

HP Project and Portfolio Management Center

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Web Services Guide

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

- Software version number, which indicates the software version
- Document release date, which changes each time the document is updated
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1 Getting Started with PPM Center Web Services

Overview of PPM Center Web Services

Organizations are facing an increasing need to integrate various systems and applications. Web service technology offers a standardized way of achieving such integration. This guide describes the Web services available for you to use in your HP Project and Portfolio Management Center (PPM Center) deployment. Using PPM Center Web services provides significant benefits over the Open Interface and other types of direct PPM Center database integration, and helps you efficiently achieve your strategic integration initiatives.

PPM Center includes Web service support for the following application modules:

- **HP Project Management.** Enables organizations to streamline and standardize the management of project activities using a template-based, collaborative approach.
- **HP Resource Management.** Enables enterprises to effectively manage resource capacity and allocation.
- **HP Financial Management.** Offers automatic real-time calculations of costs and variances, resulting in detailed comparisons of project health.
- **HP Time Management.** Allows resources (users) to use time sheets to report how long they worked on specific work items.
- **HP Demand Management.** Manages requests from creation to implementation. Each request is processed using a workflow that is represented graphically in the user interface.

Web Services Operations

The supported Web service operations typically include the following categories of services:

- **Create.** Used to create an entity.
- **Get.** Used to return (read) an entity.
- **Set.** Used to revise or remove (update or possibly delete) a field in an entity.
- **Add.** Used to add data to an entity.
- **Search.** Used to find a specified detail in an entity.
- **Import/Export.** Used to import the data into (or out of) PPM Center.

Web Service Special Commands

Selected Web service operations have been incorporated in PPM Center as special commands. These commands are executed through the PPM Workbench. Web service operations can also be executed from workflows in the PPM Workbench.

What's New in Web Services Version 7.5

Enhancements

Significant enhancements have been made in the following area:

- **Single sign-on support.** Deployments relying on single sign-on are now able to integrate their Web service applications with PPM Center. Support extends to SiteMinder, LDAP, and NTLM. Custom authentication modes can also be developed.

- **Web Services Toolkit.** The Toolkit can now be downloaded by all PPM Center users. There is no longer a need to contact the PPM Center administrator to obtain a copy of the Toolkit.
- **Expanded documentation.** A new *Web Services Programmer's Guide* is being developed and will include the following information:
 - How to develop PPM Center Web service applications (both Java™ and Microsoft® .NET)
 - Tips for using PPM Center special commands and Web services
 - Details on the Web service operations and special commands
 - Descriptions of the applicable data models
 - Examples

Once released, this document will be available from the HP Software Product Manuals Web site (h20230.www2.hp.com/selfsolve/manuals).

New Web Services

The following new operations are now available:

- HP Demand Management
 - executeWFTransitions
- HP Project Management
 - bulkImportProjects
 - exportWorkPlanFromProject
 - getProjectDetails
 - searchProjects
 - updateWorkPlanStatus

- HP Resource Management
 - createRoles
 - createSkills
- HP Time Management
 - approveTimeSheet
 - approveTimeSheetLine
 - cancelTimeSheet
 - closeTimeSheet
 - createTimeSheet
 - freezeTimeSheet
 - getTimeSheet
 - getTimeSheetPolicy
 - rejectTimeSheet
 - rejectTimeSheetLine
 - reworkTimeSheetLine
 - searchTimeSheets
 - submitTimeSheet
 - updateTimeSheet

Updated Web Services

Enhancements were made to the following Web services:

- HP Financial Management
 - Budget search functionality was expanded
- HP Project Management
 - Security model was aligned with that used in PPM Center

Previously Available Web Services

PPM Center Web services rely on the Apache Axis Web service framework. PPM Center versions 6.0 SP4 (and later) and 7.0 relied on the security model available in the Axis1 software and were identical in content and usage. To take advantage of enhanced security features, later versions of the PPM Center Web services are based on the Axis2 software.

One of the consequences of using the two security models is the division of Web Service Definition Language (WSDL) content. Web service operations that rely on the Axis1 model use a different WSDL file than those using the Axis2 model.

Web Service Operations

Web services operations that were available in the early versions (using Axis1) may have been:

- **Re-implemented.** Many of the version 6.0 and 7.0 Web service operations were re-implemented in versions 7.1 or 7.5 to take advantage of Axis2 security features. These Web service operations generally have the same name.

Although you may continue to use these version 6.0 and 7.0 Web services, HP strongly recommends that you convert to the new implementation as

soon as practical. Eventually, these versions will be deleted and no longer available for your use.

If you are creating new Web service applications, use the version 7.1 or 7.5 Web services.

- **Deprecated.** Some of the version 6.0 and 7.0 Web service operations are minimally used by PPM Center customers, or have had their functionality incorporated into version 7.1 or 7.5 Web services (with different names).

These Web services have been retained for interim purposes only. Eventually, these Web services will be deleted and no longer available. Therefore, you should not design long-term solutions that are reliant on these Axis1-based Web services.

- **Replaced.** Some of the version 6.0 and 7.0 Web service operations have been replaced with a version 7.1 or 7.5 implementation and the version 6.0 and 7.0 Web service is no longer available for your use.
- **Deleted.** Some of the version 6.0 and 7.0 Web service operations are no longer used and, consequently, are not available in version 7.1 or 7.5.

The following table summarizes the availability of the pre-existing Web service operations. For example, if a Web service operation is “deprecated,” it exists (in version 7.5) in its Axis1 implementation only.

Table 1-1. Availability and status matrix for Web service operations

| Status | Axis1 6.0 and 7.0 | Axis2 7.1 and 7.5 |
|----------------|------------------------------|------------------------------|
| Re-implemented | Yes | Yes |
| Deprecated | Yes | No |
| Replaced | No | Yes |
| Deleted | No | No |

Web Service Special Commands

Pre-existing Web service special commands may have been:

- **Re-implemented.** The version 6.0 and 7.0 Web service special commands were re-implemented in versions 7.1 or 7.5 to take advantage of Axis2 security features. Because these Web service special commands have the same name, additional configuration is required in the `webservices.conf` file.

Although you may continue to use these version 6.0 and 7.0 Web services, HP strongly recommends that you convert to the new implementation as soon as practical. Eventually, these versions will be deleted and no longer available for your use.

If you are creating new Web service applications, use the version 7.1 or 7.5 Web services.

- **Retained.** These version 6.0 and 7.0 Web service special commands have been retained are available with Axis1 security only. Due to security concerns, these may be deleted in some future version; however, there currently are no plans to do so.
- **Replaced.** Some of the version 6.0 and 7.0 Web service special commands have been replaced with a version 7.1 or 7.5 (Axis2) implementation. The Axis1-based special command is no longer available for your use.
- **Deleted.** Some of the version 6.0 and 7.0 Web service special commands are no longer used and, consequently, are not available in version 7.1 or 7.5.

The following table summarizes the availability of the special commands. For example, if a Web service special command is “re-implemented,” it exists (in version 7.5) with both Axis1 and Axis2 implementations.

Table 1-2. Availability and status matrix for Web service special commands

| Status | Axis1 6.0 and 7.0 | Axis2 7.1 and 7.5 |
|----------------|------------------------------|------------------------------|
| Re-implemented | Yes | Yes |
| Retained | Yes | No |
| Replaced | No | Yes |
| Deleted | No | No |

Related Documentation

The following documentation provides additional information about PPM Center:

- *What's New and What's Changed*
- *Getting Started*
- *Open Interface Guide and Reference*
- *HP Program Management User's Guide*
- *HP Portfolio Management User's Guide*
- *HP Project Management User's Guide*
- *HP Resource Management User's Guide*
- *HP Time Management User's Guide*
- *HP Demand Management User's Guide*
- *HP Financial Management User's Guide*
- *Commands, Tokens, and Validations Guide and Reference*

2 Web Service Operations and Special Commands

PPM Center Application Modules with Web Service Support

Identification and availability of the operations and special commands available in this version of PPM Center are shown in *Table 2-1* through *Table 2-5*. The version number identifying when the Web service was introduced has been included to provide historical context.

HP Demand Management

Table 2-1. HP Demand Management Web services (page 1 of 4)

| Name | Description | Introduced in Version | Available in Version 7.5 | Available Using Axis1 | Available Using Axis2 |
|-------------------------------|---|-----------------------|--------------------------|-----------------------|-----------------------|
| Web Service Operations | | | | | |
| addRequestNotes | Adds a new note to an existing PPM Center request | 7.1 | Yes | No | Yes |
| createRequest | Creates a new PPM Center request | 7.1 | Yes | No | Yes |
| deleteRequests | Deletes one or more existing PPM Center requests | 6.0 | Yes | Yes | Yes |

Table 2-1. HP Demand Management Web services (page 2 of 4)

| Name | Description | Introduced in Version | Available in Version 7.5 | Available Using Axis1 | Available Using Axis2 |
|--|--|-----------------------|--------------------------|-----------------------|-----------------------|
| executeWFTransitions | Executes a workflow transition for a PPM Center request | 7.5 | Yes | No | Yes |
| getRequests | Fetches the detail information of one or more existing PPM Center requests | 7.1 | Yes | No | Yes |
| getRequestTypeFields ^a | Fetches the description of the fields in an existing request type | 6.0 | Yes | Yes | No |
| getRequestTypesByFieldGroup ^a | Fetches the list of request types containing a particular field group | 6.0 | Yes | Yes | No |
| importRequest ^b | Creates a new PPM Center request | 6.0 | Yes | Yes | Yes |
| setRequestFields | Updates one or more simple (token-based) fields in a PPM Center request | 7.1 | Yes | No | Yes |
| setRequestRemoteReferenceStatus | Updates the status of a remote reference for a PPM Center request | 7.1 | Yes | No | Yes |

Table 2-1. HP Demand Management Web services (page 3 of 4)

| Name | Description | Introduced in Version | Available in Version 7.5 | Available Using Axis1 | Available Using Axis2 |
|------------------------------------|--|-----------------------|--------------------------|-----------------------|-----------------------|
| updateRemoteReference ^c | The following: <ul style="list-style-type: none"> • Updates the status of a remote reference for a PPM Center request • Updates one or more simple fields in a PPM Center request • Executes one or more workflow transition for a PPM Center request | 6.0 | Yes | Yes | Yes |
| Special Commands | | | | | |
| ksc_export_fields ^d | Causes the PPM Center workflow engine to invoke the Web service and update the data of the request on all the remote references associated with the request | 6.0 | Yes | Yes | Yes |

Table 2-1. HP Demand Management Web services (page 4 of 4)

| Name | Description | Introduced in Version | Available in Version 7.5 | Available Using Axis1 | Available Using Axis2 |
|---------------------------------------|--|-----------------------|--------------------------|-----------------------|-----------------------|
| ksc_export_request ^d | Causes the PPM Center workflow engine to invoke the Web service and create a request | 6.0 | Yes | Yes | Yes |
| ksc_export_status_change ^d | Causes the PPM Center workflow engine to invoke the Web service to update the current status of the request on all the remote references associated with the request, as well as update the specified data | 6.0 | Yes | Yes | Yes |

- a. Deprecated.
- b. Re-implemented as createRequest.
- c. Re-implemented as setRequestRemoteReferenceStatus, setRequestFields, and executeWFTransitions.
- d. Requires additional settings in the `webservices.conf` file (see the *Web Services Programmer's Guide* for details).

HP Financial Management

Table 2-2. HP Financial Management Web services (page 1 of 2)

| Name | Description | Introduced in Version | Available in Version 7.5 | Available Using Axis1 | Available Using Axis2 |
|-------------------------------|---|-----------------------|--------------------------|-----------------------|-----------------------|
| Web Service Operations | | | | | |
| create ^a | Causes the PPM Center workflow engine to invoke the Web service and create a new budget | 6.0 | Yes | Yes | No |
| read ^a | Causes the PPM Center workflow engine to invoke the Web service and fetch an existing budget | 6.0 | Yes | Yes | No |
| update ^a | Causes the PPM Center workflow engine to invoke the Web service and update an existing budget | 6.0 | Yes | Yes | No |
| createCostRules | Creates one or more new PPM Center cost rules | 7.1 | Yes | No | Yes |
| deleteCostRules | Deletes one or more PPM Center cost rules | 7.1 | Yes | No | Yes |
| getCostFactors | Fetches one or more existing PPM Center cost factors | 7.1 | Yes | No | Yes |

Table 2-2. HP Financial Management Web services (page 2 of 2)

| Name | Description | Introduced in Version | Available in Version 7.5 | Available Using Axis1 | Available Using Axis2 |
|---------------------------------------|---|-----------------------|--------------------------|-----------------------|-----------------------|
| getCostRules | Fetches details of one or more existing PPM Center cost rules | 7.1 | Yes | No | Yes |
| searchCostRules | Searches for existing PPM Center cost rules | 7.1 | Yes | No | Yes |
| setCostFactors | Sets PPM Center cost factors | 7.1 | Yes | No | Yes |
| updateCostRules | Updates PPM Center cost rules | 7.1 | Yes | No | Yes |
| Special Commands | | | | | |
| ksc_export_budget ^b | (not applicable) | 6.0 | No | No | No |
| ksc_export_budget_as_xml ^b | (not applicable) | 6.0 | No | No | No |

a. Deprecated.

b. Deleted.

HP Project Management

Table 2-3. HP Project Management Web services (page 1 of 2)

| Name | Description | Introduced in Version | Available in Version 7.5 | Available Using Axis1 | Available Using Axis2 |
|---------------------------------|--|-----------------------|--------------------------|-----------------------|-----------------------|
| Web Service Operations | | | | | |
| addTasksToExistingWorkPlan | Add one or more tasks to the work plan in a PPM Center project | 7.1 | Yes | No | Yes |
| bulkImportProjects ^a | Creates one or more PPM Center projects and their associated requests in one transaction | 7.5 | Yes | No | Yes |
| createBlankWorkPlan | Creates a blank PPM Center work plan | 7.1 | Yes | No | Yes |
| createProject ^a | Creates a PPM Center project and its associated request | 7.1 | Yes | No | Yes |
| createWorkPlanFromTemplate | Creates a PPM Center work plan based on a template | 7.1 | Yes | No | Yes |
| executeWorkflowTransition | Executes a single workflow transition for a PPM Center request | 7.1 | Yes | No | Yes |
| exportWorkPlanFromProject | Exports all the tasks in a PPM Center work plan | 7.5 | Yes | No | Yes |

Table 2-3. HP Project Management Web services (page 2 of 2)

| Name | Description | Introduced in Version | Available in Version 7.5 | Available Using Axis1 | Available Using Axis2 |
|-------------------------|--|-----------------------|--------------------------|-----------------------|-----------------------|
| getProjectDetails | Fetches detail information for an existing PPM Center project | 7.5 | Yes | No | Yes |
| importWorkPlanTasks | Creates a PPM Center work plan and imports the tasks | 7.1 | Yes | No | Yes |
| readTasks | Fetches the task information for one or more existing PPM Center tasks | 7.1 | Yes | No | Yes |
| searchProjects | Searches for existing PPM Center projects | 7.5 | Yes | No | Yes |
| searchTasks | Searches for existing PPM Center tasks | 7.1 | Yes | No | Yes |
| updateProject | Updates a PPM Center project | 7.1 | Yes | No | Yes |
| updateTaskActuals | Updates the actuals of PPM Center task assignments | 7.1 | Yes | No | Yes |
| updateWorkPlanStatus | Updates the status of the root task for a PPM Center project work plan | 7.5 | Yes | No | Yes |
| Special Commands | | | | | |
| None | | | | | |

a. Does not import work plans, budgets, or any other associated entity.

HP Resource Management

Table 2-4. HP Resource Management Web services (page 1 of 2)

| Name | Description | Introduced in Version | Available in Version 7.5 | Available Using Axis1 | Available Using Axis2 |
|-------------------------------|--|-----------------------|--------------------------|-----------------------|-----------------------|
| Web Service Operations | | | | | |
| createResourcePools | Creates one or more PPM Center resource pools | 7.1 | Yes | No | Yes |
| createRoles | Creates new PPM Center roles | 7.5 | Yes | No | Yes |
| createSkills | Creates new PPM Center skills | 7.5 | Yes | No | Yes |
| getResourceParticipation | Fetches resource participation, for an existing resource, in PPM Center resource pools | 7.1 | Yes | No | Yes |
| getResourcePools | Fetches details for one or more existing PPM Center resource pools | 7.1 | Yes | No | Yes |
| searchResourcePools | Searches for existing PPM Center resource pools | 7.1 | Yes | No | Yes |

Table 2-4. HP Resource Management Web services (page 2 of 2)

| Name | Description | Introduced in Version | Available in Version 7.5 | Available Using Axis1 | Available Using Axis2 |
|--------------------------|--|-----------------------|--------------------------|-----------------------|-----------------------|
| setResourceParticipation | Sets resource participation in PPM Center resource pools | 7.1 | Yes | No | Yes |
| updateResourcePools | Updates existing PPM Center resource pools | 7.1 | Yes | No | Yes |
| Special Commands | | | | | |
| None | | | | | |

HP Time Management

Table 2-5. HP Time Management Web services (page 1 of 3)

| Name | Description | Introduced in Version | Available in Version 7.5 | Available Using Axis1 | Available Using Axis2 |
|-------------------------------|--|-----------------------|--------------------------|-----------------------|-----------------------|
| Web Service Operations | | | | | |
| approveTimeSheet | Approves an existing PPM Center time sheet | 7.5 | Yes | No | Yes |
| approveTimeSheetLine | Approves an existing PPM Center time sheet line | 7.5 | Yes | No | Yes |
| cancelTimeSheet | Cancels an existing PPM Center time sheet | 7.5 | Yes | No | Yes |
| closeTimeSheet | Closes an existing PPM Center time sheet | 7.5 | Yes | No | Yes |
| createTimeSheet | Creates a new PPM Center time sheet, including lines and effort data | 7.5 | Yes | No | Yes |
| freezeTimeSheet | Freezes an existing PPM Center time sheet | 7.5 | Yes | No | Yes |
| getActualTime | Fetches specified, existing PPM Center actual time | 7.1 | Yes | No | Yes |
| getTimeSheet | Fetches an existing PPM Center time sheet | 7.5 | Yes | No | Yes |

Table 2-5. HP Time Management Web services (page 2 of 3)

| Name | Description | Introduced in Version | Available in Version 7.5 | Available Using Axis1 | Available Using Axis2 |
|---------------------|--|-----------------------|--------------------------|-----------------------|-----------------------|
| getTimeSheetPolicy | Fetches an existing PPM Center time sheet policy | 7.5 | Yes | No | Yes |
| read ^a | (not applicable) | 6.0 | No | No | No |
| rejectTimeSheet | Rejects an existing time sheet | 7.5 | Yes | No | Yes |
| rejectTimeSheetLine | Rejects an existing PPM Center time sheet line | 7.5 | Yes | No | Yes |
| reworkTimeSheetLine | Reworks an existing PPM Center time sheet | 7.5 | Yes | No | Yes |
| searchTimeSheets | Searches for existing PPM Center time sheets | 7.5 | Yes | No | Yes |
| submitTimeSheet | Submits an existing PPM Center time sheet | 7.5 | Yes | No | Yes |
| updateTimeSheet | Updates an existing PPM Center time sheet, including lines and effort data | 7.5 | Yes | No | Yes |

Table 2-5. HP Time Management Web services (page 3 of 3)

| Name | Description | Introduced in Version | Available in Version 7.5 | Available Using Axis1 | Available Using Axis2 |
|--|---|-----------------------|--------------------------|-----------------------|-----------------------|
| Special Commands | | | | | |
| ksc_export_actual_time | Causes the PPM Center workflow engine to invoke the Web service and export the specified, existing PPM Center actual time | 6.0 | Yes | No | Yes |
| ksc_export_actual_time_as_xml ^a | (not applicable) | 6.0 | No | No | No |

a. Deleted.

3 Accessing Web Services Files and Tools

WSDL and XSD Files

Versions 7.1 and 7.5

Web Service Definition Language Specification

The Web Service Definition Language (WSDL) specifications used in conjunction with PPM Center Web services can be found at the following locations on your PPM Server:

- HP Project Management

`<Host>:<Port>/itg/ppmservices/ProjectService?wsdl`

- HP Demand Management

`<Host>:<Port>/itg/ppmservices/DemandService?wsdl`

- HP Resource Management

`<Host>:<Port>/itg/ppmservices/ResourceService?wsdl`

- HP Time Management

`<Host>:<Port>/itg/ppmservices/TimeService?wsdl`

- HP Financial Management

`<Host>:<Port>/itg/ppmservices/FinanceService?wsdl`

where

`<Host>` represents the host name or IP address where your PPM Center instance is accessed.

`<Port>` represents the port number where your PPM Center instance is accessed.

`<Host>:<Port>` corresponds to the `BASE_URL` `server.conf` parameter value and is typically followed by `/itg`.

Additionally, the WSDL and XSD files are stored in Axis2 archives (`.aar` files) located on the PPM Server in the `<PPM_Home>/server/<PPM_Server_Name>/deploy/itg.war/WEB-INF/ppmservices` directory.

where

`<PPM_Home>` represents the path where your PPM Center instance is installed. For example: `xyzserver/E/PPMServer`.

`<PPM_Server_Name>` represents the name assigned to your PPM Server during installation. For example: `xyzProduction`.

This corresponds to the `KINTANA_SERVER_NAME` `server.conf` parameter value and does not necessarily reflect the actual host name of the server.

XML Schema Definition Specification

XML Schema Definition (XSD) specifications that augment the WSDL can be found at the following locations on your PPM Server:

- HP Project Management

```
<Host>:<Port>/itg/ppmservices/ProjectService?xsd=xsd0
```

- HP Demand Management

```
<Host>:<Port>/itg/ppmservices/DemandService?xsd=xsd0
```

- HP Resource Management

```
<Host>:<Port>/itg/ppmservices/ResourceService?xsd=xsd0
```

- HP Time Management

```
<Host>:<Port>/itg/ppmservices/TimeService?xsd=xsd0
```

- HP Financial Management

```
<Host>:<Port>/itg/ppmservices/FinanceService?xsd=xsd0
```

In addition to these XSD files, the following application modules also rely on a “common” XSD file.

- HP Project Management

```
<Host>:<Port>/itg/ppmservices/ProjectService?xsd=xsd1
```

- HP Demand Management

```
<Host>:<Port>/itg/ppmservices/DemandService?xsd=xsd1
```

- HP Resource Management

```
<Host>:<Port>/itg/ppmservices/ResourceService?xsd=xsd1
```

Versions 6.0 and 7.0

Web Service Definition Language Specification

The Web Service Definition Language (WSDL) specifications used in conjunction with PPM Center Web services version 6.0 can be found at the following locations on your PPM Server:

- HP Demand Management

`<Host>:<Port>/itg/services/Request?wsdl`

- HP Financial Management

`<Host>:<Port>/itg/services/Finance?wsdl`

The version 6.0 and 7.0 WSDL files do not rely on any XSD files.

Web Services Toolkit

For your convenience, HP provides the Web Services Toolkit to decrease Web service application development time.

Accessing the Toolkit

To access the Toolkit, use your Web browser to navigate to the following URL:

`<Host>:<Port>/itg/download/webservice/webservice_toolkit.zip`

The files are archived in Zip format and must be extracted before they can be used. The files can be copied to your local PC or workstation—they do not have to be installed on a PPM Server.

There are many ways to create client applications. The Toolkit provides copies of the WSDL and XSD files, along with several libraries, so that you can concentrate on your application's logic rather than worry about the framework.

Toolkit Contents

Although Web services can be implemented using numerous languages, the Toolkit currently provides only Java and .NET examples. These are included in the Toolkit in the following directories:

- `java`
- `MicrosoftDotNet`

java Directory

The Java-specific directory in the Toolkit includes the following directories and files:

- `bin` contains the scripts to set up the compiling and execution environment.
- `client`
 - `src`
 - `examples` contains subdirectories with code samples which can be used as starting point for developing custom client program logic.
 - `dm` contains an example for HP Demand Management.
 - `fm` contains an example for HP Financial Management.
 - `pm` contains an example for HP Project Management.
 - `rm` contains an example for HP Resource Management.
 - `tm` contains an example for HP Time Management.
 - `security` contains an example of the callback handler.
 - `fm60` contains an example for HP Financial Management using the version 6.0 and 7.0 Web service implementation.
 - `conf` contains example configuration files which are required for authentication—these typically require modification.

- docs
 - javadoc_7.5.zip contains all the PPM Center version 7.5 javadocs.
 - javadoc_6.0.zip contains the javadocs for the Mercury IT Governance Center version 6.0 and PPM Center version 7.0 implementations.
- lib subdirectories include all the required libraries for compiling and executing the client code, including the `webservice_client.jar`, which is the stubs generated from WSDL.
- modules contains the rampart and addressing libraries.

MicrosoftDotNet Directory Content

The .NET-specific directory of the Toolkit includes the following directories and files:

- DemandServiceTest contains an example for HP Demand Management
 - Properties contains Visual Studio and .NET configuration files.
 - Web References
 - localhostDemandService contains WSDL, XSD, and data source files.
- ProjectServiceTest contains an example for HP Project Management
 - Properties contains Visual Studio and .NET configuration files.
 - Web References
 - localhostProjectService contains WSDL, XSD, and data source files.

4 Configuring Web Services on the PPM Server

Applicable Standards, Specifications, and Compatibilities

The following standards and environments apply to the Web services implementation:

- PPM Center version 7.1 uses the Axis2 Web service framework to leverage the following capabilities:
 - Extensible and modular architecture
 - Very easy-to-define custom message routing
 - Easy addition framework for new WS-* specifications
- PPM Center version 7.1 Web services support the following standards:
 - Document/Literal model
 - SOAP 1.1 and 1.2
 - WSDL 1.1 and 2.0 (with some caveats)
 - WS-Security

See the *System Requirements and Compatibility Matrix* for a complete and current list of PPM Center requirements.

Enabling Web Services

Although automatically installed with PPM Center, Web services must be enabled before they can be used.

To enable PPM Center for Web services:

1. (Optional, although highly recommended) Create a backup copy of the `<PPM_Home>/server.conf` file where `<PPM_Home>` represents the location where your PPM Center instance is installed.
2. Open the `server.conf` file for edit.
3. Enable Web services calls by adding (or modifying) the following setting:

```
com.kintana.core.server.ENABLE_WEB_SERVICES=TRUE
```

4. Save and close the `server.conf` file.
5. Stop, then restart the PPM Server.

Optional Debug Logging Configurations

PPM Center Web services debug logging can be enabled and disabled. See the following sections for information on enabling and disabling debug logging.

Enabling Debug Logging for Web Services

Debug logging is only needed to help troubleshoot serious problems.

By default, debug logging is disabled.

To enable Web services logging, complete the following steps:

1. Open the `<PPM_Home>/conf/logging.conf` file for edit.
2. Change the logging threshold by verifying (or modifying) the following setting:

```
com.kintana.core.logging.SYSTEM_THRESHOLD = DEBUG
```

If you change the value, make note of its current setting.

3. Enable the logging level for Web services by adding (or modifying) the following setting.

```
com.kintana.core.logging.PRODUCT_FUNCTION_LOGGING_LEVEL =  
com.mercury.itg.ws, DEBUG
```

4. Save and close the `logging.conf` file.
5. Stop, then restart the PPM Server.

Disabling Debug Logging for Web Services

Once your troubleshooting is complete, Web service debug logging should be disabled.

To disable Web services logging, complete the following steps:

1. Open the `<PPM_Home>/conf/logging.conf` file for edit.
2. If you changed the logging threshold in [step 2 on page 39](#), re-instate the previous setting. This parameter is typically set as follows:

```
com.kintana.core.logging.SYSTEM_THRESHOLD = ERROR
```

3. Disable the logging level for Web services by commenting out the parameter as follows:

```
# com.kintana.core.logging.PRODUCT_FUNCTION_LOGGING_LEVEL =  
com.mercury.itg.ws, DEBUG
```

4. Save and close the `logging.conf` file.
5. Stop, then restart the PPM Server.

Web Service Security

Overview of Web Service Security

PPM Center Web service security includes support for standards for authentication as well as the flexibility to implement HTTP basic authentication and HTTPS. Details for enabling message- and transport-level security, as well as details for integrating with single sign-on software, are discussed in the following sections.

Authentication

PPM Center Web services use the Web Services Security specification (WS-Security) to secure SOAP message exchanges. PPM Center Web services rely on a Rampart module integrated with Axis2 Web service engine to provide WS-Security support.



More information about the WS-Security specification can be found at:
www.oasis-open.org/specs/index.php#wssv1.1

The WS-Security specification defines a set of standard SOAP headers to provide quality of protection through message integrity (XML signature), message confidentiality (XML encryption), and single message authentication (UsernameToken authentication, Kerberos authentication, X509 certificate authentication, and so forth). These mechanisms can be used to accommodate a wide variety of security models. The WS-Security specification is considered a message level authentication protocol because all the security information is carried within the SOAP message.

By default, PPM Center supports WS-Security username token authentication, timestamp validation, and encryption of WS-Security headers.

In addition to WS-Security, PPM Center also supports HTTP basic authentication (HTTP transport level authentication protocol), as well as HTTPS (secure) authentication.

PPM Center Web services can also be integrated with third-party single sign-on software such as SiteMinder.

Authorization

PPM Center Web services follow the same authorization model as Web applications. Refer to the *Security Model Guide and Reference* for details on specific functional areas. This document focuses only on authentication.

Message-Level Security (WS-Security Specification)

Enabling and Disabling Message-Level Security

PPM Center Web service configuration can be found in following file:

```
<PPM_Home>/server/<PPM_Server_Name>/deploy/itg.war/WEB-INF/  
conf/axis2.xml.
```

where

<PPM_Home> represents the path where your PPM Center instance is installed. For example: `xyzserver/E/PPMServer`.

<PPM_Server_Name> represents the name assigned to your PPM Server during installation. For example: `xyzProduction`.

This corresponds to the `KINTANA_SERVER_NAME` `server.conf` parameter value and does not necessarily reflect the actual host name of the server.

By default, WS-Security authentication is enabled.

In the `axis2.xml` file, the following XML section enables WS-Security.

```
<module ref="rampart" />
<parameter name="InflowSecurity">
  <action>
    <items>
      UsernameToken Timestamp Encrypt
    </items>
    <passwordCallbackClass>
      mercury.itg.ws.core.handlers.security.
      PasswordCallbackHandler
    </passwordCallbackClass>
    <decryptionPropFile>
      service.properties
    </decryptionPropFile>
  </action>
</parameter>
```

To disable WS-Security authentication, comment out all of this XML.

In the `InflowSecurity` section (of the previously described XML), the following three action items are defined:

- **UsernameToken.** Specifies that the UsernameToken security credentials should be expected in received SOAP messages.

The UsernameToken profile defines a set of SOAP headers to carry the username/password from the client to the server.
- **Timestamp.** Specifies that the Timestamp element should be validated. The default clock skew tolerance is five minutes.
- **Encrypt.** Specifies that encrypted messages should be decrypted.

The following example shows a SOAP header that does not include timestamp data or encryption:

```
<soap:Header>
  <wsse:Security xmlns:wss="http://docs.oasis-open.org/wss/
2004/01/oasis-200401-wss-wssecurity-secext-1.0.xsd"
soap:mustUnderstand="1">
    <wsse:UsernameToken xmlns:wsu="http://docs.oasis-
open.org/wss/2004/01/oasis-200401-wss-wssecurity-
utility-1.0.xsd" wsu:Id="UsernameToken-7433399">
      <wsse:Username>admin
      </wsse:Username>
      <wsse:Password Type="http://docs.oasis-open.org/wss/
2004/01/oasis-200401-wss-username-token-profile-
1.0#PasswordText">admin
      </wsse:Password>
    </wsse:UsernameToken>
  </wsse:Security>
</soap:Header>
```

Timestamp

By default, PPM Center enables Timestamp validation.

To disable Timestamp validation on the server side, remove the string “Timestamp” from the action items list in the InflowSecurity section, as shown in the following example:

```
<module ref="rampart" />
<parameter name="InflowSecurity">
  <action>
    <items>
      UsernameToken Encrypt
    </items>
    <passwordCallbackClass>
      mercury.itg.ws.core.handlers.security.
      PasswordCallbackHandler
    </passwordCallbackClass>
    <decryptionPropFile>
      service.properties
    </decryptionPropFile>
  </action>
</parameter>
```

Encryption

By default, PPM Center encrypts WS-Security username token headers.

To disable encryption, remove the string “Encrypt” from the action items list in the InflowSecurity section, as shown in the following example (which also disables Timestamp validation):

```
<module ref="rampart" />
<parameter name="InflowSecurity">
  <action>
    <items>
      UsernameToken
    </items>
    <passwordCallbackClass>
      mercury.itg.ws.core.handlers.security.
      PasswordCallbackHandler
    </passwordCallbackClass>
    <decryptionPropFile>
      service.properties
    </decryptionPropFile>
  </action>
</parameter>
```



Refer to Axis2 Rampart documentation for more information.

ws.apache.org/axis2/modules/rampart/1_0/security-module.html

Transport-Level Security

HTTP Basic Authentication

In the event it is not convenient to use WS-Security, it is possible to configure PPM Center to accept user credentials passed using HTTP basic authentication headers.

To enable HTTP basic authentication:

1. Open the `axis2.xml` file for edit.
2. Locate the `InflowBasicAuth` section.
3. Change the value of `Enforced` to `true`.

```
<parameter name="InFlowBasicAuth">  
  <Enforced>true</Enforced>  
</parameter>
```

4. Save and close the `axis2.xml` file.

When HTTP basic authentication is enabled on the PPM Server, the credential carried in HTTP authentication header is authenticated against PPM Center users' credentials.



When this mode is enabled, avoid duplication authentication by making sure that you have disabled message-level security, as described in [Message-Level Security \(WS-Security Specification\)](#) on page 42.

HTTPS

To enable HTTPS, refer to the external Web server or JBoss guide for details. To make a secure HTTPS connection from a Web service client, see the *Web Services Programmer's Guide*.

Integrating with Single Sign-On Software

Like any other PPM Center Web components, PPM Center Web services integrate with most industry standard single sign-on (SSO) systems, such as CA SiteMinder, Oracle® Identity Management, RSA Sign-On Manager, and IBM Tivoli Access Manager. Integration is accomplished through a pluggable authentication framework (similar to JAAS) and relies on the authentication framework described in *Web Service Security on page 41*.

PPM Center includes a login module for SiteMinder. For other SSO systems, additional customization may be involved.



HP will support single sign-on integration to the extent that HP API is used for this purpose. HP will provide logging information so that customers and third-party vendors can troubleshoot the integration themselves. HP will not set up the third-party system for debugging purpose. HP does not commit to changing any HP-produced code should the integration fail.

SiteMinder

The following figures show how SiteMinder is used to process authentication requests for PPM Center.

Figure 4-1 shows the steps when a *user* logs onto PPM Center through the standard interface.

1. An HTTP or HTTPS logon request is made to PPM Center.
2. The SiteMinder Web Agent intercepts the “protected” user request and redirects it to the Policy Server.
3. The Policy Server prompts for the username and password, validates the information, and then forwards the request to the PPM Center Web server module.
4. The Web server module forwards the validated logon request to the SiteMinder SSO module, after which the user is logged onto PPM Center.

Figure 4-1. Web client single sign-on authentication scenario

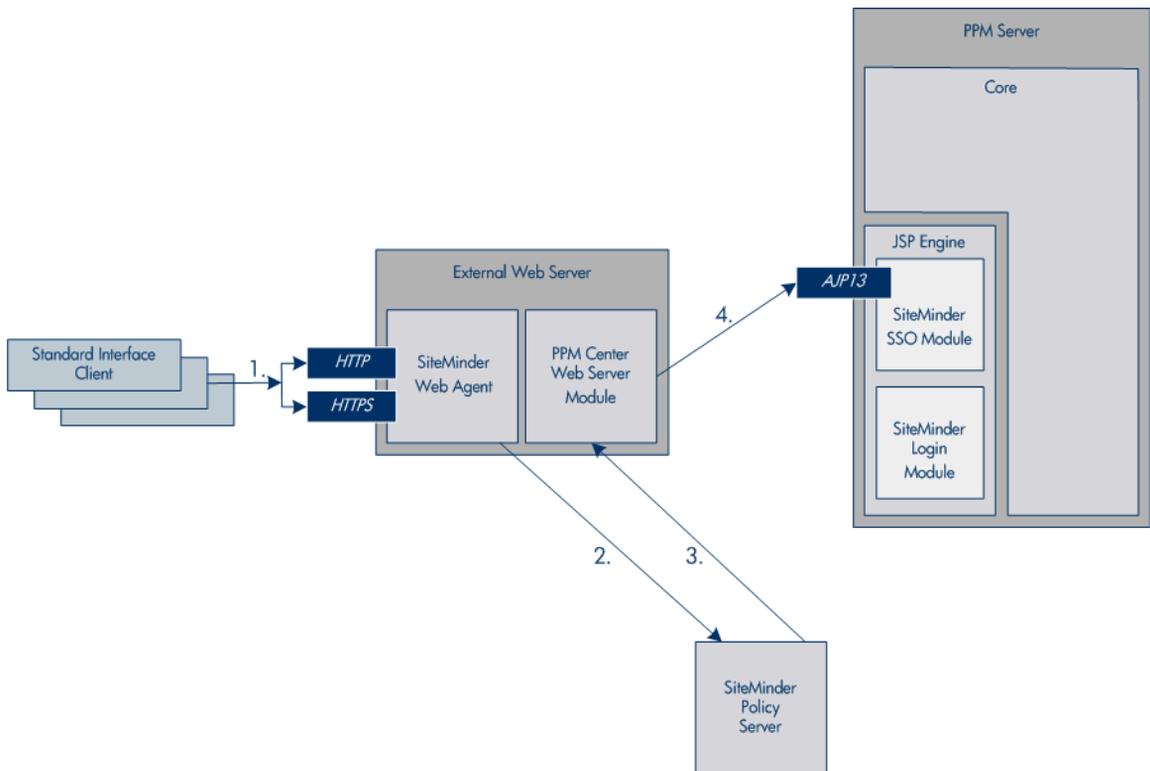
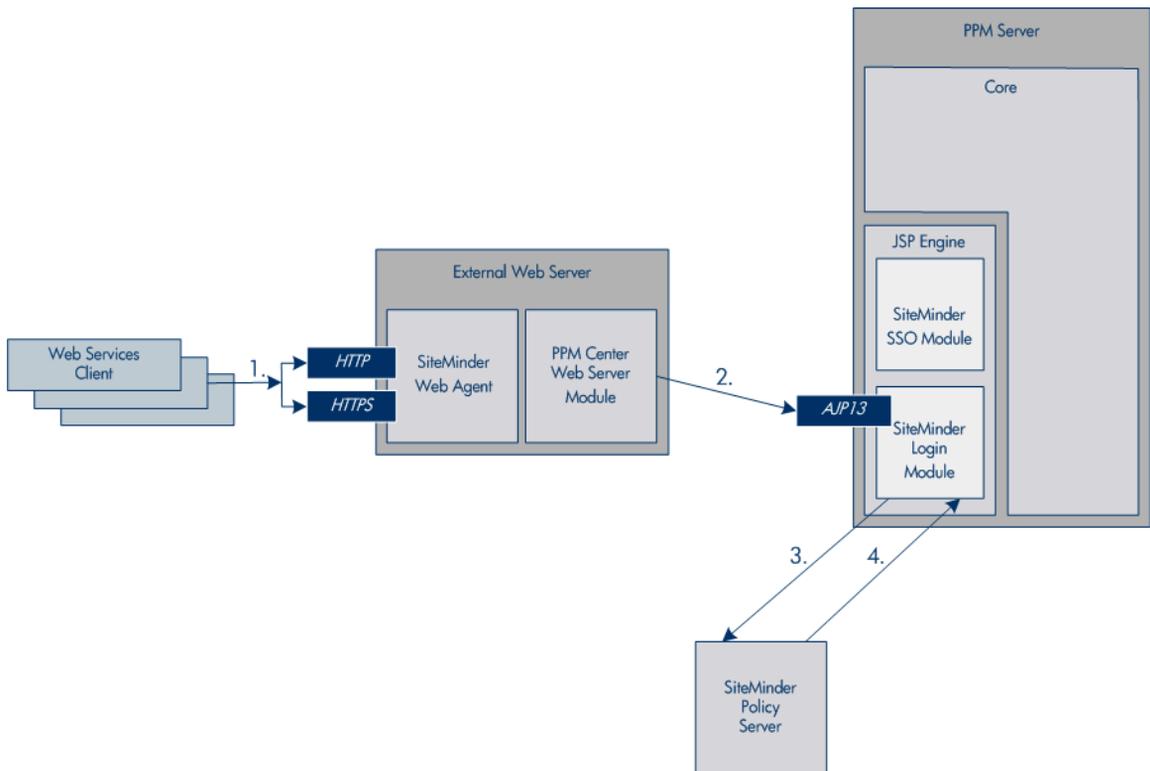


Figure 4-2 shows the steps when a *Web service* uses SiteMinder to log onto PPM Center.

1. A SOAP request is passed to PPM Center.
2. The SiteMinder Web Agent passes the “unprotected” Web service request to the SiteMinder Login Module (through the PPM Center Web server module).
3. The SiteMinder Login Agent extracts the username and password from the SOAP header and forwards the information to the SiteMinder Policy Server.
4. The Policy Server validates the information and returns the validated logon request to the Login Module, after which the Web service is logged onto PPM Center.

Figure 4-2. Web service client single sign-on scenario



SiteMinder Configuration

To configure the SiteMinder for PPM Center support, complete the following steps:

1. In SiteMinder, add the following sub realms under the PPM Center main protection realm so that the Web service URLs are unprotected. (The Web service URL would be protected by the custom SiteMinder agent created in the next step.)
 - ppmservices
 - services
2. Create a new Web agent.
 - Make sure that the 4.x compatibility flag is set.
 - Enter the server name of the PPM Center instance.
 - Enter a secret password.



Remember the agent name and the password since these values are used elsewhere.

3. Create a new Agent Config Object.
 - a. Copy the PPM Center agent's Agent Config Object.
 - b. Change the AgentName and DefaultAgentName parameters in the Agent Config Object to use the agent name created in [step 2](#).
4. Create a new realm for /itg. Choose the agent created in [step 2](#) for this realm.

PPM Server Configuration

To configure the PPM Server for single sign-on support, complete the following steps:

1. Install the SiteMinder Java Agent API for PPM Center product. Refer to *System Administration Guide and Reference* for details.
2. To configure PPM Center Web service to authenticate using SiteMinder, add following parameters to the `server.conf` file.

```
# Allow SiteMinder Login Module to be invoked for Web service
user authentication.
com.kintana.core.server.ENABLE_WEBSERVICE_SSO=false

# If SiteMinder is chosen as the only authentication mode,
individual user's authentication mode
#set through workbench's user page would be overwritten by
this mode.
com.kintana.core.server.authethentication_mode=SiteMinder

# PPM Web application would use single sign-on mode if this
parameter is set.
com.kintana.core.server.SINGLE_SIGN_ON
PLUGIN=com.kintana.sc.security.auth.SiteMinderSingleSignOn
```

The authentication mode could be set as Mixed, if needed:

```
com.kintana.core.server.authethentication_mode=ITG,
SiteMinder
```

For Web service operations, the Authentication Mode for the Web service user account(s) should be set to SiteMinder. (This is configured from the PPM Workbench **Sys Admin > Users** menu.)

3. Set the SiteMinder parameters as detailed in the *System Administration Guide and Reference*.

Use the values for the agent name and the password (established in [step 2 on page 50](#)) for the for `SM_AGENT_NAME` and `SM_SHARED_SECRET` parameters in the `<PPM_Home>/integration/siteminder/siteminder.conf` file.



A limitation of the solution is that the user is authenticated to SiteMinder for every Web service call.

Other Single Sign-On Software

To integrate with single sign-on software other than SiteMinder, additional customization might be involved depending on the SSO software deployed.

PPM Center Web service clients support HTTP basic authentication. Therefore, if the SSO system can be configured to support HTTP basic authentication, this would be the simplest solution. In this case, no customization would be needed, simply pass the users' credential through the HTTP basic authentication header to SSO systems for authentication. Refer to the *Web Services Programmer's Guide* for Web service client configuration details.

The integration can also happen at PPM Center server side by developing a custom login module (JAAS-like) that can be plugged into PPM Center. Refer to the *Web Services Programmer's Guide* to learn about developing custom authentication modules.

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