.print("Using Security at url " + url + " ..");
    UDDI_Security_PortType security = UDDISecurityStub.getInstance(url);
    System.out.println(" done");
    return security;
}
```

The helper method `getPublishingStub()` returns the UDDI Publication stub of the Web service listening at the URL specified by the `URL_PUBLISHING` property.

```
public static UDDI_Publication_PortType getPublishingStub()
  throws SOAPException {
    // you can specify your own URL in property - uddi.demos.url.publishing
    String url = DemoProperties.getProperty(URL_PUBLISHING,
                    "http://localhost:8080/uddi/publishing");
    System.out.print("Using Publishing at url " + url + " ..");
    UDDI_Publication_PortType inquiry = UDDIPublishStub.getInstance(url);
    System.out.println(" done");
    return inquiry;
}
```

The `getAuthInfo()` method is used to authorize the user against the UDDI registry and to get the secret authInfo key.

```
public static String getAuthInfo(String userName,
                    String password, UDDI_Security_PortType security)
  throws InvalidParameterException, UDDIException {
    System.out.print("Logging in ..");
    AuthToken authToken = security.get_authToken(new Get_authToken(userName, password));
    System.out.println(" done");
    return authToken.getAuthInfo();
}
```

The `discardAuthInfo()` method invalidates the secret authInfo key, so it cannot be used anymore.

```
public static DispositionReport discardAuthInfo(String authInfo,
               UDDI_Security_PortType security)
  throws InvalidParameterException, UDDIException {
    System.out.print("Logging out ..");
    DispositionReport dispositionReport = security.discard_authToken(new Discard_authToken(authInfo));
    System.out.println(" done");
    return dispositionReport;
}
```

The `createSaveBusiness()` method is used to create a new instance of the `Save_business` class and initialize it with values from parameters:

```
public static Save_business createSaveBusiness(String[] names,
String[] nameLangCodes, String description, String authInfo)
  throws InvalidParameterException {
    for (int i = 0; i < names.length; i++) {
        System.out.println("lang = " + nameLangCodes[i] + ", name = " + names[i]);
    }
    System.out.println("description = " + description);

    BusinessEntity businessEntity = new BusinessEntity();
    businessEntity.setBusinessKey("");
    for (int i = 0; i < names.length; i++) {
        if (nameLangCodes[i] == null) {
            businessEntity.addName(new Name(names[i]));
        } else {
            businessEntity.addName(new Name(names[i], nameLangCodes[i]));
        }
    }
    businessEntity.addDescription(new Description(description));
    Save_business save = new Save_business();
    save.addBusinessEntity(businessEntity);
    save.setAuthInfo(authInfo);
    save.setGeneric(Constants.GENERIC_2_0);
    return save;
}
```

The UDDI API call `save_business` is performed in the method `saveBusiness()`:

```
public static BusinessDetail saveBusiness(Save_business save)
  throws UDDIException, SOAPException {
    UDDI_Publication_PortType publishing = getPublishingStub();
    System.out.print("Save in progress ...");
    BusinessDetail businessDetail = publishing.save_business(save);
    System.out.println(" done");
    return businessDetail;
}
```

The saved businessEntity is displayed by the `printBusinessDetail()` method. One interesting aspect of the HP SOA Registry Foundation client API is that each UDDIObject contains the `toXML()`, which returns a human-readable formatted listing of the XML representation.

```
public static void printBusinessDetail(BusinessDetail businessDetail) {
    System.out.println();
    BusinessEntityArrayList businessEntityArrayList = businessDetail.getBusinessEntityArrayList();
    int position = 1;
    for (Iterator iterator = businessEntityArrayList.iterator(); iterator.hasNext();) {
        BusinessEntity entity = (BusinessEntity) iterator.next();
        System.out.println("Business " + position + " : " + entity.getBusinessKey());
        System.out.println(entity.toXML());
        System.out.println();
        System.out.println("**********************************************************");
        position++;
    }
}
```

## Building and Running Demos

This section shows how to build and run the HP SOA Registry Foundation Basic Publishing demo set. Let us continue with our SaveBusiness demo.

1 Be sure that the demos are properly configured and the HP SOA Registry Foundation is up and running.

2 Change your working directory to

| | |
|---|---|
| Windows: | %REGISTRY_HOME%\demos\basic\publishing\v2 |
| UNIX: | $REGISTRY_HOME/demos/basic/publishing/v2 |

3 Build all demos using:

| | |
|---|---|
| Windows: | run.bat make |
| UNIX: | ./run.sh make |

When compiling demos on Windows platforms, you may see the following text:

```
A subdirectory or file ..\..\common\.\build\classes already exists.
```

This is expected and does not indicate a problem.

4 To get list of all available demos, run

| | |
|---|---|
| Windows: | run.bat help |
| UNIX: | ./run.sh help |

5 The selected demo can be executed via the **run** command using the name of the demo as a parameter. For example to run the SaveBusiness demo, invoke

| | |
|---|---|
| Windows: | run.bat SaveBusiness |
| UNIX: | ./run.sh SaveBusiness |

The output of this demo will resemble the following:

```
Running SaveBusiness demo...
**************************************************************************
***    HP SOA Registry Demo - SaveBusiness    ***
**************************************************************************

Saving business entity where
Enter count of names [1]:
Enter language code []:
```

```
Enter name in language  [Marketing]:
Enter description [Saved by SaveBusiness demo]:

Using Publishing at url https://mycomp.com:8443/uddi/publishing .. done
Logging in .. done
lang = null, name = Marketing
description = Saved by SaveBusiness demo
Save in progress ... done

Business 1 : c9e8be50-a5a5-11d8-91cd-5c1d367091cd
<businessEntity businessKey="c9e8be50-a5a5-11d8-91cd-5c1d367091cd" operator="Systinet"
authorizedName="demo_john" xmlns="urn:uddi-org:api_v2">
    <name>Marketing</name>
    <description>Saved by SaveBusiness demo</description>
</businessEntity>

********************************************************
Logging out .. done
```

6. To rebuild demos, execute `run.bat clean` (`./run.sh clean`) to delete the classes directory and `run.bat make` (`./run.sh make`) to rebuild the demo classes.

## UDDI v3

- UDDI v3 Inquiry demos
- UDDI v3 Publishing demos

### Inquiry v3

The HP SOA Registry Foundation basic inquiry demo set is used to demonstrate the HP SOA Registry Foundation application programming interface's capabilities and to teach the reader how to use this API to perform basic inquiry calls to a UDDI registry.

The HP SOA Registry Foundation basic inquiry demos cover the inquiry aspect of the UDDI Version 3.0.1 Specification [http://www.oasis-open.org/committees/uddi-spec/doc/tcspecs.htm#uddiv3]. You will learn how to use the HP SOA Registry Foundation client API to contact and get information from a UDDI registry over a SOAP interface. There is one demo for each UDDI call, from `find_business` to `get_tModel`.

The HP SOA Registry Foundation basic inquiry demo set contains following demos. They will assist you in learning the HP SOA Registry Foundation client API.

**FindBinding.** Demonstrates how to construct and fill the `Find_binding` object, get an Inquiry stub for the UDDI registry, perform a `find_binding` call, and display the results.

**FindBusiness.** Demonstrates how to construct and fill a `Find_business` object, get an Inquiry stub for the UDDI registry, perform a `find_business` call and display the results.

**FindRelatedBusiness.** Demonstrates how to construct and fill a `Find_relatedBusiness` object, get an Inquiry stub for the UDDI registry, perform a `find_relatedBusiness` call and display the results.

**FindService.** Demonstrates how to construct and fill a `Find_service` object, get an Inquiry stub for the UDDI registry, perform a `find_service` call and display the results.

**FindTModel.** Demonstrates how to construct and fill a `Find_tModel` object, get an Inquiry stub for the UDDI registry, perform a `find_tModel` call and display the results.

**GetBindingDetail.** Demonstrates how to create a `Get_bindingDetail` object, set the bindingKey of the bindingTemplate to be fetched, get an Inquiry stub for the UDDI registry, perform a `get_bindingDetail` call, and display the result.

**GetBusinessDetail.** Demonstrates how to create a `Get_businessDetail` object, set the businessKey of the businessEntity to be fetched, get an Inquiry stub for the UDDI registry, perform a `get_businessDetail` call, and display the result.

**GetOperationalInfo.** Demonstrates how to create a `Get_operationalInfo` object, set a UDDI key, get an Inquiry stub for the UDDI registry, perform a `get_operationalInfo` call, and display the operational info of the selected UDDI structure.

**GetServiceDetail.** Demonstrates how to create a `Get_serviceDetail` object, set the serviceKey of the business service to be fetched, get an Inquiry stub for the UDDI registry, perform a `get_serviceDetail` call, and display the result.

**GetTModeDetail.** Demonstrates how to create a `Get_tModelDetail` object, set the tModelKey of the tModel to be fetched, get an Inquiry stub for the UDDI registry, perform a `get_tModelDetail` call, and display the result.

## Prerequisites and Preparatory Steps: Code

We expect, that you have already installed the HP SOA Registry Foundation and set the REGISTRY_HOME environment variable to its installation location.

To run HP SOA Registry Foundation's demos, your UDDI registry must be running. To start the UDDI registry, execute the **serverstart** script:

| | |
|---|---|
| Windows: | %REGISTRY_HOME%\bin\serverstart.bat |
| UNIX: | $REGISTRY_HOME/bin/serverstart.sh |

It is necessary to configure the demos. The configuration system has two levels: global and local. The properties defined at the global level may be overwritten at the local level. The global properties are located in the file:

| | |
|---|---|
| Windows: | %REGISTRY_HOME%\demos\env.properties |
| UNIX: | $REGISTRY_HOME/demos/env.properties |

The values set during the installation of the HP SOA Registry Foundation work out of box, and their modification affects all demos. If you need to redefine the value of some property for a single demo (that is, at the local level), edit the file `env.properties` in the directory where `run.bat` (`run.sh`) is located. Local level properties for Basic/Inquiry demos are loaded in the file:

| | |
|---|---|
| Windows: | %REGISTRY_HOME%\demos\basic\inquiry\v3\env.properties |
| UNIX: | $REGISTRY_HOME/demos/basic/inquiry/v3/env.properties |

**Table 99. Properties Used in Demos**

| Name | Default value | Description |
|---|---|---|
| uddi.demos.result.max_rows | 5 | limit of data returned from registry |
| uddi.demos.url.inquiry | `http://localhost:8080/uddi/inquiry` | the inquiry Web service port URL |

## Presentation and Functional Presentation

This section describes programing pattern used in all demos using the FindTModel demo as an example. You can find its source code in the file:

| | |
|---|---|
| Windows: | %REGISTRY_HOME%\demos\basic\inquiry\src\demo\uddi\v3\inquiry\FindTModel.java |
| UNIX: | $REGISTRY_HOME/demos/basic/inquiry/src/demo/uddi/v3/inquiry/FindTModel.java |

The main method is straightforward. It gathers user's input (tModel name and findQualifier name), calls a method to initialize the `Find_tModel` object, executes the `find_tModel` UDDI call, and displays the list of found tModels:

```
String name = UserInput.readString("Enter name", "demo%");
String findQualifier = UserInput.readString("Enter findQualifier", "approximateMatch");
Find_tModel find_tModel = createFindByTModel(name, findQualifier);
TModelList result = findTModel(find_tModel);
printTModelList(result);
```

The `createFindTModel()` method is used to create new instance of Find_tModel class and initialize it with values from parameters:

```
public static Find_tModel createFindByTModel(String name, String findQualifier)
        throws InvalidParameterException {
    System.out.println("findQualifier = " + findQualifier);
    System.out.println("name = " + name);
    Find_tModel find_tModel = new Find_tModel();
    find_tModel.setName(new Name(name));
    find_tModel.setMaxRows(new Integer(MAX_ROWS));
    find_tModel.addFindQualifier(findQualifier);
    return find_tModel;
}
```

The helper method `getInquiryStub()` returns the UDDI Inquiry stub of the web service listening at the URL specified in the `URL_INQUIRY` property.

```
public static UDDI_Inquiry_PortType getInquiryStub()
        throws SOAPException {
    // you can specify your own URL in property - uddi.demos.url.inquiry
    String url = DemoProperties.getProperty(URL_INQUIRY, "http://localhost:8080/uddi/inquiry");
    System.out.print("Using Inquiry at url " + url + " ..");
    UDDI_Inquiry_PortType inquiry = UDDIInquiryStub.getInstance(url);
    System.out.println(" done");
    return inquiry;
}
```

The UDDI API call `find_tModel` is performed in the method `findTModel`:

```
public static TModelList findTModel(Find_tModel find_tModel)
        throws UDDIException, SOAPException {
    UDDI_Inquiry_PortType inquiry = getInquiryStub();
    System.out.print("Search in progress ..");
    TModelList tModelList = inquiry.find_tModel(find_tModel);
    System.out.println(" done");
    return tModelList;
}
```

The list of found tModels are printed with the method `printTModelList`. One interesting aspect of the HP SOA Registry Foundation client API is that each UDDIObject contains method `toXML()`, which returns a human-readable, formatted, listing of its XML representation.

```
public static void printTModelList(TModelList tModelList) {
    System.out.println();
    ListDescription listDescription = tModelList.getListDescription();
    if (listDescription!=null) {
        // list description is mandatory part of result,
 // if the resultant list is subset of available data
        int includeCount = listDescription.getIncludeCount();
        int actualCount = listDescription.getActualCount();
        int listHead = listDescription.getListHead();
        System.out.println("Displaying "+includeCount+" of "+
                           actualCount+", starting at position " + listHead);
    }

    TModelInfoArrayList tModelInfoArrayList = tModelList.getTModelInfoArrayList();
    if (tModelInfoArrayList==null) {
        System.out.println("Nothing found");
        return;
    }

    int position = 1;
    for (Iterator iterator = tModelInfoArrayList.iterator(); iterator.hasNext();) {
        TModelInfo tModelTemplate = (TModelInfo) iterator.next();
        System.out.println("TModel "+position+" : "+tModelTemplate.getTModelKey());
        System.out.println(tModelTemplate.toXML());
        System.out.println();
        System.out.println("********************************************************");
        position++;
    }
}
```

## Building and Running Demos

This section shows how to build and run the HP SOA Registry Foundation Basic Inquiry demo set. Our example continues with the FindTModel demo.

1 Be sure that the demos are properly configured and the HP SOA Registry Foundation is up and running.

2 Change your working directory to:

|  |  |
|---|---|
| Windows: | %REGISTRY_HOME%\demos\basic\inquiry\v3 |
| UNIX: | $REGISTRY_HOME/demos/basic/inquiry/v3 |

3 Build all demos using:

|  |  |
|---|---|
| Windows: | run.bat make |
| UNIX: | ./run.sh make |

➤ When compiling demos on Windows platforms, you may see the following text:

```
A subdirectory or file ..\..\common\.\build\classes already exists.
```

This is expected and does not indicate a problem.

4 To get list of all available demos, run

|  |  |
|---|---|
| Windows: | run.bat help |
| UNIX: | ./run.sh help |

5 Run a selected demo by executing the **run** command with the name of the demo as a parameter. For example, to run the FindTModel demo, invoke

|  |  |
|---|---|
| Windows: | run.bat FindTModel |
| UNIX: | ./run.sh FindTModel |

The output of this demo will resemble the following:

```
******************************************
***    HP SOA Registry Demo - FindTModelDemo     ***
            ******************************************

Searching for tModel where
Enter name [demo%]:
Enter findQualifier [approximateMatch]:
findQualifier = approximateMatch
```

```
name = demo%
Using Inquiry at url http://localhost:8080/uddi/inquiry .. done
Search in progress .. done

Displaying 3 of 3, starting at position 1
TModel 1 : uddi:systinet.com:demo:departmentID

<tModelInfo tModelKey="uddi:systinet.com:demo:departmentID"
               xmlns="urn:uddi-org:api_v3">
  <name>demo:departmentID</name>
  <description>Identifier of the department</description>
</tModelInfo>

********************************************************
TModel 2 : uddi:systinet.com:demo:hierarchy

<tModelInfo tModelKey="uddi:systinet.com:demo:hierarchy"
               xmlns="urn:uddi-org:api_v3">
  <name>demo:hierarchy</name>
  <description>Business hierarchy taxonomy</description>
</tModelInfo>

********************************************************
TModel 3 : uddi:systinet.com:demo:location:floor

<tModelInfo tModelKey="uddi:systinet.com:demo:location:floor" xmlns="
            urn:uddi-org:api_v3">
  <name>demo:location:floor</name>
  <description>Specifies floor, on which the department is located</description>
</tModelInfo>

********************************************************
```

6 To rebuild demos, execute `run.bat clean` (`./run.sh clean`) to delete the classes directory and `run.bat make` (`./run.sh make`) to rebuild the demo classes.

## Publishing v3

The HP SOA Registry Foundation basic publishing demo set demonstrates the HP SOA Registry Foundation application programming interface's capabilities and teaches how to use this API to perform basic publishing calls to a UDDI registry.

The HP SOA Registry Foundation basic publishing demos cover the publication aspect of the UDDI Version 3 Specification [http://www.oasis-open.org/committees/uddi-spec/doc/tcspecs.htm#uddiv3]. You will learn, how to use the HP SOA Registry Foundation client API to publish information to a UDDI registry over a SOAP interface. There is one demo for each UDDI call, from `add_publisherAssertion` through `get_registeredInfo` to `save_business`.

The HP SOA Registry Foundation basic publishing demo set contains the following demos. They will assist you in learning the HP SOA Registry Foundation client API.

**AddAssertion.** Demonstrates how to construct and fill the `Add_publisherAssertion` object, get a Publishing stub for the UDDI registry, get an authToken, and perform the `add_publisherAssertion` call.

**DeleteAssertion.** Demonstrates how to construct and fill the `Delete_publisherAssertion` object, get a Publishing stub for the UDDI registry, get an authToken, and perform the `delete_publisherAssertion` call.

**DeleteBinding.** Demonstrates how to construct and fill the `Delete_binding` object, get a Publishing stub for the UDDI registry, get an authToken, and perform the `delete_binding` call.

**DeleteBusiness.** Demonstrates how to construct and fill the `Delete_business` object, get Publishing stub for the UDDI registry, get an authToken, and perform the `delete_business` call.

**DeleteService.** Demonstrates how to construct and fill the `Delete_service` object, get Publishing stub for the UDDI registry, get an authToken, and perform the `delete_service` call.

**DeleteTModel.** Demonstrates how to construct and fill the `Delete_tModel` object, get a Publishing stub for the UDDI registry, get an authToken, and perform the `delete_tModel` call.

**GetAssertionStatusReport.** Demonstrates how to construct and fill the `Get_assertionStatusReport` object, get a Publishing stub for the UDDI registry, get an authToken, and perform the `get_assertionStatusReport` call.

**GetPublisherAssertions.** Demonstrates how to construct and fill the `Get_publisherAssertions` object, get a Publishing stub for the UDDI registry, get an authToken, and perform the `get_publisherAssertions` call.

**GetRegisteredInfo.** Demonstrates how to construct and fill the `Get_registeredInfo` object, get a Publishing stub for the UDDI registry, get an authToken, and perform the `get_registeredInfo` call.

**SaveBinding.** Demonstrates how to construct and fill the `Save_binding` object, get a Publishing stub for the UDDI registry, get an authToken, and perform the `save_binding` call.

**SaveBusiness.** Demonstrates how to construct and fill the `Save_business` object, get a Publishing stub for the UDDI registry, get an authToken, and perform the `save_business` call.

**SaveService.** Demonstrates how to construct and fill the `Save_service` object, get a Publishing stub for the UDDI registry, get an authToken, and perform the `save_service` call.

**SaveTModel.** Demonstrates how to construct and fill the `Save_tModel` object, get a Publishing stub for the UDDI registry, get an authToken, and perform the `save_tModel` call.

**SetAssertions.** Demonstrates how to construct and fill the `Set_publisherAssertions` object, get a Publishing stub for the UDDI registry, get an authToken, and perform the `set_publisherAssertions` call.

## Prerequisites and Preparatory Steps: Code

We expect that you have already installed the HP SOA Registry Foundation and set the `REGISTRY_HOME` environment variable to its installation location.

To run the HP SOA Registry Foundation's demos, your UDDI registry must be running. To start the registry, execute the **serverstart** script:

| | |
|---|---|
| Windows: | %REGISTRY_HOME%\bin\serverstart.bat |
| UNIX: | $REGISTRY_HOME/bin/serverstart.sh |

It is neccessary to configure the demos. The configuration system has two levels: global and local. The properties defined at the global level may be overwritten at the local level. The global properties are located in the file:

| | |
|---|---|
| Windows: | %REGISTRY_HOME%\demos\env.properties |
| UNIX: | $REGISTRY_HOME/demos/env.properties |

The values set during the installation of the HP SOA Registry Foundation work out of the box, and their modification affects all demos. If you need to redefine the value of some property for a single demo (that is, at the local level), edit the file `env.properties` in the directory where `run.sh`(`run.bat`) is located. Local level properties for the `Basic/Inquiry` demos are loaded from the file:

| | |
|---|---|
| Windows: | %REGISTRY_HOME%\demos\basic\publishing\v3\env.properties |
| UNIX: | $REGISTRY_HOME/demos/basic/publishing/v3/env.properties |

**Table 100. Properties Used in the Demos**

| Name | Default Value | Description |
|---|---|---|
| uddi.demos.user.john.name | demo_john | First user's name |
| uddi.demos.user.john.password | demo_john | First user's password |
| uddi.demos.user.jane.name | demo_jane | Second user's name |
| uddi.demos.user.jane.password | demo_jane | Second user's password |
| uddi.demos.url.publishing | `http://localhost:8080/uddi/publishing` | The publication Web service port URL |
| uddi.demos.url.security | `http://localhost:8080/uddi/security` | The security web service port URL |

## Presentation and Functional Presentation

This section describes the programming pattern used in all demos using the SaveBusiness demo as an example. You can find this demo's source code in the file:

| | |
|---|---|
| Windows: | %REGISTRY_HOME%\demos\basic\publishing\src\demo\uddi\v3\publishing\SaveBusiness.java |
| UNIX: | $REGISTRY_HOME/demos/basic/publishing/src/demo/uddi/v3/publishing/SaveBusiness.java |

The main method is easy to understand. First it gathers the user's input: an optional publisher-assigned businessKey, then variable long array of business entity names with their language codes, and a description of the business.

The next step is to get the security stub and authorize the user. The resulting authInfo string is a secret key passed in all requests.

Next, the `Save_business` object is created, filled, and passed to the `saveBusiness` method as a parameter.

When successful, the `BusinessDetail` object is returned from the UDDI registry and printed. The last step is to discard the authInfo string, so no malicious user can use it to compromise a user's account.

```
String businessKey = UserInput.readString("Enter (optional) businessKey", "");
int count = UserInput.readInt("Enter count of names", 1);
String[] names = new String[count];
String[] languageCodes = new String[count];
for (int i = 0; i < count; i++) {
    String tmp = UserInput.readString("Enter language code", "");
    languageCodes[i] = (tmp.length() > 0) ? tmp : null;
    names[i] = UserInput.readString("Enter name in language " + tmp, "Marketing");
}
String description = UserInput.readString("Enter description", "Saved by SaveBusiness demo");
System.out.println();

UDDI_Security_PortType security = getSecurityStub();
String authInfo = getAuthInfo(user, password, security);
Save_business save = createSaveBusiness(businessKey, names, languageCodes, description, authInfo);
BusinessDetail result = saveBusiness(save);
printBusinessDetail(result);
discardAuthInfo(authInfo, security);
```

The helper method, `getSecurityStub()` returns the UDDI Security stub of the web service listening at the URL specified by the `URL_SECURITY` property.

```
public static UDDI_Security_PortType getSecurityStub()
 throws SOAPException {
    // you can specify your own URL in property - uddi.demos.url.security
    String url = DemoProperties.getProperty(URL_SECURITY, "http://localhost:8080/uddi/security");
    System.out.print("Using Security at url " + url + " ..");
    UDDI_Security_PortType security = UDDISecurityStub.getInstance(url);
    System.out.println(" done");
    return security;
}
```

Similarly, the helper method `getPublishingStub()` returns the UDDI Publication stub of the web service listening at the URL specified by the `URL_PUBLISHING` property.

```
public static UDDI_Publication_PortType getPublishingStub()
 throws SOAPException {
    // you can specify your own URL in property - uddi.demos.url.publishing
    String url = DemoProperties.getProperty(URL_PUBLISHING, "http://localhost:8080/uddi/publishing");
    System.out.print("Using Publishing at url " + url + " ..");
    UDDI_Publication_PortType inquiry = UDDIPublishStub.getInstance(url);
    System.out.println(" done");
    return inquiry;
}
```

The `getAuthInfo()` method is used to authorize the user against the UDDI registry and to get the secret authInfo key.

```
public static String getAuthInfo(String userName, String password, UDDI_Security_PortType security)
  throws InvalidParameterException, UDDIException {
    System.out.print("Logging in ..");
    AuthToken authToken = security.get_authToken(new Get_authToken(userName, password));
    System.out.println(" done");
    return authToken.getAuthInfo();
}
```

The `discardAuthInfo()` method invalidates the secret authInfo key, so it cannot be used anymore.

```
public static void discardAuthInfo(String authInfo, UDDI_Security_PortType security)
  throws InvalidParameterException, UDDIException {
    System.out.print("Logging out ..");
    security.discard_authToken(new Discard_authToken(authInfo));
    System.out.println(" done");
}
```

The `createSaveBusiness()` method is used to create a new instance of the `Save_business` class and initialize it with values from parameters:

```
public static Save_business createSaveBusiness(String businessKey, String[] names,
  String[] nameLangCodes, String description, String authInfo)
  throws InvalidParameterException {
    System.out.println("businessKey = " + businessKey);
    for (int i = 0; i < names.length; i++) {
        System.out.println("lang = " + nameLangCodes[i] + ", name = " + names[i]);
    }
    System.out.println("description = " + description);

    BusinessEntity businessEntity = new BusinessEntity();
    if (businessKey!=null && businessKey.length()>0)
        businessEntity.setBusinessKey(businessKey);
    for (int i = 0; i < names.length; i++) {
        if (nameLangCodes[i] == null) {
            businessEntity.addName(new Name(names[i]));
        } else {
            businessEntity.addName(new Name(names[i], nameLangCodes[i]));
        }
    }
    businessEntity.addDescription(new Description(description));

    Save_business save = new Save_business();
    save.addBusinessEntity(businessEntity);
    save.setAuthInfo(authInfo);
    return save;
}
```

The UDDI API call `save_business` is performed in the method `saveBusiness()`:

```
public static BusinessDetail saveBusiness(Save_business save)
  throws UDDIException, SOAPException {
    UDDI_Publication_PortType publishing = getPublishingStub();
    System.out.print("Save in progress ...");
    BusinessDetail businessDetail = publishing.save_business(save);
    System.out.println(" done");
    return businessDetail;
}
```

The saved businessEntity is displayed by the `printBusinessDetail()` method. One interesting aspect of the HP SOA Registry Foundation client API is that each UDDIObject contains the `toXML()`, which returns a human-readable formatted listing of the XML representation.

```
public static void printBusinessDetail(BusinessDetail businessDetail) {
    System.out.println();
    BusinessEntityArrayList businessEntityArrayList = businessDetail.getBusinessEntityArrayList();
    int position = 1;
    for (Iterator iterator = businessEntityArrayList.iterator(); iterator.hasNext();) {
        BusinessEntity entity = (BusinessEntity) iterator.next();
        System.out.println("Business " + position + " : " + entity.getBusinessKey());
        System.out.println(entity.toXML());
        System.out.println();
        System.out.println("**********************************************************");
        position++;
    }
}
```

## Building and Running Demos

This section shows how to build and run the HP SOA Registry Foundation Basic Publishing demo set. Let's continue with our SaveBusiness demo.

1 Be sure that the demos are properly configured and the HP SOA Registry Foundation is up and running.

2 Change your working directory to:

| | |
|---|---|
| Windows: | %REGISTRY_HOME%\demos\basic\publishing\v3 |
| UNIX: | $REGISTRY_HOME/demos/basic/publishing/v3 |

3 Build all demos using:

| | |
|---|---|
| Windows: | run.bat make |
| UNIX: | ./run.sh make |

When compiling demos on Windows platforms, you may see the following text:

```
A subdirectory or file ..\..\common\.\build\classes already exists.
```

This is expected and does not indicate a problem.

4 To get list of all available demos, run

| | |
|---|---|
| Windows: | run.bat help |
| UNIX: | ./run.sh help |

5 The selected demo can be executed via the **run** command using the name of the demo as a parameter. For example to run the SaveBusiness demo, invoke

| | |
|---|---|
| Windows: | run.bat SaveBusiness |
| UNIX: | ./run.sh SaveBusiness |

The output of this demo will resemble the following:

```
****************************************************************************
***    HP SOA Registry Demo - SaveBusiness   ***
****************************************************************************

Saving business entity where
Enter (optional) businessKey []: uddi:systinet.com:demo:marketing
Enter count of names [1]: 1
Enter language code []:
Enter name in language  [Marketing]:
Enter description [Saved by SaveBusiness demo]: Marketing department

Using Security at url http://localhost:8080/uddi/security .. done
Logging in .. done
businessKey = uddi:systinet.com:demo:marketing
lang = null, name = Marketing
description = Marketing department
Using Publishing at url http://localhost:8080/uddi/publishing .. done
Save in progress ... done

Business 1 : uddi:systinet.com:demo:marketing
```

```
<businessEntity businessKey="uddi:systinet.com:demo:marketing" xmlns="urn:uddi-org:api_v3">
  <name>Marketing</name>
  <description>Marketing department</description>
</businessEntity>

********************************************************
Logging out .. done
```

6 To rebuild demos, execute `run.bat clean` (`./run.sh clean`) to delete the classes directory and `run.bat make` (`./run.sh make`) to rebuild the demo classes.

## Advanced Demos

Advanced demos section includes the following demos:

- Inquiry Range Queries demo - The HP SOA Registry Foundation Range queries demos set demonstrates, how to use HP SOA Registry Foundation inquiry enhancement - Range Queries. HP SOA Registry Foundation range queries functionality allows you to search UDDI entities with the ability to use comparative operators (>, <) for matching keyValues in keyedReferences.
- Custody demos - The HP SOA Registry Custody demo covers the custody transfer aspects of the UDDI API specification. You will learn how to generate a custody transfer token and transfer the ownership of selected structures to another user.
- Subscription demos - The HP SOA Registry advanced subscription demos cover the subscription aspects of the UDDI Version 3 Specification. They teach how to use the HP SOA Registry client API to create new subscriptions, get lists of subscriptions, get subscription results, and delete subscriptions.
- Validation demos - The valueset validation API provides methods to validate values used in the keyedReferences of checked taxonomies. The checks might range from very simple (check value against list of available values as in the InternalValidation service), to complex, such as performing contextual checks.
- Taxonomy demos - The Taxonomy API is used to manage and query taxonomies in the HP SOA Registry. These demos cover all API methods, so you can learn how to download, upload, save, delete, get and find taxonomies. In addition, you can manage individual values in internally checked taxonomies using the Category API.

## Advanced Inquiry - Range Queries

The HP SOA Registry Foundation Range queries demos set demonstrates, how to use HP SOA Registry Foundation inquiry enhancement - Range Queries. HP SOA Registry Foundation range queries functionality allows you to search UDDI entities with the ability to use comparative operators (>, <) for matching keyValues in keyedReferences.

The demos set includes the following demo:

- `FindBusiness`

### Prerequisites and Preparatory Steps: Code

We expect that you have already installed the HP SOA Registry Foundation and set the `REGISTRY_HOME` environment variable to the registry's installation location.

To run the HP SOA Registry Foundation's demos, your registry must be running. To start the HP SOA Registry Foundation, execute the **serverstart** script:

| | |
|---|---|
| Windows: | %REGISTRY_HOME%\bin\serverstart.bat |
| UNIX: | $REGISTRY_HOME/bin/serverstart.sh |

It is necessary to configure the demos. The configuration system has two levels: global and local. The properties defined at the global level may be overwritten at the local level. The global properties are located in the file:

| | |
|---|---|
| Windows: | %REGISTRY_HOME%\demos\env.properties |
| UNIX: | $REGISTRY_HOME/demos/env.properties |

The values set during the installation of the HP SOA Registry Foundation work out of box, and their modification affects all demos. If you need to redefine the value of some property for a single demo (that is, at the local level), edit `env.properties`. This file is located in the same directory as the file `run.sh` (`run.bat`). Local level properties for the `Advanced Inquiry` demos are loaded from the file:

| | |
|---|---|
| Windows: | %REGISTRY_HOME%\demos\advanced\inquiry\env.properties |
| UNIX: | $REGISTRY_HOME/demos/advanced/inquiry/env.properties |

**Table 101. Properties Used in Demos**

| Name | Default Value | Description |
|---|---|---|
| uddi.demos.result.max_rows | 5 | limit of data returned from registry |
| uddi.demos.url.inquiryExt | `http://localhost:8080/uddi/inquiryExt` | the extended inquiry web service port URL |

## Presentation and Functional Presentation

This section describes the programming pattern used in demos using the FindBusiness demo as an example. You can find its source code in the file:

| | |
|---|---|
| Windows: | %REGISTRY_HOME%\demos\advanced\inquiry\src\demo\uddi\rq\FindBusiness.java |
| UNIX: | $REGISTRY_HOME/demos/advanced/inquiry/src/demo/uddi/rq/FindBusiness.java |

The helper method `createFindBusiness` creates a FindBusiness structure:

```
public Find_business createFindBusiness(String tModelKey, String keyValue,
                                        String operator, String quantifier)
        throws InvalidParameterException {
    System.out.println("tModelKey = " + tModelKey);
    System.out.println("keyValue = " + keyValue);
    System.out.println("operator = " + operator);
    System.out.println("quantifier = " + quantifier);

    Find_business find_business = new Find_business();
    QualifiedKeyedReference qualifiedKeyedReference = new QualifiedKeyedReference();
    qualifiedKeyedReference.setTModelKey(tModelKey);
    qualifiedKeyedReference.setKeyValue(keyValue);
    qualifiedKeyedReference.setFindQualifierArrayList(parseFindQualifiers(operator, quantifier));
    find_business.setCategoryBag(new CategoryBag(new KeyedReferenceArrayList(qualifiedKeyedReference)));
    find_business.setMaxRows(new Integer(MAX_ROWS));

    return find_business;
}
```

The `findBusiness` method performs the searching operation:

```
public BusinessList findBusiness(Find_business find_business) throws UDDIException, SOAPException {
    System.out.print("Check structure validity .. ");
    try {
        find_business.check();
    } catch (InvalidParameterException e) {
        System.out.println("Failed!");
        throw new UDDIException(e);
    }
    System.out.println("OK");

    UDDI_Inquiry_PortType inquiry = getInquiryStub();
    System.out.print("Search in progress ..");
    BusinessList businessList = inquiry.find_business(find_business);
    System.out.println(" done");
    return businessList;
}
```

## Building and Running Demos

This section shows, how to build and run the HP SOA Registry Foundation Advanced Inquiry demo set. Let us continue with our FindBusiness demo.

1 Be sure that the demo are properly configured and the HP SOA Registry Foundation is up and running.

2 Change your working directory to

| | |
|---|---|
| Windows | %REGISTRY_HOME%\demos\advanced\inquiry |
| UNIX | $REGISTRY_HOME/demos/advanced/inquiry |

3 Build demo using:

| Windows: | UNIX: |
|---|---|
| `run.bat make` | `./run.sh make` |

➤ When compiling demo on Windows platforms, you may see the following text:

```
A subdirectory or file ..\..\common\.\build\classes already exists.
```

. This is expected and does not indicate a problem.

4 To get list of all available demos, run

| | |
|---|---|
| Windows: | run.bat help |
| UNIX: | ./run.sh help |

5 The selected demo can be executed via the **run** command using the name of the demo as a parameter. For example, to run the FindBusiness demo, invoke

| | |
|---|---|
| Windows: | run.bat FindBusiness |
| UNIX: | ./run.sh FindBusiness |

The output of this demo will resemble the following:

```
*************************************************************************
***             HP SOA Registry Demo - FindBusiness              ***
*************************************************************************

Searching for businesses by category where keyedReference
Enter tModelKey [uddi:systinet.com:demo:location:floor]:
Enter keyValue [1]: 3
Enter operator (=,<,>,<=,>=,<>) [=]:>
Enter quantifier (exists,notExists) [exists]:
tModelKey = uddi:systinet.com:demo:location:floor
keyValue = 3
operator = >
quantifier = exists
Check structure validity .. OK
Using Inquiry at url http://van.in.idoox.com:8080/uddi/inquiryExt .. done
Search in progress .. done

Displaying 1 of 1, starting at position 1
Business 1 : uddi:systinet.com:demo:it
<businessInfoExt businessKey="uddi:systinet.com:demo:it" xmlns="http://systinet.com/uddi/api/v3/ext/5.0">
```

```
  <name xmlns="urn:uddi-org:api_v3">IT</name>
  <description xmlns="urn:uddi-org:api_v3">IT department</description>
  <serviceInfos xmlns="urn:uddi-org:api_v3">
    <serviceInfoExt serviceKey="uddi:systinet.com:demo:it:support"
businessKey="uddi:systinet.com:demo:it" xmlns="http://systinet.com/uddi/api/v3/ext/5.0">
      <name xmlns="urn:uddi-org:api_v3">Support</name>
      <description xmlns="urn:uddi-org:api_v3">Telephone support</description>
      <bindingTemplates xmlns="urn:uddi-org:api_v3">
        <bindingTemplate bindingKey="uddi:b77eb8f0-86ce-11d8-ba05-123456789012"
serviceKey="uddi:systinet.com:demo:it:support">
          <description>IT related issues shall be reported there</description>
          <accessPoint useType="endPoint">tel:+1-123-456-7890</accessPoint>
          <tModelInstanceDetails>
            <tModelInstanceInfo tModelKey="uddi:uddi.org:transport:telephone"/>
          </tModelInstanceDetails>
        </bindingTemplate>
      </bindingTemplates>
    </serviceInfoExt>
    <serviceInfoExt serviceKey="uddi:systinet.com:demo:hr:employeesList"
businessKey="uddi:systinet.com:demo:hr" xmlns="http://systinet.com/uddi/api/v3/ext/5.0">
      <name xmlns="urn:uddi-org:api_v3">EmployeeList</name>
      <description xmlns="urn:uddi-org:api_v3">wsdl:type representing service</description>
      <bindingTemplates xmlns="urn:uddi-org:api_v3">
        <bindingTemplate bindingKey="uddi:5c546520-78b8-11d8-bec4-123456789012"
serviceKey="uddi:systinet.com:demo:hr:employeesList">
          <description>wsdl:type representing port</description>
          <accessPoint useType="http://schemas.xmlsoap.org/soap/http">urn:unknown-location-
uri</accessPoint>
          <tModelInstanceDetails>
            <tModelInstanceInfo tModelKey="uddi:systinet.com:demo:employeeList:binding">
              <instanceDetails>
                <instanceParms>EmployeeList</instanceParms>
              </instanceDetails>
            </tModelInstanceInfo>
            <tModelInstanceInfo tModelKey="uddi:systinet.com:demo:employeeList:portType">
              <instanceDetails>
                <instanceParms>EmployeeList</instanceParms>
              </instanceDetails>
            </tModelInstanceInfo>
          </tModelInstanceDetails>
          <categoryBag>
            <keyedReference tModelKey="uddi:uddi.org:xml:namespace" keyName="uddi.org:xml:namespace"
keyValue="http://systinet.com/wsdl/demo/uddi/services/"/>
            <keyedReference tModelKey="uddi:uddi.org:wsdl:types" keyName="uddi.org:wsdl:types"
keyValue="port"/>
            <keyedReference tModelKey="uddi:uddi.org:xml:localName" keyName="uddi.org:xml:localName"
keyValue="EmployeeList"/>
```

```
            <keyedReference tModelKey="uddi:systinet.com:taxonomy:endpoint:availability"
keyName="Available" keyValue="Available"/>
           <keyedReference tModelKey="uddi:systinet.com:taxonomy:endpoint:status" keyName="Operational"
 keyValue="Operational"/>
          </categoryBag>
        </bindingTemplate>
      </bindingTemplates>
    </serviceInfoExt>
  </serviceInfos>
  <contactInfos>
    <contactInfo useType="Technical support">
      <personName xmlns="urn:uddi-org:api_v3">John Demo</personName>
    </contactInfo>
  </contactInfos>
</businessInfoExt>

********************************************************
```

## Custody

The HP SOA Registry Foundation demo is used to demonstrate the registry's application programming interface's capabilities and to demonstrate how to use this API.

The HP SOA Registry Foundation Custody demo covers the custody transfer aspects of the UDDI Version 3.01 Specification [http://www.oasis-open.org/committees/uddi-spec/doc/tcspecs.htm#uddiv3].. You will learn how to generate a custody transfer token and transfer the ownership of selected structure to another user.

There is a single demo within this package - CustodyDemo. It demonstrates how to generate a transfer token for a selected UDDI key and how to use it to transfer the custody of the structure identified by the UDDI key to another user.

### Prerequisites and Preparatory Steps: Code

We expect that you have already installed the HP SOA Registry Foundation and set the `REGISTRY_HOME` environment variable to the registry's installation location.

To run the HP SOA Registry Foundation's demos, your registry must be running. To start the HP SOA Registry Foundation, execute the **serverstart** script:

| | |
|---|---|
| Windows: | %REGISTRY_HOME%\bin\serverstart.bat |
| UNIX: | $REGISTRY_HOME/bin/serverstart.sh |

It is necessary to configure the demos. The configuration system has two levels: global and local. The properties defined at the global level may be overwritten at the local level. The global properties are located in the file:

| | |
|---|---|
| Windows: | %REGISTRY_HOME%\demos\env.properties |
| UNIX: | $REGISTRY_HOME/demos/env.properties |

The values set during the installation of the HP SOA Registry Foundation work out of the box, and their modification affects all demos. If you need to redefine a property's value for a single demo (that is,, at the local level), edit `env.properties`. This file is located in the same directory as the file `run.sh` (`run.bat`). Local level properties for the `Custody` demo are loaded from the file:

| | |
|---|---|
| Windows: | %REGISTRY_HOME%\demos\advanced\custody\env.properties |
| UNIX: | $REGISTRY_HOME/demos/advanced/custody/env.properties |

### Table 102. Properties used in demos

| Name | Default Value | Description |
|---|---|---|
| uddi.demos.user.john.name | demo_john | first user's name |
| uddi.demos.user.john.password | demo_john | first user's password |
| uddi.demos.user.jane.name | demo_jane | second user's name |
| uddi.demos.user.jane.password | demo_jane | second user's password |
| uddi.demos.url.custody | `http://localhost:8080/uddi/custody` | the custody Web service port URL |
| uddi.demos.url.security | `http://localhost:8080/uddi/security` | the security Web service port URL |

## Presentation and Functional Presentation

This section describes programming pattern of the Custody demo. You can find its source code in the file:

| | |
|---|---|
| Windows: | %REGISTRY_HOME%\demos\advanced\custody\src\demo\uddi\custody\CustodyDemo.java |
| UNIX: | $REGISTRY_HOME/demos/advanced/custody/src/demo/uddi/custody/CustodyDemo.java |

To make the demo easier to use, it contains two use cases. The first use case shows the owner of a UDDI structure who wants to transfer it to another user. The second use case is the second user transferring the same structure to his own custody. Let us start with first use case.

We must gather user input first. It is necessary to read user credentials and the key of the structure owned by the user. If you use default values, this means that the user demo_john is transferring custody of the `systinet.com:departmentID` tModel to user demo_jane. The user logs in and generates a transfer token for the given UDDI key. The transfer token contains information about the registry, expiration time, and secret opaqueToken. Any user who knows these data, can transfer the structure(s) covered by the transferToken.

```
String user = UserInput.readString("Enter first user name",
            DemoProperties.getProperty(USER_JOHN_NAME));
String password = UserInput.readString("Enter password",
                   DemoProperties.getProperty(USER_JOHN_PASSWORD));
String uddiKey = UserInput.readString("Enter UDDI key",
                                       "uddi:systinet.com:demo:departmentID");
System.out.println();

UDDI_Security_PortType security = getSecurityStub();
String authInfo = getAuthInfo(user, password, security);
Get_transferToken get = createGetTransferToken(uddiKey, authInfo);
TransferToken token = getTransferToken(get);
printTransferToken(token);
discardAuthInfo(authInfo, security);
```

The helper method `getCustodyStub()` returns the UDDI Custody stub of the Web service listening at the URL specified by the `URL_CUSTODY` property.

```
public static UDDI_CustodyTransfer_PortType getCustodyStub() throws SOAPException {
    // you can specify your own URL in property - uddi.demos.url.custody
    String url = DemoProperties.getProperty(URL_CUSTODY, "http://localhost:8080/uddi/custody");
    System.out.print("Using Custody at url " + url + " ..");
    UDDI_CustodyTransfer_PortType custody = UDDICustodyStub.getInstance(url);
    System.out.println(" done");
    return custody;
}
```

The `createGetTransferToken()` method is used to create the Get_transferToken object, which encapsulates the parameters of this UDDI call. In this example we set authInfo and a single key for the UDDI structure to be transferred int the custody of the second user.

```
public static Get_transferToken createGetTransferToken(String uddiKey, String authInfo)
  throws InvalidParameterException {
    System.out.println("uddiKey = " + uddiKey);
    Get_transferToken get = new Get_transferToken();
    get.addKey(uddiKey);
    get.setAuthInfo(authInfo);
    return get;
}
```

The next step is to invoke the `get_transferToken` UDDI call and get the result, which is a TransferToken.

```
public static TransferToken getTransferToken(Get_transferToken get)
  throws UDDIException, SOAPException {
    UDDI_CustodyTransfer_PortType custody = getCustodyStub();
    System.out.print("Get in progress ...");
    TransferToken token = custody.get_transferToken(get);
    System.out.println(" done");
    return token;
}
```

At this point the first user, John Demo, has generated a transfer token. He can discard it or send it to the second user Jane Demo, so she can transfer the entities to her custody. The transfer token must be kept secret, so plain text transports such as unencrypted emails are not suitable for this purpose. Let us suppose that Jane Demo has received the transfer token already. She logs in, creates a Transfer_entities object and invokes the UDDI call `transfer_entities`.

```
user = UserInput.readString("Enter second user name",
                                 DemoProperties.getProperty(USER_JANE_NAME));
password = UserInput.readString("Enter password", DemoProperties.getProperty(USER_JANE_PASSWORD));
System.out.println();

authInfo = getAuthInfo(user, password, security);
Transfer_entities transfer = createTransferEntities(uddiKey, token, authInfo);
transferEntities(transfer);
discardAuthInfo(authInfo, security);
```

The `createTransferEntities()` method is used to create Transfer_entities object, which encapsulates parameters of same name UDDI call. In this example we set Jane's authInfo, UDDI key to be transferred, and the TransferToken generated by John.

```
public static Transfer_entities createTransferEntities(String uddiKey,
                                                           TransferToken token, String authInfo)
  throws InvalidParameterException {
    Transfer_entities transfer = new Transfer_entities();
    transfer.addKey(uddiKey);
    transfer.setTransferToken(token);
    transfer.setAuthInfo(authInfo);
    return transfer;
}
```

The final step is to make the `transfer_entities` UDDI call. When it successfully returns, the second user (Jane) is the happy owner of the UDDI structure `systinet.com:demo:departmentID`.

```
public static void transferEntities(Transfer_entities transfer)
  throws UDDIException, SOAPException {
    UDDI_CustodyTransfer_PortType custody = getCustodyStub();
    System.out.print("Transfer in progress ...");
    custody.transfer_entities(transfer);
    System.out.println(" done");
}
```

## Building and Running Demos

This section shows how to build and run the HP SOA Registry Foundation Custody demo.

1. Be sure that the demos are properly configured and the HP SOA Registry Foundation is up and running.
2. Change your working directory to

| | |
|---|---|
| Windows: | %REGISTRY_HOME%\demos\advanced\custody |
| UNIX: | $REGISTRY_HOME/demos/advanced/custody |

3. Build demo using:

| | |
|---|---|
| Windows: | run.bat make |
| UNIX: | ./run.sh make |

When compiling demos on Windows platforms, you may see the following text:

```
A subdirectory or file ..\..\common\.\build\classes already exists.
```

This is expected and does not indicate a problem.

4 To get list of all available commands, run

| Windows: | run.bat help |
|---|---|
| UNIX: | ./run.sh help |

5 The demo can be executed via the **run** command, using the name of the demo as a parameter. To run the Custody demo, invoke

| Windows: | run.bat CustodyDemo |
|---|---|
| UNIX: | ./run.sh CustodyDemo |

The output of this demo will resemble the following:

```
Running CustodyDemo demo...
**************************************************************************
***                HP SOA Registry Demo - CustodyDemo                 ***
**************************************************************************


Getting transfer token where
Enter first user name [demo_john]:
Enter password [demo_john]:
Enter UDDI key [uddi:systinet.org:demo:departmentID]:

Using Security at url https://mycomp.com:8443/uddi/security .. done
Logging in .. done
uddiKey = uddi:systinet.org:demo:departmentID
Using Custody at url https://mycomp.com:8443/uddi/custody .. done
Get in progress ... done

TransferToken
<transferToken xmlns="urn:uddi-org:custody_v3">
<nodeID xmlns="urn:uddi-org:api_v3">Systinet</nodeID>
<expirationTime>2004-05-17T12:32:51.236+02:00</expirationTime>
<opaqueToken>ZmZmZmZmZmZlMDVmZGEzNg==</opaqueToken>
</transferToken>

Logging out .. done

Transfering custody where
Enter second user name [demo_jane]:
Enter password [demo_jane]:
```

```
Logging in .. done
Using Custody at url https://mycomp.com:8443/uddi/custody .. done
Transfer in progress ... done
Logging out .. done
```

6 To rebuild demos, execute `run.bat clean` (`./run.sh clean`) to delete the classes directory and `run.bat make` (`./run.sh make`) to rebuild the demo classes.

## Subscription

The HP SOA Registry Foundation advanced subscription demo set demonstrates the HP SOA Registry Foundation application programming interface's capabilities and shows how to use the Subscription API to perform subscription calls to the registry.

The HP SOA Registry Foundation advanced subscription demos cover the subscription aspects of the UDDI Version 3 Specification [http://www.oasis-open.org/committees/uddi-spec/doc/tcspecs.htm#uddiv3]. They teach how to use the HP SOA Registry Foundation client API to create new subscriptions, get lists of subscriptions, get subscription results, and delete subscriptions.

The HP SOA Registry Foundation basic publishing demo set contains the following demos to assist you in learning the HP SOA Registry Foundation client API:

**SaveSubscription.** Demonstrates how to construct and fill the `Save_subscription` object, get a Subscription stub for the UDDI registry, and perform the `save_subscription` call.

**GetSubscriptions.** Demonstrates how to construct and fill the `Get_subscriptions` object, get a Subscription stub for the UDDI registry, and perform the `get_subscriptions` call.

**GetSubscriptionResults.** Demonstrates how to construct and fill the `Get_subscriptionResults` object, get a Subscription stub for the UDDI registry, and perform the `get_subscriptionResults` call.

**DeleteSubscription.** Demonstrates how to construct and fill the `Delete_subscription` object, get a Subscription stub for the UDDI registry, and perform the `delete_subscription` call.

### Prerequisites and Preparatory Steps: Code

We expect that you have already installed the HP SOA Registry Foundation and set the `REGISTRY_HOME` environment variable to the registry's installation location.

To run the HP SOA Registry Foundation's demos, your registry must be running. To start the HP SOA Registry Foundation, execute the **serverstart** script:

| | |
|---|---|
| Windows: | %REGISTRY_HOME%\bin\serverstart.bat |
| UNIX: | $REGISTRY_HOME/bin/serverstart.sh |

It is necessary to configure the demos. The configuration system has two levels: global and local. The properties defined at the global level may be overwritten at the local level. The global properties are located in the file:

| | |
|---|---|
| Windows: | %REGISTRY_HOME%\demos\env.properties |
| UNIX: | $REGISTRY_HOME/demos/env.properties |

The values set during the installation of the HP SOA Registry Foundation work out of box, and their modification affects all demos. If you need to redefine the value of some property for a single demo (that is, at the local level), edit `env.properties`. This file is located in the same directory as the file `run.sh` (`run.bat`). Local level properties for the `Subscription` demos are loaded from the file:

| | |
|---|---|
| Windows: | %REGISTRY_HOME%\demos\advanced\subscription\env.properties |
| UNIX: | $REGISTRY_HOME/demos/advanced/subscription/env.properties |

**Table 103. Properties used in demos**

| Name | Default Value | Description |
|---|---|---|
| uddi.demos.user.john.name | demo_john | first user's name |
| uddi.demos.user.john.password | demo_john | first user's password |
| uddi.demos.url.subscription | `http://localhost:8080/uddi/subscription` | the subscription web service port URL |
| uddi.demos.url.security | `http://localhost:8080/uddi/security` | the security web service port URL |

## Presentation and Functional Presentation

This section describes the programming pattern used in all demos using the GetSubscriptionResults demo as an example. You can find this demo's source code in the file:

| | |
|---|---|
| Windows: | %REGISTRY_HOME%\demos\basic\subscription\src\demo\uddi\subscription\GetSubscriptionResults.java |
| UNIX: | $REGISTRY_HOME/demos/basic/subscription/src/demo/uddi/subscription/GetSubscriptionResults.java |

Let us start with a description of `main` method. The first part is used to configure the demo by the user. Then it logs the user into the UDDI registry, creates a `Get_subscriptionResults` object holding the parameters of the request. This object is transformed in the next step into the SOAP UDDI call `get_subscriptionResults`. Its results are then displayed and the user is logged off from the UDDI registry.

```
String user = UserInput.readString("Enter user name",
                                      DemoProperties.getProperty(USER_JOHN_NAME));
String password = UserInput.readString("Enter password",
                                         DemoProperties.getProperty(USER_JOHN_PASSWORD));
String key = UserInput.readString("Enter subscription key", "");
int shift = UserInput.readInt("Enter start of coverage period in minutes", 60);
System.out.println();

UDDI_Security_PortType security = getSecurityStub();
String authInfo = getAuthInfo(user, password, security);
Get_subscriptionResults get = createGetSubscriptionResults(key, shift, authInfo);
SubscriptionResultsList result = getSubscriptionResults(get);
printSubscriptionResults(result);
discardAuthInfo(authInfo, security);
```

The method `createGetSubscriptionResults` takes subscriptionKey as a parameter that identifies the subscription in the UDDI registry, coveragePeriod, and authInfo of the user. The CoveragePeriod is used to identify the time period for which the user is interested in changes matched by the selected Subscription.

```
public static Get_subscriptionResults createGetSubscriptionResults(String subscriptionKey,
  int coveragePeriod, String authInfo) throws InvalidParameterException {
    Get_subscriptionResults getSubscriptionResults = new Get_subscriptionResults();
    getSubscriptionResults.setSubscriptionKey(subscriptionKey);

    // calculate coverage period
    long coveragePeriodShiftInMs = coveragePeriod * 60 * 1000;
    long endPoint = System.currentTimeMillis();
    long startPoint = endPoint - coveragePeriodShiftInMs;
    getSubscriptionResults.setCoveragePeriod(new CoveragePeriod(new Date(startPoint),
                                                                      new Date(endPoint)));
    getSubscriptionResults.setAuthInfo(authInfo);

    return getSubscriptionResults;
}
```

The helper method, `getSubscriptionStub()`, returns the UDDI Subscription stub of the web service listening at the URL specified by the `URL_SUBSCRIPTION` property.

```
public static UDDI_Subscription_PortType getSubscriptionStub() throws SOAPException {
     String url = DemoProperties.getProperty(URL_SUBSCRIPTION,
                                               "http://localhost:8080/uddi/subscription");
     System.out.print("Using Subscription at url " + url + " ..");
     UDDI_Subscription_PortType subscriptionStub = UDDISubscriptionStub.getInstance(url);
     System.out.println(" done");
     return subscriptionStub;
}
```

The UDDI API call `get_subscriptionResults` is performed in the method `getSubscriptionResults()`:

```
public static SubscriptionResultsList getSubscriptionResults(Get_subscriptionResults save)
  throws UDDIException, SOAPException {
    UDDI_Subscription_PortType subscriptionStub = getSubscriptionStub();
    System.out.print("Get in progress ...");
    SubscriptionResultsList result = subscriptionStub.get_subscriptionResults(save);
    System.out.println(" done");
    return result;
}
```

## Building and Running Demos

This section shows how to build and run the HP SOA Registry Foundation Advanced Subscription demo set. Let us continue with our GetSubscriptionResults demo.

1 Be sure that the demos are properly configured and the HP SOA Registry Foundation is up and running.

2 Change your working directory to:

| | |
|---|---|
| Windows: | %REGISTRY_HOME%\demos\advanced\subscription |
| UNIX: | $REGISTRY_HOME/demos/advanced/subscription |

3 Build all demos using:

| | |
|---|---|
| Windows: | run.bat make |
| UNIX: | ./run.sh make |

When compiling demos on Windows platforms, you may see the following text:

```
A subdirectory or file ..\..\common\.\build\classes already exists.
```

This is expected and does not indicate a problem.

4 To get a list of all available demos, run

| | |
|---|---|
| Windows: | run.bat help |
| UNIX: | ./run.sh help |

5 The selected demo can be executed via the **run** with the name of the demo as parameter. For example, to run the GetSubscriptionResults demo, invoke

| | |
|---|---|
| Windows: | run.bat GetSubscriptionResults |
| UNIX: | ./run.sh GetSubscriptionResults |

6 The HP SOA Registry Foundation Subscription demos show a complete use case for the Subscription API. The SaveSubscription demo creates a new subscription for the user John Demo. This subscription monitors changes to the business entity named `Marketing`.

```
Running SaveSubscription demo...
**************************************************************************
***               HP SOA Registry Demo - SaveSubscriptionDemo          ***
**************************************************************************

Saving subscription where
Enter user name [demo_john]:
Enter password [demo_john]:
Enter business name to watch [Marketing]:
Enter subscription validity in days [2]:
Enter limit of subscription results [5]:

Using Security at url https://mycomp.com:8443/uddi/security .. done
Logging in .. done
businessName = Marketing
limit = 5
valid = 2
```

```
Using Subscription at url https://mycomp.com:8443/uddi/subscription .. done
Save in progress ... done

Subscription 1 : uddi:4f0d7450-a578-11d8-91cd-5c1d367091cd
<subscription brief="false" xmlns="urn:uddi-org:sub_v3">
    <subscriptionKey>uddi:4f0d7450-a578-11d8-91cd-5c1d367091cd</subscriptionKey>
    <subscriptionFilter>
        <find_business xmlns="urn:uddi-org:api_v3">
            <name>Marketing</name>
        </find_business>
    </subscriptionFilter>
    <maxEntities>5</maxEntities>
    <expiresAfter>2004-05-14T11:28:30.721+02:00</expiresAfter>
</subscription>

********************************************************
Logging out .. done
```

If you want to list your available subscriptions, run the `GetSubscriptions` demo:

```
Finding subscriptions where
Enter user name [demo_john]:
Enter password [demo_john]:

Using Security at url https://mycomp.com:8443/uddi/security .. done
Logging in .. done
Using Subscription at url https://mycomp.com:8443/uddi/subscription .. done
Get in progress ... done

Subscription 1 : uddi:4f0d7450-a578-11d8-91cd-5c1d367091cd
<subscription brief="false" xmlns="urn:uddi-org:sub_v3">
    <subscriptionKey>uddi:4f0d7450-a578-11d8-91cd-5c1d367091cd</subscriptionKey>
    <subscriptionFilter>
        <find_business xmlns="urn:uddi-org:api_v3">
            <name>Marketing</name>
        </find_business>
    </subscriptionFilter>
    <maxEntities>5</maxEntities>
    <expiresAfter>2004-05-14T11:28:30.721+02:00</expiresAfter>
</subscription>

********************************************************
Logging out .. done
```

Now we need to generate some traffic on UDDI registry, that matches the subscription filter, that we have defined. You can use SaveBusiness demo from HP SOA Registry Foundation Basic Publishing demos to save business entity named Marketing.

```
Running SaveBusiness demo...
**************************************************************************
***             HP SOA Registry Demo - SaveBusinessDemo               ***
**************************************************************************

Saving business entity where
Enter (optional) businessKey []:
Enter count of names [1]:
Enter language code []:
Enter name in language  [Marketing]:
Enter description [Saved by SaveBusiness demo]:

Using Security at url https://mycomp.com:8443/uddi/security .. done
Logging in .. done
businessKey =
lang = null, name = Marketing
description = Saved by SaveBusiness demo
Using Publishing at url https://mycomp.com:8443/uddi/publishing .. done
Save in progress ... done

Business 1 : uddi:8097cc00-a578-11d8-91cd-5c1d367091cd
<businessEntity businessKey="uddi:8097cc00-a578-11d8-91cd-5c1d367091cd" xmlns="urn:uddi-org:api_v3">
    <name> Marketing</name>
    <description> Saved by SaveBusiness demo</description>
</businessEntity>
```

Then we want to get the results of the subscription. It is necessary to specify correct subscription key and sufficient coverage period.

```
Running GetSubscriptionResults demo...
**************************************************************************
***            HP SOA Registry Demo - GetSubscriptionResultsDemo      ***
**************************************************************************

Finding subscription results where
Enter user name [demo_john]:
Enter password [demo_john]:
Enter subscription key []: uddi:4f0d7450-a578-11d8-91cd-5c1d367091cd
Enter start of coverage period in minutes [60]:

Using Security at url https://mycomp.com:8443/uddi/security .. done
Logging in .. done
```

```
Using Subscription at url https://mycomp.com:8443/uddi/subscription .. done
Get in progress ... done
Subscription uddi:4f0d7450-a578-11d8-91cd-5c1d367091cd
Coverage period=Fri May 14 08:30:28 CEST 2004 - Fri May 14 09:30:28 CEST 2004

Subscription results:
<subscriptionResultsList xmlns="urn:uddi-org:sub_v3">
    <chunkToken>0</chunkToken>
    <coveragePeriod>
        < startPoint>2004-05-14T08:30:28.565+02:00</startPoint>
        < endPoint>2004-05-14T09:30:28.824+02:00</endPoint>
    </coveragePeriod>
    < subscription brief="false">
        < subscriptionKey> uddi:4f0d7450-a578-11d8-91cd-5c1d367091cd</subscriptionKey>
        < subscriptionFilter>
            < find_business xmlns="urn:uddi-org:api_v3">
                 < name> Marketing</name>
            </find_business>
        </subscriptionFilter>
        < maxEntities>5</maxEntities>
        < expiresAfter>2004-05-14T11:28:30.721+02:00</expiresAfter>
    </subscription>
    < businessList>
        < businessInfos>
            < businessInfo businessKey="uddi:8097cc00-a578-11d8-91cd-5c1d367091cd">
                 < name> Marketing</name>
                 < description> Saved by SaveBusiness demo</description>
            </businessInfo>
        </businessInfos>
    </businessList>
</subscriptionResultsList>

********************************************************
```

If we do not need the subscription anymore, we can delete it with DeleteSubscription demo.

```
**************************************************************************
***             HP SOA Registry Demo - DeleteSubscriptionDemo         ***
**************************************************************************

Deleting subscription where
Enter subscription key []: uddi:4f0d7450-a578-11d8-91cd-5c1d367091cd

Using Security at url https://mycomp.com:8443/uddi/security .. done
Logging in .. done
subscriptionKey = uddi:4f0d7450-a578-11d8-91cd-5c1d367091cd
Using Subscription at url https://mycomp.com:8443/uddi/subscription .. done
```

```
Delete in progress ... done
Logging out .. done
```

## Validation

The HP SOA Registry Foundation Validation demo shows how to implement, deploy, and use a custom valueset validation service.

The valueset validation API provides methods to validate values used in keyedReferences of checked taxonomies. The checks might range from very simple (check value against list of available values like in InternalValidation service) to complex, which performs contextual checks.

There are two classes and one xml file to import taxonomy, that are used by the Validation demo.

**ISBNValidation.** Valueset validation interface implementation. It checks keyValues from keyedReferences in all structures. The keyValue must be in ISBN format, otherwise E_invalidValue UDDI exception is thrown to deny the save operation.

**isbn.xml.** Taxonomy description used to import checked categorization demo:ISBN into the HP SOA Registry Foundation.

**ValidationDemo.** Demonstrates how to save a tModel with the keyedReference, that uses demo:ISBN categorization checked by ISBNValidation.

### Prerequisites and Preparatory Steps: Code

We expect that you have already installed the HP SOA Registry Foundation and set the `REGISTRY_HOME` environment variable to the registry's installation location.

To run the HP SOA Registry Foundation's demos, your registry must be running. To start the HP SOA Registry Foundation, execute the **serverstart** script:

| | |
|---|---|
| Windows: | %REGISTRY_HOME%\bin\serverstart.bat |
| UNIX: | $REGISTRY_HOME/bin/serverstart.sh |

It is necessary to configure the demos. The configuration system has two levels: global and local. The properties defined at the global level may be overwritten at local level. The global properties are located in the file:

| | |
|---|---|
| Windows: | %REGISTRY_HOME%\demos\env.properties |
| UNIX: | $REGISTRY_HOME/demos/env.properties |

The values set during the installation of the HP SOA Registry Foundation work out of box, and their modification affects all demos. If you need to redefine the value of some property for a single demo (that is, at the local level), edit `env.properties`. This file is located in the same directory as the file `run.sh` ( `run.bat`). Local level properties for the `Validation` demo is loaded from the file:

| | |
|---|---|
| Windows: | %REGISTRY_HOME%\demos\advanced\validation\env.properties |
| UNIX: | $REGISTRY_HOME/demos/advanced/validation/env.properties |

**Table 104. Properties Used in Demos**

| Name | Default Value | Description |
|---|---|---|
| uddi.demos.user.john.name | demo_john | first user's name |
| uddi.demos.user.john.password | demo_john | first user's password |
| uddi.demos.url.publishing | `http://localhost:8080/uddi/publishing` | the publishing Web service port URL |
| uddi.demos.url.security | `http://localhost:8080/uddi/security` | the security Web service port URL |

## Presentation and Functional Presentation

This section describes programming pattern used in ISBNValidation class. You can find its source code in the file

| | |
|---|---|
| Windows: | %REGISTRY_HOME%\demos\advanced\validation\src\demo\uddi\validation\ISBNValidation.java |
| UNIX: | $REGISTRY_HOME/demos/advanced/validation/src/demo/uddi/validation/ISBNValidation.java |

The HP SOA Registry Foundation simplifies the development of Valueset validation services. It intelligently performs some checks automatically based on the properties of the taxonomy (content of categoryBag), so you as developer may concentrate on logic of your validation service. For example it ensures, that categorization tModelKey is not used in identifierBag or that it is used only in UDDI structures, for which its compatibility was declared.

Let's start with description of `validate_values` method. It serves as starting point to the validation service. The Validate_values object contains at least one tModel, businessEntity, businessService, bindingTemplate or publisherAsertion, which contains reference to the taxonomy validated by this web service. If the validation service is shared between several taxonomies, UDDI structures, which use them, are grouped in single validate_values call.

When the method `validate_values` finds the structure type to be validated, it calls `validate_values` on the list of UDDI structures, which iterates over each element in the list and call `validate` method on single structure. If there is at least one error in dispositionReport, UDDI exception is thrown to deny the save operation.

```
public DispositionReport validate_values(Validate_values body) throws UDDIException {
    DispositionReport report = new DispositionReport();

    if (body.getBusinessEntityArrayList() != null)
        validate_values(body.getBusinessEntityArrayList(), report);

    else if (body.getBusinessServiceArrayList() != null)
        validate_values(body.getBusinessServiceArrayList(), report);

    else if (body.getTModelArrayList() != null)
        validate_values(body.getTModelArrayList(), report);

    else if (body.getPublisherAssertionArrayList() != null)
        validate_values(body.getPublisherAssertionArrayList(), report);

    else if (body.getBindingTemplateArrayList() != null)
        validate_values(body.getBindingTemplateArrayList(), report);

    ResultArrayList results = report.getResultArrayList();
    if (results == null || results.size() == 0)
        return DispositionReport.DISPOSITION_REPORT_SUCCESS;

    throw new UDDIException(report);
}
```

This method than validates all keyedReferences and if the structure contains children (for example businessServices in businessEntity), it recursively validates the too. For demo:ISBN categorization the check of identifierBag is useless, because the HP SOA Registry Foundation would already detect it as error and stop the execution of save operation.

```
private void validate(TModel tModel, DispositionReport report) throws UDDIException {
    CategoryBag categoryBag = tModel.getCategoryBag();
    IdentifierBag identifierBag = tModel.getIdentifierBag();
    KeyedReferenceArrayList keyedReferences;
    if (categoryBag != null) {
        keyedReferences = categoryBag.getKeyedReferenceArrayList();
        if (keyedReferences != null) {
            validate(keyedReferences, report);
        }

        validateKeyedReferenceGroups(categoryBag.getKeyedReferenceGroupArrayList(), report);
    }

    if (identifierBag != null) {
        keyedReferences = identifierBag.getKeyedReferenceArrayList();
        if (keyedReferences != null) {
            validate(keyedReferences, report);
        }
    }
}
```

The method `validate` iterates over all keyedReferences and if they reference demo:ISBN taxonomy, than it checks the keyValue, if it is in valid ISBN format. If not, it adds error report to dispositionReport.

```
private void validate(KeyedReferenceArrayList keyedReferenceArrayList, DispositionReport report)
  throws UDDIException {
    for (Iterator iter = keyedReferenceArrayList.iterator(); iter.hasNext();) {
        KeyedReference keyedReference = (KeyedReference) iter.next();
        if (TMODEL_KEY.equalsIgnoreCase(keyedReference.getTModelKey())) {
            if (!checkISBN(keyedReference.getKeyValue())) {
                String message = "KeyValue is not valid ISBN number in " + keyedReference.toXML();
                report.addResult(createResult(UDDIErrorCodes.E_INVALID_VALUE, message));
            }
        }
    }
}
```

The implementation of ISBNValidation web service is not optimal. It scans all UDDI structures and containers of keyedReferences, even if the HP SOA Registry Foundation was configured to deny such usage. The optimal code would check only categoryBag in tModels.

## Building and Running Demos

This section shows, how to build, deploy and run the HP SOA Registry Foundation Advanced Validation demo.

1 Be sure that the demos are properly configured and the HP SOA Registry Foundation is up and running.

2 Change your working directory to

| | |
|---|---|
| Windows: | %REGISTRY_HOME%\demos\advanced\validation |
| UNIX: | $REGISTRY_HOME/demos/advanced/validation |

3 Build all classes using:

| | |
|---|---|
| Windows: | run.bat make |
| UNIX: | ./run.sh make |

When compiling demos on Windows platforms, you may see the following text:

```
A subdirectory or file ..\..\common\.\build\classes already exists.
```

This is expected and does not indicate a problem.

4 Copy the file ISBNValidation.class to REGISTRY_HOME/app/uddi/services/Wasp-inf/classes

| | |
|---|---|
| Windows: | cd %REGISTRY_HOME%\demos\advanced\validation\build |
| | xcopy classes %REGISTRY_HOME%\app\uddi\services\Wasp-inf\classes /S |
| UNIX: | cd $REGISTRY_HOME/demos/advanced/validation/build |
| | cp -r classes $REGISTRY_HOME/app/uddi/services/Wasp-inf |

5 Now use Advanced Taxonomy demo UploadTaxonomy to upload the file isbn.xml located in data subdirectory of Validation demo directory. For more information, how to do it, read Taxonomy demo documentation.

6 When the demo:ISBN taxonomy has been uploaded and `ISBNValidation.class` copied, you must shutdown the HP SOA Registry Foundation, delete the REGISTRY_HOME/work directory, and restart the HP SOA Registry Foundation.

7 The ValidationDemo can be executed via command run with

| | |
|---|---|
| Windows: | run.bat ValidationDemo |
| UNIX: | ./run.sh ValidationDemo |

The output of this demo will resemble the following:

8 To rebuild demos, execute `run.bat clean` ( `./run.sh clean`) to delete the classes directory and `run.bat make` ( `./run.sh make`) to rebuild the demo classes.

## Taxonomy

The HP SOA Registry Foundation Taxonomy demos demonstrates the HP SOA Registry Foundation's Taxonomy capabilities and show how to use this API.

The Taxonomy is used to manage and query taxonomies in the HP SOA Registry Foundation. These demos cover all API methods, so you can learn how to download, upload, save, delete, get and find taxonomies. In addition, you can manage individual values in internally checked taxonomies using the Category API.

The HP SOA Registry Foundation contains the following demos to assist you in learning the HP SOA Registry Foundation Taxonomy and Category APIs.

**SaveTaxonomy.** Demonstrates how to save unchecked taxonomy, which can be used in businessEntities and tModels.

**DeleteTaxonomy.** Demonstrates how to deletes selected taxonomy. If the taxonomy was checked, associated binding template is automatically removed too.

**UploadTaxonomy.** Demonstrates how to upload the file containg taxonomy. This API call is usefull, when you need to process really large taxonomies, because it operates on stream of data.

**DownloadTaxonomy.** Demonstrates how to download selected taxonomy. Again this method is stream oriented.

**GetTaxonomy.** Demonstrates how to get details of selected taxonomy.

**FindTaxonomy.** Demonstrates how to search for taxonomies based on given criteria.

**AddCategory.** Demonstrates how to add new category (keyedReference value) to existing internal taxonomy.

**DeleteCategory.** Demonstrates how to delete the category in existing internal taxonomy.

**SetCategory.** Demonstrates how to update the category in existing internal taxonomy.

**MoveCategory.** Demonstrates how to change the parent of the category in existing internal taxonomy.

**GetCategory.** Demonstrates how to get the category of the internal taxonomy.

**GetRootCategory.** Demonstrates how to get list of the top-level categories of the internal taxonomy.

**GetRootPath.** Demonstrates how to get list of parents of selected category, from the top-level category to the selected one.

**FindCategory.** Demonstrates how to get list of categories, that match some criterias.

## Prerequisites and Preparatory Steps: Code

We expect that you have already installed the HP SOA Registry Foundation and set the `REGISTRY_HOME` environment variable to the registry's installation location.

To run the HP SOA Registry Foundation's demos, your registry must be running. To start the HP SOA Registry Foundation, execute the **serverstart** script:

| | |
|---|---|
| Windows: | %REGISTRY_HOME%\bin\serverstart.bat |
| UNIX: | $REGISTRY_HOME/bin/serverstart.sh |

It is necessary to configure the demos. The configuration system has two levels: global and local. The properties defined at the global level may be overwritten at local level. The global properties are located in the file:

| | |
|---|---|
| Windows: | %REGISTRY_HOME%\demos\env.properties |
| UNIX: | $REGISTRY_HOME/demos/env.properties |

The values set during the installation of the HP SOA Registry Foundation work out of box, and their modification affects all demos. If you need to redefine the value of some property for a single demo (that is, at the local level), edit `env.properties`. This file is located in the same directory as the file `run.sh` ( `run.bat`). Local level properties for the `Taxonomy` demo is loaded from the file:

| | |
|---|---|
| Windows: | %REGISTRY_HOME%\demos\advanced\taxonomy\env.properties |

|  |  |
|---|---|
| UNIX: | $REGISTRY_HOME/demos/advanced/taxonomy/env.properties |

**Table 105. Properties Used in Demos**

| Name | Default Value | Description |
|---|---|---|
| uddi.demos.user.john.name | demo_john | first user's name |
| uddi.demos.user.john.password | demo_john | first user's password |
| uddi.demos.url.taxonomy | `http://localhost:8080/uddi/taxonomy` | the taxonomy Web service port URL |
| uddi.demos.url.category | `http://localhost:8080/uddi/category` | the category Web service port URL |
| uddi.demos.url.security | `http://localhost:8080/uddi/security` | the security Web service port URL |

## Presentation and Functional Presentation

This section describes programming pattern used in all demos using the SaveTaxonomy demo as an example. You can find its source code in the file:

|  |  |
|---|---|
| Windows: | %REGISTRY_HOME%\demos\advanced\taxonomy\src\demo\uddi\taxonomy\SaveTaxonomy.java |
| UNIX: | $REGISTRY_HOME/demos/advanced/taxonomy/src/demo/uddi/taxonomy/SaveTaxonomy.java |

The main method of this demo is straightforward. It gathers user's input, logs the user in the HP SOA Registry Foundation, creates an object of Save_taxonomy, sends it to UDDI registry over SOAP and displays the result.

```
String user = UserInput.readString("Enter user name", "admin");
String password = UserInput.readString("Enter password", "changeit");
String name = UserInput.readString("Enter name", "Demo identifier");
String description = UserInput.readString("Enter description", "Saved by SaveTaxonomy demo");
System.out.println();

UDDI_Security_PortType security = getSecurityStub();
String authInfo = getAuthInfo(user, password, security);
Save_taxonomy save = createSaveTaxonomy(name, description, authInfo);
TaxonomyDetail result = saveTaxonomy(save);
printTaxonomyDetail(result);
discardAuthInfo(authInfo, security);
```

When saving taxonomy, you must first create a tModel, that will represent it. You can set your publisher assigned tModelKey and other properties. The only mandatory property is name. You don't need to specify taxonomy related keyedReferences in categoryBag, they shall be set in Taxonomy.

The Categorization is used to define usage of the taxonomy. Valid values are identifier, categorization, categorizationGroup and relationship. The compatibility marks tModel with information, in which UDDI structures it can be used.

This example creates an unchecked identifier, that can be used only in categoryBags of business entities and tModels.

```
public static Save_taxonomy createSaveTaxonomy(String name, String description, String authInfo)
  throws InvalidParameterException {
    System.out.println("name = " + name);
    System.out.println("description = " + description);

    TModel tModel = new TModel();
    tModel.setName(new Name(name));
    tModel.addDescription(new Description(description));

    Taxonomy taxonomy = new Taxonomy(tModel);
    taxonomy.setCheck(Boolean.FALSE);
    taxonomy.addCategorization(Categorization.identifier);
    taxonomy.addCompatibility(Compatibility.businessEntity);
    taxonomy.addCompatibility(Compatibility.tModel);

    Save_taxonomy save = new Save_taxonomy();
    save.addTaxonomy(taxonomy);
    save.setAuthInfo(authInfo);

    return save;
}
```

The helper method `getTaxonomyStub()` returns the Taxonomy stub of the Web service listening at the URL specified by the `URL_TAXONOMY` property.

```
public static TaxonomyApi getTaxonomyStub() throws SOAPException {
    String url = DemoProperties.getProperty(URL_TAXONOMY, "http://localhost:8080/uddi/taxonomy");
    System.out.print("Using Taxonomy at url " + url + " ..");
    TaxonomyApi taxonomy = TaxonomyStub.getInstance(url);
    System.out.println(" done");
    return taxonomy;
}
```

The Taxonomy API call `save_taxonomy` is performed in the method `saveTaxonomy()`.

```
public static TaxonomyDetail saveTaxonomy(Save_taxonomy save)
  throws UDDIException, SOAPException {
    TaxonomyApi taxonomy = getTaxonomyStub();
    System.out.print("Save in progress ...");
    TaxonomyDetail taxonomyDetail = taxonomy.save_taxonomy(save);
    System.out.println(" done");
    return taxonomyDetail;
}
```

The returned TaxonomyDetail object is displayed in `printTaxonomyDetail` method.

```
public static void printTaxonomyDetail(TaxonomyDetail taxonomyDetail) {
    System.out.println();

    TaxonomyArrayList taxonomyArrayList = taxonomyDetail.getTaxonomyArrayList();
    int position = 1;
    for (Iterator iterator = taxonomyArrayList.iterator(); iterator.hasNext();) {
        Taxonomy taxonomy = (Taxonomy) iterator.next();
        System.out.println("Taxonomy " + position + " : " + taxonomy.getTModel().getTModelKey());
        System.out.println(taxonomy.toXML());
        System.out.println();
        System.out.println("********************************************************");
        position++;
    }
}
```

## Building and Running Demos

This section shows, how to build and run the HP SOA Registry Foundation Advanced Taxonomy demo set. Let's continue with our SaveTaxonomy demo.

1. Be sure that the demos are properly configured and the HP SOA Registry Foundation is up and running.

2. Change your working directory to

| | |
|---|---|
| Windows: | %REGISTRY_HOME%\demos\advanced\taxonomy |
| UNIX: | $REGISTRY_HOME/demos/advanced/taxonomy |

3. Build all demos using:

|  |  |
|---|---|
| Windows: | run.bat make |
| UNIX: | ./run.sh make |

When compiling demos on Windows platforms, you may see the following text:

```
A subdirectory or file ..\..\common\.\build\classes already exists.
```

This is expected and does not indicate a problem.

4 To get list of all available demos, run

|  |  |
|---|---|
| Windows: | run.bat help |
| UNIX: | ./run.sh help |

5 The selected demo can be executed via command run with name of demo as parameter. For example to run the SaveTaxonomy demo, invoke

|  |  |
|---|---|
| Windows: | run.bat SaveTaxonomy |
| UNIX: | ./run.sh SaveTaxonomy |

The output of this demo will resemble the following:

```
Running SaveTaxonomy demo...
**************************************************************************
***             HP SOA Registry Demo - SaveTaxonomyDemo               ***
**************************************************************************

Saving taxonomy where
Enter user name [admin]:
Enter password [changeit]:
Enter name [Demo identifier]:
Enter description [Saved by SaveTaxonomy demo]:

Using Security at url https://mycomp.com:8443/uddi/security .. done
Logging in .. done
name = Demo identifier
description = Saved by SaveTaxonomy demo
Using Taxonomy at url https://mycomp.com:8443/uddi/taxonomy .. done
```

```
Save in progress ... done

Taxonomy 1 : uddi:5c1d5d80-a4d4-11d8-91cd-5c1d367091cd
<taxonomy check="false" xmlns="http://systinet.com/uddi/taxonomy/v3/5.0">
  <tModel tModelKey="uddi:5c1d5d80-a4d4-11d8-91cd-5c1d367091cd"
   xmlns="urn:uddi-org:api_v3">
    <name>Demo identifier</name>
    <description>Saved by SaveTaxonomy demo</description>
    <categoryBag>
      <keyedReference tModelKey="uddi:uddi.org:categorization:types"
                      keyName="Identifier system" keyValue="identifier"/>
      <keyedReference tModelKey="uddi:systinet.com:taxonomy:compatibility"
                      keyName="Compatibility" keyValue="businessEntity"/>
      <keyedReference tModelKey="uddi:systinet.com:taxonomy:compatibility"
                      keyName="Compatibility" keyValue="tModel"/>
      <keyedReference tModelKey="uddi:uddi.org:categorization:types"
                      keyName="Unchecked value set" keyValue="unchecked"/>
    </categoryBag>
  </tModel>
  <compatibilityBag>
    <compatibility>businessEntity</compatibility>
    <compatibility>tModel</compatibility>
  </compatibilityBag>
  <categorizationBag>
    <categorization>identifier</categorization>
  </categorizationBag>
</taxonomy>

********************************************************
Logging out .. done
```

6 To rebuild demos, execute `run.bat clean` (`./run.sh clean`) to delete the classes directory and `run.bat make` (`./run.sh make`) to rebuild the demo classes.

## Security Demos

Security Demos section includes the following demos:

- Account Demos - You will learn how to register new accounts (or update existing accounts), enable, get, find, and delete accounts.
- Group Demos - You will learn how to create or update, get, find and delete groups.

- Permission Demos - You will learn how to set and search permissions.
- ACL Demos - The Systinet ACL extension is used to grant or revoke rights to selected users or groups. You will learn how to create, save, delete, get and find ACLs.

## Account

The HP SOA Registry Foundation Account Demos are used to demonstrate the HP SOA Registry Foundation application programming interface's capabilities and to demonstrate how to use this API.

You will learn how to register new accounts (or update existing accounts), enable, get, find, and delete accounts.

The HP SOA Registry Foundation security account demo set contains the following demos to assist you in learning the HP SOA Registry Foundation client API:

**SaveAccount.** Demonstrates how to construct and fill the `Save_account` object, get an Account stub for the UDDI registry, and perform the `save_account` call.

**DeleteAccount.** Demonstrates how to construct and fill the `Delete_account` object, get an Account stub for the UDDI registry, and perform the `delete_account` call.

### Prerequisites and Preparatory Steps: Code

We expect that you have already installed the HP SOA Registry Foundation and set the `REGISTRY_HOME` environment variable to the registry's installation location.

To run the HP SOA Registry Foundation's demos, your HP SOA Registry Foundation must be running. To start the registry, execute the **serverstart** script:

| | |
|---|---|
| Windows: | %REGISTRY_HOME%\bin\serverstart.bat |
| UNIX: | $REGISTRY_HOME/bin/serverstart.sh |

It is necessary to configure the demos. The configuration system has two levels: global and local. The properties defined at the global level may be overwritten at the local level. The global properties are located in the file:

| | |
|---|---|
| Windows: | %REGISTRY_HOME%\demos\env.properties |

| | |
|---|---|
| UNIX: | $REGISTRY_HOME/demos/env.properties |

The values set during the installation of the HP SOA Registry Foundation work out of the box, and their modification affects all demos. If you need to redefine a property's value for a single demo (that is,, at the local level), edit `env.properties`. This file is located in the same directory as the file `run.sh` (`run.bat`). Local level properties for the `Account` demo are loaded from the file:

| | |
|---|---|
| Windows: | %REGISTRY_HOME%\demos\security\account\env.properties |
| UNIX: | $REGISTRY_HOME/demos/security/account/env.properties |

**Table 106. Properties Used in Demos**

| Name | Default Value | Description |
|---|---|---|
| uddi.demos.url.account | `http://localhost:8080/uddi/account` | the account Web service port URL |
| uddi.demos.url.security | `http://localhost:8080/uddi/security` | the security Web service port URL |

## Presentation and Functional Presentation

This section describes the programming pattern used in all demos using the SaveAccount demo as an example. You can find this demo's source code in the file:

| | |
|---|---|
| Windows: | %REGISTRY_HOME%\demos\security\account\src\demo\uddi\account\SaveAccount.java |
| UNIX: | $REGISTRY_HOME/demos/security/account/src/demo/uddi/account/SaveAccount.java |

The main method is divided into two parts. The first part serves to configure the demo by the user. It reads the credentials of the user who will run the demo. If you wish to save new user on a registry that supports public registration, then the demo may be modified to skip authentication. It then reads information about the new user to be saved (or about the user to be updated) including login name, password, name, and email address.

The second part contains the execution of the demo. It looks up the security stub and authenticates the user. It then creates a `Save_userAccount` object and sends it over SOAP to the UDDI registry as a `save_userAccount` operation. The returned `UserAccount` object is printed to the console and the authInfo is discarded.

```
String admin = UserInput.readString("Enter admin login","admin");
String admin_password = UserInput.readString("Enter admin password","changeit");
String login = UserInput.readString("Enter new user's login","demo_eric");
String password = UserInput.readString("Enter password","demo_eric");
String name = UserInput.readString("Enter full name","Eric Demo");
String email = UserInput.readString("Enter email","demo_eric@localhost");
System.out.println();

UDDI_Security_PortType security = getSecurityStub();
String authInfo = getAuthInfo(admin, admin_password, security);
Save_userAccount save = createSaveUserAccount(login, password, name, email, authInfo);
UserAccount userAccount = saveUserAccount(save);
printUserAccount(userAccount);
discardAuthInfo(authInfo, security);
```

The method `createSaveUserAccount` is used to create an object representing the `save_userAccount` operation. The authInfo is required under two circumstances: if the HP SOA Registry Foundation is configured not to allow public registration or if the account already exists.

```
public static Save_userAccount createSaveUserAccount(String login, String password,
  String name, String email, String authInfo) throws InvalidParameterException {
    System.out.println("login = " + login);
    System.out.println("password = " + password);
    System.out.println("name = " + name);
    System.out.println("email = " + email);

    UserAccount account = new UserAccount();
    account.setLoginName(login);
    account.setPassword(password);
    account.setFullName(name);
    account.setEmail(email);
    account.setLanguageCode("EN");

    Save_userAccount save = new Save_userAccount(account, authInfo);
    return save;
}
```

The helper method, `getAccountStub()`, returns the UDDI Account stub of the web service listening at the URL specified by the `URL_ACCOUNT` property.

```
public static AccountApi getAccountStub() throws SOAPException {
    // you can specify your own URL in property - uddi.demos.url.account
    String url = DemoProperties.getProperty(URL_ACCOUNT, "http://localhost:8080/uddi/account");
    System.out.print("Using Account at url " + url + " ..");
    AccountApi account = AccountStub.getInstance(url);
    System.out.println(" done");
    return account;
}
```

The HP SOA Registry Foundation API call `save_userAccount` is performed in the method `saveUserAccount`.

```
public static UserAccount saveUserAccount(Save_userAccount save) throws SOAPException, AccountException {
    AccountApi accountApi = getAccountStub();
    System.out.print("Save in progress ...");
    UserAccount userAccount = accountApi.save_userAccount(save);
    System.out.println(" done");
    return userAccount;
}
```

## Building and Running Demos

This section shows how to build and run the HP SOA Registry Foundation Account demos.

1 Be sure that the demos are properly configured and the HP SOA Registry Foundation is up and running.

2 Change your working directory to

| | |
|---|---|
| Windows: | %REGISTRY_HOME%\demos\security\account |
| UNIX: | $REGISTRY_HOME/demos/security/account |

3 Build demos using:

| | |
|---|---|
| Windows: | run.bat make |
| UNIX: | ./run.sh make |

When compiling demos on Windows platforms, you may see the following text:

```
A subdirectory or file ..\..\common\.\build\classes already exists.
```

This is expected and does not indicate a problem.

4 To get list of all available commands, run

| | |
|---|---|
| Windows: | run.bat help |
| UNIX: | ./run.sh help |

5 The selected demo can be executed via the **run** command using the name of the demo as a parameter. For example, to run the SaveAccount demo, invoke

| | |
|---|---|
| Windows: | run.bat SaveAccount |
| UNIX: | ./run.sh SaveAccount |

The output of this demo will resemble the following:

```
Running SaveAccount demo...
**************************************************************************
***    HP SOA Registry Demo - SaveAccount   ***
**************************************************************************

Saving user account where
Enter admin login [admin]:
Enter admin password [changeit]:
Enter new user's login [demo_eric]:
Enter password [demo_eric]:
Enter full name [Eric Demo]:
Enter email [demo_eric@localhost]:

Using Security at url https://mycomp.com:8443/uddi/security .. done
Logging in .. done
login = demo_eric
password = demo_eric
name = Eric Demo
email = demo_eric@localhost
Using Account at url https://mycomp.com:8443/uddi/account .. done
Save in progress ... done

User account
<userAccount xmlns="http://systinet.com/uddi/account/5.0">
<loginName>demo_eric</loginName>
<password>GD70gCeNfkwBph1m2bgGxQ==</password>
<email>demo_eric@localhost</email>
<fullName>Eric Demo</fullName>
<languageCode>EN</languageCode>
<expiration>1970-01-01T02:00:00.000+02:00</expiration>
<external>false</external>
```

```
<blocked>false</blocked>
<businessesLimit>1</businessesLimit>
<servicesLimit>4</servicesLimit>
<bindingsLimit>2</bindingsLimit>
<tModelsLimit>100</tModelsLimit>
<assertionsLimit>10</assertionsLimit>
<subscriptionsLimit>0</subscriptionsLimit>
<lastLoginTime>2004-05-18T16:20:09.084+02:00</lastLoginTime>
</userAccount>

********************************************************
Logging out .. done
```

6 To rebuild demos, execute `run.bat clean` (`./run.sh clean`) to delete the classes directory and `run.bat make` (`./run.sh make`) to rebuild the demo classes.

## Group

The HP SOA Registry Foundation Group demos are used to demonstrate the HP SOA Registry Foundation application programming interface's capabilities and to demonstrate how to use this API.

You will learn how to create or update, get, find and delete groups.

The HP SOA Registry Foundation security group demo set contains the following demos to assist you in learning the HP SOA Registry Foundation client API:

**Save.** Demonstrates how to construct and fill the `Save_group` object, get a Group stub for the UDDI registry, and perform the `save_group` call.

**Delete.** Demonstrates how to construct and fill the `Delete_group` object, get a Group stub for the UDDI registry, and perform the `delete_group` call.

**Get.** Demonstrates how to construct and fill the `Get_group` object, get a Group stub for the UDDI registry, and perform the `get_group` call.

**Find.** Demonstrates how to construct and fill the `Find_group` object, get a Group stub for the UDDI registry, and perform the `find_group` call.

**WhereIAm.** Demonstrates how to construct and fill the `Where_amI` object, get a Group stub for the UDDI registry, and perform the `where_amI` call.

## Prerequisites and Preparatory Steps: Code

We expect that you have already installed the HP SOA Registry Foundation and set the `REGISTRY_HOME` environment variable to the registry's installation location.

To run the HP SOA Registry Foundation's demos, your HP SOA Registry Foundation must be running. To start the registry, execute the **serverstart** script:

| | |
|---|---|
| Windows: | %REGISTRY_HOME%\bin\serverstart.bat |
| UNIX: | $REGISTRY_HOME/bin/serverstart.sh |

It is necessary to configure the demos. The configuration system has two levels: global and local. The properties defined at the global level may be overwritten at the local level. The global properties are located in the file:

| | |
|---|---|
| Windows: | %REGISTRY_HOME%\demos\env.properties |
| UNIX: | $REGISTRY_HOME/demos/env.properties |

The values set during the installation of the HP SOA Registry Foundation work out of the box, and their modification affects all demos. If you need to redefine a property's value for a single demo (that is,, at the local level), edit `env.properties`. This file is located in the same directory as the file `run.sh` (`run.bat`). Local level properties for the `Group` demo are loaded from the file:

| | |
|---|---|
| Windows: | %REGISTRY_HOME%\demos\security\group\env.properties |
| UNIX: | $REGISTRY_HOME/demos/security/group/env.properties |

**Table 107. Properties Used in Demos**

| Name | Default Value | Description |
|---|---|---|
| uddi.demos.url.group | `http://localhost:8080/uddi/group` | the group Web service port URL |
| uddi.demos.url.security | `http://localhost:8080/uddi/security` | the security Web service port URL |

## Presentation and Functional Presentation

This section describes the programming pattern used in all demos using the WhereIAm demo as an example. You can find this demo's source code in the file:

| | |
|---|---|
| Windows: | %REGISTRY_HOME%\demos\security\group\src\demo\uddi\group\WhereIAm.java |
| UNIX: | $REGISTRY_HOME/demos/security/group/src/demo/uddi/group/WhereIAm.java |

The main method starts by gathering configuration information from the user. The first, login name, is used to run the command; the second is argument of the `where_amI` operation. It then logs the user to the registry, creates the `Where_amI` object, sends it over SOAP and prints a list of groups to which the login belongs.

```
String user = UserInput.readString("Enter login to authenticate",
                DemoProperties.getProperty(USER_JOHN_NAME));
String password = UserInput.readString("Enter password",
                       DemoProperties.getProperty(USER_JOHN_PASSWORD));
String login = UserInput.readString("Enter login to search", user);
System.out.println();

UDDI_Security_PortType security = getSecurityStub();
String authInfo = getAuthInfo(user, password, security);
Where_amI save = createWhereAmI(login, authInfo);
GroupList groups = whereAmI(save);
printGroupList(groups);
discardAuthInfo(authInfo, security);
```

The method `createWhereAmI` is used to create an object representation of the `where_amI` operation.

```
public static Where_amI createWhereAmI(String login, String authInfo)
  throws InvalidParameterException {
    System.out.println("login = " + login);

    Where_amI find = new Where_amI();
    find.setLoginName(login);
    find.setAuthInfo(authInfo);

    return find;
}
```

The helper method, `getGroupStub()`, returns the UDDI Group stub of the Web service listening at the URL specified by the `URL_GROUP` property.

```
public static GroupApi getGroupStub() throws SOAPException {
    // you can specify your own URL in property - uddi.demos.url.group
    String url = DemoProperties.getProperty(URL_GROUP, "http://localhost:8080/uddi/group");
    System.out.print("Using Group API at url " + url + " ..");
    GroupApi account = GroupStub.getInstance(url);
    System.out.println(" done");
    return account;
}
```

The HP SOA Registry Foundation API call `where_amI` is performed in the method `whereAmI`.

```
public static GroupList whereAmI(Where_amI find)
  throws SOAPException, GroupException {
    GroupApi groupApi = getGroupStub();
    System.out.print("Search in progress ...");
    GroupList groups = groupApi.where_amI(find);
    System.out.println(" done");
    return groups;
}
```

Finally the method `printGroupList` is used to print the found groups to the console.

```
public static void printGroupList(GroupList groups) {
    System.out.println();
    ListDescription listDescription = groups.getListDescription();
    if (listDescription != null) {
        // list description is mandatory part of result, if the resultant list is subset of available data

        int includeCount = listDescription.getIncludeCount();
        int actualCount = listDescription.getActualCount();
        int listHead = listDescription.getListHead();
        System.out.println("Displaying " + includeCount + " of " + actualCount + ",
                                           starting at position " + listHead);
    }

    GroupInfoArrayList groupInfoArrayList = groups.getGroupInfoArrayList();
    if (groupInfoArrayList == null) {
        System.out.println("Nothing found");
        return;
    }

    int position = 1;
    for (Iterator iterator = groupInfoArrayList.iterator(); iterator.hasNext();) {
        GroupInfo group = (GroupInfo) iterator.next();
        System.out.println("Group " + position);
        System.out.println(group.toXML());
        System.out.println();
        System.out.println("********************************************************");
        position++;
    }
}
```

## Building and Running Demos

This section shows how to build and run the HP SOA Registry Foundation Group demos.

1 Be sure that the demos are properly configured and the HP SOA Registry Foundation is up and running.

2 Change your working directory to:

| | |
|---|---|
| Windows: | %REGISTRY_HOME%\demos\security\group |
| UNIX: | $REGISTRY_HOME/demos/security/group |

3 Build demos using:

| | |
|---|---|
| Windows: | run.bat make |
| UNIX: | ./run.sh make |

When compiling demos on Windows platforms, you may see the following text:

```
A subdirectory or file ..\..\common\.\build\classes already exists.
```

This is expected and does not indicate a problem.

4 To get list of all available commands, run

| | |
|---|---|
| Windows: | run.bat help |
| UNIX: | ./run.sh help |

5 The selected demo can be executed via the **run** command with the name of the demo as parameter. For example, to run the WhereIAm demo, invoke

| | |
|---|---|
| Windows: | run.bat WhereIAm |

| UNIX: | ./run.sh WhereIAm |
|---|---|

The output of this demo will resemble the following:

```
Running WhereIAm demo...
**************************************************************************
***    HP SOA Registry Demo - WhereIAm   ***
**************************************************************************

Find groups of user where
Enter login to authenticate [demo_john]:
Enter password [demo_john]:
Enter login to search [demo_john]:

Using Security at url https://mycomp.com:8443/uddi/security .. done
Logging in .. done
login = demo_john
Using Group API at url https://mycomp.com:8443/uddi/group .. done
Search in progress ... done

Group 1
<groupInfo xmlns="http://systinet.com/uddi/group/5.0">
<name>system#everyone</name>
<description>The special group that contains all users.</description>
<privateGroup>false</privateGroup>
<external>false</external>
</groupInfo>

********************************************************
Group 2
<groupInfo xmlns="http://systinet.com/uddi/group/5.0">
<name>system#registered</name>
<description>The special group that contains all users who are logged
onto the UDDI registry.</description>
<privateGroup>false</privateGroup>
<external>false</external>
</groupInfo>

********************************************************
Logging out .. done
```

6 To rebuild demos, execute `run.bat clean` (`./run.sh clean`) to delete the classes directory and `run.bat make` (`./run.sh make`) to rebuild the demo classes.

## Permission

The HP SOA Registry Foundation Permission Demos are used to demonstrate the HP SOA Registry Foundation application programming interface's capabilities and to demonstrate how to use this API.

You will learn how to set and search permissions.

The HP SOA Registry Foundation security permission demo set contains the following demos to assist you in learning the HP SOA Registry Foundation client API:

**SetPermission.** Demonstrates how to construct and fill the `Set_permission` object, get a Permission stub for the UDDI registry, and perform the `set_permission` call.

**WhoHasPermission.** Demonstrates how to construct and fill the `Who_hasPermission` object, get a Permission stub for the UDDI registry, and perform the `who_hasPermission` call.

**GetPermission.** Demonstrates how to construct and fill the `Get_permission` object, get a Permission stub for the UDDI registry, and perform the `get_permission` call.

### Prerequisites and Preparatory Steps: Code

We expect that you have already installed the HP SOA Registry Foundation and set the `REGISTRY_HOME` environment variable to the registry's installation location.

To run the HP SOA Registry Foundation's demos, your HP SOA Registry Foundation must be running. To start the registry, execute the **serverstart** script:

| | |
|---|---|
| Windows: | %REGISTRY_HOME%\bin\serverstart.bat |
| UNIX: | $REGISTRY_HOME/bin/serverstart.sh |

It is necessary to configure the demos. The configuration system has two levels: global and local. The properties defined at the global level may be overwritten at the local level. The global properties are located in the file:

| | |
|---|---|
| Windows: | %REGISTRY_HOME%\demos\env.properties |
| UNIX: | $REGISTRY_HOME/demos/env.properties |

The values set during the installation of the HP SOA Registry Foundation work out of the box, and their modification affects all demos. If you need to redefine a property's value for a single demo (that is,, at the local level), edit `env.properties`. This file is located in the same directory as the file `run.sh` (`run.bat`). Local level properties for the `Permission` demos are loaded from the file:

| | |
|---|---|
| Windows: | %REGISTRY_HOME%\demos\security\permission\env.properties |
| UNIX: | $REGISTRY_HOME/demos/security/permission/env.properties |

**Table 108. Properties Used in Demos**

| Name | Default Value | Description |
|---|---|---|
| uddi.demos.url.permission | `http://localhost:8080/uddi/permission` | the permission Web service port URL |
| uddi.demos.url.security | `http://localhost:8080/uddi/security` | the security Web service port URL |

## Presentation and Functional Presentation

This section describes the programming pattern used in all demos using the SetPermission demo as an example. You can find this demo's source code in the file:

| | |
|---|---|
| Windows: | %REGISTRY_HOME%\demos\security\permission\src\demo\uddi\permission\SetPermission.java |
| UNIX: | $REGISTRY_HOME/demos/security/permission/src/demo/uddi/permission/SetPermission.java |

The main method is divided into two parts. The first part serves to configure the demo by the user. It reads the credentials of the user who will run the demo and is allowed to set permissions. Then it reads permission type, name, and action.

The second part contains the execution of the demo. It looks up the security stub and authenticates the user. It then creates a `Set_permission` object and sends it over SOAP to the UDDI registry as a `set_permission` operation. If the user has explicitly declared permissions that are not present in this operation, these will be removed.

```
String user = UserInput.readString("Enter login","admin");
String password = UserInput.readString("Enter password","changeit");
String principal = UserInput.readString("Enter principal type", PrincipalType.user.getValue());
String login = UserInput.readString("Enter login/group name",
                                                        DemoProperties.getProperty(USER_JOHN_NAME));
String type = UserInput.readString("Enter permission type",
                                       "org.systinet.uddi.security.permission.ApiManagerPermission");
String name = UserInput.readString("Enter permission name",
                                                 "org.systinet.uddi.client.taxonomy.v3.TaxonomyApi");
String action = UserInput.readString("Enter action", "download_taxonomy");
System.out.println();

UDDI_Security_PortType security = getSecurityStub();
String authInfo = getAuthInfo(user, password, security);
Set_permission set = createSetPermission(login, principal, name, type, action, authInfo);
setPermission(set);
discardAuthInfo(authInfo, security);
```

The method `createSetPermission` creates an object representing the `set_permission` operation.

```
public static Set_permission createSetPermission(String login, String principal,
  String name, String type, String action, String authInfo) throws InvalidParameterException {
    System.out.println(principal+", login/name = " + login);
    System.out.println("type = " + type);
    System.out.println("name = " + name);
    System.out.println("action = " + action);

    PermissionDescriptors permissionDescriptors = new PermissionDescriptors();
    permissionDescriptors.setPrincipal(new Principal(login, PrincipalType.getPrincipalType(principal)));
    PermissionDescriptor descriptor = new PermissionDescriptor();
    descriptor.setName(name);
    descriptor.setType(type);
    descriptor.addAction(action);
    permissionDescriptors.addPermissionDescriptor(descriptor);

    Set_permission set = new Set_permission();
    set.setPermissionDescriptors(permissionDescriptors);
    set.setAuthInfo(authInfo);

    return set;
}
```

The helper method, `getPermissionStub()`, returns the UDDI Permission stub of the Web service listening at the URL specified by the `URL_PERMISSION` property.

```
public static PermissionApi getPermissionStub() throws SOAPException {
// you can specify your own URL in property - uddi.demos.url.permission
String url = DemoProperties.getProperty(URL_PERMISSION, "http://localhost:8080/uddi/permission");
System.out.print("Using Permission API at url " + url + " ..");
PermissionApi permission = PermissionStub.getInstance(url);
System.out.println(" done");
return permission;
}
```

The HP SOA Registry Foundation API call `set_permission` is performed in the method `setPermission`.

```
public static void setPermission(Set_permission set) throws
  SOAPException, PermissionException {
    PermissionApi permissionApi = getPermissionStub();
    System.out.print("Save in progress ...");
    permissionApi.set_permission(set);
    System.out.println(" done");
}
```

## Building and Running Demos

This section shows how to build and run the HP SOA Registry Foundation Permission demos.

1 Be sure that the demos are properly configured and the HP SOA Registry Foundation is up and running.

2 Change your working directory to

| | |
|---|---|
| Windows: | %REGISTRY_HOME%\demos\security\permission |
| UNIX: | $REGISTRY_HOME/demos/security/permission |

3 Build demos using:

| | |
|---|---|
| Windows: | run.bat make |
| UNIX: | ./run.sh make |

When compiling demos on Windows platforms, you may see the following text:

```
A subdirectory or file ..\..\common\.\build\classes already exists.
```

This is expected and does not indicate a problem.

4 To get list of all available commands, run

| | |
|---|---|
| Windows: | run.bat help |
| UNIX: | ./run.sh help |

5 The selected demo can be executed via the **run** command using the name of the demo as a parameter. For example, to run the SetPermission demo, invoke

| | |
|---|---|
| Windows: | run.bat SetPermission |
| UNIX: | ./run.sh SetPermission |

The output of this demo will resemble the following:

```
Running SetPermission demo...
**************************************************************************
***   HP SOA Registry Demo: SetPermission   ***
**************************************************************************

Setting permission where
Enter login [admin]:
Enter password [changeit]:
Enter principal type [user]:
Enter login/group name [demo_john]:
Enter permission type [org.systinet.uddi.security.permission.ApiManagerPermission]:
Enter permission name [org.systinet.uddi.client.taxonomy.v3.TaxonomyApi]:
Enter action [download_taxonomy]:

Using Security at url https://mycomp.com:8443/uddi/security .. done
Logging in .. done
user, login/name = demo_john
type = org.systinet.uddi.security.permission.ApiManagerPermission
name = org.systinet.uddi.client.taxonomy.v3.TaxonomyApi
action = download_taxonomy

Using Permission API at url https://mycomp.com:8443/uddi/permission .. done
Save in progress ... done
Logging out .. done
```

6 To rebuild demos, execute `run.bat clean` (`./run.sh clean`) to delete the classes directory and `run.bat make` (`./run.sh make`) to rebuild the demo classes.

## ACL

The HP SOA Registry Foundation ACL Demos demonstrate the HP SOA Registry Foundation ACL application programming interface's capabilities and how to use this API.

The Systinet ACL extension is used to grant or revoke rights to selected users or groups. You will learn how to create, save, delete, get and find ACLs.

The HP SOA Registry Foundation Security ACL demo set contains the following demos to assist you in learning the HP SOA Registry Foundation client API:

**Create.** Demonstrates how to use Create ACL to give one user rights to create a service in the business entity of another user.

**Save.** Demonstrates how to use Save ACL to give one user rights to update the business entity of another user.

**Delete.** Demonstrates how to use Delete ACL to give one user rights to delete a business entity of another user.

**Get.** Demonstrates how to use Get ACL to revoke from a selected user the right to get the business detail of a business entity.

**Find.** Demonstrates how to use Find ACL to hide the business entity in a find_business operation from a selected user.

### Prerequisites and Preparatory Steps: Code

We expect that you have already installed the HP SOA Registry Foundation and set the `REGISTRY_HOME` environment variable to the registry's installation location.

To run the HP SOA Registry Foundation's demos, your HP SOA Registry Foundation must be running. To start the registry, execute the **serverstart** script:

| | |
|---|---|
| Windows: | %REGISTRY_HOME%\bin\serverstart.bat |
| UNIX: | $REGISTRY_HOME/bin/serverstart.sh |

It is necessary to configure the demos. The configuration system has two levels: global and local. The properties defined at the global level may be overwritten at the local level. The global properties are located in the file:

| | |
|---|---|
| Windows: | %REGISTRY_HOME%\demos\env.properties |
| UNIX: | $REGISTRY_HOME/demos/env.properties |

The values set during the installation of the HP SOA Registry Foundation work out of the box, and their modification affects all demos. If you need to redefine a property's value for a single demo (that is,, at the local level), edit `env.properties`. This file is located in the same directory as the file `run.sh` ( `run.bat`). Local level properties for the `ACL` demos are loaded from the file:

| | |
|---|---|
| Windows: | %REGISTRY_HOME%\demos\security\acl\env.properties |
| UNIX: | $REGISTRY_HOME/demos/security/acl/env.properties |

**Table 109. Properties Used in Demos**

| Name | Default Value | Description |
|---|---|---|
| uddi.demos.user.john.name | demo_john | first user's name |
| uddi.demos.user.john.password | demo_john | first user's password |
| uddi.demos.user.jane.name | demo_jane | second user's name |
| uddi.demos.user.jane.password | demo_jane | second user's password |
| uddi.demos.url.publishing | `http://localhost:8080/uddi/publishing` | The publication Web service port URL |
| uddi.demos.url.security | `http://localhost:8080/uddi/security` | the security Web service port URL |

## Presentation and Functional Presentation

This section describes the programming pattern used in all demos using the Find demo as an example. You can find this demo's source code in the file:

| | |
|---|---|
| Windows: | %REGISTRY_HOME%\demos\security\acl\src\demo\uddi\acl\Find.java |
| UNIX: | $REGISTRY_HOME/demos/security/acl/src/demo/uddi/acl/Find.java |

The main method is divided into several logical parts. The first part is used to configure the demo for the user. The "good" user represents the user who will receive a positive ACL; the "bad" user represents the user who will receive a negative ACL.

The second part contains the `save_business` operation with extra information. The ACLs are set in the categoryBag. In the next section, the bad user unsuccessfully tries to find the business entity by name, and finally the good user finds the business entity.

```
String name = UserInput.readString("Enter business name", "ACL find demo");
String description = UserInput.readString("Enter description",
                                                "Demonstration of find-allowed, find-denied ACLs");
String searchName = UserInput.readString("Enter search string", "ACL%");
String owner = UserInput.readString("Enter entity owner", "admin");
String password = UserInput.readString("Enter owner's password", "changeit");
String loginGood = UserInput.readString("Enter good user's login",
                                                        DemoProperties.getProperty(USER_JOHN_NAME));
String passwordGood = UserInput.readString("Enter good user's password",
                                                    DemoProperties.getProperty(USER_JOHN_PASSWORD));
String loginBad = UserInput.readString("Enter bad user's login",
                                                        DemoProperties.getProperty(USER_JANE_NAME));
String passwordBad = UserInput.readString("Enter bad user's password",
                                                    DemoProperties.getProperty(USER_JANE_PASSWORD));
System.out.println();

UDDI_Security_PortType security = getSecurityStub();
String authInfoOwner = getAuthInfo(owner, password, security);
Save_business saveBusiness = createSaveBusiness(name, description, loginGood, loginBad, authInfoOwner);
BusinessDetail result = saveBusiness(saveBusiness);
printBusinessDetail(result);
discardAuthInfo(authInfoOwner, security);

System.out.println(" ");
System.out.println("Finding business entity where");
String authInfoGood = getAuthInfo(loginGood, passwordGood, security);
Find_business findBusiness = createFindByName(searchName, authInfoGood);
BusinessList businessList = findBusiness(findBusiness);
printBusinessList(businessList);
discardAuthInfo(authInfoGood, security);

System.out.println(" ");
System.out.println("Finding business entity where");
String authInfoBad = getAuthInfo(loginBad, passwordBad, security);
findBusiness = createFindByName(searchName, authInfoBad);
businessList = findBusiness(findBusiness);
printBusinessList(businessList);
discardAuthInfo(authInfoGood, security);
```

The `createSaveBusiness` operation is used to create the `Save_business` object. The ACLs are stored in the keyedReferenceGroup with the `uddi:systinet.com:acl` tModelKey as keyedReference, where the tModelKey specifies the tModelKey of the ACL, keyValue holds the login name of the user or group, and finally keyName is used to distinguish between users and groups in the keyValue.

```
public static Save_business createSaveBusiness(String name,
                                                          String description, String goodUser,
  String badUser, String authInfo) throws InvalidParameterException {
    System.out.println("name = " + name);
    System.out.println("description = " + description);
    System.out.println("goodUser = " + goodUser);
    System.out.println("badUser = " + badUser);

    BusinessEntity businessEntity = new BusinessEntity();
    businessEntity.addName(new Name(name));
    businessEntity.addDescription(new Description(description));

    CategoryBag categoryBag = new CategoryBag();
    businessEntity.setCategoryBag(categoryBag);
    KeyedReferenceGroup aclGroup = new KeyedReferenceGroup("uddi:systinet.com:acl");
    aclGroup.addKeyedReference(new KeyedReference("uddi:systinet.com:acl:find-allowed",
                                                                              goodUser, "user"));
    aclGroup.addKeyedReference(new KeyedReference("uddi:systinet.com:acl:find-denied",
                                                                               badUser, "user"));
    categoryBag.addKeyedReferenceGroup(aclGroup);

    Save_business save = new Save_business();
    save.addBusinessEntity(businessEntity);
    save.setAuthInfo(authInfo);

    return save;
}
```

The `find_business` operation takes the *`authInfo`* parameter used to identify the user who runs the query.

```
public static Find_business createFindByName(String name, String authInfo)
  throws InvalidParameterException {
System.out.println("name = " + name);
Find_business find_business = new Find_business();
find_business.addName(new Name(name));
find_business.setMaxRows(new Integer(MAX_ROWS));
find_business.setAuthInfo(authInfo);
find_business.addFindQualifier("approximateMatch");
return find_business;
}
```

## Building and Running Demos

This section shows how to build and run the HP SOA Registry Foundation ACL demos.

1 Be sure that the demos are properly configured and the HP SOA Registry Foundation is up and running.

2 Change your working directory to:

| | |
|---|---|
| Windows: | %REGISTRY_HOME%\demos\security\acl |
| UNIX: | $REGISTRY_HOME/demos/security/acl |

3 Build demos using:

| | |
|---|---|
| Windows: | run.bat make |
| UNIX: | ./run.sh make |

When compiling demos on Windows platforms, you may see the following text:

```
A subdirectory or file ..\..\common\.\build\classes already exists.
```

This is expected and does not indicate a problem.

4 To get list of all available commands, run

| | |
|---|---|
| Windows: | run.bat help |
| UNIX: | ./run.sh help |

5 The selected demo can be executed via the **run** command with the name of the demo as parameter. For example, to run the Find demo, invoke

| | |
|---|---|
| Windows: | run.bat Find |
| UNIX: | ./run.sh Find |

The output of this demo will resemble the following:

```
Running Find demo...
**************************************************************************
***    HP SOA Registry Demo - ACLFind   ***
**************************************************************************

Saving business entity where
Enter business name [ACL find demo]:
Enter description [Demonstration of find-allowed, find-denied ACLs]:
Enter search string [ACL%]:
Enter entity owner [admin]:
Enter owner's password [changeit]:
Enter good user's login [demo_john]:
Enter good user's password [demo_john]:
Enter bad user's login [demo_jane]:
Enter bad user's password [demo_jane]:

Using Security at url https://mycomp.com:8443/uddi/security .. done
Authenticating the user admin .. done
name = ACL find demo
description = Demonstration of find-allowed, find-denied ACLs
goodUser = demo_john
badUser = demo_jane
Using Publishing at url https://mycomp.com:8443/uddi/publishing .. done
Save business in progress ... done

Business 1 : uddi:91ba8390-a8e0-11d8-b2ad-779f83c0b2ad
<businessEntity businessKey="uddi:91ba8390-a8e0-11d8-b2ad-779f83c0b2ad"
xmlns="urn:uddi-org:api_v3">
<name>ACL find demo</name>
<description>Demonstration of find-allowed, find-denied ACLs</description>
<categoryBag>
<keyedReferenceGroup tModelKey="uddi:systinet.com:acl">
<keyedReference tModelKey="uddi:systinet.com:acl:find-allowed"
keyName="user" keyValue="demo_john"/>
<keyedReference tModelKey="uddi:systinet.com:acl:find-denied"
keyName="user" keyValue="demo_jane"/>
</keyedReferenceGroup>
</categoryBag>
</businessEntity>

Logging out .. done

Finding business entity where
Authenticating the user demo_john .. done
name = ACL%
```

```
Using Inquiry at url http://mycomp.com:8080/uddi/inquiry .. done
Search in progress .. done

Displaying 1 of 1, starting at position 1
Business 1 : uddi:91ba8390-a8e0-11d8-b2ad-779f83c0b2ad
<businessInfo businessKey="uddi:91ba8390-a8e0-11d8-b2ad-779f83c0b2ad"
xmlns="urn:uddi-org:api_v3">
<name>ACL find demo</name>
<description>Demonstration of find-allowed, find-denied ACLs</description>
</businessInfo>

Logging out .. done

Finding business entity where
Authenticating the user demo_jane .. done
name = ACL%
Using Inquiry at url http://mycomp.com:8080/uddi/inquiry .. done
Search in progress .. done

Displaying 0 of 0, starting at position 1
Nothing found
Logging out .. done
```

6. To rebuild demos, execute `run.bat clean` (`./run.sh clean`) to delete the classes directory and `run.bat make` (`./run.sh make`) to rebuild the demo classes.

## Resources Demos

The Resources Demos section includes the following demos:

- WSDL - Teaches how to publish, unpublish and find a WSDL document in UDDI version 2 and UDDI version 3.
- XSD - Teaches how to publish, unpublish and find an XML Schema.

### WSDL2UDDI v2

The HP SOA Registry Foundation WSDL2UDDI demo set is used to demonstrate the HP SOA Registry Foundation WSDL2UDDI application programming interface's capabilities and to demonstrate how to use this API. The HP SOA Registry Foundation WSDL2UDDI demos cover the UDDI Version 2.0.4 Specification [http://www.oasis-open.org/committees/uddi-spec/doc/tcspecs.htm#uddiv2]. You will learn how to query and publish a WSDL to a UDDI registry over a SOAP interface. The HP SOA Registry Foundation WSDL2UDDI demo set contains following demos to assist you in learning the WSDL2UDDI client API.

**PublishWSDL.** Demonstrates how to construct and fill the `Publish_wsdl` object, get the WSDL2UDDI stub for the UDDI registry, get an authToken, and perform the `publish_wsdl` call.

**UnPublishWSDL.** Demonstrates how to construct and fill the `Unpublish_wsdl` object, get WSDL2UDDI stub for the UDDI registry, get an authToken, and perform the `unpublish_wsdl` call.

**FindWSDL.** Demonstrates how to construct and fill the `Find_wsdlServiceInfo` object, get the WSDL2UDDI stub for the UDDI registry, get an authToken, and perform the `find_wsdlServiceInfo` call.

**GetWSDL.** Demonstrates how to construct and fill the `Get_wsdlServiceInfo` object, get the WSDL2UDDI stub for the UDDI registry, get an authToken, and perform the `get_wsdlServiceInfo` call.

## Prerequisites and Preparatory Steps: Code

We expect that you have already installed the HP SOA Registry Foundation and set the `REGISTRY_HOME` environment variable to the registry's installation location.

To run the HP SOA Registry Foundation's demos, your HP SOA Registry Foundation must be running. To start the registry, execute the **serverstart** script:

| | |
|---|---|
| Windows: | %REGISTRY_HOME%\bin\serverstart.bat |
| UNIX: | $REGISTRY_HOME/bin/serverstart.sh |

It is necessary to configure the demos. The configuration system has two levels: global and local. The properties defined at the global level may be overwritten at local level. The global properties are located in the file:

| | |
|---|---|
| Windows: | %REGISTRY_HOME%\demos\env.properties |
| UNIX: | $REGISTRY_HOME/demos/env.properties |

The values set during the installation of the HP SOA Registry Foundation work out of the box, and their modification affects all demos. If you need to redefine the value of some property for a single demo (that is, at the local level), edit `env.properties`. This file is located in the same directory as the file `run.sh` ( `run.bat`). Local level properties for the `WSDL2UDDI` demos are loaded from the file:

| | |
|---|---|
| Windows: | %REGISTRY_HOME%\demos\basic\wsdl\v2\env.properties |
| UNIX: | $REGISTRY_HOME/demos/basic/wsdl/v2/env.properties |

**Table 110. Properties Used in Demos**

| Name | Default Value | Description |
|---|---|---|
| uddi.demos.user.john.name | demo_john | first user's name |
| uddi.demos.user.john.password | demo_john | first user's password |
| uddi.demos.url.wsdl2uddi | `http://localhost:8080/uddi/wsdl2uddi` | the wsdl2uddi Web service port URL |
| uddi.demos.url.security | `http://localhost:8080/uddi/security` | the security Web service port URL |

## Presentation and Functional Presentation

This section describes programming pattern used in all demos using the PublishWSDL demo as an example. You can find its source code in the file:

| | |
|---|---|
| Windows: | %REGISTRY_HOME%\demos\basic\wsdl2uddi\src\demo\uddi\v2\wsdl2uddi\PublishWSDL.java |
| UNIX: | $REGISTRY_HOME/demos/basic/wsdl2uddi/src/demo/uddi/v2/wsdl2uddi/PublishWSDL.java |

The main method is very short. After gathering the user's input, it gets the security stub and authorizes the user. The resulting authInfo string is a secret key passed to the Publish request, which is created and initialized in the `createPublish()` method.

The user's choice of WSDL is published to the selected businessEntity within the `publishWSDL()` method.

When successful, the WsdlDetail object is returned from the UDDI registry and printed.

The last step is to discard the authInfo string, so that no malicious user can use it to compromise another user's account.

```
String businessKey = UserInput.readString("Enter businessKey",
       "d7222f66-08aa-3a6e-a299-2ed4ac785682");
String url = UserInput.readString("Enter WSDL URL",
              "http://localhost:8080/uddi/doc/demos/EmployeeList.wsdl");
System.out.println();
```

```
UDDI_Security_PortType security = getSecurityStub();
String authInfo = getAuthInfo(user, password, security);
Publish_wsdl publish = createPublish(businessKey, url, authInfo);
WsdlDetail result = publishWSDL(publish);
printWsdlDetail(result);
discardAuthInfo(authInfo, security);
```

The helper method `getSecurityStub()` returns the UDDI Security stub of the Web service listening at the URL specified by the `URL_SECURITY` property.

```
public static UDDI_Security_PortType getSecurityStub()
  throws SOAPException {
    // you can specify your own URL in property - uddi.demos.url.security
    String url = DemoProperties.getProperty(URL_SECURITY,
                            "http://localhost:8080/uddi/security");
    System.out.print("Using Security at url " + url + " ..");
    UDDI_Security_PortType security = UDDISecurityStub.getInstance(url);
    System.out.println(" done");
    return security;
}
```

Similarly, the helper method `getWsdl2uddiStub()` returns the WSDL2UDDI stub of the Web service listening at URL specified by the `URL_WSDL2UDDI` property.

```
public static Wsdl2uddiApi getWsdl2uddiStub() throws SOAPException {
    // you can specify your own URL in property - uddi.demos.url.wsdl2uddi
    String url = DemoProperties.getProperty(URL_WSDL2UDDI,
                                           "http://localhost:8080/uddi/wsdl2uddi");
    System.out.print("Using WSDL2UDDI at url " + url + " ..");
    Wsdl2uddiApi inquiry = Wsdl2uddiStub.getInstance(url);
    System.out.println(" done");
    return inquiry;
}
```

The `getAuthInfo()` method is used to authorize the user against the UDDI registry and to get the secret authInfo key.

```
public static String getAuthInfo(String userName,
                        String password, UDDI_Security_PortType security)
    throws InvalidParameterException, UDDIException {
    System.out.print("Logging in ..");
    AuthToken authToken = security.get_authToken(new Get_authToken(userName, password));
    System.out.println(" done");
    return authToken.getAuthInfo();
}
```

The `discardAuthInfo()` method invalidates the secret authInfo key, so that it cannot be reused.

```
public static DispositionReport discardAuthInfo(String authInfo,
                                                        UDDI_Security_PortType security)
  throws InvalidParameterException, UDDIException {
    System.out.print("Logging out ..");
    DispositionReport dispositionReport = security.discard_authToken(new Discard_authToken(authInfo));
    System.out.println(" done");
    return dispositionReport;
}
```

The `createPublish()` method is used to create a new instance of the `Publish` class and initialize it with values from parameters:

```
public static Publish_wsdl createPublish(String businessKey,
                                                    String url, String authInfo)
  throws InvalidParameterException {
    System.out.println("businessKey = " + businessKey);
    System.out.println("url = " + url);

    WsdlMapping wsdlMapping = new WsdlMapping();
    wsdlMapping.setBusinessKey(businessKey);
    Wsdl wsdl = new Wsdl(url);
    WsdlDetail wsdlDetail = new WsdlDetail(wsdl, wsdlMapping);
    Publish_wsdl publish = new Publish_wsdl(wsdlDetail, authInfo);
    return publish;
}
```

The WSDL2UDDI API call `Publish_wsdl` is performed in the method `publishWSDL()`.

```
public static WsdlDetail publishWSDL(Publish_wsdl save)
  throws UDDIException, SOAPException {
    Wsdl2uddiApi publishing = getWsdl2uddiStub();
    System.out.print("Save in progress ...");
    WsdlDetail wsdlDetail = publishing.publish_wsdl(save);
    System.out.println(" done");
    return wsdlDetail;
}
```

The returned WsdlDetail is displayed by the `printWsdlDetail()` method.

One interesting aspect of HP SOA Registry Foundation client API is that each UDDIObject contains the `toXML()` method, which returns a human-readable formatted listing of its XML representation.

```
public static void printWsdlDetail(WsdlDetail wsdlDetail) {
    System.out.println();
    System.out.println(wsdlDetail.toXML());
}
```

## Building and Running Demos

This section shows, how to build and run the HP SOA Registry Foundation Basic Publishing demo set. Let's continue with our SaveBusiness demo.

1 Be sure that the demos are properly configured and the HP SOA Registry Foundation is up and running.

2 Change your working directory to

| | |
|---|---|
| Windows | %REGISTRY_HOME%\demos\basic\wsdl\v2 |
| UNIX | $REGISTRY_HOME/demos/basic/wsdl/v2 |

3 Build all demos using:

| | |
|---|---|
| Windows: | run.bat make |
| UNIX: | ./run.sh make |

When compiling demos on Windows platforms, you may see the following text:

```
A subdirectory or file ..\..\common\.\build\classes already exists.
```

This is expected and does not indicate a problem.

4 To get list of all available demos, run

| | |
|---|---|
| Windows: | run.bat help |
| UNIX: | ./run.sh help |

5 The selected demo can be executed via the **run** command using the name of demo as parameter. For example, to run the PublishWSDL demo, invoke

|  |  |
|---|---|
| Windows: | run.bat PublishWSDL |
| UNIX: | ./run.sh PublishWSDL |

The output of this demo will resemble the following:

```
Running PublishWSDL demo...
**********************************************************************
***              HP SOA Registry Demo - PublishWSDL              ***
**********************************************************************


Publishing WSDL where
Enter businessKey [d7222f66-08aa-3a6e-a299-2ed4ac785682]:
Enter WSDL URL [http://localhost:8080/uddi/inquiry/wsdl]:
       http://localhost:8080/uddi/doc/demos/EmployeeList.wsdl

Using Publishing at url https://mycomp.com:8443/uddi/publishing .. done
Logging in .. done
businessKey = d7222f66-08aa-3a6e-a299-2ed4ac785682
url = http://localhost:8080/uddi/doc/demos/EmployeeList.wsdl
Using WSDL2UDDI at url https://mycomp.com:8443/uddi/wsdl2uddi .. done
Save in progress ... done

<wsdlDetail xmlns="http://systinet.com/uddi/wsdl2uddi/v2/5.0">
    <wsdl>
        <wsdlLocation>http://localhost:8080/uddi/doc/demos/EmployeeList.wsdl</wsdlLocation>
    </wsdl>
    <wsdlMapping>
        <businessKey xmlns="urn:uddi-org:api_v2">d7222f66-08aa-3a6e-a299-2ed4ac785682<
                      /businessKey>
        <services>
            <service name="EmployeeList" namespace="
                                  http://systinet.com/wsdl/demo/uddi/services/"
              publishingMethod="rewrite">
                <serviceKey xmlns="urn:uddi-org:api_v2">
                      d0a50390-af1c-11d8-b9bf-eb2d7e20b9bf</serviceKey>
                    <ports>
                        <port name="EmployeeList" publishingMethod="rewrite">
                        <bindingKey xmlns="urn:uddi-org:api_v2">
                     d0aca4b0-af1c-11d8-b9bf-eb2d7e20b9bf</bindingKey>
                    </port>
                </ports>
            </service>
        </services>
        <bindings>
            <binding name="EmployeeList_binding"
```

```
                    namespace="http://systinet.com/wsdl/demo/uddi/services/"
             publishingMethod="rewrite">
               <tModelKey xmlns="urn:uddi-org:api_v2">
                   uuid:d07da570-af1c-11d8-b9bf-eb2d7e20b9bf</tModelKey>
           </binding>
       </bindings>
       <portTypes>
           <portType name="EmployeeList_portType"
                    namespace="http://systinet.com/wsdl/demo/uddi/services/"
             publishingMethod="rewrite">
               <tModelKey xmlns="urn:uddi-org:api_v2">
                          uuid:d0658990-af1c-11d8-b9bf-eb2d7e20b9bf</tModelKey>
           </portType>
       </portTypes>
   </wsdlMapping>
</wsdlDetail>
Logging out .. done
```

6 To rebuild demos, execute `run.bat clean` (`./run.sh clean`) to delete the classes directory and `run.bat make` (`./run.sh make`) to rebuild the demo classes.

## WSDL2UDDI v3

The HP SOA Registry Foundation WSDL2UDDI demo set is used to demonstrate the HP SOA Registry Foundation WSDL2UDDI application programming interface's capabilities and to show how to use this API. The HP SOA Registry Foundation WSDL2UDDI demos cover the UDDI Version 3.01 Specification [http://www.oasis-open.org/committees/uddi-spec/doc/tcspecs.htm#uddiv3]. You will learn how to query and publish a WSDL to a UDDI registry over a SOAP interface.

The HP SOA Registry Foundation WSDL2UDDI demo set contains following demos to assist you in learning the WSDL2UDDI client API.

**PublishWSDL.** Demonstrates how to construct and fill the `Publish_wsdl` object, get the WSDL2UDDI stub for the UDDI registry, get an authToken, and perform the `publish_wsdl` call.

**UnPublishWSDL.** Demonstrates how to construct and fill the `Unpublish_wsdl` object, get WSDL2UDDI stub for the UDDI registry, get an authToken, and perform the `unpublish_wsdl` call.

**FindWSDL.** Demonstrates how to construct and fill the `Find_wsdlServiceInfo` object, get the WSDL2UDDI stub for the UDDI registry, get an authToken, and perform the `find_wsdlServiceInfo` call.

**GetWSDL.** Demonstrates how to construct and fill the `Get_wsdlServiceInfo` object, get the WSDL2UDDI stub for the UDDI registry, get an authToken, and perform the `get_wsdlServiceInfo` call.

## Prerequisites and Preparatory Steps: Code

We expect that you have already installed the HP SOA Registry Foundation and set the `REGISTRY_HOME` environment variable to the registry's installation location.

To run the HP SOA Registry Foundation's demos, your HP SOA Registry Foundation must be running. To start the registry, execute the **serverstart** script:

| | |
|---|---|
| Windows: | %REGISTRY_HOME%\bin\serverstart.bat |
| UNIX: | $REGISTRY_HOME/bin/serverstart.sh |

It is necessary to configure the demos. The configuration system has two levels: global and local. The properties defined at the global level may be overwritten at local level. The global properties are located in the file:

| | |
|---|---|
| Windows: | %REGISTRY_HOME%\demos\env.properties |
| UNIX: | $REGISTRY_HOME/demos/env.properties |

The values set during installation of the HP SOA Registry Foundation work out of the box, and their modification affects all demos. If you need to redefine the value of some property for a single demo (that is, at the local level), edit `env.properties`. This file is located in the same directory as the file `run.sh` (`run.bat`). Local level properties for the `WSDL2UDDI` demos are loaded from the file:

| | |
|---|---|
| Windows: | %REGISTRY_HOME%\demos\basic\wsdl\v3\env.properties |
| UNIX: | $REGISTRY_HOME/demos/basic/wsdl/v3/env.properties |

**Table 111. Properties Used in Demos**

| Name | Default Value | Description |
|---|---|---|
| uddi.demos.user.john.name | demo_john | first user's name |
| uddi.demos.user.john.password | demo_john | first user's password |
| uddi.demos.url.wsdl2uddi | `http://localhost:8080/uddi/wsdl2uddi` | the wsdl2uddi Web service port URL |
| uddi.demos.url.security | `http://localhost:8080/uddi/security` | the security Web service port URL |

## Presentation and Functional Presentation

This section describes programming pattern used in all demos using the PublishWSDL demo as an example. You can find its source code in file

| | |
|---|---|
| Windows: | %REGISTRY_HOME%\demos\basic\wsdl2uddi\src\demo\uddi\v3\wsdl2uddi\PublishWSDL.java |
| UNIX: | $REGISTRY_HOME/demos/basic/wsdl2uddi/src/demo/uddi/v3/wsdl2uddi/PublishWSDL.java |

The main method is very short. After gathering the user's input, it gets the security stub and authorizes the user. The resulting authInfo string is a secret key passed to the Publish request, which is created and initialized in the `createPublish()` method.

The user's choice of WSDL is published to the selected businessEntity within the `publishWSDL()` method.

When successful, the WsdlDetail object is returned from the UDDI registry and printed.

The last step is to discard the authInfo string, so that no malicious user can use it to compromise another user's account.

```
String businessKey = UserInput.readString("Enter businessKey", "uddi:systinet.com:demo:hq");
String url = UserInput.readString("Enter WSDL URL", "http://localhost:8080/uddi/doc/demos/EmployeeList.wsdl");
System.out.println();

UDDI_Security_PortType security = getSecurityStub();
String authInfo = getAuthInfo(user, password, security);
Publish_wsdl publish = createPublish(businessKey, url, authInfo);
WsdlDetail result = publishWSDL(publish);
printWsdlDetail(result);
discardAuthInfo(authInfo, security);
```

The helper method `getSecurityStub()` returns the UDDI Security stub of the Web service listening at the URL specified by the `URL_SECURITY` property.

```
public static UDDI_Security_PortType getSecurityStub()
 throws SOAPException {
    // you can specify your own URL in property - uddi.demos.url.security
    String url = DemoProperties.getProperty(URL_SECURITY, "http://localhost:8080/uddi/security");
    System.out.print("Using Security at url " + url + " ..");
    UDDI_Security_PortType security = UDDISecurityStub.getInstance(url);
    System.out.println(" done");
    return security;
}
```

Similarly, the helper method `getWsdl2uddiStub()` returns the WSDL2UDDI stub of the Web service listening at URL specified by the `URL_WSDL2UDDI` property.

```
public static Wsdl2uddiApi getWsdl2uddiStub() throws SOAPException {
    // you can specify your own URL in property - uddi.demos.url.wsdl2uddi
    String url = DemoProperties.getProperty(URL_WSDL2UDDI, "http://localhost:8080/uddi/wsdl2uddi");
    System.out.print("Using WSDL2UDDI at url " + url + " ..");
    Wsdl2uddiApi inquiry = Wsdl2uddiStub.getInstance(url);
    System.out.println(" done");
    return inquiry;
}
```

The `getAuthInfo()` method is used to authorize the user against the UDDI registry and to get the secret authInfo key.

```
public static String getAuthInfo(String userName, String password, UDDI_Security_PortType security)
  throws InvalidParameterException, UDDIException {
    System.out.print("Logging in ..");
    AuthToken authToken = security.get_authToken(new Get_authToken(userName, password));
    System.out.println(" done");
    return authToken.getAuthInfo();
}
```

The `discardAuthInfo()` method invalidates the secret authInfo key, so that it cannot be reused.

```
public static void discardAuthInfo(String authInfo, UDDI_Security_PortType security)
  throws InvalidParameterException, UDDIException {
    System.out.print("Logging out ..");
    security.discard_authToken(new Discard_authToken(authInfo));
    System.out.println(" done");
}
```

The createPublish() method is used to create a new instance of the Publish class and initialize it with values from parameters:

```
public static Publish_wsdl createPublish(String businessKey, String url, String authInfo)
  throws InvalidParameterException {
    System.out.println("businessKey = " + businessKey);
    System.out.println("url = " + url);

    WsdlMapping wsdlMapping = new WsdlMapping();
    wsdlMapping.setBusinessKey(businessKey);
    Wsdl wsdl = new Wsdl(url);
    WsdlDetail wsdlDetail = new WsdlDetail(wsdl, wsdlMapping);
    Publish_wsdl publish = new Publish_wsdl(wsdlDetail, authInfo);
    return publish;
}
```

The WSDL2UDDI API call Publish_wsdl is performed in the method publishWSDL().

```
public static WsdlDetail publishWSDL(Publish_wsdl save)
  throws UDDIException, SOAPException {
    Wsdl2uddiApi publishing = getWsdl2uddiStub();
    System.out.print("Save in progress ...");
    WsdlDetail wsdlDetail = publishing.publish_wsdl(save);
    System.out.println(" done");
    return wsdlDetail;
}
```

The returned WsdlDetail is displayed by the printWsdlDetail() method.

One interesting aspect of HP SOA Registry Foundation client API is that each UDDIObject contains the toXML() method, which returns a human-readable formatted listing of its XML representation.

```
public static void printWsdlDetail(WsdlDetail wsdlDetail) {
    System.out.println();
    System.out.println(wsdlDetail.toXML());
}
```

## Building and Running Demos

This section shows, how to build and run the HP SOA Registry Foundation Basic Publishing demo set. Let's continue with our SaveBusiness demo.

1 Be sure that the demos are properly configured and the HP SOA Registry Foundation is up and running.

2 Change your working directory to

| | |
|---|---|
| Windows | %REGISTRY_HOME%\demos\basic\wsdl\v3 |
| UNIX | $REGISTRY_HOME/demos/basic/wsdl/v3 |

3 Build all demos using:

| | |
|---|---|
| Windows: | run.bat make |
| UNIX: | ./run.sh make |

➤ When compiling demos on Windows platforms, you may see the following text:

```
A subdirectory or file ..\..\common\.\build\classes already exists.
```

This is expected and does not indicate a problem.

4 To get list of all available demos, run

| | |
|---|---|
| Windows: | run.bat help |
| UNIX: | ./run.sh help |

5 The selected demo can be executed via the **run** command using the name of the demo as a parameter. For example, to run the PublishWSDL demo, invoke

| | |
|---|---|
| Windows: | run.bat PublishWSDL |
| UNIX: | ./run.sh PublishWSDL |

The output of this demo will resemble the following:

```
Running PublishWSDL demo...
**************************************************************************
***              HP SOA Registry Demo - PublishWSDL              ***
**************************************************************************

Publishing WSDL where
Enter businessKey [uddi:systinet.com:demo:hq]:
Enter WSDL URL [http://localhost:8080/uddi/doc/demos/EmployeeList.wsdl]:
```

```
Using Security at url https://mycomp.com:8443/uddi/security .. done
Logging in .. done
businessKey = uddi:systinet.com:demo:hq
url = http://localhost:8080/uddi/doc/demos/EmployeeList.wsdl
Using WSDL2UDDI at url https://mycomp.com:8443/uddi/wsdl2uddi .. done
Save in progress ... done

<wsdlDetail xmlns="http://systinet.com/uddi/wsdl2uddi/v3/5.0">
    <wsdl>
        <wsdlLocation>http://localhost:8080/uddi/doc/demos/EmployeeList.wsdl</wsdlLocation>
    </wsdl>
    <wsdlMapping>
    <businessKey xmlns="urn:uddi-org:api_v3">uddi:systinet.com:demo:hq</businessKey>
    <services>
        <service name="EmployeeList" namespace="http://systinet.com/wsdl/demo/uddi/services/"
        publishingMethod="rewrite">
       <serviceKey xmlns="urn:uddi-org:api_v3">uddi:dde19a70-af1a-11d8-b9bf-eb2d7e20b9bf</serviceKey>

            <ports>
                <port name="EmployeeList" publishingMethod="rewrite">
                    <bindingKey xmlns="urn:uddi-org:api_v3">uddi:dde85130-af1a-11d8-b9bf-
eb2d7e20b9bf</bindingKey>
                </port>
            </ports>
        </service>
    </services>
    <bindings>
        <binding name="EmployeeList_binding" namespace="http://systinet.com/wsdl/demo/uddi/services/"

        publishingMethod="rewrite">
          <tModelKey xmlns="urn:uddi-org:api_v3">uddi:ddc84610-af1a-11d8-b9bf-eb2d7e20b9bf</tModelKey>

        </binding>
    </bindings>
    <portTypes>
       <portType name="EmployeeList_portType" namespace="http://systinet.com/wsdl/demo/uddi/services/"

        publishingMethod="rewrite">
          <tModelKey xmlns="urn:uddi-org:api_v3">uddi:ddbc3820-af1a-11d8-b9bf-eb2d7e20b9bf</tModelKey>

        </portType>
    </portTypes>
    </wsdlMapping>
</wsdlDetail>
Logging out .. done
```

6 To rebuild demos, execute `run.bat clean` (`./run.sh clean`) to delete the classes directory and `run.bat make` (`./run.sh make`) to rebuild the demo classes.

## XSD2UDDI

The HP SOA Registry Foundation XSD2UDDI demo set demonstrates the HP SOA Registry Foundation application programming interface's capabilities and shows how to use the XSD2UDDI API to manipulate XSD documents.

The demos set includes the following demos:

- `FindXsd`
- `FindXsdMapping`
- `GetXsdDetail`
- `PublishXsd`
- `UnpublishXsd`

### Prerequisites and Preparatory Steps: Code

We expect that you have already installed the HP SOA Registry Foundation and set the `REGISTRY_HOME` environment variable to the registry's installation location.

To run the HP SOA Registry Foundation's demos, your registry must be running. To start the HP SOA Registry Foundation, execute the **serverstart** script:

| | |
|---|---|
| Windows: | %REGISTRY_HOME%\bin\serverstart |
| UNIX: | $REGISTRY_HOME/bin/serverstart.sh |

It is necessary to configure the demos. The configuration system has two levels: global and local. The properties defined at the global level may be overwritten at the local level. The global properties are located in the file:

| | |
|---|---|
| Windows: | %REGISTRY_HOME%\demos\env.properties |
| UNIX: | $REGISTRY_HOME/demos/env.properties |

The values set during the installation of the HP SOA Registry Foundation work out of box, and their modification affects all demos. If you need to redefine the value of some property for a single demo (that is, at the local level), edit `env.properties`. This file is located in the same directory as the file `run.sh` (`run.bat`). Local level properties for the `XSD2UDDI` demos are loaded from the file:

| | |
|---|---|
| Windows: | %REGISTRY_HOME%\demos\resources\xsd\env.properties |
| UNIX: | $REGISTRY_HOME/demos/resources/xsd/env.properties |

**Table 112. Properties Used in Demos**

| Name | Default Value | Description |
|---|---|---|
| uddi.demos.user.john.name | demo_john | first user's name |
| uddi.demos.user.john.password | demo_john | first user's password |
| uddi.demos.url.xsd2uddi | `http://localhost:8080/uddi/xsd2uddi` | the xsd2uddi web service port URL |
| uddi.demos.url.security | `http://localhost:8080/uddi/security` | the security web service port URL |

## Presentation and Functional Presentation

This section describes the programming pattern used in all demos using the PublishXsd demo as an example. You can find its source code in the file:

| | |
|---|---|
| Windows: | %REGISTRY_HOME%\demos\resources\xsd\src\demo\uddi\xsd\PublishXsd.java |
| UNIX: | $REGISTRY_HOME/demos/resources/xsd/src/demo/uddi/xsd/PublishXsd.java |

The helper method `createPublishXsd` creates a Publish_xsd structure:

```
public Publish_xsd createPublishXsd(String location, String publishingMethod, String importMethod, String
importPolicy,
                                              String contentMethod, String contentPolicy, String authInfo)
 throws InvalidParameterException {
        System.out.println("location = " + location);

        Publish_xsd publish = new Publish_xsd();
        publish.setLocation(location);
        publish.setPublishingMethod(XsdPublishingMethod.getXsdPublishingMethod(publishingMethod));
        publish.setImportPolicy(ImportPublishPolicy.getImportPublishPolicy(importMethod));
        publish.setImportPublishingMethod(ImportPublishingMethod.getImportPublishingMethod(importPolicy));

        publish.setContentPolicy(ContentPublishPolicy.getContentPublishPolicy(contentPolicy));
       publish.setContentPublishingMethod(ContentPublishingMethod.getContentPublishingMethod(contentMethod));

        publish.setAuthInfo(authInfo);

        return publish;
}
```

The `publishXsdResource` method performs the publishing operation:

```
public XsdDetail publishXsdResource(Publish_xsd publish) throws UDDIException, SOAPException {
        System.out.print("Check structure validity .. ");
        try {
            publish.check();
        } catch (InvalidParameterException e) {
            System.out.println("Failed!");
            throw new UDDIException(e);
        }
        System.out.println("OK");

        Xsd2uddiApi xsdApi = getXsd2UddiStub();
        System.out.print("Publishing in progress ...");
        XsdDetail xsdDetail = xsdApi.publish_xsd(publish);
        System.out.println(" done");
        return xsdDetail;
}
```

## Building and Running Demos

This section shows, how to build and run the HP SOA Registry Foundation XSD2UDDI demo set. Let us continue with our PublishXsd demo.

1 Be sure that the demos are properly configured and the HP SOA Registry Foundation is up and running.

2 Change your working directory to

| | |
|---|---|
| Windows | %REGISTRY_HOME%\demos\resources\xsd |

| | |
|---|---|
| UNIX | $REGISTRY_HOME/demos/resources/xsd |

3 Build all demos using:

| | |
|---|---|
| Windows: | run.bat make |
| UNIX: | ./run.sh make |

When compiling demos on Windows platforms, you may see the following text:

```
A subdirectory or file ..\..\common\.\build\classes already exists.
```

. This is expected and does not indicate a problem.

4 To get list of all available demos, run

| | |
|---|---|
| Windows: | run.bat help |
| UNIX: | ./run.sh help |

5 The selected demo can be executed via the **run** command using the name of the demo as a parameter. For example, to run the PublishWSDL demo, invoke

| | |
|---|---|
| Windows: | run.bat PublishXsd |
| UNIX: | ./run.sh PublishXsd |

The output of this demo will resemble the following:

```
Running PublishXsd demo...
**********************************************************************
***              HP SOA Registry Demo - PublishXsd               ***
**********************************************************************

Publishing XML schema with the following parameters:
Enter XSD location (URI) [http://localhost:8080/uddi/doc/demos/employees.xsd]:
Enter publishing method (update,create) [update]:
Enter import publishing policy (all,explicit) [all]:
```

```
Enter import publishing method (reuse,create,ignore) [reuse]:
Enter content publishing policy (all,explicit) [all]:
Enter content publishing method (reuse,create,ignore) [reuse]:

Using Security at url https://localhost:8443/uddi/security .. done
Logging in .. done
location = http://localhost:8080/uddi/doc/demos/employees.xsd
Check structure validity .. OK
Using XSD2UDDI at url https://localhost:8443/uddi/xsd2uddi .. done
Publishing in progress ... done

XML Schema http://localhost:8080/uddi/doc/demos/employees.xsd
<xsdDetail xmlns="http://systinet.com/uddi/xsd2uddi/v3/5.5">
  <xsdInfo>
    <location>http://localhost:8080/uddi/doc/demos/employees.xsd</location>
    <namespace>http://systinet.com/uddi/demo/employeeList</namespace>
    <tModelKey xmlns="urn:uddi-org:api_v3">uddi:systinet.com:demo:xsd:employees</tModelKey>
    <name xmlns="urn:uddi-org:api_v3">employees.xsd</name>
  </xsdInfo>
  <elements>
    <element>
      <localName>persons</localName>
      <symbolModel>
        <name xmlns="urn:uddi-org:api_v3">persons</name>
        <tModelKey xmlns="urn:uddi-org:api_v3">uddi:ca43cec0-20f8-11d9-9c6a-1d0743509c6a</tModelKey>
      </symbolModel>
    </element>
    <element>
      <localName>person</localName>
      <symbolModel>
        <name xmlns="urn:uddi-org:api_v3">person</name>
        <tModelKey xmlns="urn:uddi-org:api_v3">uddi:ca5e82b0-20f8-11d9-9c6a-1d0743509c6a</tModelKey>
      </symbolModel>
    </element>
    <element>
      <localName>department</localName>
      <symbolModel>
        <name xmlns="urn:uddi-org:api_v3">department</name>
        <tModelKey xmlns="urn:uddi-org:api_v3">uddi:ca6a90a0-20f8-11d9-9c6a-1d0743509c6a</tModelKey>
      </symbolModel>
    </element>
  </elements>
  <types>
    <type>
      <localName>persons</localName>
      <symbolModel>
        <name xmlns="urn:uddi-org:api_v3">persons</name>
        <tModelKey xmlns="urn:uddi-org:api_v3">uddi:ca742d90-20f8-11d9-9c6a-1d0743509c6a</tModelKey>
      </symbolModel>
    </type>
    <type>
      <localName>person</localName>
      <symbolModel>
        <name xmlns="urn:uddi-org:api_v3">person</name>
        <tModelKey xmlns="urn:uddi-org:api_v3">uddi:ca856ba0-20f8-11d9-9c6a-1d0743509c6a</tModelKey>
      </symbolModel>
    </type>
    <type>
      <localName>department</localName>
      <symbolModel>
        <name xmlns="urn:uddi-org:api_v3">department</name>
        <tModelKey xmlns="urn:uddi-org:api_v3">uddi:ca908f30-20f8-11d9-9c6a-1d0743509c6a</tModelKey>
      </symbolModel>
    </type>
  </types>
</xsdDetail>
Logging out .. donee
```

# Index

# Glossary

| | |
|---|---|
| .NET | A software platform designed by the Microsoft Corporation. It is an environment for writing C#, Visual Basic, and C++ programs that can easily and securely interoperate. |
| .NET Framework | An environment for building, deploying, and running Web services and other applications. It consists of three main parts: the Common Language Runtime, the Framework classes, and ASP.NET. |
| .NET Framework Software Development Kit (SDK) | A set of documentation, samples, command-line tools, compilers, and the .NET Framework; that is, everything you need to write, build, test, and deploy .NET Framework applications. |
| Accepting Security Provider | A security provider that is responsible for accepting secure requests and usually also for determining the invoker identity.<br>See also Identity. |
| Access Control | Restrictions of a subject's access to a resource.<br>See also Access Controller, Subject. |
| Access Controller | An application component that is responsible for access control decisions.<br>See also Access Control. |
| accessPoint | A binding template element that indicates where you can find the endpoint of the Web service that is described by this entity. This may be a URL, an electronic mail address, or even a telephone number.<br>See also Universal Description, Discovery and Integration. |
| ACL | Access Control List — A list of entities, together with their access rights, the members of which have authorized access to a resource.<br>See also Subject. |
| Admin Service | The core System Web service, allowing you to manage advanced settings for each deployed service on a Systinet Server. Using this Web service it is possible to manage settings like security mechanisms, |

| | |
|---|---|
| | transport interceptors, polymorphism, automatic Web service authentication, and automatic authorization checks per Web service method. |
| Alias | A name that an entity uses in place of its real name. |
| Apache Containers | A schema for transferring containers proposed by Apache group. This schema is not compatible with Microsoft .NET. |
| Application Server-Dependent Deployment Descriptor | When an enterprise application is deployed on the server, it contains a set of deployment descriptors. They contain application metadata. Format and meaning of Application Server Dependent Deployment Descriptor is closely related to the application server and cannot be used in the context of any other application server. |
| Application Web services | Web services can be categorized into the three groups: System, Application, and Utility Web services. Application Services are created for specific tasks by the developer. To accomplish the task they typically use Utility Web services. |
| ASP .NET | ASP .NET is a unified Web development platform that provides the services necessary for developers to build enterprise-class Web applications. |
| Asynchronous Client Invocation | Client invocation of any Web service in an asynchronous way. |
| Asynchronous Return Mechanism | A service implementation returning the results of a call to Systinet Server in an asynchronous way. |
| Asynchronous Transport Coupling | Sending the response from a Web service invocation over a different transport channel than the one on which the request came. |
| Authentication | The process of establishing the validity of a claimed identity, it usually consists of two steps: 1/ identification - presenting identity credentials to the security system, 2/ verification - generating identity that corroborates the binding between the identity principals and credentials. |
| Authorization | The process of determining what types of activities are permitted. Usually, authorization is in the context of authentication. Once you |

| | |
|---|---|
| | have authenticated principals, they may be authorized different types of access or activity.<br>See also Authentication. |
| BEA WebLogic Application Server | An application server provided by BEA Systems, Inc. |
| Binding Template | For a businessService entry, a list of binding templates that point to specifications and other technical information about the service is associated. For example, a binding template might point to a URL that supplies information on how to invoke the service. The binding template also associates the service with a service type.<br>See also Universal Description, Discovery and Integration. |
| Borland Application Server | An application server provided by the Borland Software Corporation. |
| Borland Enterprise Server | An application server provided by Borland Software Corporation. |
| Business Entity | A representation of information about a business. Each business entity contains a unique identifier, the business name, a short description of the business, some basic contact information, a list of categories and identifiers that describe the business, and a URL pointing to more information about the business.<br>See also Universal Description, Discovery and Integration. |
| Business Policy | A set of requirements, codified in Technical Policies, and their associations with a set of artifacts in an SOA. A Business Policy should always represent a course of action that is needed to achieve a particular business objective.<br><br>Systinet business policies are covered by the WS-PolicyAttachment specification [http://msdn.microsoft.com/webservices/default.aspx?pull=/library/en-us/dnglobspec/html/ws-policyattachment.asp].<br>See also Technical Policy. |
| Business Service | A structure associated with a businessEntity that consists of a list of businessService structures offered by the businessEntity. Each businessService entry contains a business description of the service, a |

| | |
|---|---|
| | list of categories that describe the service, and a list of pointers to references and information related to the service.<br>See also Universal Description, Discovery and Integration. |
| C# | A modern, object-oriented language that enables programmers to build a applications for the Microsoft .NET platform. |
| Catalina Servlet Container | A Tomcat 4.0 servlet container. Tomcat is the servlet container that is used in the official Reference Implementation for the Java Servlet and JavaServer Pages technologies. |
| Certificate | An electronic identifier from a certification authority that includes the certification authority signature made with its private key. The authenticity of the signature is validated by other users who trust the certification authority public key.<br>See also Certification Authority. |
| Certificate Chain | A list of Certificates (usually X.509 Certificates), starting with a certificate for a given subject that is signed by the authority represented by the next certificate in the list. This list usually ends with the root certification authority certificate.<br>See also X.509. |
| Certificate Revocation List | A data structure that enumerates digital certificates that have been invalidated by their issuer prior to when they were scheduled to expire.<br>See also Certificate. |
| Certification Authority | An entity that issues digital certificates (especially X.509 certificates) and vouches for the binding between the data items in a certificate.<br>See also X.509. |
| Client Package | Client side-specific information needed to invoke a specific Web service. This usually consists of a deployment descriptor and custom code, such as header processors, interceptors, serializers. |
| Client Profile (in Systinet Developer) | A set of client packages and additional configuration, such as security settings.<br>See also Client Package. |

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| Clustering | The act of connecting multiple computers and making them act like a single machine. Corporations often cluster servers to distribute computing-intensive tasks and risks. If one server in a cluster fails, some operating systems can move its processes to another server, allowing end users to continue working while the first server is revived. |
| Content Based Routing (CBR) | An advanced and easy to use technique for message routing based on message content.<br>See also XPath. |
| Credentials | Data that is transferred to establish the claimed identity of an entity. According to RFC2828, a credential is the information one entity presents to another to authenticate the other's identity. |
| CRL | See Certificate Revocation List. |
| CTS (Common Types System) | A definition of how types work within runtime (their declaration and usage), which enables types in one language to interoperate with types in another language, including cross-language exception handling.<br>See also .NET. |
| DMZ (Demilitarized Zone) | An unprotected server on which all parties have access to everything. A web server may be put in the DMZ while the assets it accesses, such as databases, remain behind a firewall. It works in conjunction with transport layer security.<br>See also TLS. |
| Deploy Service | A System Web service that is used to deploy packages to a Systinet Server. |
| Deploy Tool | A part of Systinet Server that deploys and undeploys deployment packages to Systinet Servers. |
| Deployed Web service (in Systinet Developer) | A Web service that is assigned to a particular Deployment Package in the Project.<br>See also Deployment Package. |
| Deployment | The process of installing a deployment package to particular Systinet Server. |

| | |
|---|---|
| | See also Deployment Package, Deployment Descriptor. |
| Deployment Descriptor | An XML document describing a package.<br>See also Deployment. |
| Deployment Package | A definition of Web services plus deployment information.<br>See also Deployment. |
| Deserialization | The process of creating Java objects out of a SOAP message. |
| Deserializer | A class that creates a Java object and fills it with the data from a SOAP message. |
| Distinguished Name | A distinguished name (DN) is a set of attribute values that identify the path leading from the base of the directory information tree to the object that is named. An X.509 public-key certificate or CRL contains a DN that identifies its issuer, and an X.509 attribute certificate contains a DN or other form of a name that identifies its subject.<br>See also Certificate, X.509. |
| Document/Literal | One possible encoding for a SOAP message, indicating that the message must strictly follow a schema written in the WSDL Document. |
| DOM | Document Object Model - a tree of objects with interfaces for traversing the tree and writing an XML version of it, as defined by the W3C specification. |
| DOM element | A structure representing an XML element as defined by DOM. |
| Dynamic Call | Constructing and issuing a request whose signature is possibly not known until runtime. |
| Dynamic Invocation | Constructing and issuing a request whose signature is possibly not known until runtime. |
| EAR File | Applications deployed on an application server are usually delivered as one compressed file with .ear extension. The file may contain software components, web applications, and resources. |

| | |
|---|---|
| EJB | Enterprise JavaBean. |
| Embedded Server | The Systinet Server in Systinet Developer that is used for testing purposes. It is tightly bound with the IDE. |
| Encoded Serialization | Serialization that uses an encoding layer to read/write data. |
| Endpoint | A referenceable entity (using, for example, a URL or URI). |
| Entity JavaBean | The kind of EJB that provides an object view of data in the database. See also EJB. |
| Exception (Unhandled Java Exception) | An event during program execution that prevents the program from continuing normally. |
| Forte For Java | Sun Microsystems Forte For Java. An IDE for development of Java applications. It was a branded and commercial version of NetBeans; now it is named Sun ONE Studio (SOS). Systinet Developer for Sun ONE Studio is a plug-in that can be plugged into SOS and lets developers develop Web service based applications right in the IDE. See also Sun ONE Studio. |
| GSS-API | Generic Security Services API (GSS-API) is a programming interface that allows two applications to establish a security context independent of the underlying security mechanisms. Specified in RFC-2743. See also Security Mechanism. |
| Header | A part of a SOAP message usually carrying some metadata. |
| Header Processor | A Java class for parsing/creating headers. |
| HTTP | HyperText Transfer Protocol. The Internet protocol, based on TCP/IP. |
| HTTPS | HyperText Transfer Protocol layered over the SSL protocol. See also HTTP, Security Mechanism. |
| IBM WebSphere Application Server | An application server provided by the International Business Machines Corporation. |

| | |
|---|---|
| Identity | Information that is unique within a security domain and that is recognized as denoting a particular entity within that domain. |
| IETF | Internet Engineering Task Force (www.ietf.org). |
| IIS (Internet Information Services) | A secure platform for building and deploying business applications, hosting and managing Web sites, and publishing and sharing information across a company intranet or the Internet. |
| In Parameter | A parameter that is passed from client to server. |
| In/Out Parameter | A parameter that is passed in both directions. For example, it may contain an input value for the server and the processed result for the client. |
| Incoming Message | A message that is sent to Systinet Server runtime. On the client side, this is a response message. On the server side, a request message. |
| Initiating Security Provider | A security provider that is responsible for initiating and maintaining secure communication from the client to the server side.<br>See also Security Provider. |
| Interceptor | A class for intercepting (that is, inspecting or modifying) the content of a message. |
| J2EE Application Server | An application server that is compliant with the J2EE specification published by Sun Microsystems Incorporated. |
| J2EE Specification | The Java 2 Platform, Enterprise Edition specification published by Sun Microsystems Incorporated. |
| JAAS | The Java Authentication and Authorization Service (JAAS) is a set of Java packages that enable services to authenticate and enforce access controls upon users.<br>See also Authentication, Authorization, Access Control. |
| JAR File | A file compressed using the Java Archive (JAR) file format. |

| | |
|---|---|
| Java Collections | A set of collections defined by the Java Platform specification (java.util.Map, java.util.Set, java.util.List). |
| Java Security | A set of Java security concepts based on the security framework provided by Java itself.<br>See also JSSE, JCE, JAAS. |
| Java2WSDL tool | A tool for converting Java classes and/or interfaces into their WSDL description. |
| JavaBeans Activation Framework | Standard services used to determine the type of an arbitrary piece of data, encapsulate access to it, discover the operations available on it, and to instantiate the appropriate bean to perform said operation(s). |
| JAX-RPC | A standard created by Sun's Java Community Process (#101) intended as a high-level API for calling Web services. |
| JAXM | A standard created by Sun's Java Community Process (#67) intended as a low-level API for calling Web services. |
| JBoss Application Server | An open source Application Server available from JBoss. |
| JCE | The Java Cryptography Extension - a set of packages that provide a framework and implementations for encryption, key generation and key agreement, and Message Authentication Code (MAC) algorithms. Support for encryption includes symmetric, asymmetric, block, and stream ciphers. The software also supports secure streams and sealed objects. |
| JDBC | Java DataBase Connectivity (JDBC) Data Access API. |
| JMS | The Java Message Service API. |
| JMS Destination | For sending and receiving messages, JMS uses a destination, which may be either JMS Topic or JMS Queue.<br>See also JMS. |
| JMS Message | A message sent by the Java Message Service.<br>See also JMS. |

| | |
|---|---|
| JMS Provider | A provider of JMS administered objects, such as JMS Queue or JMS Queue Connection Factory.<br>See also JMS. |
| JMS Queue | Used by the Java Message Service in Point-to-Point communications.<br>See also JMS. |
| JMS Queue Connection Factory | Used by the Java Message Service in Point-to-Point communications for creating JMS Connections.<br>See also JMS. |
| JMS Topic | Used by the Java Message Service in Publish/Subscribe communications.<br>See also JMS. |
| JMS Topic Connection Factory | Used by the Java Message Service in Publish/Subscribe communications for creating JMS Connections.<br>See also JMS. |
| JMS Transport | A pluggable transport that enables the sending of SOAP messages using the Java Message Service.<br>See also JMS. |
| JNDI | The Java Naming and Directory Interface; provides support for the common features of naming services including COS (Common Object Services), DNS (Domain Name System), LDAP (Lightweight Directory Access Protocol), and NIS (Network Information System).<br>See also LDAP. |
| JNDI Lookup | A lookup based on a unique JNDI name that returns an object bounded in the JNDI namespace.<br>See also JNDI. |
| JNDI Property | To use a specific implementation of JNDI, JNDI properties might be required to be set in the environment.<br>See also JNDI. |
| JSSE | The Java Secure Socket Extension - a set of Java packages that enable secure Internet communications. It implements a Java version of SSL |

| | |
|---|---|
| | (Secure Sockets Layer) and TLS (Transport Layer Security) protocols and includes functionality for data encryption, server authentication, message integrity, and optional client authentication. Using JSSE, developers can provide for the secure passage of data between a client and a server running any application protocol (such as HTTP, Telnet, NNTP, and FTP) over TCP/IP. |
| JTA | The Java Transaction API. |
| Kerberos | A system developed at the Massachusetts Institute of Technology that uses passwords and symmetric cryptography (DES) to implement a ticket-based, peer-entity authentication service and an access control service distributed in a client-server network environment. |
| Key | Short for Cryptographic Key - an input parameter that varies the transformation performed by a cryptographic algorithm. |
| Key Entry | An entry in the key store consisting of an alias, a cryptographic key, and a certificate chain.<br>See also Alias, Key Store, Key, Certificate Chain. |
| Key Store | A Systinet Server component responsible for management of key entries.<br>See also Key Entry. |
| LDAP | Lightweight Directory Access Protocol (RFC-1777) - a client-server protocol that supports basic use of the directory servers, that is, database servers or other systems that provide information (such as digital certificates or CRL) about an entity whose name is known.<br>See also Certificate, CRL. |
| Library Package | Java class packages that provide their classes to other deployed packages. Java classes deployed in Systinet Server are normally accessible only inside their own packages. |
| Literal Serialization | Serialization driven only by XML Schema-type definitions. |
| Load-Balancing | Distributing processing and communications activity evenly across a computer network so that no single device is overwhelmed. |

| | |
|---|---|
| Local Name | A local part (without namespace) of a Qname.<br>See also Qualified Name. |
| Message | Data plus meta-information indicating how it is to be routed and handled. An example of a message is a SOAP message or transport-level message. |
| Message Processing | The process through which a message is processed by interceptors, serializers, and deserializers. |
| MIME | Multipurpose Internet Mail Extensions - a standard for sending data with attachments. This standard is set out in RFCs 2045, 2046, 2047, and 2048. |
| MOM | Message Oriented Middleware. An integration paradigm based on asynchronous message exchange. |
| Multipart Content | Content encoded in accordance with the MIME specification. |
| Namespace | Namespaces are typically established to distinguish between multiple interpretations of a single token or phrase. For example, a "nut" in the "food" namespace is something to eat, while in the "hardware" namespace something to fasten to a bolt (something you would not want to attempt with a "food:nut" and vice-versa). In XML, it can be thought of as a collection of names, identified by a URI reference [RFC2396], that are used in XML documents. |
| NetBeans | An open source platform primarily used for development of Java applications; it has evolved into a Tools Platform. The commercial and branded version of NetBeans is a product called Sun ONE Studio (formerly Sun Forte For Java).<br>See also Sun ONE Studio. |
| OASIS | Organization for the Advancement of Structured Information Standards (http://www.oasis-open.org) - an international, not-for-profit consortium that designs and develops industry standard specifications for interoperability based on XML. |
| Orion Application Server | An Application Server available from IronFlare AB of Sweden. |

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| Out Parameter | A parameter that is sent from the server to the client. |
| Outgoing Message | A message sent out during Systinet Server runtime. On the client side, this message is called a request; on the server side, it is a response. |
| Package Manager (in Systinet Developer) | A part of a Systinet Server representation/Client Profile that is responsible for management of deployment/client packages. It also lets you view the installed packages and their Web services. |
| Package, Client Package | See Client Package. |
| Package, Library Package | See Library Package. |
| Package, Server Package | See Server Package. |
| Permission | An action that can be performed on a particular resource by a specific principal or role. |
| PDP- Policy Decision Point | A logical entity that is responsible for authorizing or denying access to services and/or resources. |
| Ping Service | A ping service is a System Web service that can be used as a lightweight method for determining whether a Systinet Server is running. |
| PKCS | The Public-Key Cryptography Standards are specifications produced by RSA Laboratories in cooperation with secure systems developers worldwide for the purpose of accelerating the deployment of public-key cryptography. |
| PKI | Public-Key Infrastructure - a system of certification authorities (and, optionally, other supporting servers and agents) that perform some set of certificate management, archive management, key management, and token management functions for a community of users in an application of asymmetric cryptography.<br>See also Certification Authority. |
| PEP - Policy Enforcement Point | A logical entity that enforces policy decisions. |

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| POP, POP3 | Post Office Protocol - a protocol for retrieval of email messages from mail servers.<br>See also POP3 server. |
| POP3 server | A mail server that supports the POP3 protocol from retrieval of email messages.<br>See also POP, POP3. |
| Port | A part of WSDL that binds an endpoint address and its interface. |
| PortType | Part of a WSDL document that describes the interface of a service.<br>See also WSDL. |
| Principal | An entity whose identity can be authenticated. A principal can represent any entity, such as an in individual, a corporation, or a login id. |
| Protected Store | A Systinet Server component consisting of a user store and key store.<br>See also User Store, Key Store. |
| Proxy Host | The host name of a proxy server. |
| Proxy Port | Port number of a proxy server. |
| Proxy, dynamically generated | A Java object that acts as a proxy to a Web service. Invoking methods on this object results in a SOAP request and response exchange with the Web service. |
| Public Cloud | A Universal Business Registry where businesses can describe and publish their web services to the general public.<br>See also UBR. |
| Publisher Assertion | A structure that allows you to emphasize a relationship between two Business Entities.<br>See also Universal Description, Discovery and Integration. |
| QName | See Qualified Name. |
| Qualified Name | A name that consists of a namespace and a unique name from that namespace. |

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|  | See also Namespace. |
| Receiver | A referenceable entity that accepts messages. This can be overseen as a Web service, an asynchronous endpoint, or a stub/proxy that accepts a response. |
| Reference | A reference to data that are defined in another part of the message. An example might be a reference to the next MIME part of a message or a reference to repeated Java objects. |
| Reliability | The ability of messages to be delivered regardless of software component, system, or network failures.<br>See also WS-ReliableMessaging. |
| Remote Debugging (in Systinet Developer) | Debugging of Web services that are deployed to a remote Systinet Server. In Systinet Server for Java Developer, you can place a breakpoint into your Web service source code, switch-on Remote Debugging Support for Systinet Server and debug this Web service remotely even when it is running on a remote machine. |
| Remote Server | In Systinet Developer, you have a list of Systinet Servers that you can work with. You can register any running Systinet Server into this list so you can work with it (remotely manage this server, deploy Web services to this server etc.). |
| REST | REpresentational State Transfer is an architectural module used to implement networked IT systems. The modeling of communication between components is similar to that used by HTTP. The main distinguishing features of this model relate to resources. |
| Return Value | A single value returned from a service. |
| Role | A category that applies to a set of principals. |
| RFC | An IETF Request For Comments (see http://www.ietf.org/rfc) - usually a standard or a recommendation. |

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| RPC | Remote Procedure Call - an extension of a common procedure call used inside one application to span multiple processes running on multiple hosts. |
| RPC/Encoded | One possible SOAP message encoding, indicating that the message format is logically given by the XML schema present in the WSDL. The physical representation of the message is given by the encoding of the message.<br>See also WSDL. |
| SAML | Security Assertions Markup Language - an XML framework for exchanging security information over the Internet. SAML enables disparate security services systems to interoperate. It resides within a system's security mechanisms to enable exchange of identities and entitlements with other services. |
| Scalability | How well a system can adapt to increased demands. For example, a scalable network system would be one that can start with just a few nodes, but easily expand to thousands of nodes. |
| Schema Type | Defines the type of a part of XML data. |
| Security Manager | The component of Systinet Server responsible for security management. |
| Security Mechanism | A mechanism that implements a security function. Some examples of security mechanisms are authentication exchange, checksum, digital signature, encryption, and traffic padding. |
| Security Provider | A provider for particular security mechanism(s).<br>See also Security Mechanism. |
| Sender | An entity that sends messages. |
| Sequence Owner | A load balancer node that handles all the messages in a WS-RM reliable managing sequence. The reliable message sequence corresponds to a load balancer session.<br>See also WS-ReliableMessaging. |

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| Serialization | The process by which binary objects are written into a structured stream; for example, when Java objects are written into a SOAP message. |
| Serializer | A class that writes a Java object into a SOAP message. |
| Server Package | The package that holds all the service-related files.<br>See also Deployment Package, Deployment. |
| Service Class | The implementation class of the Web service. |
| Service Endpoint | A single endpoint of a service instance with an associated path and additional configuration (such as header processors, serializers, etc.). |
| Service Instance | A service class instance registered in Systinet Server for Java. |
| Service Lookup | See Web Service Lookup. |
| Service Manager | A component of Systinet Server that is responsible for management of deployed Web services. |
| Service State | The current state of a service instance; for example, Offline, Starting, Running, Stopping, Stopped. |
| Service, Asynchronous Java Service | A Web service implemented in Java that returns the results of an invocation in an asynchronous manner. |
| Service, Java Service | A Web service implemented in Java that handles the messages using Java types representation of their content. |
| Service, Raw Service | A Service written in Java that handles the messages using a low-level transport message API. |
| Service, XML Service | A Service written in Java that handles the messages using the low-level SOAP Message API. |
| Servlet | The basic part of Java Servlet Technology. |
| Servlet Container | A container application that allows servlets to run.<br>See also Servlet. |

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| Single Login | A system of applications, where a principal (user) authenticates with one system entity (called identity provider) and has that authentication honored by other system entities (called service providers or partners).<br>See also SSO (Single Sign-On). |
| SMTP | Simple Mail Transfer Protocol - a protocol for sending email messages between servers. Most email systems that send mail over the Internet use SMTP to send messages from one server to another; the messages can then be retrieved with an email client using either POP or IMAP. In addition, SMTP is generally used to send messages from a mail client to a mail server. |
| SMTP Server | A mail server that supports the SMTP protocol for email transfer.<br>See also SMTP. |
| SOAP | Simple Object Access Protocol - a lightweight protocol based on XML for the exchange of information in a decentralized, distributed environment. |
| SOAP Body | The part of a SOAP message that contains the actual data.<br>See also SOAP. |
| SOAP Digital Signature | The W3C document SOAP Security Extensions: Digital Signature specifies the syntax and processing rules for a SOAP header entry to carry digital signature information within a SOAP 1.1 Envelope.<br>See also SOAP, SOAP Header, SOAP Envelope, XML Signature. |
| SOAP Envelope | The root element of a SOAP message. It contains exactly one body sub-element and optionally one header sub-element.<br>See also SOAP. |
| SOAP Fault | Used to return errors that occur during the routing/processing of a SOAP message.<br>See also SOAP. |
| SOAP Fault-Actor | Part of a SOAP Fault. It provides information about who/what caused the fault.<br>See also SOAP Fault. |

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| SOAP Fault-Code | Part of a SOAP Fault. It provides an numeric identification of the fault.<br>See also SOAP Fault. |
| SOAP Fault-Detail | Part of a SOAP Fault that provides more details about the fault. In Systinet Server for Java, this element usually contains a server stack trace.<br>See also SOAP Fault. |
| SOAP Header | The part of soap message that contains metadata (for example, authentication information or instance identification) of the message.<br>See also SOAP Body. |
| SOAP Message | A message encoded in accordance with the SOAP specification.<br>See also SOAP. |
| SOAP with Attachments | Binding for a SOAP message to be carried within a MIME multipart/related message in such a way that the processing rules for the SOAP 1.1 message are preserved.<br>See also SOAP. |
| SOAPSpy | A SOAP message-tracking tool that scans communication between the client and sever. The communication is visually displayed. You can also manually change and send the messages.<br>See also SOAP. |
| SOS | See Sun ONE Studio. |
| SPKM | Simple Public Key Mechanism - a security mechanism specified by the IETF in RFC-2025. |
| SQL Statement | A statement of the Structured Query Language. |
| SSJ | Abbreviation for Systinet Server for Java™. |
| SSL | The Secure Sockets Layer (SSL) and Transport Layer Security (TLS) protocols were designed to help protect the privacy and integrity of data while it is transferred across a network. The Internet Engineering Task Force (IETF) standard called Transport Layer Security (TLS) is based on SSL. |

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| | See also TLS. |
| SSO (Single Sign-On) | A system that enables a user to access multiple computer platforms or application systems after being authenticated only once.<br>See also SAML, Kerberos. |
| Static Invocation | Constructing a request at compile time. Calling an operation via a proxy procedure. |
| Stub | A statically-generated service interface, which in turn dynamically generates the proxy during runtime. |
| Subject | A grouping of related information for a single entity, such as a person. Such information includes the Subject's identities, as well as its security-related attributes (passwords and cryptographic keys, for example).<br>See also Identity. |
| Sun ONE Studio | Sun ONE Studio (formerly Sun Forte For Java) is an IDE for development of Java applications. It is a branded and commercial version of NetBeans. Systinet Developer for Sun ONE Studio is a plug-in that can be used with SOS and lets developers develop Web service-based applications in the IDE.<br>See also NetBeans. |
| Systinet Developer | A product of Systinet Corporation that lets developers create, test, debug, and manage Web services using their favorite IDE. Systinet Developer is a plug-in that enhances IDEs such as Sun Microsystems Sun ONE Studio, Borland JBuilder, and IBM Eclipse. |
| Systinet Server for Java Application Directory | A directory to which the WASP_HOME parameter points.<br>See also Deployment, WASP_HOME. |
| Systinet Server for Java Root URL | The URL where Systinet Server runs. The Global URL of the Web service running on Systinet Server is <Systinet Server for Java Root URL> + <path of the Service Endpoint>. |
| System Web Services | Web services can be categorized into three groups: System, Application, and Utility Web services. System Web services facilitates fundamental |

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| | functions such as service deployment, administration and security settings management. |
| Target Namespace | In WSDL, XML Schema, or a deployment descriptor document, the namespace into which the content of the document is placed. |
| Technical Policy | A set of assertions that represent a business requrement. Technical policies are associated with SOA artifacts to which the requirement applies; a set of technical policies and associated artifacts forms a Business Policy.<br><br>In WS-Policy terms, a Systinet technical policy = WS-Policy + name + documentation.<br>See also Business Policy. |
| TLS | Transport Layer Security protocol. Its primary goal is to provide privacy and data integrity between two communicating applications. The first version of TLS is described in RFC-2246.<br>See also SSL. |
| tModel | A structure that takes the form of keyed metadata (data about data). In a general sense, the purpose of a tModel within the UDDI registry is to provide a reference system based on abstraction. Among the roles that a tModel plays in UDDI is the ability to provide and to describe compliance with a specification or concept to a taxonomy, for example. |
| Tomcat Servlet Container | The servlet container that is used in the official Reference Implementation for the Java Servlet and JavaServer Pages technologies. |
| Transport | A component of Systinet Server that is responsible for transferring messages to a Web service using particular transport protocol. |
| Transport Message | A message accessible via Systinet Server Transport API.<br>See also Message. |
| Transport Repository | A repository of all Systinet Server transports. |
| Trusted Certificate Entry | An entry managed by the key store that represents a trusted certificate or certificate chain. |

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| | See also Key Store, Certificate Chain. |
| UBR | Universal Business Registry (also known as Public Cloud) - a set of UDDI Registries that form a global distributed registry of information about Web services. Note that UBR nodes (members of the Public Cloud) are run by Microsoft, IBM, SAP, HP, and NNTP. They replicate the content of Public Cloud. |
| UDDI | See Universal Description, Discovery and Integration. |
| UDDI Green Pages | UDDI accepts and organizes three types of information into three broad categories: White, Yellow, and Green Pages. Green Pages hold the technical information about services that are exposed by the business, including references and interfaces to the services a company can deliver. |
| UDDI Inquiry Port | Every UDDI Registry implementation provides two ports with which you can interact: inquiry and publishing. The inquiry port allows you to browse and search information that is published to a UDDI Registry. |
| UDDI node | The UDDI node is a collection of Web services, each of which implements the APIs in a UDDI API set, and that are managed according to a common set of policies. Typically, a node consists of at least an implementation of the Inquiry, the Publication, and the Custody and Ownership Transfer API sets; often a node will implement additional API sets such as Subscription and Replication. |
| UDDI Operator | A UDDI Operator is a role of a person who sets node policy and runs a node. There is exactly one operator for a given node. |
| UDDI Publishing Port | Every UDDI Registry implementation provides two ports with which you can interact with: inquiry and publishing. The publishing port allows you to publish information about your Web services. |
| UDDI Registry | A UDDI Registry is an implementation of the UDDI specification that allows Web service vendors to register information about the Web services they offer so that others can find them. |

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| UDDI White Pages | UDDI accepts and organizes three types of information into three broad categories: White, Yellow, and Green Pages. White Pages include address, contact, and known identifiers. |
| UDDI Yellow Pages | UDDI accepts and organizes three types of information into three broad categories: White, Yellow, and Green Pages. Yellow Pages include industrial categorizations based on standard taxonomies. |
| Undeployment | Undeployment is a process of uninstalling deployed packages from Systinet Server.<br>See also Deployment. |
| Universal Description, Discovery and Integration | UDDI is a specification for distributed Web-based information registries of Web services. |
| Updatable Policy | A Systinet Server component responsible for management of access control lists.<br>See also ACL. |
| URI | Uniform Resource Identifier - the generic term for all types of names and addresses that refer to objects on the World Wide Web. A URL is one kind of URI. |
| URL | Uniform Resource Locator - the global address of documents and other resources on the World Wide Web. The first part of the address indicates what protocol to use and the second part specifies the IP address or the domain name where the resource is located. |
| User | Any person who interacts directly with a computer system. Note that 'users' do not typically include 'operators,' 'system programmers,' 'technical control officers,' 'system security officers,' and other system support personnel. |
| User Group | A named collection of user identifiers.<br>See also User. |
| User Property | In the context of Systinet Server for Java, a user attribute that can be stored in the user store.<br>See also User Store. |

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| User Store | A Systinet Server component responsible for management of user (security) properties, such as passwords and certificates. |
| Utility Web services | Web services can be categorized into three groups: System, Application, and Utility Web. A Utility Service typically provides commonly required functionality utilized by any Application Web service. It provides an easy way for developers to reuse common functions to produce more reliable code and reduce redundancy. |
| UUID | Universally Unique Identifier as used in http://www.ietf.org/ recommendations or drafts. |
| WAR File | A format for compressing files, similar to a JAR file. Web applications that may be deployed to an application server are often compressed into WAR files.<br>See also JAR File. |
| WASP, WASP Server for Java | The former name of Systinet Server for Java™. |
| WASP_HOME | The directory where the Systinet Server distribution is installed. |
| WaspPackager Tool | A part of Systinet Server for Java that creates deployment packages that can be deployed to Systinet Servers or client packages that are used for Web service Clients.<br>See also Deployment, Deployment Package, Client Package. |
| Web Service | Loosely coupled software components delivered over Internet standard technologies. |
| Web Service Client | An application that uses Web services. |
| Web Service Debugger (in Systinet Developer) | A special kind of Sun ONE Studio Debugger Type that must be used for debugging Web service clients. This Debugger Type ensures the correct initialization of the client part of Systinet Server for Java. |
| Web Service Executor (in Systinet Developer) | A special kind of Sun ONE Studio Executor that must be used for running Web service Clients. This Executor ensures the correct initialization of the client part of Systinet Server for Java. |

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| Web Service Lookup | A process through which a remote Web service is bound to a Java interface. The result of this process is a Java stub for the Web service. |
| Web Services Description Language Utility (wsdl.exe) | Used to generate code for XML Web service clients and XML Web services using ASP.NET from WSDL contract files and XSD schemas. |
| WSDL | An XML-based language that describes an interface of a Web service plus information on how to call the Web service and where to find it. |
| WSDL Compiler | The previous name for WSDL2Java, a Systinet Server tool that converts a WSDL document into Java code. |
| WSDL Compiler tool | See WSDL Compiler. |
| WSDL Compiler Web service | Former name of the WSDL2Java Web service, a utility Web service that offers SOAP access to the WSDL2Java tool used for the generation of Java source files from a WSDL document. |
| WSDL Operation | Part of a WSDL Document representing the interface of an operation that can be invoked on a Web service. |
| WSDL Port | Part of a WSDL Document that binds the endpoint of a service with an interface. |
| WSDL Service | Part of WSDL Document that specifies the set of endpoints that define one logical service. |
| WS-Addressing | A protocol that provides transport-neutral mechanisms to address Web services and messages. Specifically, WS-Addressing defines XML elements to identify Web service endpoints and to secure end-to-end endpoint identification in messages. It enables messaging systems to support message transmission through networks that include processing nodes such as endpoint managers, firewalls, and gateways in a transport-neutral manner.<br><br>For more information, please see the WS-Addressing specification. [http://msdn.microsoft.com/library/default.asp?url=/library/en-us/dnglobspec/html/ws-addressing.asp] |

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| WS-Eventing | Specification which describes a protocol that allows Web services to subscribe to or accept subscriptions for event notification messages.<br><br>For more information, please see the WS-Eventing specification. [http://msdn.microsoft.com/webservices/community/workshops/default.aspx?pull=/library/en-us/dnglobspec/html/ws-eventing.asp] |
| WS-Policy | The Web Services Policy Framework (WS-Policy) provides a general purpose model and corresponding syntax to describe and communicate the policies of a Web Service. WS-Policy defines a base set of constructs that can be used and extended by other Web Services specifications to describe a broad range of service requirements, preferences, and capabilities.<br><br>For more information, please see the WS-Policy specification. [http://msdn.microsoft.com/webservices/default.aspx?pull=/library/en-us/dnglobspec/html/ws-policy.asp] |
| WS-ReliableMessaging | A protocol that allows messages to be delivered reliably between distributed applications in the presence of software component, system, or network failures. Is used in conjunction with other specifications and application-specific protocols within the SOAP [SOAP] and WSDL [WSDL] extensibility model. The draft version of this protocol was known as WS-Reliability.<br><br>For more information, please see the WS-ReliableMessaging specification. [http://msdn.microsoft.com/webservices/default.aspx?pull=/library/en-us/dnglobspec/html/ws-reliablemessaging.asp] |
| WS-RM | See WS-ReliableMessaging. |
| WS-Security | WS-Security describes enhancements to SOAP messaging to provide quality of protection through message integrity, message confidentiality, and single message authentication. It enables the user to encrypt and/or sign individual SOAP messages.<br><br>Systinet Server for Java provides an implementation of OASIS' working draft 13 [http://www.oasis-open.org]. It is based on a Systinet-modified |

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| | version of Apache XML-Security package 1.0.4 [http://xml.apache.org/security].<br><br>For more information, please see the WS-Security specification. [http://msdn.microsoft.com/library/default.asp?url=/library/en-us/dnglobspec/html/ws-security.asp] |
| X.509 | Part of the ITU-T X.500 specification that defines a framework to provide and support data origin authentication and peer entity authentication services, including formats for X.509 public-key certificates, X.509 attribute certificates, and X.509 CRLs.<br>See also CRL. |
| XKMS | The XML Key Management Specification - a specification designed to extend the public key infrastructure (PKI) model by using XML to provide new levels of ease and interoperability when implementing secure applications.<br>See also PKI, XML. |
| XML | eXtensible Markup Language - a W3C-sponsored format for structured documents and data, used mostly on the Web. |
| XML Canonicalization | A method for generating a physical representation, the canonical form, of an XML document that accounts for permissible changes or variations in syntax. It is a reduction of a document to a standard minimal form useful, among other things, for document or structure comparisons. Except for limitations regarding a few unusual cases, if two documents have the same canonical form, then the two documents are logically equivalent within the given application context. |
| XML Encryption | A standard that specifies the process for encrypting data and representing the result in an XML document. The data may be an XML element, or XML element content, or any arbitrary data (including an XML document).<br>See also XML, XML Signature. |
| XML protocol | A communication or messaging protocol based on XML. |

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| XML Schema | A means for defining the structure, content and semantics of XML documents through XML itself. It defines a richer set of data types - such as booleans, numbers, dates and times, and currencies - than the more traditional DTD. XML Schemas make it easier to validate documents based on namespaces. It is defined in the W3C's XML Schema Working Group. |
| XML Signature | A way of providing integrity, message authentication, and/or signer authentication services for data of any type, whether located within the XML that includes the signature or elsewhere.<br>See also XML, XML Encryption. |
| XPath | A language for addressing parts of an XML document. See XPath 1.0 [http://www.w3.org/TR/xpath] and XPath 2.0 [http://www.w3.org/TR/2004/WD-xpath20-20041029/].<br>See also XSLT, XQuery, Content Based Routing (CBR). |
| XQuery | A query language able to express queries across data structured as XML. The result of an XQuery program is also XML. XQuery can be viewed as a transformation language. See XQuery 1.0 [http://www.w3.org/TR/2004/WD-xquery-20041029/].<br>See also XPath. |
| XSLT | A language for transforming XML documents to other XML documents or more generally any text output. Its expressive power is greater than XQuery. Hence it is more universal. See XSLT 1.0 [http://www.w3.org/TR/xslt] and XSLT 2.0 [http://www.w3.org/TR/xslt20/].<br>See also XPath, XQuery. |