

HP Service Oriented Architecture Manager

Integration Guide

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Windows®, HP-UX, Linux



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Introduction

The *Integration Guide* is intended for users who want to take advantage of the HP Service Oriented Architecture (SOA) Manager's integration possibilities. SOA Manager Integration is often performed to either customize how the SOA Manager works or to reuse the SOA Manager's assets within other enterprise applications.

Much attention has been given to ensure that the SOA Manager's architecture is flexible and easy to integrate with. The architecture is pluggable and uses popular industry standards such as Java and XML. More important, the SOA Manager is among the first distributed management software products to use a services-based architecture. For example, Web services are used to expose many parts of the SOA Manager's management model. This practice not only ensures standard and open integration possibilities, it clearly sets the SOA Manager within current and future SOA-based environments.

Document Overview

The *SOA Manager Integration Guide* provides instructions for performing integrations with the SOA Manager. The guide provides a brief contextual overview of the customization and integration possibilities. Generally, each chapter is dedicated to an integration possibility and is self contained. Therefore, the book need not be read in sequence.

Every effort has been made to explain general concepts. However, much of the content in this guide assumes that the user is already familiar with the SOA Manager and has a basic level of experience. If you are new to the SOA Manager product, it is recommended that you first become familiar with the product. A good starting point is the *SOA Manager User Guide* and the *SOA Manager Tutorials*. These and other documents are located in the distribution in the /Documentation directory.

Audience

The *Integration Guide* is primarily intended for solution architects, systems integrators, and application developers who are responsible for integrating and enabling management components in their environments.

Integration with SOA Manager – An Overview

Integration Points

SOA Manager provides several integration points. The integration points can facilitate the deployment of Web services management solution as well as provide an opportunity to repurpose some of the management data that is collected for Web services. In some cases, there is also the ability to customize the solution with management features that are not supported with the solution, but important to fulfill the management needs of a Web service deployment.

In general, the integration points have been organized into the categories listed below. This is purely an organizational scheme and does not suggest any functional boundaries within the product.

- SOA Manager includes the following integration points:
 - Database – This integration point is used to create custom audit reports or to include audit information within other management applications.
 - Web services interfaces – This integration point is used to create new (or augment existing) enterprise management applications by reusing the SOA Manager’s management data and management model. The data and model are exposed as management Web services.
- SOA Manager policy enforcement intermediary – The intermediary supports integration with Java APIs. This integration helps you create custom management handlers that address the specific Web service management requirements of an organization.
- Integration with other products – You can integrate HP SOA Manager with the following products:
 - HP Operations Manager
 - HP Business Process Insight (BPI)

Prerequisites for Integration

These steps are used to manually create SOA Manager's assets as well as customize the HP SOA Manager and the policy enforcement intermediary startup. The prerequisites for integration are as follows:

- Customize startup behaviors.
- Automate repetitive tasks.
- Save time when updating HP SOA Manager assets over multiple installations.
- Reuse current tool sets (IDE, Content Versioning System, and so on).
- Maintain current development processes.

Startup Tasks

HP SOA Manager policy enforcement intermediary group has the ability to execute user-defined Java code at startup. This is useful for initializing any required services when the processes are started or executing any type of process initialization code.

Integrators are responsible for creating the user-defined Java code as well as configuring each server to use the custom code. Configuration of startup classes is done in the servers' XML configuration file (`server.xml`).

HP SOA Manager

You can integrate with HP SOA Manager by using published Web services interfaces or databases.

Web Services Integration

The most common and robust method for integrating with HP SOA Manager is by using the SOA Manager's published Web services interfaces. The Web services are SOAP based Web services that are defined using WSDL. The Web services follow standard Web services management protocols.



Two Web services management specifications are: Web Services Distributed Management (WSDM) and Web Services for Management (WS-Management). At present, HP SOA Manager software utilizes the Web Services catalog, which is an HP authored precursor to the standard WS management protocols. HP SOA Manager software supports these specifications as they mature and stabilize.

Web services integrations allow system architects to leverage current management investments and provide a broader and more thorough view of the enterprise. In general, Web services integrations are used to:

- Link HP SOA Manager with other enterprise management products to create composite and custom applications
- Create and/or reuse current management consoles to display the SOA Manager's management data
- Create custom management consoles

Database Integrations

Web services audit trace messages are persisted to a central database. This information in conjunction with the model relationships which are also populated into the database (such as which Business Service contains which Web services) can be used to enable reporting and analytical applications such as SLA reporting, billing, non-repudiation, forecasting, and so on. Any application can potentially connect to the SOA Manager database and make use of the data. For example, the database can be used to create audit reports using packages like Crystal Reports.

Integrators are responsible for creating and maintaining database connections from within their applications. In addition, integrators are responsible for upgrading their applications as the SOA Manager's database schema changes.

HP SOA Manager Policy Enforcement Intermediary Group

The Broker Configurator tool is typically used to create intermediary groups, configure intermediary group management handlers, and deploy intermediary groups. These steps can become repetitive and time consuming depending on the number of intermediary groups that are being deployed. However, these tasks can be completed without using the Broker Configurator.

Integrators are responsible for creating the intermediary group definition file (a proprietary file written using XML), packaging the intermediary group as a Java Archive (jar file), and copying it to the appropriate directory on the policy enforcement intermediary group. Depending on the requirements, some or all of these tasks can be automated.

Java API Integrations

Policy handlers implement management logic that is used to interpose visibility and controls on Web services. These handlers are inserted in the HTTP or SOAP pipeline that is responsible for processing request and response messages. Intermediary groups use a set of standard handlers and can also be configured to use a set of simple or advanced handlers. However, an organization may have special management requirements that are not covered by any of the provided handlers.

In such cases, the SOA Manager's Java API can be used to create custom handlers that can implement any management or processing logic that is required.

Integrators are responsible for:

- Creating the custom handler Java logic by extending a base class
- Compiling the handler
- Configuring the handler in the intermediary group definition file
- Packaging the handler in the intermediary group jar file

Security Customization

The SOA Manager's Java API integration point is used to create custom security implementations that allow an organization to enforce security policies that are not covered by the default security features provided by the policy enforcement intermediary. This includes custom authentication based on user profile, custom security handlers, and an XML Introspection service.

Integration of SOA Manager with Other products

The following sections include a brief overview of the integration features provided by HP SOA Manager with other HP products.

HP Operations Manager Integration

The HP Operations Manager for UNIX software provides a fully integrated management solution for networks, systems, databases, and applications found in heterogeneous distributed IT environments. This comprehensive product suite represents a complete set of tools enabling IT organizations to improve overall availability and reliability, maintain the highest degree of management flexibility, and establish management control over virtually all aspects of an enterprise environment.

The SOA Manager software is a distributed management solution that is used to manage enterprise applications that are deployed in SOA-based environments. These applications utilize SOA principals as well as Web services standards. A unique feature of the SOA Manager software is the ability to represent the manageability of assets in a virtual management model called a business service model and expose that management model through Web services-based interfaces.

The SOA Manager and HP Operations Manager integration gives HP Operations Manager the ability to manage the SOA Manager's management information together with other enterprise management data. The integration provides a means of improving the availability of enterprise resources as well as a comprehensive and centralized view of the health and well being of the resources.

The integration includes:

- The ability to view an SOA Manager service model using the HP Operations Manager Service Navigator
- The ability to view service model alert messages in the HP Operations Manager Message Browser
- The ability to acknowledge service model alerts using the HP Operations Manager Message Browser

HP BPI Integration

You can import SOA Manager business services within HP Business Process Insight (BPI), to monitor these services within your business flows. These business services are the representation of a number of related Web services and intermediary (brokered) services within SOA Manager; for example, they might represent an Order Status Query, which can comprise a number of Web services. This Order Status Query might need to be available between certain business hours and return responses within a given time. The availability of this service can be monitored by OVBPI as part of an over-arching business flow within your organization and you can then report on whether or not this service is available, and if the service is not available, what the impact is on your business.

Prerequisites for Integration

Before integration, you must make sure that you perform the following activities:

- Customize startup behaviors
- Automate repetitive tasks
- Save time when updating SOA Manager's assets over multiple installations
- Reuse current tool sets (IDE, Content Versioning System, and so on)
- Maintain current development processes

Startup Tasks for SOA Manager and Policy Enforcement Intermediary

HP SOA Manager and policy enforcement intermediary have the ability to execute user-defined Java code at startup. This is useful for initializing any required services when the process is started, or for executing any other type of process initialization code. To have either SOA Manager or intermediary execute startup code, a class must be created that implements the `com.hp.wsm.sn.server.StartupTask` interface. This startup class should be registered in the `service.xml` file of either HP SOA Manager or HP SOA Manager Intermediary. This file is present in the `/conf` directory.

StartupTask Interface

A startup class must implement the `com.hp.wsm.sn.server.StartupTask` interface in order to be executed. The `StartupTask` interface is as follows:

```
public interface StartupTask {
    public void startup(MipServer server) throws
        StartupTaskFailureException,
        LicenseException.LicenseRunTimeError,
        LicenseException.LicenseNotFound;
}
```

The class must be available on the classpath. When the server executes the startup task, it creates a new instance of the class and executes the startup method, passing in the current `com.hp.wsm.sn.server.MipServer` instance. The `MipServer` class is used for internal processing and is generally not used by user-defined startup tasks. The `MipServer` interface is not documented and is subject to change.

The startup class should throw a subclass of the `com.hp.wsm.sn.server.StartupTaskFailureException` class if a critical problem occurred and the server should shutdown.

Configuration File (server.xml)

The `server.xml` file is located in the `<install_dir>/conf/broker` and `<install_dir>/conf/networkservices` directories, respectively. Underneath the root `<server>` element, it has a `<startup>` element. This is the element in which the list of startup classes is contained. Each startup class should be specified within `<classname>` tags. For example:

```
<server>
  <startup>
    <classname>
      com.hp.wsm.sn.networkservices.NetworkServicesStartupTask
    </classname>
  </startup>
</server>
```

The startup tasks are executed in the order in which they appear in the startup list. User-defined startup tasks should follow the existing `com.hp.wsm.sn` startup tasks. While it is possible to put a startup task before the existing `NetworkServicesStartupTask` or `BrokerStartupTask`, it is not recommended.

Manually Implementing Intermediary Web Services

When using a policy enforcement intermediary-based deployment scenario, the Broker Configurator is typically used to create intermediary Web services. This includes configuring an intermediary Web service's management handlers. As an option, users can manually create intermediary Web services and configure their management handlers. Intermediary Web services are manually created and deployed when:

- You do not want to use the Broker Configurator.
- You want to develop and manage intermediary Web services using your own development environment (IDE, Content Versioning System, development processes).
- You want to create custom intermediary Web services.

The instructions in this section demonstrate how to manually create an intermediary Web service and deploy it to the Policy Enforcement Point (PEP).

Creating an Intermediary Web Service JAR

The artifacts of an intermediary Web service are packaged as a JAR file. A good method for learning about intermediary Web services is to create an intermediary Web service using the Broker Configurator, and then inspecting the intermediary Web service JAR file or using the files in the JAR as a template for creating your own intermediary Web services. When using the Broker Configurator, the JAR file is written to the `<install_dir>/conf/broker`.

The archive contains two files which can be manually created:

- `service.wsdl` – This file contains a service's definition without the address (endpoints) for the service. The service can be defined using either SOAP semantics, or can be created using straight XML.
- `service.xml` – This file contains a service's endpoints and also the management capabilities that will be interposed for the service.

Writing the Intermediary Web Service Definition

The intermediary Web service definition (`service.xml`) is an XML-based file and can be created using a text editor or an XML editor. Among other things, the definition contains a service's endpoints and references to any management handlers. The file can contain handlers that are included with the WSM solution, or can contain any custom handlers you create. The `service.xml` contains the following elements:

<service>

This is the root element of the intermediary Web service definition. The following attributes are included as part of the `<service>` element.

- `class`: Defines the class used to create the intermediary Web service. There are four possible classes that you can use:

- `com.hp.wsm.sn.router.xml.SimpleSoapServiceFactory`: This class is used to create an intermediary service for SOAP-based services as defined in the `service.wsdl` file. The intermediary Web service can contain a predefined set of handlers often referred to as simple handlers.
 - `com.hp.wsm.sn.router.xml.SimpleXmlServiceFactory`: This class is used to create an intermediary Web service for XML-based services as defined in the `service.wsdl` file. The intermediary Web service can contain a predefined set of handlers often referred to as simple handlers.
 - `com.hp.wsm.sn.router.xml.CustomSoapServiceFactory`: This class is used to create an intermediary service for SOAP-based services as defined in the `service.wsdl` file. The intermediary Web service can contain a broad set of handlers and can also contain any custom handlers you create.
 - `com.hp.wsm.sn.router.xml.CustomXmlServiceFactory`: This class is used to create an intermediary Web service for XML-based services as defined in the `service.wsdl` file. The intermediary Web service can contain a broad set of handlers and can also contain any custom handlers you create.
- `name`: The name of the intermediary Web service
 - `version`: A version for the intermediary Web service
 - `namespace`: A list of namespaces entered as *prefix=url*

<transport>

The <transport> element is contained within the <service> element and is used to define the transport layer used to access the intermediary Web service. It contains a reference to the transport provider as well as the http context that is used to access the intermediary Web service and whether the transport layer is secured.

The following example demonstrates the transport definition:

```
<transport
  provider="com.hp.wsm.sn.router.http.HttpTransportProvider">
  <ns1:property name="http.context" value="/financeServiceProxy"/>
  <ns1:property name="http.secure" value="false"/>
</transport>
```

<routing>

The <routing> element is contained within the <service> element and is used to bind the intermediary service to a Web service endpoint. The dispatcher is used to send the request to final endpoint. The following example demonstrates the routing definition:

```
<routing>
  <entry binding="ns2:FinanceServiceSoapSoapBinding">
    <ns3:endpoint
      type="com.hp.wsm.sn.common.dispatcher.
        endpoint.http.HttpEndpointProvider">
      <ns1:property name="priority" value="primary"/>
      <ns4:address>
        http://15.40.235.105:8080/axis/services/FinanceServiceSoap
      </ns4:address>
    </ns3:endpoint>
  </entry>
</routing>
```

Handler Definitions

Each handler that you want to include for the intermediary Web service must be referenced in the intermediary service definition and be contained within the <service> element. Any properties for the handler must be included as attributes. The following example demonstrates the audit handler definition:

```
<audit
  classname="com.hp.wsm.sn.router.xml.handlers.audit.
    AuditHandlerFactory"
  includeProfiling="true"
  payload-filter="ALL"
  payload-option="REQUEST-RESPONSE"
</audit>
```



A reference of all the handlers can be found in the *HP SOA Manager User Guide*.

Creating a Custom Handler

The following example demonstrates a custom handler:

```
Package com.mycompany.CustomHandler

import com.hp.wsm.sn.router.common.message.MessageServiceException;
import com.hp.wsm.sn.router.xml.XmlOperation;
import com.hp.wsm.sn.router.xml.handlers.BaseXmlHandler;
import java.io.IOException;

public class CustomHandler extends BaseXmlHandler {
  public void onRequest(XmlOperation operation) throws
    MessageServiceException {
    try {
      // Custom code goes here.
    }
    catch (IOException e) {
      throw new MessageServiceException.RequestReadException(e);
    }
  }
}
```



An `onResponse` method is also available when processing a response message.

An operation can be retrieved by using `getOperation()` or `getOperationAsString()` on the `XmlOperation` object.

Accessing Attachments for SOAP with Attachments

The policy enforcement intermediary provides an API that can be used in custom handlers to access attachments that are part of a SOAP with Attachments (SwA) message. This API is part of the `com.hp.wsm.sn.router.xml.SoapOperation` class and is therefore only available for SOAP services.

To access the soap attachments of a service request in a custom intermediary Web service handler:

- 1 Create a Handler class which extends `BaseXmlHandler` and overwrites the methods:

```
public void onRequest(XmlOperation operation)
public void onResponse(XmlOperation operation)
```

- 2 In the `onRequest` and/or `onResponse` method, verify that the `XmlOperation` parameter is an instance of `SoapOperation`.

- 3 If it is a `SoapOperation`, the attachments can be accessed by casting the `XmlOperation` to a `SoapOperation` and calling:

```
public Attachments getRequestAttachments()
public Attachments getResponseAttachments()
```

The `com.hp.wsm.sn.router.soap.Attachments` class that is returned from these operations has methods to retrieve body parts by index:

```
public BodyPart get(int i)
```

Or by name:

```
public BodyPart getAttachmentByPartName(String partName)
```

The returned type is `javax.mail.BodyPart`. Below is an example of a handler that accesses attachments from a SwA message:

```
package ...

import com.hp.wsm.sn.router.xml.handlers.BaseXmlHandler;
import com.hp.wsm.sn.router.xml.XmlOperation;
import com.hp.wsm.sn.router.xml.SoapOperation;
import com.hp.wsm.sn.router.common.message.
    MessageServiceException;
import com.hp.wsm.sn.router.soap.Attachments;

public class SoapAttachmentHandler extends BaseXmlHandler {
    public void onRequest(XmlOperation operation)
        throws MessageServiceException {
        // check that the operation is an instance of SoapOperation
        if (operation instanceof SoapOperation) {
            SoapOperation soapOp = (SoapOperation)operation;
            Attachments attachments =
                soapOp.getRequestAttachments();
            // add code to manipulate the request attachment parts.
        }
    }

    public void onResponse(XmlOperation operation)
        throws MessageServiceException.InternalError {
        // check that the operation is an instance of SoapOperation
        if (operation instanceof SoapOperation) {
            SoapOperation soapOp = (SoapOperation)operation;
            Attachments attachments =
                soapOp.getResponseAttachments();
            // add code to manipulate the response attachment parts.
        }
    }
}
```

```

    }
  }
}

```

Adding Custom Handlers to an Intermediary Web Service Definition

Custom intermediary Web services allow you to add your own custom handlers to an intermediary Web service's handler chain. In order to add a custom handler, you must first create the custom intermediary Web service and then edit the service's definition file located in the intermediary Web service jar file.

To add a custom handler:


- 1 Uncompress `<install_dir>\conf\broker\<intermediary_web_service_name>.jar`.
- 2 Using a text (or XML) editor, open `service.xml`.

- 3 Under the `<service>` element, add a `<handler>` element and include the fully qualified class name. For example:

```
<handler classname="com.company.HandlerClass" />
```

- 4 If the handler requires any properties, add them as elements under the handler class. For example:


```
<handler classname="com.company.HandlerClass" >
  <property1>foo</property1>
  <property2>
    <property name="foo" value="bar" />
  </property2>
  <ns1:property3>foo</ns1:property3>
</handler>
```

 If the property uses a namespace, you must declare the namespace as an attribute of the `<service>` element before using the namespace (`xmlns:ns1="com.company"`).

- 5 Save and close `service.xml`.
- 6 Place the custom handler class and any dependent classes in the same directory as `service.xml`.
- 7 Re-jar the intermediary Web service including the custom handler class and any dependent classes.

Deploying an Intermediary Web Service Jar

Intermediary Web service JARs are placed in the `<install_dir>/conf/broker` directory. Any intermediary Web service JARs that are in this directory are automatically deployed by the policy enforcement intermediary. When the JAR is deployed, it is automatically extracted to `<install_dir>/conf/broker` and placed in a directory that is named using the IP address of the host computer.

 Never edit the extracted files as they will be overwritten when a new JAR is deployed.

Exposing Web Service Entities by Using SOA Manager

SOA Manager creates a unique Managed Object (MO) for every managed entity. A managed entity can be a business service, Policy Enforcement Point (PEP), web service, or a web service configuration that includes multiple instances of web services. SOA Manager exposes these entities as web services. You can use the northbound interfaces to extract the web services during an integration of SOA Manager with other products.

Each MO includes operations to expose the attributes, relationships, performance, events, and so on of a managed entity. Operations with similar functionalities are grouped into port types.

The following port types are available to expose the resources of an MO:

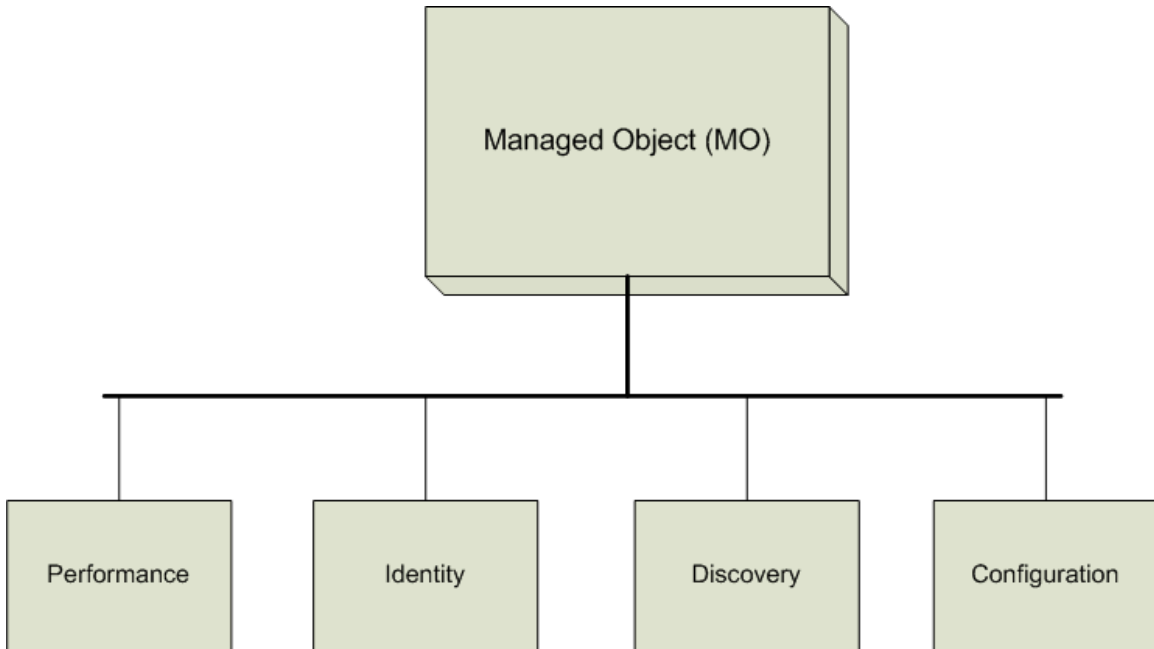
- **Identity:** This port type provides operations such as *GetManagementWsdUrl* that returns the management WSDL URL (identity) of the managed object. You can use this operation to retrieve the identity of any service or entity.
- **Discovery:** This port type provides operations such as *getRelationships* that returns the identity of the related managed objects and the type of relationship.
- **Performance:** This port type provides operations such as *QueryPerformanceData* to expose the performance metrics of a service. A service can be a business service or a Web service.
- **Configuration:** This port type provides operations such as *GetName*, *GetType*, *GetDescription*, and so on to retrieve the attributes of the type of configuration.

You can use the port types listed above and the corresponding operations with MOs that represent the following types of entities:

- SOA Manager
- Catalog services
- Business services
- PEPs

- Business content monitoring notification services

The following diagram represents the types of entities you can expose from a managed object.



In addition to the port types listed above, SOA Manager also provides alert and audit operations for all MOs. You can use these operations for reporting and alert management on the MOs. The following are the port types for alert and audit operations:

- Alert Service and Alert Source: These port types provide operations such as `queryAlerts`, `queryAlertProperties`, `deleteAlertsByIds`, `deleteAlerts`, and `getCurrentAlertSeverity` for alert management.
 - EventPull and EventPush: These port types provide operations to capture all trace information that you want to audit for Web service responses and requests. Trace information includes details about a Web service such as performance data, size, security, start and end points, success, failures, and so on.

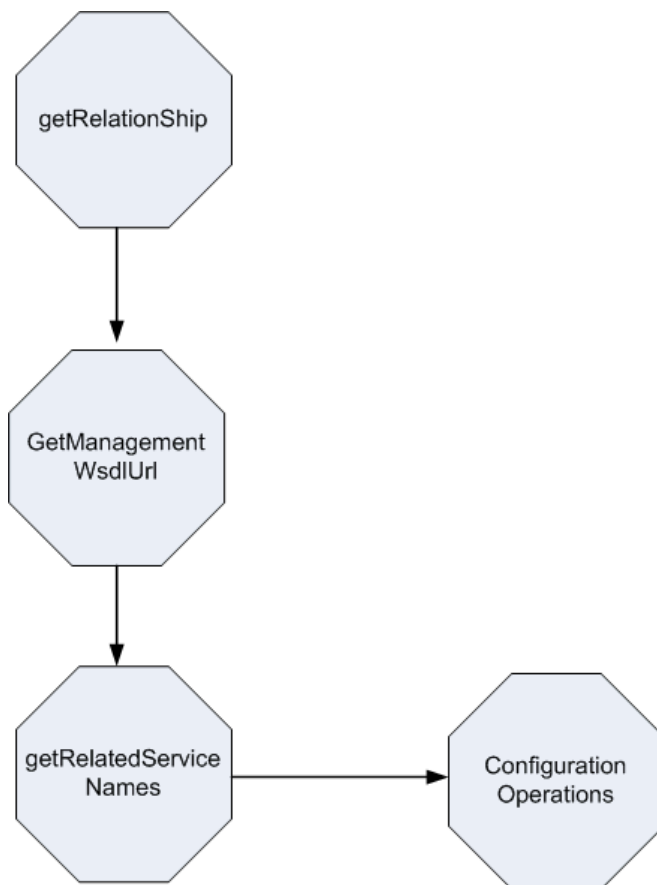
The subsequent chapters contain detailed information about the operations you can use to retrieve the entities of an MO. Following are some use cases that might help you in other product integration scenarios with SOA Manager:

- Use Case 1: Retrieving a list of business services, the attributes, and list of Web services related to the business service.
- Use Case 2: Retrieving performance metrics of a business service or a Web service.
- Use Case 3: Retrieving a list of events from an entity.

Use Case 1

To retrieve a list of business services, the attributes, and a list of web services related to the business service, you must do as follows:

- 1 Use the `getRelationship` operation to retrieve the WSDL of the MO that represents the business services and PEPs from the catalog service.
- 2 Use the `GetManagementWsdUrl` operation to retrieve the WSDL URL of the required business service. This WSDL URL represents the MO SOA Manager creates for each service.
- 3 Use the `getRelatedServiceNames` operation to retrieve a list of Web services related to the business service.
- 4 Use the operations listed in the *Configuration Operations* section to retrieve the attributes of the business service. The following figure represents the sequence of actions that you must perform.



Use Case 2

To retrieve performance metrics of an entity, you can use the *QueryPerformanceData* operation of the *ServicePerformanceSnapshotPT* (performance) port type. This operation returns the performance data from the last poll aggregated for the last six minutes, for every hour, and for a day.

Use Case 3

To retrieve a list of events from an entity, you can use the operations listed under the *EventPull* port type. These operations retrieve all the associated events with the MO from the HP SOA Manager. For example, the *GetSupportedEventTypes* operation returns the URIs for supported event types. For example, a sample output by this operation could be as follows:

The current events are
 Urn:MIPAlert
<http://schemas.hp.com/wsmf/2003/03/Foundation/Event>

Discovery Operations

The *ManagedObjectDiscoveryPT* (discovery) port type provides the *getRelationship* operation to retrieve the relationships and the types of relationships of a managed object with other managed objects. This operation returns the MO WSDL of the managed objects. The following table lists the type of relationships and the URIs that represent them.

Relationship Type	URI
ContainedIn	http://schemas.hp.com/wsmf/2003/03/Relations/ContainedIn
DependedUpon	http://schemas.hp.com/wsmf/2003/03/Relations/DependedUpon
Contains	http://schemas.hp.com/wsmf/2003/03/Relations/Contains
DependsOn	http://schemas.hp.com/wsmf/2003/03/Relations/DependsOn
CorrespondsTo	http://schemas.hp.com/wsmf/2003/03/Relations/CorrespondsTo

Refer to the following table for more information about the types of relationships returned when you use the *getRelationship* operation with different types of services.

Service Type	Returned Relationship Types
Business service	<ul style="list-style-type: none"> • ContainedIn* • Contains**
Web service intermediary	<ul style="list-style-type: none"> • ContainedIn* • Contains**

*Returns the catalog WSDL

**Returns the WSDL URL for the MO

Configuration Operations

The *ManagedObjectConfigurationPT* (configuration) port type provides the following operations to retrieve the attributes of a managed object:

- GetName
- GetType
- GetDescription
- GetOwner
- GetVendor
- GetResourceVersion
- GetManagedObjectVersion
- GetCreatedOn
- GetResourceHostName
- GetManagedObjectHostName

Performance Operations

The *ServicePerformanceSnapshotPT* port type provides the *QueryPerformanceData* operation to retrieve the performance data displayed in the HP SOA Manager web interface for a business service. The operation returns the following data for a business service:

- Availability status
- Uptime in milliseconds
- Aggregated data from the last poll
- Data for the past six minutes
- Aggregated data for one hour
- Aggregated data for a day

Alert Operations

SOA Manager used the *AlertService* and *AlertSource* port types to retrieve and manage the alerts associated with a managed object. These port types provide the following operations.

Operation	Description
deleteAlerts	This operation retrieves alerts by using the <i>queryAlerts</i> and <i>deleteAlertsByIds</i> operations. This operation converts all the retrieved alerts to the resolved state and deletes the alert.

deleteAlertsByIds	This operation changes the ID of an alert to the resolved state and deletes the alert. This operation generates an exception for an invalid alert ID and stops processing the rest of the alert IDs after encountering an invalid alert ID.
queryAlerts	This operation returns the alert details associated with an MO. This operation also returns the alerts based on the severity type specified with the operation. Refer to <i>Alert Severity Types</i> section for more information about alert severity types. This operation is similar to the deleteAlerts and deleteAlertsByIds operations, but it does not delete the alert.
sendAlert	This operation generates an alert by using the Alert Handle and sends the alert to the HP SOA Manager web interface.
queryAlertProperties	This operation retrieves the alert details based on the alert ID and creates a name-value pair and property of the alert and sends it to the HP SOA Manager web interface.
setOVMessageId	This operation adds an <i>AlertMetaData</i> for the alert in the SOA Manager database.
getCurrentAlertSeverity	This operation retrieves the alerts based on the severity type specified. For more information about the alert severity types, refer to the <i>Alerts Severity Types</i> section.

Alert Severity Types

The alert severity types and the URIs that represent the alert severity types are as follows.

Alert Severity Type	URI
Normal	http://schemas.hp.com/notiofication/severity/normal
Information	http://schemas.hp.com/notiofication/severity/info
Warning	http://schemas.hp.com/notiofication/severity/warning
Minor	http://schemas.hp.com/notiofication/severity/minor
Major	http://schemas.hp.com/notiofication/severity/major
Critical	http://schemas.hp.com/notiofication/severity/critical
Unknown	http://schemas.hp.com/notiofication/severity/unknown

You can specify the type of alert to retrieve by using the corresponding URI listed in the table.

Audit Operations

SOA Manager uses the EventPull and EventPush port types to retrieve all events from the HP SOA Manager and to subscribe for the list of event type notifications from the HP SOA Manager. The following sections include information in detail for these port types:

EventPull Port Type

You can use this port type to retrieve all the events from the HP SOA Manager. This port type provides the following operations:

- **GetSupportedEventTypes:** This operation returns the supported list of event types as URIs for the MO. The following table lists the event types and the URIs that represent the event types.

Event Type	URI
RelationshipsChanged	http://schemas.hp.com/wsmf/2003/03/Foundation/Event/RelationshipsChanged
MessageTraceNotification	http://schemas.hp.com/mip/2004/WsExecutionEnvironment/Event/MessageTraceNotification
All Events	http://schemas.hp.com/wsmf/2003/03/Foundation/Event

- **PullSubscribe:** You can use this operation to retrieve all the events from the HP SOA Manager.
- **CancelSubscription:** You can use this operation to cancel the retrieval of all the events from the HP SOA Manager.
- **GetEventsSinceId:** This operation returns the events that occurred since the event ID specified with the operation.
- **GetEventsSinceDate:** This operation returns the events that occurred since the date specified in the operation.
- **GetEventsRangeByDate:** This operations returns the events sorted according to date ranges. The operation returns the events based on the date specified.

EventPush Port Type

You can use this port type to subscribe for events and trace notifications from the HP SOA Manager. This port type provides the following operations:

- **GetSupportedEventTypes**
- **PublishSubscribe**
- **CancelSubscription**

You can use the *PublishSubscribe* operation to subscribe for notifications from the HP SOA Manager. You must provide the URI of the MO and the URI of the event type you require a subscription for, as the input parameters to this operation.

Operations for Managing HP SOA Manager

HP SOA Manager creates an MO that provides the following additional operations to manage HP SOA Manager.

Port Type	Operation	Operation Description
WseeConfigurationPT	GetConfigurationUrl	This operation returns the URL where you can configure the SOA Manager. This operation is currently not working.
ManagedObjectControlPT	SetStatus SetName	These operations allow you to specify the properties of the HP SOA Manager. Refer to the section <i>Status Parameters</i> for a list of URIs you can provide for these operations to specify the status.
ManagedObjectMonitoringPT	GetStatus	This operation retrieves the status of the HP SOA Manager.
WseeControlPT	Stop Start	These operations allow you to stop and start the HP SOA Manager. You cannot start the HP SOA Manager with this operation after you stop it.
WseeLoggingPT	getLogLevel getTrailingLogMessages setLogLevel SetLogLevelForCategory getLogLevelforCategory	These operations allow you to control the logging of the HP SOA Manager.
WseeMonitoringPT	getServices	This operation returns the services running on the Web services container. This operation is currently not working, so you can use the wsmf catalog WSDL to identify the services running on the Web service container.

Status Parameters

The following table lists the status type of the HP SOA Manager and the corresponding URIs that you can provide with the *SetStatus* and *SetName* operations.

Status Type	URI
Failed	http://schemas.hp.com/wsmf/2003/03/Foundation/Status/Failed
Inactive	http://schemas.hp.com/wsmf/2003/03/Foundation/Status/Inactive

Operational	http://schemas.hp.com/wsmf/2003/03/Foundation/Status/Operational
Starting	http://schemas.hp.com/wsmf/2003/03/Foundation/Status/Starting
Stopping	http://schemas.hp.com/wsmf/2003/03/Foundation/Status/Stopping
Unknown	http://schemas.hp.com/wsmf/2003/03/Foundation/Status/Unknown

Business Service Operations

The following table lists the additional operations that you can use to manage business services.

Port Type	Operation	Description
BusinessServiceUddiDiscovery	getRelatedServiceNames	This operation returns the names of the services related to the MO with the specified relationship type.
LifecyclePT	delete	This operation allows you to delete a business service.
ServiceMonitoringPolicyPT	GetPolicy	This operation returns the policies specified as the entry point for the business service.
	SetPolicy	This operation allows you to specify the policies to be set for the business service at entry point.

PEP Operations

SOA Manager provides the following additional operations that you can use to manage Policy Enforcement Point (PEP) services.

Port Type	Operation	Description
ItServiceResourcePT	getName	This operation returns the name of the PEP.
	unregister	This operation cancels the registration of the PEP service with the HP SOA Manager.
	getObjectNameString	This operation returns the value of the PEP service string as follows: http://soa.hp.com:5002/wsmf/services/Runtime\$service=WsmWseeItService\$IntermediaryWseeITService=Test?wsdl
ItServiceUddiDiscovery	getRelatedServiceNames	This operation returns the resource names of the services related to the PEP service. You can specify a specific type of relationship to retrieve services that have the specified relationship with the PEP service.
	findItResourceName	This operation returns the resource name of the PEP service.

	getSubType	This operation returns the type of the PEP service.
--	------------	---

Publishing the Model

You can publish the service model and the events associated with the model according to the RDF standards. SOA Manager provides the `RDFModelPublisher` port type to publish the service model. This port type provides the following operations:

- `getModel`: This operation exposes the SOA Manager model as an RDF model.
- `getCurrentModelIteration`: This operation returns the iteration number for the model. The iteration number is incremented when the model changes. You can also use this operation to provide the subscription ID of the client that uses the model. This helps in automatically extending the subscription expiry period if the client is found active.

Note: The iteration number is reset to one after the service model is restarted.

- `registerEventListener`: You can use this operation to register for notifications about the events that occur at a client that uses the model. You must provide the subscription ID of the client as the input for this operation.
- `unregisterEventListener`: You can use this operation to cancel the registration for the notifications about the events at a client. You must provide the subscription ID of the client as an input for this operation.

Refer to the *HP SOA Manager User Guide* for more information about publishing the model.

Database Integration

This chapter describes how to create SLA audit reports using the SOA Manager Server's audit database. The chapter provides a brief overview of the integration architecture and includes a reference of the schema and data dictionary of the audit database. An example of an SLA audit report is also provided.

Overview

SOA Manager has the ability to capture audit information about Web service messages into a central audit database. When a policy enforcement intermediary group is registered with HP SOA Manager, the Audit Service registers an event callback listener. Subsequently, the intermediary posts Audit Trace message lists back to the Audit Service at a configured interval. The Audit Service inserts these trace messages into the Audit database. This information in conjunction with the model relationships which are also populated into the database (such as which Business Service contains which Web services) can be used to enable reporting and analytical applications such as SLA reporting, billing, non-repudiation, forecasting, etc.

This chapter provides instructions for producing custom SLA reports based on the management data that is stored in the Audit database.

Database Schema Reference

There are two tables that are used to create SLA Audit reports:

- MESSAGE_TRACE
- MESSAGE

MESSAGE_TRACE Table

Name	Type	Description
sequenceId	xsd:string	An identifier that links together

Name	Type	Description
		<p>MessageTrace instances that represent hops between nodes (i.e. intermediaries) for the same message call. This information is currently passed between nodes in the HTTP header SequenceHeader.</p> <p>If a node receives a message that has a SequenceHeader, it should use that value to populate the sequenceId field of the MessageTrace for that message.</p> <p>If a node receives a message that does not have a SequenceHeader, the node should generate a new globally unique sequenceId. It should use this value to populate the sequenceId field of the MessageTrace for that message.</p> <p>In either case, the node should also add a SequenceHeader HTTP header to any outgoing messages associated with this call and populate it with the appropriate sequenceId.</p>
traceSourceId	xsd:string	<p>A unique identifier that identifies the source of the message trace – the intermediary that is sending the message trace to the CollectionService.</p> <p>The value is the host and port of the router sending the trace.</p>
traceSourceRole	xsd:string	<p>A string indicating the role being played by the sender of this message trace with regard to the message being traced.</p>
serviceName	xsd:string	<p>The name of the service being invoked.</p> <p>The value of this field is the name of the service element in the WSDL for this service.</p>
serviceVersion	xsd:string	<p>The version of the service being invoked.</p> <p>The value of this field is the namespace of the service element in the WSDL for this service.</p>
portType	xsd:string	<p>The WSDL portType being invoked.</p>
operation	xsd:string	<p>The WSDL operation being invoked.</p>
binding	xsd:string	<p>The WSDL binding being invoked.</p>
serviceType	xsd:string	<p>An indicator if the service is managed internally (proxy) or is outside the service network.</p> <p>This field is restricted to the values internal and external.</p>

Name	Type	Description
transportType	xsd:string	The transport on which the message traveled. This is typically http or jms.
consumerSecurityPrincipal	xsd:string	The Principal invoking the service.
providerSecurityPrincipal	xsd:string	The Principal used by the services network on behalf of the consumer.
senderURI	xsd:string	A URI identifying the message source.
receiverURI	xsd:string	A URI identifying the message destination.
duration	xsd:long	The duration in milliseconds of the call from the time the request was received by this node to when it was completed.
timestamp	xsd:dateTime	The time at which the call was received. This should be in UTC format ('Z' extension) with Millisecond (.sss) precision.
errorType	xsd:string	An indicator for the type of error that occurred, if any. This field is restricted to the values none, application, transport, timeout, marshalling, and soap fault.
requestSize	xsd:int	The size of the request in bytes.
responseSize	xsd:int	The size of the response in bytes

MESSAGE Table

This table contains actual message payloads.

Name	Type	Description
sequenceId	xsd:string	The UUID representing this message.
requestMessage	CLOB	The payload body of a request message.
responseMessage	CLOB	The payload body of a response message.

Sample SLA Reports

You can build SLA reports from the SOA Manager Audit database using a reporting package like Crystal Reports. Refer to the Audit database schema and data dictionary to understand the source of this information.

From: MM/DD/YY HH:MM:SS
 To: MM/DD/YY HH:MM:SS
 Compute over interval: MONTH / WEEK / DAY / HOUR

Consumer: <securityPrincipal>
Consumed Service: <serviceNS>:<serviceName>
Number of Requests made:
Number of Requests processed successfully:
Number of Requests failed:
%age Availability over interval: (Number of Requests processed
successfully / Number of Requests made) X 100
Max Response time:
Average Response time:

Sample SLA Reports for Month of Nov 2004

From: 11/01/04 00:00:00

To: 11/30/04 00:00:00

Compute over : DAY

Consumer: joebob

Consumed Service: http://wsm.hp.com/finance:financeServiceProxy

Time Window	Number of Requests	Number of Successes	Number of failures	% Availability	Ave Response (ms)	Max Response (ms)
11/01/04 – 11/02/04	35	24	11	68.57	274	360
11/02/04 – 11/03/04	45	44	1	97.77	248	423
...						

Consumed Service: http://wsm.hp.com/mobile:mobileServiceProxy

Time Window	Number of Requests	Number of Successes	Number of failures	% Availability	Ave Response (ms)	Max Response (ms)
11/01/04 – 11/02/04	29	29	0	100	128	175
11/02/04 – 11/03/04	13	13	0	100	110	155
...						

HP Operations Manager Integration

Overview

The HP Operations Manager software provides a fully integrated management solution for networks, systems, databases, and applications found in heterogeneous distributed IT environments. This comprehensive product suite represents a complete set of tools enabling IT organizations to improve overall availability and reliability, maintain the highest degree of management flexibility, and establish management control over virtually all aspects of an enterprise environment.

The SOA Manager software is a distributed management solution that is used to manage enterprise applications that are deployed in SOA-based environments. These applications utilize SOA principals as well as Web services standards. A unique feature of the SOA Manager software is the ability to represent the manageability of assets in a virtual management model called a business service model and expose that management model through Web services-based interfaces.

The SOA Manager Operations Manager integration gives Operations Manager the ability to manage the SOA Manager's management information together with other enterprise management data. The integration provides a means of improving the availability of enterprise resources as well as a comprehensive and centralized view of the health and well being of the resources.

The integration includes:

- The ability to view an SOA Manager service model using the HP Operations Manager Service Navigator
- The ability to view service model alert messages in the HP Operations Manager Message Browser
- The ability to acknowledge service model alerts using the HP Operations Manager Message Browser

Conceptual Architecture

The SOA Manager Operations Manager Plug-in is the main component of the integration. The Plug-in is installed on the HP Operations Manager Management Server and communicates with the SOA Manager's SOA Manager Server using a standard Web services based management protocol.

The Plug-in contains a Web service client that is used to get management information from the SOA Manager Server. This information includes the service model (business services, policy enforcement points, and so on...) and also includes any service model alerts.

In particular, two Web services are published by the SOA Manager Server and used by the plug-in:

- `RDFModelPublisher` – This Web service is used to get the SOA Manager's service model that is published as an RDF-based (Resource Description Framework) model.
- `AlertService` – This Web service is used to get and acknowledge alert messages.

The Plug-in then transforms the management information into an Operations Manager format so that it can be viewed using the HP Operations Manager Console. The Plug-in utilizes several HP Operations Manager tools to present the management information. These tools include:

- `opcservice` – This tool is used to update the Service Navigator's service map.
- `opcmsg` – This tool is used to update the Message Browser to include all alert messages.
- `opcmack` – This tool is used to synchronize messages that have been acknowledged in either the SOA Manager's web interface or the HP Operations Manager Message Browser.

Installation and Configuration

This chapter provides instructions for installing and configuring the SOA Manager Operations Manager Plug-in. If you are not familiar with HP Operations Manager, you should consult the HP Operations Manager documentation when completing the instructions in this chapter. In addition, it is recommended that a development-time installation of HP Operations Manager be used to test the SOA Manager Operations Manager Integration before installing and running on a production installation of HP Operations Manager.

Requirements

This section details the hardware and software requirements for installing and running the SOA Manager Operations Manager Plug-in. Make sure the requirements are met before beginning the installation.



Before installing the SOA Manager Operations Manager Plug-in, make sure SOA Manager is installed and operational.

Software Requirements

The following table provides a list of software that is required to install and run the SOA Manager Operations Manager Plug-in.

Table 6-1: SOA Manager Operations Manager Integration Required Software

Products	Platforms
SOA Manager 2.50	Windows: Microsoft Windows 2003 Server Unix: HP-UX PA-RISC 11.11i, HP-UX Itanium 11.23 and Red Hat Linux Advanced Server 3.0
Operations Manager 8.0 or above	HP-UX 11.23, Solaris 2.9/5.9/9.0, Solaris 2.8/5.8/8.0
JavaConsole A.08.00 (UNIX version included with HP Operations Manager)	HP-UX 11.x, Windows 2K / NT
JDK 1.4.x	HP-UX 11.23, Solaris 2.9/5.9/9.0, Solaris 2.8/5.8/8.0

Hardware Requirements

The following minimum hardware is required to install and run the SOA Manager Operations Manager Plug-in.

Table 6-2: Hardware Requirements

Requirement	Minimum
RAM	512 MB
Disk Space	50 MB

Patches

It is important that all recommended patches for Operations Manager and Java are installed prior to running the SOA Manager Operations Manager Plug-in. To find the recommended HP Operations Manager patches, go to <http://support.openview.hp.com/patches>. In the browse by product version section, select **operations for UNIX** and click the >> button. To find the recommended Java patches for HP-UX, go to <http://www.hp.com/products1/unix/java>. From the left side of the screen, click **Patches**. To find the recommended Java patches for Solaris, go to <http://sunsolve.sun.com/pubpatch> for the latest J2SE patch cluster.



Check for updated patches every few months.

Kernel Parameters

Verify that the kernel parameters meet the recommended settings to run a Java program. You can use the HPjconfig tool to determine the recommended kernel parameter settings. To download the HPjconfig tool, go to <http://www.hp.com/products1/unix/java/java2/hpjconfig>.

Installing the Plug-in

This section includes steps for installing the SOA Manager Operations Manager Plug-in on HP-UX and Solaris. The installation is performed on an Operations Manager management server. In addition, you must be logged onto the management server as root when completing the instructions in this section.

To install the SOA Manager Operations Manager plug-in:

- 1 From the SOA Manager distribution, copy `Addons/ovo/soam-ovou-hpux.depot`, `Addons/ovo/soam-ovou-hpux-itanium.depot` or `Addons/ovo/soam-ovou-solaris.depot` to a location on the management server.

- 2 From a command prompt, run:

```
swinstall -x reinstall=true -s <depot_file> \*
```

The depot is installed to `/opt/soam-ovou`. This location is referred to as `plugin_install_dir` throughout this documentation.

Setting Environment Variables

The Plug-in requires the following environment variables to be set on the HP Operations Manager management server:

- `JAVA_HOME`: Set this variable to the JDK 1.4.x installation directory.
- For HP-UX PA-RISC, set `SHLIB_PATH` to `/opt/OV/lib` or wherever `libopcdb.sl` and `libopcsv_r.sl` are located.
- For HP-UX Itanium, set `SHLIB_PATH` to `/opt/OV/lib/hpux32` or wherever `libopcdb.so` and `libopcsv_r.so` are located.
- For Solaris, set `LD_LIBRARY_PATH` to `/opt/OV/lib` or wherever `libopcdb.so` and `libopcsv_r.so` are located.

Configuring the Plug-in

This section includes instructions for configuring the Plug-in. The Plug-in is configured using the `<plugin_install_dir>/soam-ovou.properties` file. The properties file is a text file and can be edited using a text editor.

The properties file contains default values which may or may not be valid for your HP Operations Manager and SOA Manager installation. The default values must be changed before starting the Plug-in.

To configure the Plug-in:

- 1 Using a text editor, open `<plugin_install_dir>/soam-ovou.properties`.
- 2 Configure the following properties:

- **NS_BASE_URL:** Enter the URL of the SOA Manager Server. The Plug-in uses this URL to connect to the SOA Manager Server. For example:

```
http://<host>:5002
```

Replace *<host>* with either the IP address or the fully qualified DNS name of the computer where the SOA Manager Server is installed. Port 5002 is the default port used to connect to the SOA Manager Server. Change the port number if a different port is being used.
- **HP Operations Manager_ACK_OPERATOR:** Enter a valid HP Operations Manager operator username. This user name is used to connect to the HP Operations Manager server in order to synchronize acknowledged messages between the SOA Manager and HP Operations Manager Message Browser.
- **HP Operations Manager_ACK_PASSWORD:** Run the `<plugin_install_dir>/encrypt-pwd.sh` script to encrypt the HP Operations Manager operator password. The script prompts for the password and returns an encrypted password. Enter the returned encrypted password as the value of this property.
- **SERVICE_MAP_OPERATORS:** Enter a comma separated list of valid HP Operations Manager operator user names that are to be granted access to the service map.
- **OPCSERVICE:** Enter the path to the HP Operations Manager `opcservice` command line tool. The default path where this tool is located is typically `/opt/OV/bin/`. This tool is required to run the Plug-in.
- **OPCMACK:** Enter the path to the HP Operations Manager `opcmack` command line tool. The default path where this tool is located is typically `/opt/OV/bin/`. This tool is required to run the Plug-in.
- **OPCMSG:** Enter the path to the HP Operations Manager `opcmsg` command line tool. The default path where this tool is located is typically `/opt/OV/bin/`. This tool is required to run the Plug-in.
- **LISTENER_PORT:** Enter a port that is currently not being used. The port is used to listen for model change events.

3 Save and close `soam-ovou.properties`.

Creating a SOAM Message Group

The plug-in is configured to group all messages as part of the SOAM message group. This message group must be created. If the SOAM message group is not created and set to a valid operator name, the messages are sent to the Misc (miscellaneous) message group.

The following tasks are used to create a message group:

- Create a Message Group
- Modify the Operator User Profile

Create a Message Group

To create a custom message group:

- 1 From any HP Operations Manager window, open the Message Group Bank window by selecting **Window | Message Group Bank**. The HP Operations Manager Message Group Bank window displays.
- 2 From the HP Operations Manager Message Group Bank window, select **Actions | Message Groups | Add....** The Add Message Group dialog box displays.
- 3 From the Add Message Group dialog box, enter *SOAM* as the name and enter a description.
- 4 Click **OK**. The HP Operations Manager Message Group Bank window displays and the new message group is listed.
- 5 Close the Message Group Bank window.

Modify the Operator User Profile

A message group must be assigned to a valid operator profile. In these instructions, the *opc_adm* operator is modified to include the *SOAM* message group. If you are using a different operator profile, use that operator instead.

To modify the *opc_adm* user profile:

- 1 From any HP Operations Manager window, open the User Bank window by selecting **Window | User Bank**. The HP Operations Manager User Bank window displays.
- 2 From the HP Operations Manager User Bank window, right-click **opc_adm** and select **Modify**. The Modify User: *opc_adm* dialog box displays.
- 3 From the dialog box, select **Responsibilities**. The Responsibilities for Operator [*opc_adm*] dialog box displays.
- 4 From the Message Groups column, scroll to locate the *SOAM* message group.
- 5 Click the Node Group check boxes to assign the *SOAM* message group to different node groups.
- 6 Click **Close**.
- 7 From the Modify User: *opc_adm* dialog box, click **OK**.
- 8 Close the HP Operations Manager User Profile Bank window.

Starting the Plug-in

The Plug-in is started using a shell script. The script is located in the *<plugin_install_dir>*. Before starting the Plug-in, make sure that both the SOA Manager Server and the HP Operations Manager Management Server are started.

To start the plug-in:

- 1 From a command prompt, change directories to *<plugin_install_dir>*.

- 2 Run `start-soam-ovou.sh`. The Plug-in may take several minutes to start.

Stopping the Plug-in

The Plug-in is stopped using a shell script. The script is located in the `<plugin_install_dir>`.

To stop the plug-in:

- 1 From a command prompt, change directories to `<plugin_install_dir>`.
- 2 Run `stop-soam-ovou.sh`. The shutdown is complete when the following message displays in the output:

```
SOA Manager HP Operations Manager plugin stopped
```

Installing the Java Console

HP Operations Manager for UNIX includes a Java-based operator's console that is used to monitor an HP Operations Manager managed environment. In regards to the SOA Manager Operations Manager integration, the Java console is used to:

- View the status of the SOAM services.
- Perform impact analysis and root cause analysis for SOAM services.
- View and acknowledge SOAM messages.

The Java Console can run on any system where a JRE is installed. However, the instructions in this section are specific to installing the Java Console on Windows. See the HP Operations Manager documentation or the Java Console's Online Help (once you have installed the Java console on Windows) for instructions on additional platform installation instructions.

To install the Java console:

- 1 Ftp `/opt/OV/www/htdocs/ito_op/ITO_JAVA.exe` from the HP Operations Manager management server to the PC where you are installing the console.
- 2 Execute `ITO_JAVA.exe`. An install shield displays and guides you through the installation process.


Starting the Java Console

To start the Java Console:

- 1 Double-click the Java Console icon on the desktop.
- 2 Enter the following information in the HP Operations Manager Operations Login dialog box (if a different operator is configured, use that operator name instead of `opc_adm`):

— **User Name:** `opc_adm`

— **Password:** `<opc_adm password>` default password is `OpC_adm`

- **Management Server:** The full DNS name of the HP Operations Manager management server system
 - 3 Click **OK**. The Java Console starts and displays information for your HP Operations Manager environment.
 - 4 From the Object Pane, expand the **Services** node to view SOAM services.
 - 5 From the Object Pane, expand the **Message Groups** node to view the SOAM message group.
-  If you are new to the Java console, see the HP Operations Manager documentation or the Java Console's Online Help.

Uninstalling the Plug-in

To uninstall the SOA Manager Operations Manager Plug-in:

- 1 From a command prompt, run:

```
swremove SOAMSPI
```
- 2 Delete `<plugin_install_dir>`.
- 3 Delete the `/tmp/soa-map.xml` file.

Performing Standard Management Functions

This chapter provides some tasks that are typically performed when using the SOA Manager Operations Manager Integration. In particular, the following sections are included:

- Service Management
- Alert Message Management
- Using XPL Logging

Service Management

Service management is achieved using the Service Navigator that is included in the HP Operations Manager Java Console. During runtime, the SOA Manager Operations Manager Integration automatically discovers SOA Manager managed resources and represents them as a Service Map. Any deployment changes that occur in the SOA Manager environment are dynamically synchronized with the Service Map.

The Service Navigator also allows detailed management of the resources that are presented in the Service Map. The detailed management includes browsing the managed resource hierarchy, their relationships, attributes, metrics, and invocation of methods that are exposed by the resources.

Instructions for installing and starting the Java Console (including the Service Navigator) are located in Chapter 2. In addition, Online Help is available for the Java Console.

To view the service map:

- 1 Start and log in to the Java Console.
- 2 From the Object Pane, expand the **Services** node to view SOAM business services.
- 3 Right-click a business service and select **Show Graph**. The service graph displays and shows the business service model.

Starting the HP SOA Manager Web Interface

The HP SOA Manager web interface can be started from the HP Operations Manager Java Console and is a convenient way to troubleshoot business services from the console.

To start the HP SOA Manager web interface console from the HP Operations Manager Java Console:

- 1 From the Object Pane, expand the **Services** node to view SOAM business services.
- 2 Right-click a business service and select **Start --> SOA Manager GUI**. The HP SOA Manager web interface is displayed in a new Workspace window.

Alert Message Management

All alert messages generated through SOA Manager are captured and displayed in the Java Console's message browser.

To view SOA Manager alert messages:

- 1 Start and log in to the Java Console.
- 2 From the Object Pane, expand the **Message Groups** node to view the SOAM message group.
- 3 Select the SOAM message group. The message browser displays and lists all SOA Manager alert messages.
- 4 Right-click a message and select **Properties**. The Message Properties dialog box displays and lists additional details about the alert message.

Acknowledging Alert Messages

Alert messages are acknowledged using standard HP Operations Manager Console procedures and can also be acknowledged in the SOA Manager HP SOA Manager web interface. Alerts that are acknowledged in the HP Operations Manager console are automatically removed from the alert list in the HP SOA Manager web interface console and vice versa.

To acknowledge an alert message in the HP Operations Manager console, right-click on a message and select **Acknowledge**. The alert message is removed from the list of alert messages. Check the HP SOA Manager web interface Console to verify that the alert message has been removed from the SOA Manager Server as well.

Changing Message Properties

SOA Manager alert messages are organized in HP Operations Manager by the message group name (this field is named `MsgGrp`) and the Application name. The default values of these fields are respectively `SOAM` and `SOA Manager`. A custom message group and application name can be configured using the Plug-in property file.

To change message properties:

- 1 Stop the Plug-in if it is currently started.
- 2 Using a text editor, open `<plugin_install_dir>/soam-ovou.properties`.
- 3 Configure the following properties:
 - **MSG_APPLICATION**: Enter an application name. The name displays in the Application field.
 - **MSG_GROUP**: Enter a message group name. The name displays in the `MsgGrp` field and on the Object pane. The Message group must be a valid HP Operations Manager message group. See “Creating a Message Group” in Chapter 2. If the name entered is not a valid message group name, the messages are displayed as Misc (miscellaneous) messages.
- 4 Save and close `soam-ovou.properties`.
- 5 Start the Plug-in.
- 6 Start (or refresh) the HP Operations Manager Console and verify that the Application and `MsgGrp` fields are updated.

Using XPL Logging

The Plug-in uses HP Operations Manager Cross Platform (XPL) logging. Log messages are displayed in the terminal window where the Plug-in is started and written to the `log` subdirectory of the HP Operations Manager data directory (typically `/var/opt/OV`). The log file name has the format:

soam-ovou[unique].sequence.locale

For example:

`soam-ovou0.0.en_US`

This file is the first plug-in log file created for the US English locale.

XPL creates a log file for an English locale and a second file for your system’s locale if it is different from English.

XPL creates up to 10 log files, each file containing up to 1 megabyte of data. The log files will have sequence numbers 0 through 9. When the maximum number of log files is exceeded, the sequence 0 log file is overwritten.

Configuring Log Levels

You can change the log levels using the `<plugin_install_dir>/xpllogging.properties`. Alternatively, you can change the log levels by editing the `logging.properties` file in the `JDK /lib` directory. The log levels are: SEVERE, WARNING, INFO, FINE, FINER, and FINEST. By default the log level is set to Fine.

Using JRE Properties File

You can change the log level for Plug-in by editing the `logging.properties` file in the `JRE /lib` directory. For example:

```
com.hp.ov.mip.mip.rdf.client.RDFModelClient.level = INFO
```

This sets the log level to INFO. You must restart the Plug-in for the change to take effect.

Using the XPL Properties File

You can change the log level for the Plug-in by editing the `<plugin_install_dir>/xpllogging.properties` file. For example:

```
com.hp.ov.mip.mip.rdf.client.RDFModelClient.level = INFO
```

This sets the log level to INFO. You must restart the Plug-in for the change to take effect.

Troubleshooting

This chapter provides common troubleshooting tasks when using the SOA Manager Operations Manager Plug-in. In addition, refer to the *SOA Manager Release Notes* for the latest information about the SOA Manager Operations Manager Integration.

Startup Errors

The Plug-in does not start and the following log message displays:

```
Error starting event listener: java.net.BindException: Address
already in use
```

Solution:

This error occurs when either another instance of the Plug-in is currently started or when a different process is already using the port. Use the `<plugin_install_dir>/stop-soam-ovou.sh` to stop the Plug-in and then restart the Plug-in.

If the problem still occurs, use the `ps` command to manually kill the `soam-ovou` process or any other process that is using the port.

The plug-in starts with the following error:

```
Unexpected Exception when trying to fetch model from Network
Services: AxisFault

    faultCode:
{http://schemas.xmlsoap.org/soap/envelope/}Server.userException
    faultSubcode:
    faultString: java.net.ConnectException: Connection refused
    faultActor:
    faultNode:
```

Solution:

This error occurs when the URL for the Network Service server is invalid or a connection to the server failed.

- 1 Stop the plug-in.
- 2 Open `<plugin_install_dir>/soam-ovou.properties` and verify that the `NS_BASE_URL` is set to a valid host and port.
- 3 Save and close the properties file.
- 4 Start the Plug-in.

Message Errors

SOA Manager messages display in the `Misc` message group in the Java Console Message Browser.

Solution:

- 1 Stop the plug-in.
- 2 Open `<plugin_install_dir>/soam-ovou.properties`
- 3 Verify that the `MSG_GROUP` property is set to a valid HP Operations Manager message group and that the message group is assigned to the operator. See the “Creating a SOAM Message Group” section in Chapter 2.
- 4 Save and close the properties file.
- 5 Start the Plug-in.

HP BPI Integration

HP Business Process Insight (BPI) is one of the HP Software products that you can integrate with SOA Manager. You can configure instances of the HP BPI SOA Manager adapter to integrate with your SOA Manager installations. You can then configure HPBPI to link SOA Manager business events to the business flows that you define. HP SOA Manager enables you to manage your service oriented architecture (SOA) resources to ensure their reliability and optimize their performance. The combination of HP SOA Manager and HP Business Process Insight provides you with the ability to monitor the health and performance of services running within a Service Oriented Architecture. This chapter provides an overview of the integration, configuring, and troubleshooting instructions when integrating HP BPI with HP SOA Manager. Refer to the HP Business Process Insight (BPI) manuals for more information about detailed instructions and conceptual information regarding HP BPI.

Integration Instructions

The HP BPI-SOA Manager integration works as follows:

- Within the OVBPI Modeler, you are able to specify the SOA Manager Business Services on which your business flow depends.
- You then deploy your flow to the HP BPI Business Impact Engine.
- As these Business Services change state, this status information is collected from SOA Manager and your HP BPI flow reflects any resultant business impact.

For SOA Manager to be able to communicate with HP BPI you need to install and run the OVBPI SOA Manager Adapter component. This SOA Manager Adapter component can be installed on any machine that has access to your network, but typically you would install the SOA Manager Adapter component on the SOA Manager server. Refer to the BPI Installation Guide for more details.

Let's consider the architecture where you have installed HP BPI and the SOA Manager adapter on different servers where:

- You install and configure the HP BPI SOA Manager Adapter to talk to your SOA Manager installation.

- Within the HP BPI Administration Console, you configure a connection to your HP BPI SOA Manager Adapter.
- You make sure the HP BPI Service Adapters component is running, as this is the component that handles the BPI side of the SOA Manager connection. This communication uses the HP Software Web Services interface.
- When defining a flow within the HP BPI Modeler you specify the names of the SOA Manager Business Services that you wish to use. The HP BPI Modeler calls the HP BPI Service Adapters component (which, in turn, calls the HP BPI SOA Manager Adapter) to determine whether these services exist as Business Services within SOA Manager.
- You deploy your flow to the HP BPI Business Impact Engine.
- The BPI Service Adapters component polls the HP BPI SOA Manager Adapter to get status details about the SOA Manager Business Services. Any status changes for these Business Services are passed through to the HP BPI Business Impact Engine.

Configuration Instructions

Configuring the HP BPI SOA Manager integration requires some set up on both the SOA Manager server and the HP BPI server. Even if you have installed HP BPI on the same server as SOA Manager, these steps are still required:

On the HP BPI Server

You configure the SOA Manager connection details using the HP BPI Administration Console:

- 1 Select **Operational Service Sources** from the Navigation tree in the Administration Console. The right-hand pane shows a list of Operational Service Sources.
- 2 From the right-hand pane, select the **Add** button to add a new Service Source for the SOA Manager adapter instance that you have created. You are presented with the Service Oriented Architecture Manager Source Properties dialog box.
- 3 Enter values for the properties of the SOA Manager Service Source. The properties are fully described in the HP Business Process Insight Administration Guide:
 - Service Source Name
 - Description (Optional)
 - Product Name, which is set as Service Oriented Architecture Manager. The interface allows for additional Service Sources to be added in future versions of BPI.
 - Host name
 - Port
 - Status Event Poll Interval In addition, you can configure a Web Proxy for your Web Services connection if you have on

- 4 Click the **OK** button when you modifications are complete.
- 5 Make sure that the **Enabled** check box is selected in the column next to the new service source entry.
- 6 Click the **Apply** button to apply your changes
- 7 Move to the Component Status screen and stop and restart all the BPI components. The configuration is now complete and you can access SOA Manager business services from HP BPI.

On the SOA Manager Server

You need to install the HP BPI SOA Manager Adapter and configure it to talk to your SOA Manager installation. Once the BPI SOA Manager Adapter is installed and running, it is available to HP BPI.

Prerequisites for HP BPI- SOA Manager Adapter Installation

The SOA Manager adapter needs be installed only if you want to use SOA Manager as a source of operational events. The adapter can be installed on any Windows machine and configured to access the machine where SOA Manager is running.

You install the SOA Manager Adapter files from the zip archive provided on the HP BPI distribution media.



You can configure and start only one instance of the SOA Manager adapter for each installation. Starting multiple instances of the adapter from the same installation can have unpredictable results.

If you want to run multiple instances of the adapter on one machine, you can achieve this by installing the adapter multiple times and starting one adapter instance from each installation.

You need the following information available to install and set up the adapter on the SOA Manager machine.

Information	Notes
The name of the SOA Manager Web Service that Manager Web Service that contains the catalog of web services that it exposes.	This is the SOA Manager Web service that starts with the following string: WsmfServiceCatalog... The SOA Manager Web services are listed at: http://hostname:port/wsmf/services where: <ul style="list-style-type: none"> • hostname, is the host name of the machine where SOA Manager is running. This is described as the next parameter in this table. • port, is the port number used by SOA Manager to publish its Web Services. This is described more fully later in this table.
Hostname of the machine where SOA Manager is running	If no hostname is specified, a value of local host is assumed.

Port number used by SOA Manager to publish its Web Services	If no port number is specified, a value of 5002 is used.
Port Number used to publish the SOA Manager adapter as a Web Service. This is the Axis port number as installed with the adapter.	If no port number is specified, a value of 18097 is used.

Installing the HP BPI- SOA Manager Adapter

Complete the following steps to install the adapter:

- 1 Locate the zip archive file on the HP SOA Manager distribution media:
`cd-root\i386\soam-adaptor.zip`
- 2 Copy the zip archive file to the machine where you want to install the SOA Manager adapter.
- 3 Create a new directory for the SOA Manager Adapter zip archive file.
- 4 Unpack the zip archive file into the directory that you have created in the previous step.
- 5 Set the path for the Java Home directory for the adapter in the environment variable `SOAMADAPTER_JAVA_HOME`. Open a Command Window and enter:

```
set SOAMADAPTER_JAVA_HOME=java-install-dir
where java-install-dir is the location of your Java installation, for
```

example: `c:\program files\java\jdk1.5.0_08`

- 6 From a Windows Command Window, locate the following script to configure and start the adapter:
- 7 From the directory where the script is located, run the following script in a new Command Window to configure and start the adapter as follows:

```
runAdapter.bat
start runAdapter -csoa-svs-catalog -h hostname -swws-port -aadport
```

where:

`-c soa-svs-catalog` (required parameter)

`-c` takes a parameter `soa-svs-catalog`, which is the name of the SOA Manager Web Services Catalog. This is the catalog name that you identified starting with the string `WsmfServiceCatalog`.

`-h hostname` (optional parameter)

- h takes a parameter, which is the fully qualified host name of the machine where SOA Manager is running. This parameter is optional and if it is not specified, a value of localhost is assumed.
- s wsvs-port (optional parameter)
- s takes a parameter, which is the port number used by SOA Manager to publish its Web services. This parameter is optional and if it is not specified a value of 5002 is used.
- a adport (optional parameter)
- a takes a parameter, which is the port number used by Axis to publish the SOA Manager Adapter as a Web Service. This parameter is optional and if it is not specified, a value of 18097 is used.

An instance of the SOA Manager Adapter is now installed, configured and started. Do not close the Command Window where you started the adapter, or you shut down this adapter instance.

You also need to configure the adapter as an operational service source for HP BPI. You do this using the Administration Console as described in the HP Business Process Insight Administration Guide.

You can check that the adapter is configured and running at any time using the following URL:

`http://hostname:18097/axis/services/SOAMAdapter?wsdl` where hostname is the name of the machine where the adapter is installed. If the browser returns an error page, then the adapter is not running.

Stopping the SOA Manager Adapter

You stop the adapter using CTRL/C in the Command Window where you started the adapter.

SOA Manager Adapter Log Files

The SOA Manager Adapter logs errors and warnings in the following log file:
`adapter-install-dir/data/log`

Troubleshooting HP BPI Integration

If the BPI Dashboard returns an error similar to the following when you attempt to link to a SOA Manager-defined Service, it is likely to be because you are using a version of the Business Process Dashboard that does not recognize the Service definition:

File: `dash1-1_error.gif`

In this example, you are running a Business Process Dashboard based on OVBPI version 01.01. The integration with SOA Manager was introduced in OVBPI version 2.10. As a result, the OVBPI Dashboard version 01.01 does not understand the SOA Manager Service and is not able to render it.

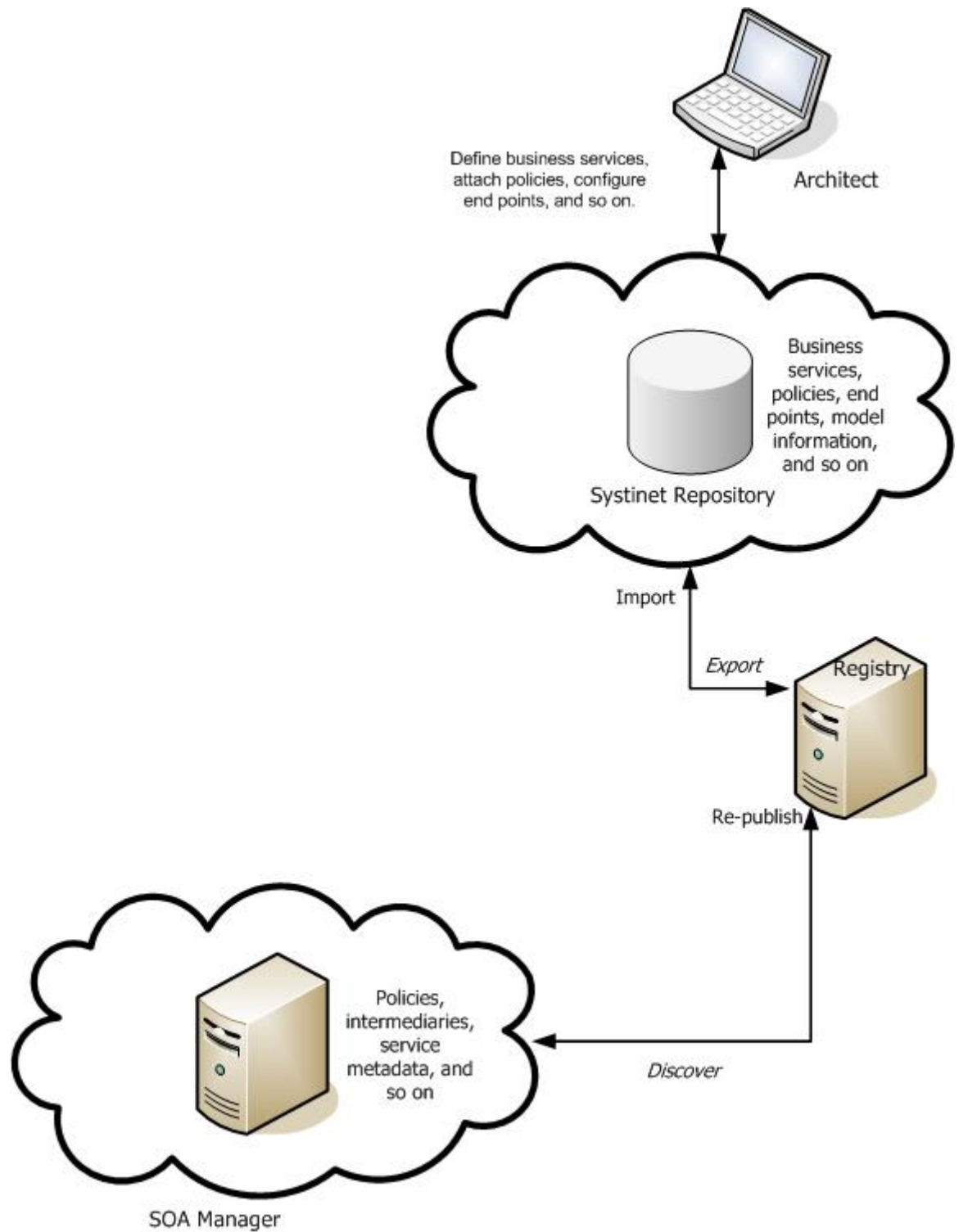
If you want to show SOA Manager Services, you need to upgrade your Business Process Dashboard to version 02.10.

HP SOA Systinet Integration- An Overview

HP SOA Manager 2.51 together with HP SOA Systinet 2.52, known as the HP SOA solution provides a complete solution across the lifecycle of SOA and allows to achieve end-to-end SOA governance. The HP SOA solution offers you a complete integrated SOA governance environment. HP provides end-to-end design-time and run-time governance by integrating HP SOA Manager with HP SOA Systinet using GIF (Governance Interoperability Framework). The GIF is designed to provide a standards-based approach to publishing and discovering business services information in a SOA across multiple vendor products. GIF improves SOA visibility, governance, and lifecycle management. During a design phase, as an architect, you can define your business services, attach policies to the service, maintain information about the service model, end points, and so on (collectively known as artifacts) using HP SOA Systinet. HP SOA Systinet maintains all this information in a location known as the repository. Systinet publishes the artifacts to a registry (UDDIv3 compliant).

Design Time and Run Time Governance

You can use HP SOA Manager to implement run time governance and management of the SOA environment. HP SOA Manager allows you to receive information about published artifacts from the registry. You can use SOA Manager to associate more policies to the published Web service, retrieve service metadata, associate Intermediaries to the Web service to bring the service under management and then publish the updated Web service back to the registry. The figure below illustrates this cycle:



Service artifacts exchange between HP SOA Manager and HP SOA Systinet

- Configure the location of the Systinet registry in SOA Manager
- Publish the runtime policies to Systinet
- Model the services in the Systinet by defining the business service, implementation service and policy information.

- Discovery of services from Systinet by SOA Manager
- Provision the discovered service to bring under management (configure last mile for policies, specify policy enforcement point location, saving and or deployment to policy enforcement point)
- Publish proxy access point and changed policy association to Systinet
- View Service Metrics from Systinet

Mapping Artifacts- SOA Manager and Systinet

The following sections provide you the conceptual information to understand the integration scenario. HP SOA Systinet business service is represented as `hpss:business` service and the business service in registry is represented as `uddi:business` service in the following sections.

The `hpss:business` service contains the following details:

- The implementation services that contain:
 - Definition of the service
 - Associated policies
- Endpoints (known as binding templates in Systinet)

Publishing Artifacts from Systinet to Registry

When you publish a business service from Systinet to the Registry, the Registry maps and maintains information about the `hpss:business` service as follows:

- TModel corresponding to the `hpss:business` service
- `uddi:business` service corresponding to the `hpss:implementation` service
- Policies associations as `uddi:keyed` references in `uddi:business` services category bag
- Endpoint information as a `uddi:binding` templates for the `uddi:business` service

Retrieving Business Services from the Registry Using SOA Manager

You can configure SOA Manager to receive subscription notifications about services that are published to the registry from Systinet. The mapping of the registry artifacts to SOA Manager artifacts is as follows:

- TModel corresponding to the `hpss:business` service maps to `soam:business` service configuration
- `uddi:business` service maps to `soam:webservice` configuration
- Policies associated to the `uddi:business` service maps to policies associated to `soam:web` service

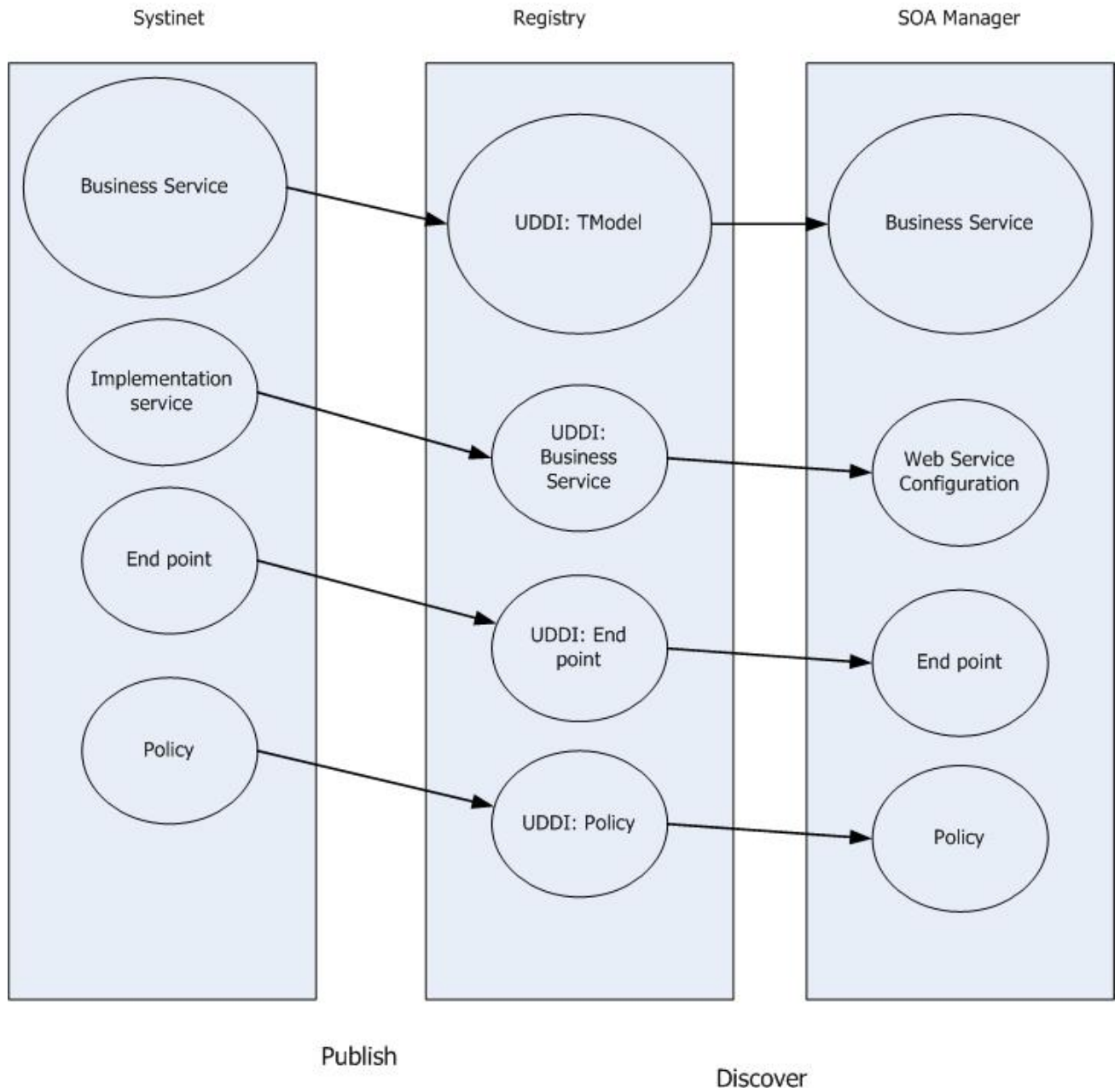


End points are not directly mapped to SOA manager artifacts, but during provisioning, you can select the binding templates from the registry that you want to use for provisioning the service.

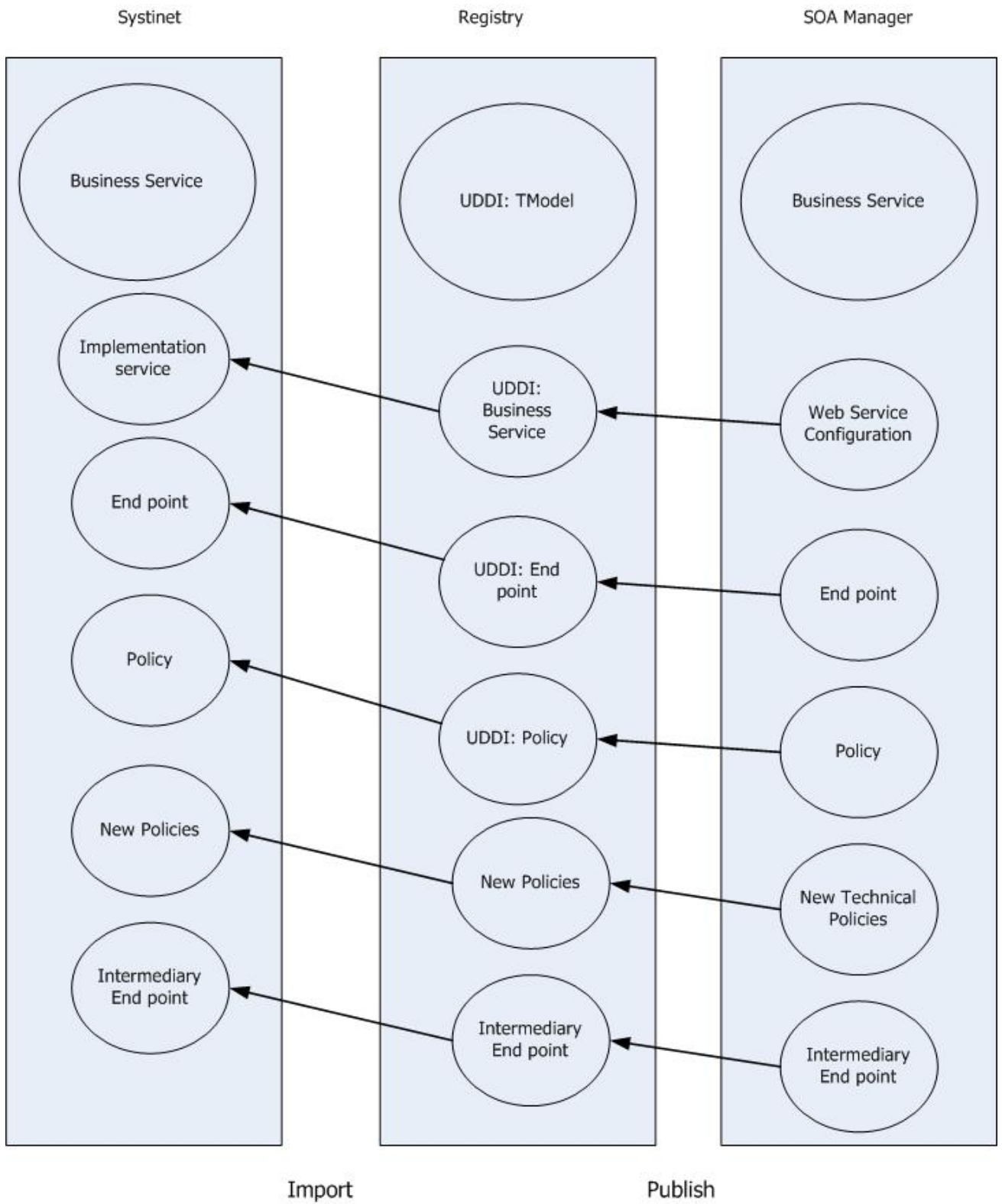
This sends the business service to SOA Manager along with the information about the policies, and endpoints.

You must provision the service retrieved from the registry using SOA Manager. You can associate additional policies and deploy the service to a policy enforcement intermediary before publishing the service back to the registry. The policy enforcement intermediary acts as the proxy for the end point that was configured initially for the business service from Systinet. This improves governance and re-usability of policies. Importing Artifacts to Systinet

The figure below illustrates how the artifacts are published from Systinet to the registry and then imported by SOA Manager.



The figure below illustrates how an imported service from the registry is updated with additional artifacts and then republished back to the registry. Systinet then imports the service from the registry.



Mapping SOA Services Model to UDDI

The SOA Manager's assets that are published to a UDDI registry can be leveraged by any application that can integrate with UDDI. This section provides a reference of how the assets are mapped in UDDI.

In particular, this section includes mappings for:

- Web services
- Technical policies

SOA Manager works with only Systinet UDDIv3 registry. You must synchronize the Systinet Registry taxonomies with the HP SOA Systinet before configuring the registry settings in SOA Manager.

Define **Managed Endpoint** represents the service managed by a Web Service Management System. It represents a proxy of the Functional Endpoint.

Functional Endpoint represents the service exposing functionality managed by a WSMS. The service is deployed on an application server.

Overview

When you publish a business service, the web services contained in that business service along with the policies associated to it are published to the registry.

Role of UDDI in the SOA

SOA implementations use UDDI as a system of record. The positioning of the role of registry technology (such as UDDI) in an SOA has evolved over the past few years since its inception. Originally, the registry was conceived as a central discovery point for design-time and run-time reuse.

However, most recent thinking in this direction is that if the registry is used as the only way to offer and discover Web services in the SOA, it provides an excellent control point to achieve Governance during various stages of development, deployment, and runtime management. Business stakeholders and enterprise architects define various policies that must be adhered to in the enterprise SOA. These policies are captured and attached to various entities in UDDI.

The UDDI Registry is used to achieve the following:

- **Reuse** – capture meta-data about Web services as well as other technology assets so that effective search capabilities from various environments may be written against the registry.
- **Policy Definition** – capture various policy definitions that provide the ability for a business person or enterprise architect to mandate policies on various entities.
- **Capture SOA Environment Model** – capture various entities participating in an SOA; their relationships; and some meaningful subset of state information about these entities. This information is used to create a standardized/normalized information store that is used to support various IT governance processes.
- **Integration** – the agreement of various participants in the SOA to settle upon ontologies that are linked together in the UDDI Registry creates very good potential for different participants to consume and populate information out of UDDI for their own narrow domains. The registry then provides a central store to create the ultimate spider that links together all this information.

Technical Policy Mapping

Technical policies defined in SOA Manager are published to UDDI registry according to : Web Services Policy Attachment, Version 1.2.

According to this specification, reusable policy expressions are registered in UDDI registry as distinct TModels. SOA Manager publishes all policies except routing and load balancing policy as distinct TModels. An example TModel is as follows:

```
<tModel tModelKey="uddi:469fef70-ac75-11dc-a342-3b4e75e1a340"
deleted="false" xmlns="urn:uddi-org:api_v3">
  <name>SchemaPolicy</name>
  <description>SchemaPolicy</description>
  <overviewDoc>
    <description>WS-Policy Expression</description>

<overviewURL>http://nt11812.asiapacific.hpqcorp.net:5002/bse_refresh/
PolicyExpression.jsp?cwcPopup=true&policy=SchemaPolicy</overviewU
RL>
  </overviewDoc>
  <categoryBag>
    <keyedReference
tModelKey="uddi:schemas.xmlsoap.org:policytypes:2003_03"
keyName="policy" keyValue
```

```

<keyedReference
tModelKey="uddi:schemas.xmlsoap.org:remotepolicyreference:2003_03"
keyName="Policy Expression for SchemaPolicy"
keyValue="http://nt11812.asiapacific.hpqcorp.net:5002/bse_refresh/PolicyExpression.jsp?cwcPopup=true&policy=KiranSchemaPolicy"/>

    <keyedReference
tModelKey="uddi:systinet.com:soa:model:taxonomies:policyTypes"
keyName="Runtime"
keyValue="uddi:systinet.com:soa:model:taxonomies:policyTypes:runtime"
/>

    <keyedReference
tModelKey="uddi:systinet.com:soa:model:taxonomies:associatedApplication"
keyName="Other"
keyValue="uddi:systinet.com:soa:model:taxonomies:associatedApplication:other"/>

</categoryBag>
</tModel

```

Apart from the taxonomies mentioned in the WS Policy Attachment Specification, additional taxonomies are published to indicate the policy type as runtime and associated application as not 'Policy Manager'

Web Service Mappings

When a web service is published to registry, the information published to registry depends on whether the web service was originally created in SOA Manager or Systinet.

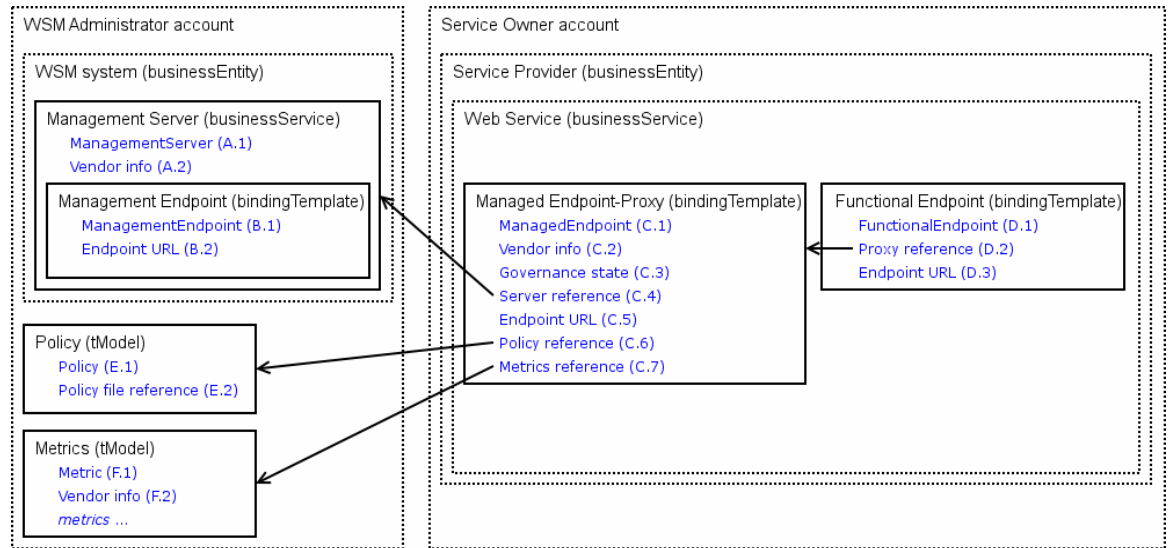
For web services created in SOA Manager initially, the following is published :

The WSDL for the proxy web service. The WSDL is published according to: *Using WSDL in a UDDI Registry, Version 2.0.2 – Technical Note*. The following UDDI entries are created:

- UDDI business service for the WSDL service
- UDDI binding template for the WSDL port
- UDDI tModel for each binding and port type
- The WSDL for the proxy Web service. The Web service WSDL is published to the UDDI registry if it does not exist in the registry already. It is published according to the technical note cited above.
- Relationships. The relationships are published as keyed references in the UDDI business service category bag. The following types of relationships are published:
 - **Reusable Policies** – A UDDI business service contains a keyed reference to indicate the reusable policies attached to the web services. Local Policy Reference taxonomy as mentioned in WS Policy Attachment specification is used to indicate this relationship
 - **Non Reusable Policies** – A UDDI business service contains a keyed reference to indicate the web service specific policies attached to it. Remote Policy Reference taxonomy as mentioned in WS Policy Attachment specification is used to indicate this relationship.

NOTE: For discovered services from systinet, the UDDI business service representing the web service is expected to be already registered in registry. Only the policy association relationship and the binding template information is updated in registry

For discovered services from systinet, the managed endpoint is published as per GIF. The figure shown below explains the mapping,



While publishing the managed endpoint following steps are followed by SOA Manager,

- The functional service's bindingTemplate (BT1) is copied to a new bindingTemplate (BT2) contained by the same businessService
- bindingTemplate (BT2) is updated with a reference to bindingTemplate (BT1) using "uddi:systinet.com:management:proxy-reference" taxonomy
- BT1's accessPoint is updated with the proxy endpoint
- Both bindingTemplates are updated with additional categorizations

An example is shown below:

```
<businessService
  serviceKey="uddi:example.com:myService:bs "
  businessKey="...">
  <name>My service</name>
  <bindingTemplates>
    <bindingTemplate
      bindingKey="uddi:example.com:myService:bt "
      serviceKey="uddi:example.com:myService:bs">
      <accessPoint URLType="http">http://example.com/myServiceProxy</accessPoint>
      <tModelInstanceDetails>
        <tModelInstanceInfo>
          ...
        </tModelInstanceInfo>
        ...
      </tModelInstanceDetails>
      <categoryBag>
        <keyedReference
```

```

        tModelKey="uddi:systinet.com:management:system"
        keyName="Management System"
        keyValue="HP SOA Manager" />
    <keyedReference
        tModelKey="uddi:systinet.com:management:type"
        keyName="Management entity type"
        keyValue="managedEndpoint" />
</keyedReference>
    <keyedReference
        tModelKey="uddi:systinet.com:management:state"
        keyName="Governance state"
        keyValue="managed" />

    <keyedReference
        tModelKey="uddi:systinet.com:management:url"
        keyName="URL from AccessPoint"
        keyValue="http://example.com/myServiceProxy" />
</categoryBag>
</bindingTemplate>

<bindingTemplate
    bindingKey="uddi:example.com:myService:functionalEndpoint"
    serviceKey="uddi:example.com:myService:bs">
    <accessPoint URLType="http">http://example.com/myService</accessPoint>
    <tModelInstanceDetails>
        ...
    </tModelInstanceDetails>
    <categoryBag>
        <keyedReference
            tModelKey="uddi:systinet.com:management:system"
            keyName="Management System"
            keyValue="HP SOA Manager" />
        <keyedReference
            tModelKey="uddi:systinet.com:management:type"
            keyName="Management entity type"
            keyValue="functionalEndpoint" />
        <keyedReference
            tModelKey="uddi:systinet.com:management:proxy-reference"
            keyName="Proxy reference"
            keyValue="uddi:example.com:myService:bt" />
    </categoryBag>
    </bindingTemplate>
</bindingTemplates>
<categoryBag>

```

```

<
    <keyedReference
        tModelKey="uddi:schemas.xmlsoap.org:remotepolicyreference:2003_03"
        keyName="Policy Expression for myServiceProxyRoutePolicy1"
        keyValue="https://soamanagerhost:5003/bse_refresh/PolicyExpression.jsp?cwcPopup=true&policy=myServiceProxyRoutePolicy1" />

    <keyedReference
        tModelKey="uddi:schemas.xmlsoap.org:localpolicyreference:2003_03"
        keyName="SchemaValidation"
        keyValue="uddi:a8666990-ac99-11dc-9cdd-a32db2519cdc" />

    <keyedReference
        tModelKey="uddi:schemas.xmlsoap.org:remotepolicyreference:2003_03"
        keyName="Policy Expression for myServiceProxyLoadBalancingPolicy"
        keyValue="https://soamanagerhost:5003/bse_refresh/PolicyExpression.jsp?cwcPopup=true&policy=myServiceProxyLoadBalancingPolicy" />

```

```

</categoryBag>
</businessService>

```

For services created in SOA Manager the proxy binding template is published according to: *Using WSDL in a UDDI Registry, Version 2.0.2 – Technical Note*

An example is shown below,

```

<businessService serviceKey="uddi:37bd5bd0-ac9a-11dc-9cdd-a32db2519cdc"
businessKey="uddi:systinet.com:demo:hr" xmlns="urn:uddi-org:api_v3">
  <name>myServiceProxy</name>
  <bindingTemplates>
    <bindingTemplate bindingKey="uddi:37e83c60-ac9a-11dc-9cdd-a32db2519cdc"
serviceKey="uddi:37bd5bd0-ac9a-11dc-9cdd-a32db2519cdc">
      <accessPoint
useType="http">http://soamanagerhost:9032/myServiceProxy/myServiceSoapSoapBindin
g</accessPoint>
      <tModelInstanceDetails>
        <tModelInstanceInfo tModelKey="uddi:37783c80-ac9a-11dc-9cdd-a32db2519cdc">
          <instanceDetails>
            <instanceParms>myServiceSoapPort</instanceParms>
          </instanceDetails>
        </tModelInstanceInfo>
        <tModelInstanceInfo tModelKey="uddi:83814670-a944-11dc-bc79-f05f9301bc77"/>
      </tModelInstanceDetails>
    </bindingTemplate>
  </bindingTemplates>
  <categoryBag>
    <keyedReference tModelKey="uddi:uddi.org:wSDL:types" keyName="WSDL Entity
type" keyValue="service"/>
    <keyedReference tModelKey="uddi:uddi.org:xml:namespace" keyName="XML
namespace" keyValue="http://wsm.hp.com/myService"/>
    <keyedReference tModelKey="uddi:uddi.org:xml:localName" keyName="XML local
name" keyValue="myServiceProxy"/>
    <keyedReference
tModelKey="uddi:schemas.xmlsoap.org:remotepolicyreference:2003_03"
keyName="Policy Expression for myServiceProxyRoutePolicy1"
keyValue="https://nttiju.asiapacific.hpqcorp.net:5003/bse_refresh/PolicyExpression.jsp?c
wcPopup=true&amp;policy=myServiceProxyRoutePolicy1"/>

```

```
<keyedReference tModelKey="uddi:schemas.xmlsoap.org:localpolicyreference:2003_03"  
keyName="SchemaValidation" keyValue="uddi:a8666990-ac99-11dc-9cdd-  
a32db2519cdc"/>
```

```
<keyedReference  
tModelKey="uddi:schemas.xmlsoap.org:remotepolicyreference:2003_03"  
keyName="Policy Expression for myServiceProxyLoadBalancingPolicy"  
keyValue="https://soamanagerhost:5003/bse_refresh/PolicyExpression.jsp?cwcPopup=tru  
e&amp;policy=myServiceProxyLoadBalancingPolicy"/>
```

```
</categoryBag>
```

```
</businessService
```



Appendix A Product Compatibility Matrix

Product Compatibility Matrix

The following table lists the HP Software products compatible for an integration with HP SOA Manager. The table also lists the versions compatible for the integration with HP SOA Manager.

Product	Version
HP Business Process Insight	2.10
HP Operations Manager for UNIX	8.1, 8.2
HP SOA Systinet	2.52 (hotfix)

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