

HP Service Test Management

Software Version: 9.30

User's Guide

Document Release Date: February 2008

Software Release Date: February 2008



Legal Notices

Warranty

The only warranties for HP products and services are set forth in the express warranty statements accompanying such products and services. Nothing herein should be construed as constituting an additional warranty. HP shall not be liable for technical or editorial errors or omissions contained herein.

The information contained herein is subject to change without notice.

Restricted Rights Legend

Confidential computer software. Valid license from HP required for possession, use or copying. Consistent with FAR 12.211 and 12.212, Commercial Computer Software, Computer Software Documentation, and Technical Data for Commercial Items are licensed to the U.S. Government under vendor's standard commercial license.

Third-Party Web Sites

HP provides links to external third-party Web sites to help you find supplemental information. Site content and availability may change without notice. HP makes no representations or warranties whatsoever as to site content or availability.

Copyright Notices

© Copyright 1993 - 2008 Mercury Interactive (Israel) Ltd.

Trademark Notices

Adobe® is a trademark of Adobe Systems Incorporated.

Java™ is a US trademark of Sun Microsystems, Inc.

Microsoft® and Windows® are U.S registered trademarks of Microsoft Corporation.

Documentation Updates

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
- Software release date, which indicates the release date of this version of the software

To check for recent updates, or to verify that you are using the most recent edition of a document, go to:

<http://h20230.www2.hp.com/selfsolve/manuals>

Support

You can visit the HP Software Support Web site at: **www.hp.com/go/hpsoftwaresupport**

HP Software online support provides an efficient way to access interactive technical support tools. As a valued support customer, you can benefit by using the support site to:

- Search for knowledge documents of interest
- Submit and track support cases and enhancement requests
- Download software patches
- Manage support contracts
- Look up HP support contacts
- Review information about available services
- Enter into discussions with other software customers
- Research and register for software training

Most of the support areas require that you register as an HP Passport user and sign in. Many also require a support contract. To find more information about access levels, go to: **http://h20230.www2.hp.com/new_access_levels.jsp**

To register for an HP Passport ID, go to: **<http://h20229.www2.hp.com/passport-registration.html>**

Table of Contents

Welcome to This Guide	9
How This Guide Is Organized	9
Documentation Library	12
Typographical Conventions	15
Chapter 1: Introduction to Service Test Management.....	17
About Service Test Management	17
The Service Test Management Integrated Solution	18
Advantages of Service Test Management	19
Chapter 2: The Service Test Management Process	21
Creating Services and Service Groups	22
Generating Requirements and Tests	23
Editing Tests Using HP Service Test	23
Running Service Tests and Viewing Results	24
Updating Services and Analyzing Changes	25
Rerunning Service Tests to Verify Changes	25
Chapter 3: Setting Up Service Test Management	27
Requirements for Service Test Management	28
The Installation Process.....	28
Installing Service Test Management	30
Loading the Service Test Management License	39
Enabling the Service Test Management Extension	40
Installing the Service Test Add-in for Quality Center.....	41
The Generated Requirements Configuration File	43
Uninstalling Service Test Management.....	45
Chapter 4: Customizing Service Test Management	53
About Customizing Service Testing	53
Customizing the Services Module	54
Customizing User Group Permissions.....	59
Customizing Module Access for User Groups	61
Customizing Project Entities	63

Chapter 5: Getting Started with the Services Module	65
Accessing the Services Module	65
The Services Module Window	66
Services Menu Bar.....	67
Services Toolbars	68
Service Repository and Service Groups Tabs.....	69
Chapter 6: Creating Services	71
About Creating Services	71
Working with Toolkits	72
Creating a Services Tree.....	73
Importing Service Definitions.....	74
Creating Manually Defined Services	86
Creating Requirement Coverage for Services.....	87
Creating Service Dependencies	91
Accessing Services on Secure Sites and Proxy Servers	95
Chapter 7: Managing Services	99
About Managing Services	100
Viewing and Modifying Services.....	101
Finding Folders and Services	103
Copying Folders and Services.....	104
Mailing Services.....	105
Managing Service Definitions	108
Managing Service Details	110
Managing Service Operations	113
Associating Service Groups with Services	116
Adding Attachments to Services and Service Groups	118
Generating Excel Reports	118
Removing and Restoring Services	120
Chapter 8: Working with Service Groups	123
About Working with Service Groups	123
Creating a Service Group.....	124
Creating Requirement Coverage for Service Groups	125
Viewing and Modifying Service Group Details.....	128
Viewing and Modifying Services Assigned to Service Groups	129
Mailing Service Groups	133
Removing Service Groups	136

Chapter 9: Generating Service Requirements and Tests	137
About Generating Service Requirements and Tests	137
Selecting Testing Aspects.....	138
Generating Service Requirements and Tests Automatically	141
Creating Empty Service Tests	147
Reviewing the Generated Requirements and Tests.....	149
Chapter 10: Linking Services to Requirements	151
About Linking Services to Requirements	151
Linking Requirements to Services or Service Groups.....	153
Linking Services to Requirements	157
Chapter 11: Linking Tests to Services	161
About Linking Tests to Services.....	161
Linking Tests to Services or Service Groups	162
Linking Services to Tests.....	170
Chapter 12: Running Service Tests	175
About Running Service Tests.....	176
Viewing and Editing Service Tests.....	176
Configuring Run-Time Settings from Quality Center.....	178
Configuring Test Instance Parameters from Quality Center	181
Creating Tests Sets for Service Tests	184
Running Service Tests.....	184
Viewing Test Results	189
Chapter 13: Viewing Linked Defects	193
About Viewing Linked Defects.....	193
Viewing Defects Linked to Services or Service Groups	194
Chapter 14: Updating Services and Analyzing Service Changes	195
About Using Change Impact Analysis	196
The Service Change Workflow	197
Updating Services and Service Groups.....	198
Reviewing Service Changes	201
Creating Test Sets for Service Changes.....	206
Running Test Sets	209
Updating the Change and Service Status.....	210
Chapter 15: Analyzing Services	211
About Analyzing Services	211
Working with Service Analysis.....	212

Table of Contents

Chapter 16: Integration with HP Service Test.....	215
Creating Tests with HP Service Test.....	215
Creating a Service Emulation.....	216
Using Emulated Services in Vuser Scripts.....	225
Emulating Services from Quality Center	227
Index	229

Welcome to This Guide

Welcome to HP Service Test Management, a complete solution for managing the process of testing services and service changes in service-oriented architecture (SOA) systems. Service Test Management integrates with HP Quality Center to provide a Web-based solution for testing the quality and performance of SOA services throughout the entire application development life cycle.

Note: This guide explains how to manage service tests in conjunction with Quality Center. For additional information on using Quality Center, refer to the *HP Quality Center User's Guide*.

How This Guide Is Organized

This guide contains the following chapters:

Chapter 1 Introduction to Service Test Management

Provides an introduction to the Service Test Management model and its integration with Quality Center.

Chapter 2 The Service Test Management Process

Describes the typical Service Test Management workflow.

Chapter 3 Setting Up Service Test Management

Describes the installation requirements and setup procedures for using Service Test Management in the Quality Center application.

Chapter 4 Customizing Service Test Management

Describes how to customize the Services module, user group permissions, module access, and project entities for services and service groups.

Chapter 5 Getting Started with the Services Module

Describes the key elements in the Services module interface, including the various tabs.

Chapter 6 Creating Services

Describes how to create a services tree, import service definitions, create requirement coverage for services, access services on secure sites and proxy servers, and manually define services in the services tree.

Chapter 7 Managing Services

Describes how to view and modify service details, definitions, and operation data, generate Excel reports, remove and restore services and service groups, and associate services groups with services.

Chapter 8 Working with Service Groups

Describes how to create service groups, create requirement coverage for service groups, and assign services to service groups.

Chapter 9 Generating Service Requirements and Tests

Describes how to use the Requirement and Test Generation wizard to automatically generate requirements and tests.

Chapter 10 Linking Services to Requirements

Describes how to link requirements to services or service groups in the Linked Requirements tab. Also describes requirements coverage.

Chapter 11 Linking Tests to Services

Describes how to link tests to services or service groups in the Linked Tests tab.

Chapter 12 Running Service Tests

Describes how to edit tests and test configuration settings. Also describes how to create and run tests, and view test results.

Chapter 13 Viewing Linked Defects

Describes how to view defects linked to your services and service groups and track the progress of defect resolution.

Chapter 14 Updating Services and Analyzing Service Changes

Describes how to identify changes in services and analyze their impact on related assets in Quality Center. Also describes how to create and run test sets to test the impact of these changes.

Chapter 15 Analyzing Services

Describes how to analyze the coverage status of services using drill-down charts.

Chapter 16 Integration with HP Service Test

Describes how HP Service Test integrates with Service Test Management to let you create tests and emulated services to check and assess the quality of applications and services in your SOA systems.

Documentation Library

The Documentation Library is an online help system that describes how to use the application. When using Service Test Management in the Quality Center application, you can access the Quality Center Documentation Library or the Service Test Management Documentation Library.

- ▶ **Quality Center Documentation Library.** When working in any module other than the Services module, you can access the Quality Center Documentation Library in the following ways:
 - ▶ Click **Documentation Library** in the Help menu to open the Quality Center Documentation Library home page. The home page provides links to the Quality Center guides and references.
 - ▶ Click **Help on this page** in the Help menu to open the Documentation Library to the topic that describes the current page.
- ▶ **Service Test Management Documentation Library.** When working in the Services module, you can access the Service Test Management Documentation Library by clicking **Help on this page** in the Help menu and then clicking the **Home** page. The Service Test Management Documentation Library home page provides links to the Service Testing guides.

The Documentation Library is best viewed from a browser with Java support. If you do not have Java support on your browser, download the Sun Java plug in from the Sun Java Web site (<http://java.com/en/index.jsp>). Note that if Java support is not available, the Documentation Library automatically opens using the JavaScript implementation. The JavaScript implementation provides the same basic functionality as the Java implementation, however does not allow use of the Favorites tab within the navigation pane.

Quality Center Documentation Library Guides

The Quality Center Documentation Library consists of the following guides and references, available online, in PDF format, or both. PDFs can be read and printed using Adobe Reader which can be downloaded from the Adobe Web site (<http://www.adobe.com>).

Getting Started explains how to use the Documentation Library and how it is organized. (Available online.)

What's New? describes the newest features in the latest versions of Quality Center. (Available online and in PDF format.)

You can also access the What's New? from the Quality Center **Help** menu. In addition, you can choose **Help > Product Feature Movies** to view short movies which demonstrate the main product features.

Readme provides last-minute news and information about Quality Center.

Quality Center Guides:

HP Quality Center User's Guide explains how to use Quality Center to organize and execute all phases of the testing process. It describes how to define requirements, plan tests, run tests, and track defects. (Available online and in PDF format.)

HP Quality Center Administrator's Guide explains how to create and maintain projects using Site Administration, and how to customize projects using Project Customization. (Available online and in PDF format.)

HP Quality Center Tutorial is a self-paced guide teaching you how to use Quality Center to manage the software testing process. (Available in PDF format.)

HP Quality Center Installation Guide explains how to install Quality Center on a server machine in a cluster environment or as a stand-alone application. (Available in PDF format.)

Business Process Testing Guides:

HP Business Process Testing User's Guide explains how to use Business Process Testing to create business process tests. (Available online and in PDF format.)

HP Business Process Testing Tutorial provides a self-paced guide that teaches you the basics of Business Process Testing in the Quality Center application. (Available in PDF format.)

API References:

HP Quality Center Database Reference provides a complete online reference for the project database tables and fields. (Available online.)

HP Quality Center Open Test Architecture API Reference provides a complete online reference for the Quality Center COM-based API. You can use the Quality Center open test architecture to integrate your own configuration management, defect tracking, and home-grown testing tools with a Quality Center project. (Available online.)

HP Quality Center Site Administration API Reference provides a complete online reference for the Site Administration COM-based API. You can use the Site Administration API to enable your application to organize, manage, and maintain Quality Center users, projects, domains, connections, and site configuration parameters. (Available online.)

HP Quality Center Custom Test Type Guide provides a complete online guide on how to create your own testing tool and integrate it into the Quality Center environment. (Available online.)

Service Test Management Documentation Library Guides

The Service Test Management Documentation Library consists of the following guides, available online, in PDF format, or both. PDFs can be read and printed using Adobe Reader which can be downloaded from the Adobe Web site (<http://www.adobe.com>).

Readme provides last-minute news and information about Service Test Management.

HP Service Test Management User's Guide explains how to use Service Test Management to facilitate the complete application delivery life cycle in SOA environments. (Available online and in PDF format.)

HP Service Test User's Guide explains how to use Service Test to create scripts for SOA environments. (Available in PDF format only.)

Typographical Conventions

This guide uses the following typographical conventions:

UI Elements and Function Names	This style indicates the names of interface elements on which you perform actions, file names or paths, and other items that require emphasis. For example, “Click the Save button.” It also indicates method or function names. For example, “The wait_window statement has the following parameters:”
<i>Arguments</i>	This style indicates method, property, or function arguments and book titles. For example, “Refer to the <i>HP User’s Guide</i> .”
<Replace Value>	Angle brackets enclose a part of a file path or URL address that should be replaced with an actual value. For example, <MyProduct installation folder>\bin.
Example	This style is used for examples and text that is to be typed literally. For example, “Type Hello in the edit box.”
CTRL+C	This style indicates keyboard keys. For example, “Press ENTER.”
[]	Square brackets enclose optional arguments.
{ }	Curly brackets indicate that one of the enclosed values must be assigned to the current argument.
...	In a line of syntax, an ellipsis indicates that more items of the same format may be included. In a programming example, an ellipsis is used to indicate lines of a program that were intentionally omitted.
	A vertical bar indicates that one of the options separated by the bar should be selected.

Welcome to This Guide

1

Introduction to Service Test Management

Service Test Management provides SOA services testing and validation that enable you to improve the quality and manage the complexity associated with SOA.

This chapter includes:

- About Service Test Management on page 17
- The Service Test Management Integrated Solution on page 18
- Advantages of Service Test Management on page 19

About Service Test Management

In SOA systems, it is essential that you test the stability and quality of your applications and services before deployment. Service Test Management, in conjunction with other HP testing tools, enables you to test the services you employ to ensure that they perform their intended function and scale to meet the needs of the applications that use them.

Service Test Management adds a Services module in Quality Center that enables you to centrally manage your SOA assets. Using the Services module, you can define, import, and store services in Quality Center. After you define or import services, you can generate a set of requirements and tests to validate the functionality, interoperability, security, boundaries, standards compliance, and performance of services in your SOA environment.

You can then run services tests and view results in the Test Plan module and Test Lab module. Service Test Management also provides service change analysis that highlights changes in SOA environments and evaluates the impact that changes in a service may have. Based on these changes, Service Test Management can automatically generate the necessary tests that need to be run.

The Service Test Management Integrated Solution

Service Test Management is an integrated solution that allows you to manage the quality of services in SOA systems. It integrates the following HP products:

- ▶ **HP Quality Center.** Enables you to centrally manage SOA assets from the Services module. You can define, import, and store services in Quality Center, and generate the necessary requirements and tests.
- ▶ **HP Service Test.** Enables you to automatically create test scripts for testing your SOA environment. You can edit tests generated using Service Test Management, run tests, view results, reuse services, and create an emulation of a Web service for testing purposes.
- ▶ **HP LoadRunner/HP Performance Center.** Enable you to perform load testing on services, and monitor and predict their performance under load. HP LoadRunner Analysis allows you to drill down to determine the specific source of bottlenecks and generate actionable reports.
- ▶ **HP QuickTest Professional.** Enables you to perform functional testing of services. It supports WSDL validation so that you can import descriptions of Web services and create tests to validate them. You can ensure that services are in compliance with corporate standards so they can be reused across multiple applications.
- ▶ **HP Systinet Registry.** Enables you to import services from the HP Systinet Registry (supports Systinet 2 with Service Pack 1 or later).

Advantages of Service Test Management

Service Test Management provides the following major advantages in testing SOA services:

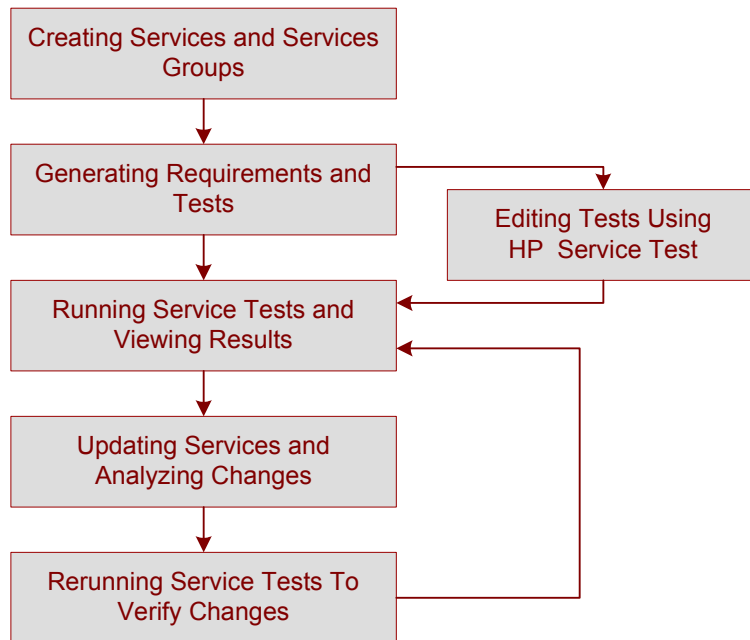
- ▶ A complete testing process that includes functional testing and performance testing.
- ▶ Automatically generated requirements and tests that validate the functionality (positive and negative), interoperability, standards compliance, security, and performance of a service.
- ▶ Reusable tests that can be combined and extended across teams, providing easier transfer of knowledge and test data.
- ▶ Change impact testing that highlights changes in SOA services and environments and evaluates the impact that changes in a service may have on different applications.
- ▶ Automatic script generation using WSDL/client recording validation/regression.
- ▶ Existing LoadRunner scripts that can be reused without any changes in Service Test, and scripts created in Service Test that can be reused in LoadRunner.
- ▶ Non-GUI testing that enables SOA services to be tested earlier in the development cycle.
- ▶ Service emulation allowing you to create a service whenever it is not available, and parameterize its response so that it can be used for early test creation.

2

The Service Test Management Process

This chapter gives you an overview of the Service Test Management process for testing services in a SOA environment.

You can perform service testing using the following process.



Creating Services and Service Groups

You create services in the Services module by adding services from your SOA environment to the services tree. You can add services by importing service definitions associated with WSDL files from a file, URL, UDDI or Systinet server. A service definition includes the service's name in the WSDL, the WSDL file location, service address (endpoint), service operations, and operation parameters. Alternatively, you can manually define services if you are using services that are not WSDL-based, or if you have no WSDLs available to test.

When you import or define a service, Service Test Management adds the service to the services tree and automatically stores the service definition in the Quality Center repository. You can define other details and attributes of the service in the Services tabs. For more information on importing and defining services, see Chapter 6, "Creating Services." For more information on managing services, see Chapter 7, "Managing Services."

You link services to other Quality Center entities (tests, test sets, and defects) through requirement coverage. When you import a service, you can link it to a new or existing requirement, a default requirement created by Service Test Management, or you can link it later. After you have linked a service to a requirement, all other Quality Center entities that are linked to the requirement are indirectly linked to the service. For more information on requirement coverage, see "Creating Requirement Coverage for Services" on page 87.

You can also link services to other services and establish dependencies between two or more services. As the operations of these linked services change, you can detect changes and establish their impact on the linked services. For more information, see "Creating Service Dependencies" on page 91.

After you import or define a service, you can assign it to service groups. Service groups allow you to organize related services into logical groupings. You might, for example, organize services into groups representing different physical deployments, business processes or transactions, or application types such as Enterprise Resource Planning (ERP) or Customer Relationship Management (CRM). For more information on creating service groups, and linking related services to these groups, see Chapter 8, “Working with Service Groups.”

Generating Requirements and Tests

You start the testing cycle by selecting the aspects you want to test for a service or group of services using the Requirement and Test Generation wizard. You can generate requirements and tests that validate the functionality, interoperability, standards compliance, boundaries, and performance of services in your SOA environment. For more information on generating requirements and tests, see Chapter 9, “Generating Service Requirements and Tests.”

After you select the testing aspects, Service Test Management creates a set of requirements and tests specifying which parts of the SOA environment to test and what to test in each part. You can refine the generated requirements and tests to suit your specific testing objectives. You can also link services to other manually created requirements and tests. For more information on linking services to requirements, see Chapter 10, “Linking Services to Requirements.” For more information on linking tests to services, see Chapter 11, “Linking Tests to Services.”

Editing Tests Using HP Service Test

After Service Test Management generates tests, you can review the tests using Service Test to determine their suitability to your testing goals. If necessary, you can refine the generated tests to expand their scope and purpose. You can add and remove service operation invocations, update argument data, add validation steps on service responses, and configure security and attachment data. For more information on using Service Test to edit service tests, see “Viewing and Editing Service Tests” on page 176.

You can also view the script's run-time settings and customize the way the script is run. If a script has parameters, you can assign values to them, or change the existing parameter values from within Quality Center. For more information, see "Configuring Run-Time Settings from Quality Center" on page 178 and "Configuring Test Instance Parameters from Quality Center" on page 181.

Running Service Tests and Viewing Results

Before running service tests, you create test sets containing the service tests. You can then run service tests and view results in the Test Lab module of Quality Center.

When you run a service test, Service Test opens and runs the test under the test configuration. When the test finishes, it reports the test results back to Quality Center, and saves them as part of the test run. You can view the results in various formats:

- ▶ View a report for each script action and a replay log from the Execution Grid. For more information, see "Viewing the Test Results Report and Log File" on page 190.
- ▶ View the results using Quality Center graphs, reports, and documents. For more information, refer to the *HP Quality Center User's Guide*.
- ▶ View service level status through requirement coverage. The view is based on the relation of a service or a group of services to a requirement. The requirement status is defined from the test execution status. For more information, see "Viewing the Linked Requirements Tab" on page 154.
- ▶ View drill-down charts to analyze the statuses of aspects and their requirements, which are a result of the test coverage of requirements. For more information, see "Analyzing Services" on page 211.
- ▶ Export Quality Center data to Microsoft Excel. This enables you to use Excel to analyze your data and present it in graphical form. For more information, see "Generating Excel Reports" on page 118.

For more information on running and viewing test results, see Chapter 12, "Running Service Tests."

After running a service test, you can create defects and link them to tests or requirements that cover the service or service group. For more information on linking defects to services, see Chapter 13, “Viewing Linked Defects.”

Updating Services and Analyzing Changes

You can reduce the risk of changes in SOA environments by checking for service updates. Service Test Management checks for updates by comparing the current WSDL file to the WSDL file stored in Quality Center. If there are updates, Service Test Management identifies any changes to the service and establishes their impact.

To verify the changes, you can create test sets containing all tests linked to the updated service, or only those tests that are using service operations affected by the changes. For more information on change impact analysis, see Chapter 14, “Updating Services and Analyzing Service Changes.”

Rerunning Service Tests to Verify Changes

After creating test sets, you can run the affected tests in the test set to verify whether these changes caused regression in service functionality and performance.

After all the changes have been successfully tested and you are satisfied with the quality of a service, you can update the service change status. For more information on creating and running test sets to verify changes, see Chapter 14, “Updating Services and Analyzing Service Changes.”

3

Setting Up Service Test Management

This chapter describes the installation requirements and setup procedures for using Service Test Management in Quality Center.

This chapter includes:

- ▶ Requirements for Service Test Management on page 28
- ▶ The Installation Process on page 28
- ▶ Installing Service Test Management on page 30
- ▶ Loading the Service Test Management License on page 39
- ▶ Enabling the Service Test Management Extension on page 40
- ▶ Installing the Service Test Add-in for Quality Center on page 41
- ▶ The Generated Requirements Configuration File on page 43
- ▶ Uninstalling Service Test Management on page 45

Requirements for Service Test Management

To use Service Test Management 9.30, you must have the following installed:

- ▶ Quality Center 9.2 (on your server machine).
- ▶ Quality Center 9.2 Patch 9 (on your server machine).
- ▶ Service Test 9.1.0 or the Service Test Add-in for Quality Center 9.2 (on your client machine).

The minimum system requirements to run Service Test Management are the same as for Quality Center, as described in the *HP Quality Center Installation Guide*.

The Installation Process

This section describes the Service Test Management installation process.

To install Service Test Management:

1 Ensure that Quality Center 9.2 is installed on your server machine.

For more information on installing Quality Center, refer to the *HP Quality Center Installation Guide*.

2 Install Quality Center 9.2 Patch 9 on your server machine.

Quality Center 9.2 Patch 9 is provided on the Service Test Management installation DVD. To install the patch, follow the on-screen installation instructions.

3 Install Service Test Management 9.30 on your server machine.

For more information on installing Service Test Management, see “Installing Service Test Management” on page 30.

4 Load the Service Test Management license.

For more information, see “Installing the Service Test Add-in for Quality Center” on page 41.

5 Enable the Service Test Management extension in Quality Center Site Administration for every project that requires Service Test Management.

For more information, see “Enabling the Service Test Management Extension” on page 40.

6 Install Service Test 9.1.0 or the Service Test Add-in for Quality Center 9.2 on each client machine.

To use all the features in Service Test Management, Service Test 9.1.0 or the Service Test Add-in for Quality Center 9.2 must be installed on each client machine from which you want to use the extension. Earlier versions of Service Test or the Service Test Add-in for Quality Center are not compatible with Service Test Management 9.30.

For more information on installing Service Test 9.1.0, refer to the *HP Service Test Installation Guide*. For more information on installing the Service Test Add-in, see “Installing the Service Test Add-in for Quality Center” on page 41.

Installing Service Test Management

The setup program provides a wizard that guides you through the installation.

To install Service Test Management:

- 1 Insert the Service Test Management installation DVD into the DVD drive and run the appropriate file.

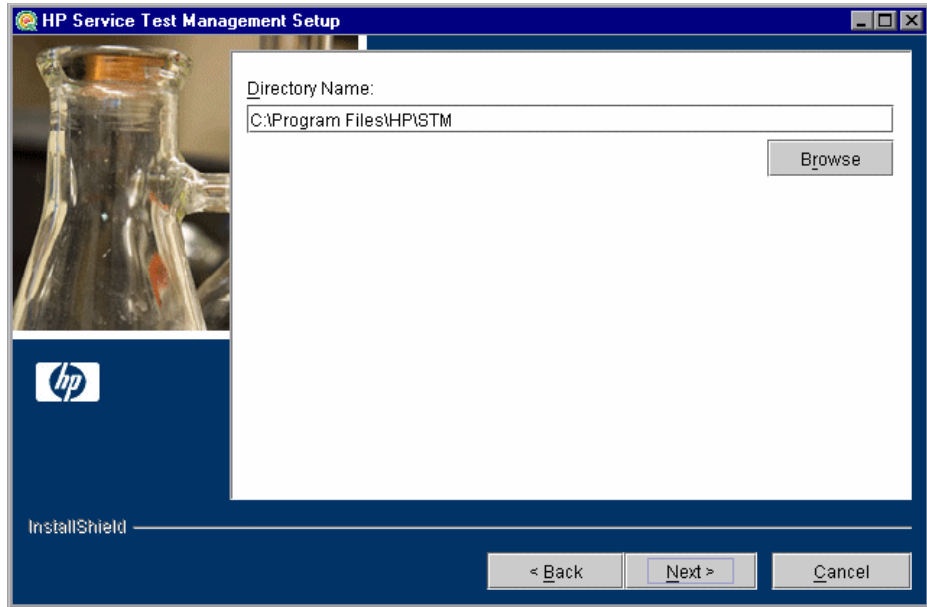
Platform	To install:
Windows	Run the setup.exe file.
Solaris or Linux (console mode)	<ul style="list-style-type: none"> ▶ To install on a Solaris platform, type: ./setupSolaris.bin -console ▶ To install on a Linux platform, type: ./setupLinux.bin -console
Solaris, Linux, or AIX (UI mode)	<p>Make sure that the DISPLAY environment variable is properly configured on the Quality Center host machine, and that the machine from which you are installing is running an X-server (for example, Exceed).</p> <ul style="list-style-type: none"> ▶ To install on a Solaris platform, type: ./setupSolaris.bin ▶ To install on a Linux platform, type: ./setupLinux.bin ▶ To install on an AIX, type: ./setupAix.bin

- 2 If you have installed a previous version of Service Test Management, a warning message opens. Click **Yes** to overwrite the existing files.
- 3 The Welcome dialog box opens. Click **Next**.
- 4 The License Agreement dialog box opens.

Read the license agreement. To accept the terms of the license agreement, select **I accept the terms of the license agreement**.

Click **Next**.

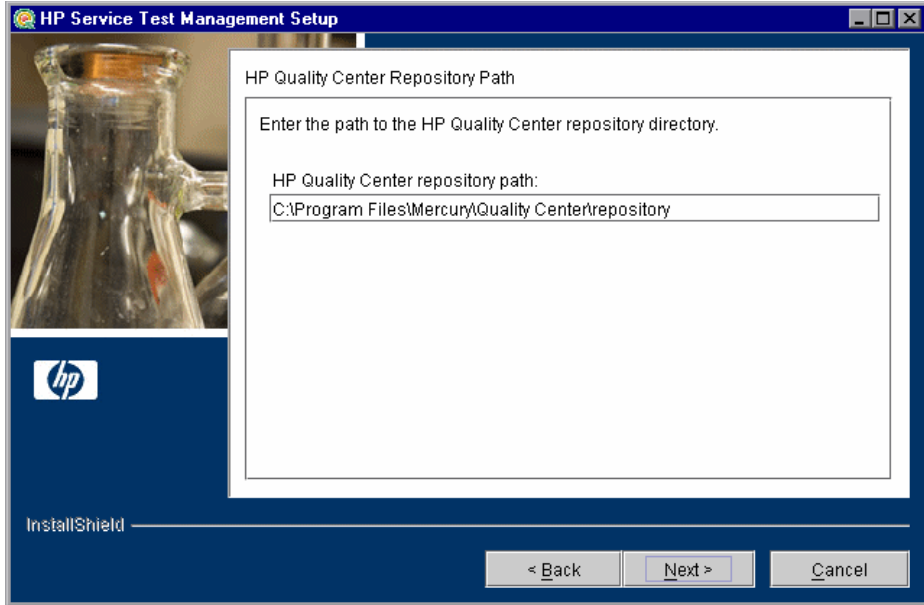
5 The Directory Name dialog box opens.



Accept the proposed folder for the Service Test Management installation or browse for an alternate folder.

Click **Next**.

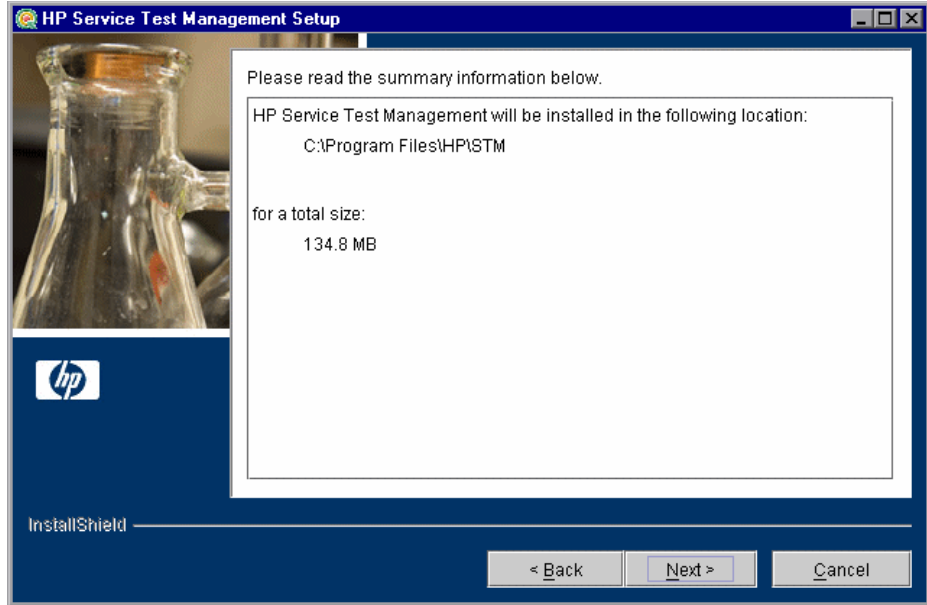
6 The HP Quality Center Repository Path dialog box opens.



Type the location of the Quality Center repository. The default Quality Center repository path is displayed.

Click **Next**.

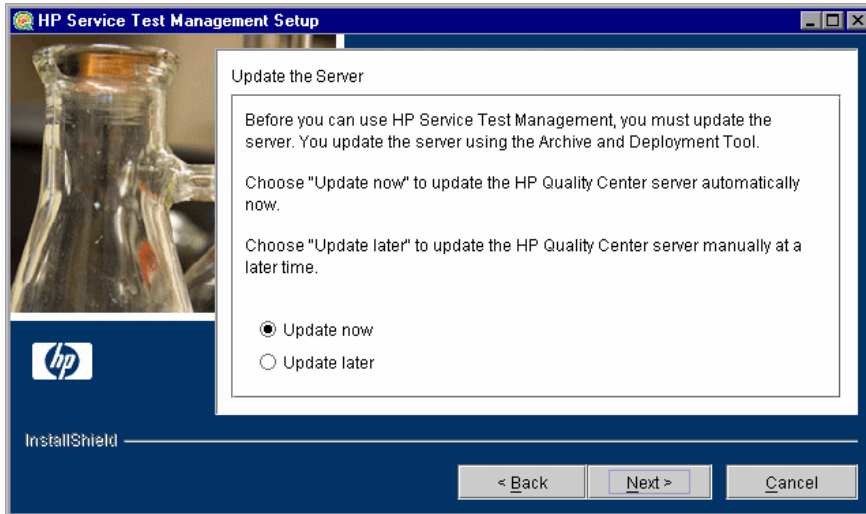
7 The Installation Summary dialog box opens.



To review or change any settings, click **Back**.

To accept the settings and start the installation, click **Next**. The installation process starts.

- 8 When the installation process completes, the Update the Server dialog box opens.



When you update the Quality Center server, the Service Test Management files are copied into the opened archive directories (**qcbin.war** and **sabin.war**) in the <Quality Center Installation>\application directory, and the Quality Center Archive and Deployment Tool is launched. This tool enables you to update the running Quality Center Web server.

Select an update option:

- **Update now.** To update the Quality Center archive files and launch the deployment tool now.
- **Update later.** To manually update the Quality Center server at a later time. You must update the Quality Center server before you can use HP Service Test Management.

Click **Next**.

- 9 If you selected **Update now**, proceed to step 10.

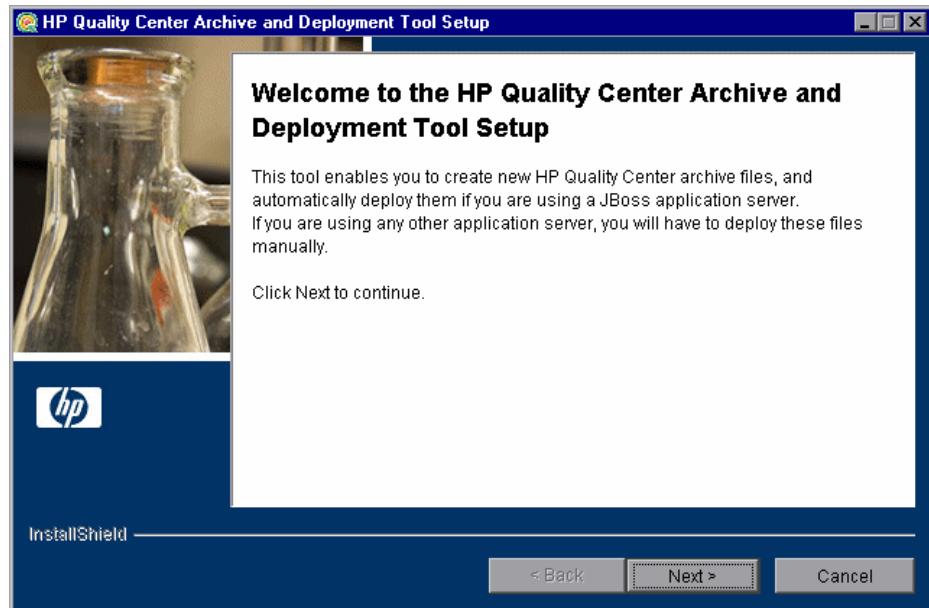
If you selected **Update later**, click **Next** and then click **Finish** to close the installation setup dialog box. When you are ready to update the application server, run the **deploy.bat** script (or **deploy.sh** for Solaris or Linux) from the **<Service Test Management installation>** directory. When running the batch file, specify the Quality Center installation directory and the location of the Quality Center repository, using the format:

```
deploy <Quality Center installation directory> <Quality Center repository
directory>
```

For example:

```
deploy "C:\Program Files\Mercury\Quality Center" "C:\Program
Files\Mercury\Quality Center\repository"
```

- 10 After clicking **Update now** or manually launching the batch file, the Quality Center Archive and Deployment Tool opens.

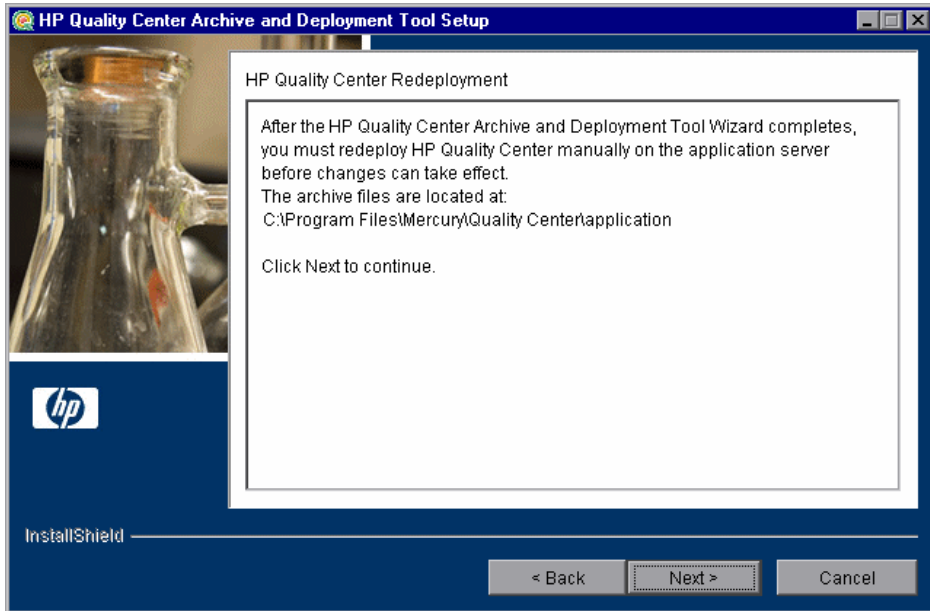


For Service Test Management to work with Quality Center, you need to create a new archive and redeploy the **qcbn.war** and **sabin.war** files on the application server. This enables changes to the archive files to take effect. Note that it takes more time to create **qcbn.war** than **sabin.war**.

Click **Next** to create the new archive files.

- 11 If your application server is JBoss, proceed to step 12.

If your application server is other than JBoss, the following dialog box opens.



You must deploy Quality Center manually on the application server after the setup process completes. The location of the archive files is shown in the dialog box.

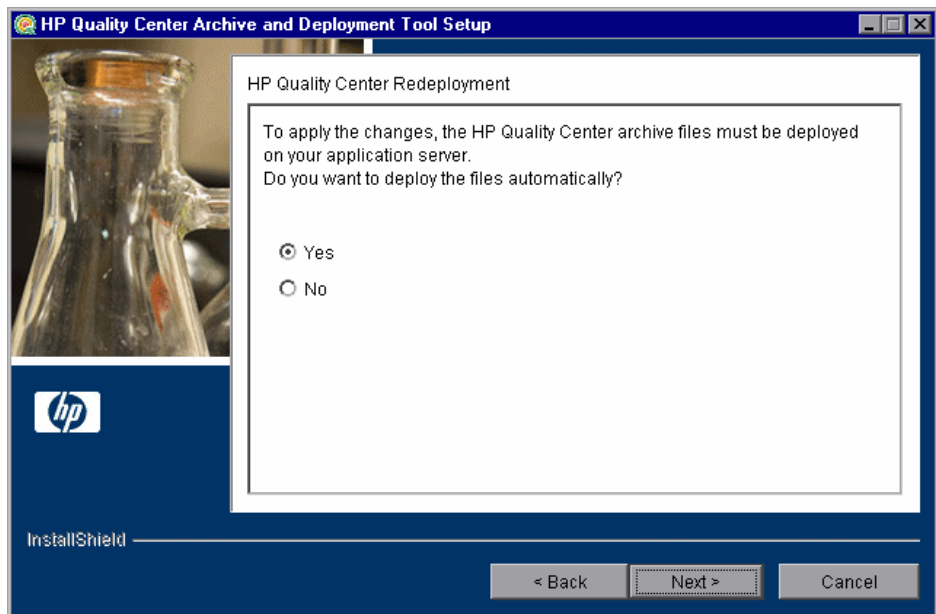
The updated archive files are stored in different formats, although the content is the same. The files are stored openly in the **10sabin.war** and **20qcbn.war** folders, and as closed archives in **sabin.war** and **qcbn.war**.

Note: For more information on manually deploying Quality Center on an application server, refer to the *HP Quality Center Installation Guide*.

Click **Next** and proceed to step 14.

- 12** If your application server is other than JBoss, proceed to step 14.

If your application server is JBoss, the HP Quality Center Redeployment dialog box opens.

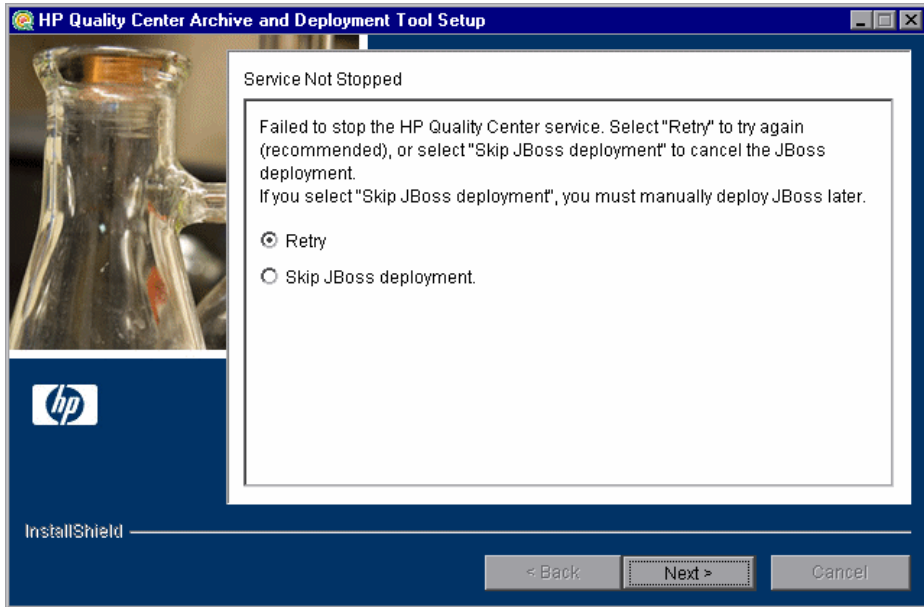


Choose one of the following options:

- **Yes.** To deploy the archive files automatically.
- **No.** To manually deploy the archive files later.

Click **Next**.

- 13** If the Quality Center service is running, the Archive and Deployment Tool automatically attempts to stop the service. If the tool is unable to stop the service, the Service Not Stopped dialog box opens.



Choose one of the following options:

- ▶ **Retry.** To try again to stop the JBoss service.
- ▶ **Skip JBoss deployment.** To cancel the deployment and manually deploy JBoss later.

Click **Next**.

- 14** When the deployment is complete, the Completion dialog box opens. Click **Finish** to close the Quality Center Archive and Deployment Tool.

Note: If you manually deployed the archive files on your application server, you must restart Quality Center after deployment.

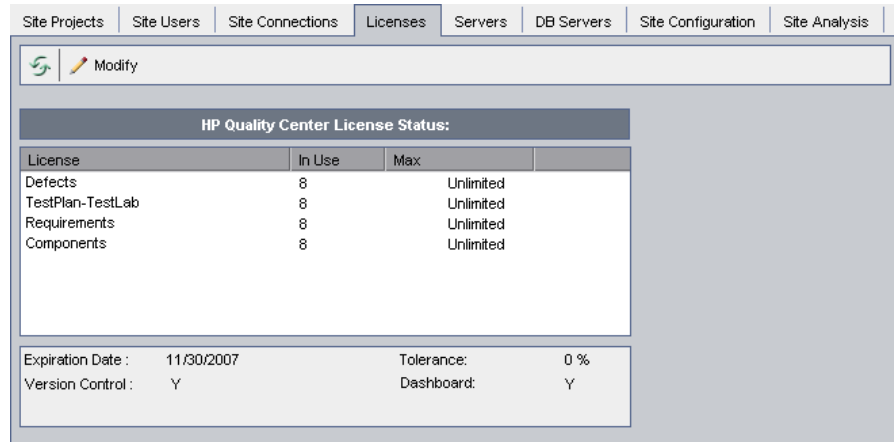
- 15** Click **Finish** to close the HP Service Test Management Setup dialog box.

Loading the Service Test Management License

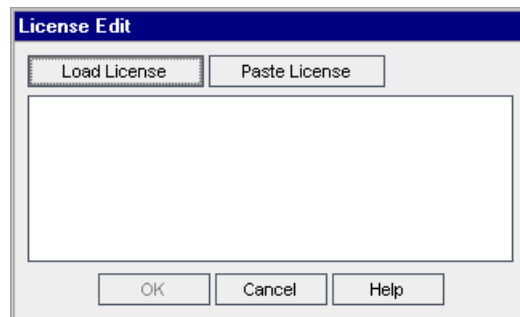
After installing Service Test Management on your Quality Center server, you must load your Service Test Management license in Site Administration to enable the Services module in Quality Center.

To load the Service Test Management license:

- 1 In Site Administration, click the **Licenses** tab.



- 2 Click the **Modify** button. The License Edit dialog box opens.



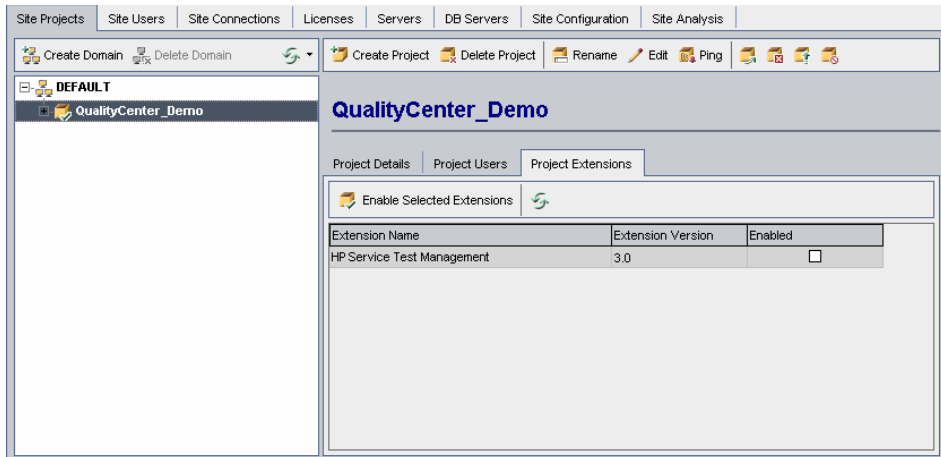
- 3 Click the **Load License** button and select the Service Test Management license file. Alternatively, copy the license file and click **Paste License**.
- 4 Click **OK**. The SOA license is displayed in the list of HP Quality Center licenses.

Enabling the Service Test Management Extension

After loading the Service Test Management license, you must enable the Service Test Management extension for a project before you can use it with the project. You cannot disable an extension for a project after you enable it.

To enable the Service Test Management extension for a project:

- 1** In Site Administration, click the **Site Projects** tab.
- 2** In the Projects list, select a project. In the right pane, click the **Project Extensions** tab. This tab is available only if you have a license for at least one extension and the extension is installed on the Quality Center server. The Extensions list is displayed, listing extensions installed on the Quality Center server.



- 3** Select the **Enabled** check box for the **HP Service Test Management** extension, and click **Yes** to confirm.



- 4** To refresh the Extensions list, click the **Refresh** button.

Installing the Service Test Add-in for Quality Center

The Service Test Add-in for Quality Center provides extended functionality to Service Test Management, enabling you to do the following in the Services module:

- ▶ Import service WSDL files from a file system, URL, UDDI or Systinet server.
- ▶ Import service WSDL files that reside in secure locations or that are accessed through proxy servers.
- ▶ Generate requirements and tests using the Requirement and Test Generation wizard.
- ▶ Perform service change analysis.

Note: The functionality provided by the Service Test add-in is included in Service Test. If you have already installed Service Test on your Quality Center client machine, or you intend to install it before using Service Test Management, you do not need to install this add-in. For more information on installing Service Test, refer to the *HP Service Test User's Guide*.

If you do not install the add-in, you can still use the Services module in Viewer mode. This mode is suitable for business services users, such as QA managers and SOA architects who want to view data on the service quality process, create service coverage, link services to requirements and tests, and produce service reports.

You can install the Service Test Add-in for Quality Center from the following locations:

- ▶ Service Test Management installation DVD. To install the add-in:
 - ▶ Run the **ServiceTestPlugin.exe** file.
 - ▶ Run the **STPlugin910FP4.msp** file.
- ▶ Quality Center Add-ins page. For more information, see “Installing the Add-in from the Quality Center Add-ins Page” on page 42.

Installing the Add-in from the Quality Center Add-ins Page

You can install the Service Test Add-in from the Quality Center Add-ins page.

Note: To install this add-in, you must log in with administrator privileges.

To install the add-in from the Quality Center Add-ins page:

- 1** Open your Web browser and type your Quality Center URL:
`http://<Quality Center server name>[<:port number>]/qcbn.`
The HP Quality Center Options window opens.
- 2** Click the **Add-ins** page link. The Quality Center Add-ins page opens.
- 3** Click the **More HP Quality Center Add-ins** link. The More HP Quality Center Add-ins page opens.
- 4** In the **Quality Center Administrator Add-ins** section, under **HP Tool Add-ins**, click the **HP Service Test Add-in for Quality Center** link. The HP Service Test Add-in for Quality Center page opens.
- 5** Click the **Download HP Service Test Add-in for Quality Center 9.2** link to download the add-in.
- 6** Follow the on-screen installation instructions.

The Generated Requirements Configuration File

The **RequirementGen.xml** file stores the configuration data for requirements generated using the Requirement and Test Generation wizard. It contains the properties of the requirements that are generated for each testing aspect and sub-aspect, and it is unique for every project.

When you create a new project, the **RequirementGen.xml** file is created in the new project's repository under the **services** folder. The **RequirementGen.xml** configuration file contains the following information:

Section	Description
Default Values	The default values of the fields and parameters that are used as properties of the requirements.
Field	The value of a database field of the requirement. For example, RQ_REQ_TYPE.
Param	The value of a parameter that is used in one of the requirement's properties. For example, %req_priority%.
Service	The requirement that is generated for the service. This requirement is used as the parent of all the requirements that are generated for the testing aspects. If this section is missing, the aspect requirements are generated as the children of the requirement that was selected in the wizard.
Aspects	The properties of the requirements that are generated for the aspect. In addition, it contains the list of sub-aspects.
SubAspect	The properties of the requirements that are generated for the sub-aspects.
Requirement	The properties of the generated requirement. This includes the requirement name, description, and any other relevant fields.

You can change the default fields and the requirement parameter values in this file. For more information, see “Customizing the Requirements Configuration Data” on page 44.

Customizing the Requirements Configuration Data

You can change the requirement name, description, parameter values, and other fields for requirements and customize them using Quality Center Open Test Architecture.

Tip: Alternatively, you can customize the configuration data using the Requirement Generation Configuration Utility which is available from Self-solve knowledge base (www.hp.com/go/hpsoftwaresupport).

To customize the configuration file using Quality Center Open Test Architecture:

- 1** Connect to the project on the Quality Center server.
- 2** Obtain a **Service Factory** object from the TDConnection object.
- 3** Download the configuration file from the Quality Center server to a folder on the client's machine. Call **LoadRequirementConfig**(<the target folder in the client's machine>).
- 4** Modify the **RequirementGen.xml** file using an XML editor.
- 5** Upload the configuration file from the client's machine to the Quality Center server. Call **SaveRequirementConfig**(<the folder in the client's machine which contains the configuration file>).

Uninstalling Service Test Management

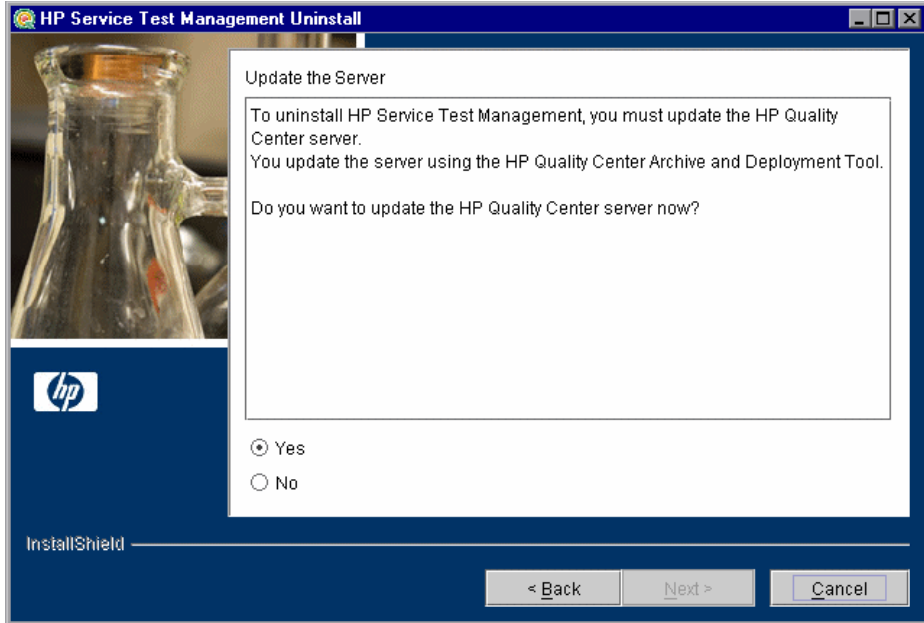
This section describes how to uninstall Service Test Management from your Windows, Solaris, or Linux server machine. When you uninstall Service Test Management, the Service Test Management files are deleted from Quality Center.

To uninstall Service Test Management from Windows:

- 1** Make sure that the application server is running.
- 2** To open the HP Service Test Management Uninstall dialog box, you can:
 - ▶ Choose **Control Panel > Add/Remove Programs**, select **HP Service Test Management**, and click the **Change/Remove** button. Follow the instructions on your screen.
 - ▶ Locate the Service Test Management home directory. By default, the files are stored in [drive]:\Program Files\HP\STM. In the **_uninst** subdirectory, double-click **uninstall.exe**.

The HP Service Test Management Uninstall dialog box opens.

3 Click **Next**. The Update the Server dialog box opens.



Select an update option:

- **Yes.** To update the archive files and launch the deployment tool now.
- **No.** To uninstall later.

Click **Next**.

4 The Quality Center Archive and Deployment Tool opens.

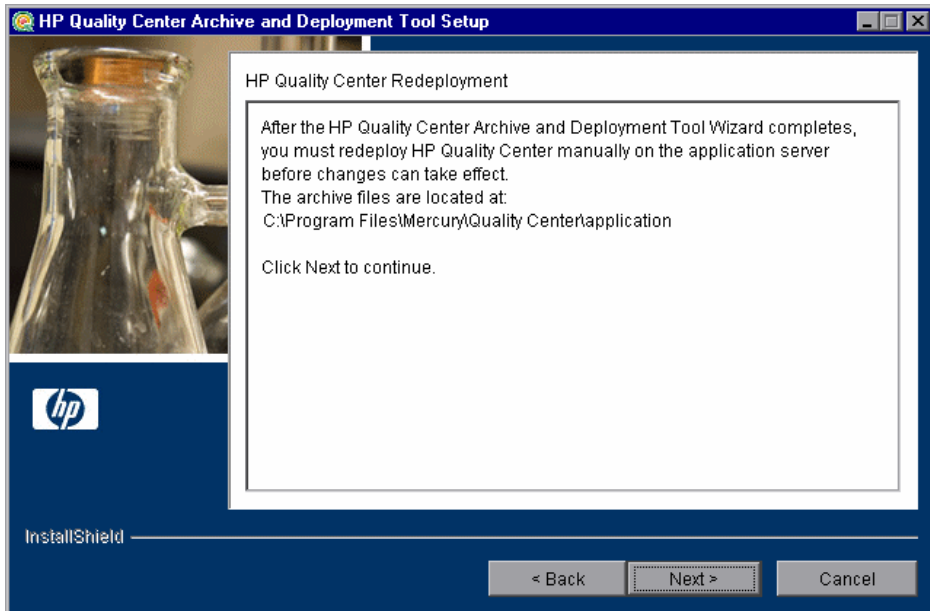
To uninstall Service Test Management, you need to create a new archive and redeploy the Quality Center and Site Administration war files (**qcbn.war** and **sabin.war**) on the application server. This enables changes to the .war files to take effect.

Click **Next** to create the new archive files.

Note: It takes more time to create **qcbn.war** than **sabin.war**.

5 If your application server is JBoss, proceed to step 6.

If your application server is other than JBoss, the following dialog box opens.



You must redeploy Quality Center manually on the application server after the setup process completes. The location of the archive files is shown in the dialog box.

The updated archive files are stored in different formats, although the content is the same. The files are stored openly in the **10sabin.war** and **20qcbn.war** folders, and as closed archives in **sabin.war** and **qcbn.war**.

To update the archives and undeploy them manually, run the **undeploy.bat** script (or **undeploy.sh** for Solaris or Linux) from the **<Service Test Management installation>** directory. When running the batch file, specify the Quality Center installation directory and the location of the Quality Center repository, using the format:

```
undeploy <Quality Center installation directory> <Quality Center repository directory>
```


For example:

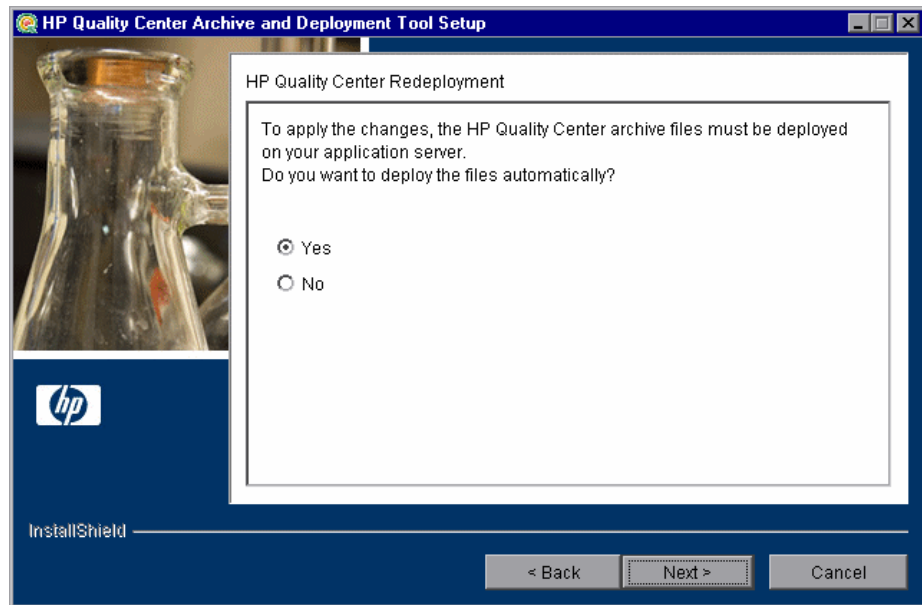
```
undeploy "C:\Program Files\Mercury\Quality Center" "C:\Program  
Files\Mercury\Quality Center\repository"
```

Note: For more information on manually deploying Quality Center on an application server, refer to the *HP Quality Center Installation Guide*.

Click **Next** and proceed to step 8.

- 6 If your application server is other than JBoss, proceed to step 8.

If your application server is JBoss, the HP Quality Center Redeployment dialog box opens.

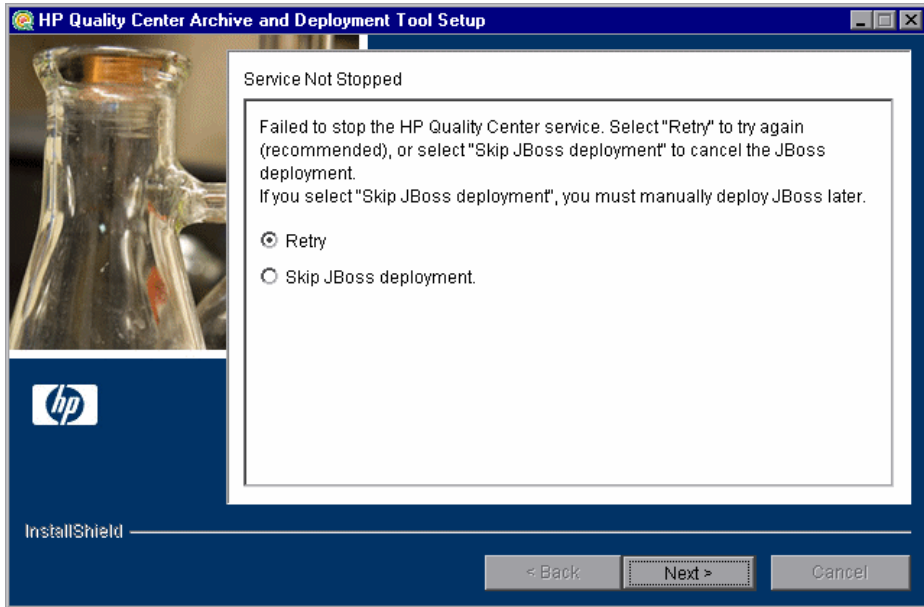


Choose one of the following options:

- **Yes.** To deploy the archive files automatically.
- **No.** To manually deploy the archive files later.

Click **Next** to continue.

- 7 If the Quality Center service is running, the Archive and Deployment Tool automatically attempts to stop the service. If the tool is unable to stop the service, the Service Not Stopped dialog box opens.

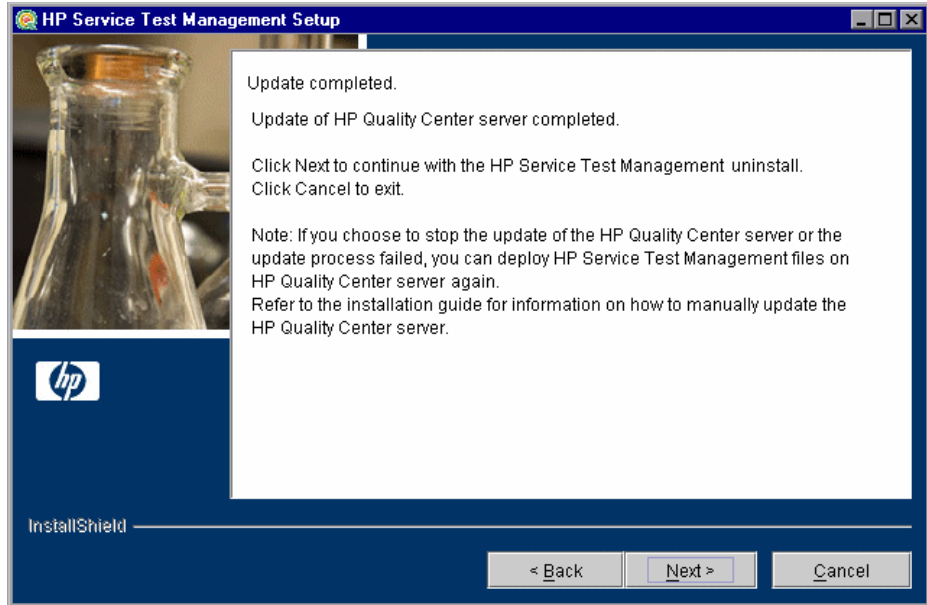


Choose one of the following options:

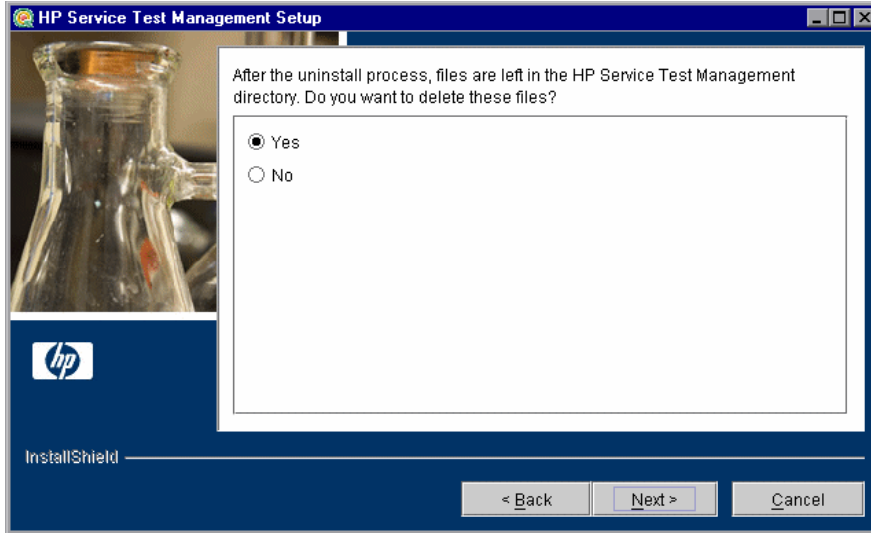
- **Retry.** To try again to stop the JBoss service.
- **Skip JBoss deployment.** To cancel the deployment and manually deploy JBoss later.

Click **Next**.

- 8 When the deployment is complete, the Completion dialog box opens. Click **Finish** to close the Quality Center Archive and Deployment Tool Setup. The HP Service Test Management Uninstall dialog box is displayed.
- 9 Click **Next**. The Update completed dialog box opens.



10 Click **Next** to continue.



It is recommended that you click **Yes** to delete the remaining uninstall files in the Service Test Management directory.

Click **Next**.

11 Click **Finish** to close the HP Service Test Management Uninstall dialog box.

To uninstall Service Test Management from Linux or Solaris:

- 1** Make sure that the application server is running.
- 2** Type the following command at the system prompt:
`/[directory]/[Service_Test_Management_directory]/_uninst/uninstall.bin`
The Service Test Management Uninstall wizard opens.
- 3** Click **Next**. Follow the on-screen instructions.
- 4** Run the Quality Center Archive and Deployment Tool to create a new archive and redeploy the Quality Center and Site Administration .war files on the application server.
- 5** When Service Test Management prompts you to delete all add-in files, select **Yes**.

4

Customizing Service Test Management

You can customize the Services module, user group permissions, module access, and project entities for services and service groups.

This chapter includes:

- ▶ About Customizing Service Testing on page 53
- ▶ Customizing the Services Module on page 54
- ▶ Customizing User Group Permissions on page 59
- ▶ Customizing Module Access for User Groups on page 61
- ▶ Customizing Project Entities on page 63

About Customizing Service Testing

You can customize general project data in the Services module. This includes specifying default values for services stored in secure locations and on a proxy server, the default Systinet and UDDI server information, the toolkit parsing order for importing service definitions, the default requirement folder, and the default and user-defined testing aspects.

You can also customize service and service group entities in the same way as you can customize other entities in your Quality Center projects. You can restrict which user groups can add, delete and modify folders, services, and service groups. You can determine whether user groups can update services and service groups, link services and service groups to requirements, and emulate services.

In addition, you can customize access to the Services module for each user group, and customize the system fields and add new user-defined fields.

Note: This chapter describes the additional customization options available with Service Test Management. For more information on Project Customization, refer to the *HP Quality Center Administrator's Guide*.

Customizing the Services Module

You can customize the default connection settings, Systinet server, UDDI server, the toolkit order for importing WSDLs, the default requirement folder, and the default and user-defined testing aspects.

To customize the Services module:

- 1 In Quality Center, select **Tools > Customize**. The Project Customization window opens.

- 2 Click the **Service Test** link. The Service Test page opens.

Service Test

Connection Settings

No connection settings were specified.

Default Systinet Server (Version 2)

Server Name:

Port:

Default UDDI Server

URL:

Version:

Auto-Detect Toolkit Order

Parsing Order:

.NET	<input type="button" value="↑"/>
Axis	
Generic Toolkit (Deprecated)	<input type="button" value="↓"/>

Default Requirements

Location: ...

Aspect Management

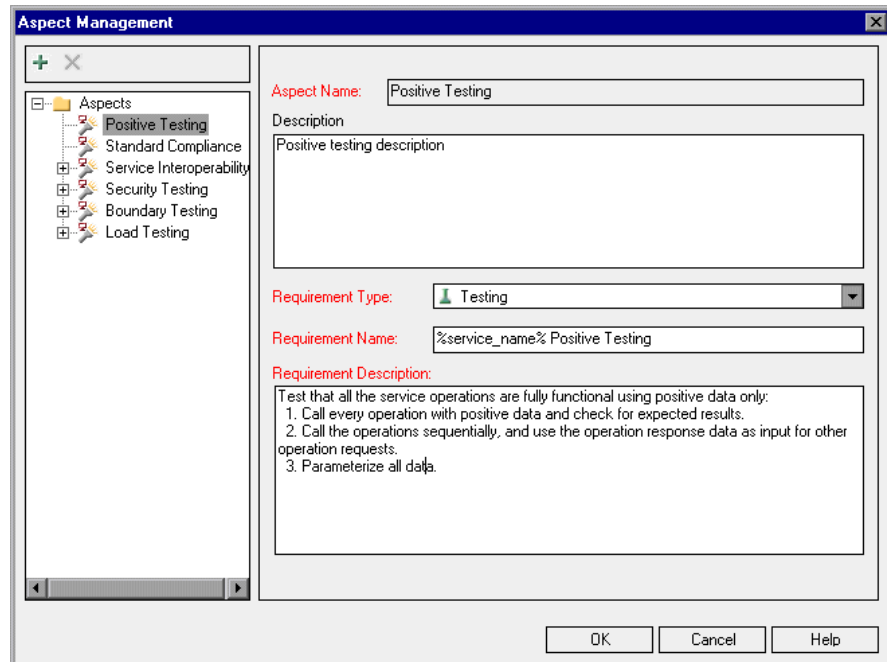
- 3 You can set the default WSDL connection settings for importing a service from a secure location and for accessing a service using a proxy server. In the **Connection Settings** section, click **Edit Default Settings**. The Connection Settings dialog box opens. Configure the default connection settings as described in “Accessing Services on Secure Sites and Proxy Servers” on page 95.
- 4 You can set the Systinet server details that are displayed by default when a user opens the Import a Service from a Systinet Server dialog box. In the **Default Systinet Server** section, type the name and port of the Systinet server. Only Systinet 2 with Service Pack 1 or later is supported.


- 5 You can set the UDDI server address URL and version that are displayed by default when a user opens the Import a Service from a UDDI Server dialog box. In the **Default UDDI Server** section, enter the URL and version of the UDDI server.
- 6 To set the order in which the toolkits are parsed when importing a WSDL, in the **Auto-Detect Toolkit Order** section, select a toolkit and use the **Move Toolkit Up** and **Move Toolkit Down** buttons.
- 7 You can select the folder in which Service Test Management creates requirements when you import services and link them to a default requirement. In the **Default Requirements** section, click the browse button and select a folder in the Select Requirements dialog box. You can only specify an existing folder for the default requirement location. For more information on linking requirements, see “Creating Requirement Coverage for Services” on page 87.
- 8 You can customize the template of the testing aspects displayed in the Requirement and Test Generation wizard. Click the **Add/Edit Aspects** button. For more information, see “Managing Testing Aspects” on page 57.
- 9 Click **Save** to save your settings to the Service Test page.




Managing Testing Aspects

You can customize the template for the system and user-defined testing aspects displayed in the Requirement and Test Generation wizard. Using the Aspect Management dialog box, you can add user-defined aspects, modify the properties of system and user-defined aspects, and delete user-defined aspects.



In the Aspect Management dialog box, the  icon indicates a system-defined aspect. The  icon indicates a user-defined aspect.

To add a testing aspect:

- 1 In the Service Test page, click the **Add/Edit Aspects** button. The Aspect Management dialog box opens.
- 2 To add an aspect at the main level, select the **Aspect** root folder. To create a sub-aspect, select an aspect.
-  3 Click the **Add Aspect** button. The New Aspect dialog box opens.
- 4 Type the aspect name and click **OK**. The aspect is added to the aspect tree.

- 5 In the **Description** box, type a description of the aspect.
- 6 Add details for the requirement to be generated from the Requirement and Test Generation wizard. For more information on generating requirements, see “Generating Service Requirements and Tests Automatically” on page 141.


Tip: To include a service name as part of the generated requirement name or generated requirement description, type %service_name% in the **Requirement Name** or **Requirement Description** box. For example, in the **Requirement Name** box, type %service_name%_my_new_requirement. After you generate the requirement using the Requirement and Test Generation wizard, %service_name% is replaced with the actual service name.

- 7 Click **OK** to close the Aspect Management dialog box.
- 8 Click **Save** to save your settings to the Service Test page.

To modify a testing aspect:

- 1 In the Service Test page, click the **Add/Edit Aspects** button. The Aspect Management dialog box opens.
- 2 Select an aspect from the aspect tree.
- 3 Update the details. Note that you cannot modify a default testing aspect name.
- 4 Click **OK** to close the Aspect Management dialog box.
- 5 Click **Save** to save your settings to the Service Test page.

To delete a testing aspect:

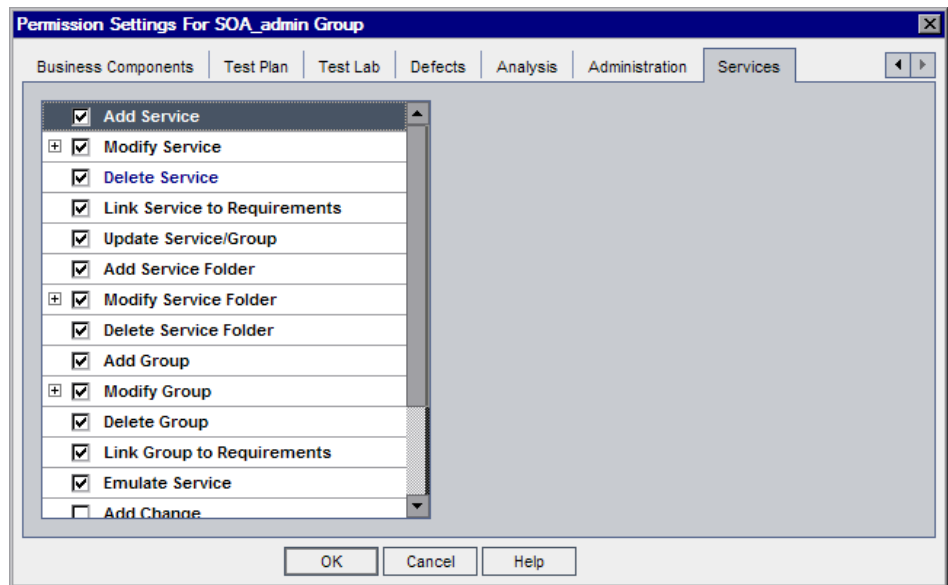
- 1 In the Service Test page, click the **Add/Edit Aspects** button. The Aspect Management dialog box opens.
- 2  Select an aspect from the aspect tree and click the **Delete Aspect** button.
- 3 Click **OK** to close the Aspect Management dialog box.
- 4 Click **Save** to save your settings to the Service Test page.

Customizing User Group Permissions

You can customize the permission settings for managing services, service groups, folders, updates, and requirement and test linkage from the Services tab in the Permission Settings dialog box. For more information on user group permissions, refer to the *HP Quality Center Administrator's Guide*.

To set user group permissions:

- 1** In Quality Center, select **Tools > Customize**. The Project Customization window opens.
- 2** Click the **Groups** link. The Groups page opens.
- 3** In the **Groups** list, choose the user group for which you want to set permissions.
- 4** Click the **Change** button. The Permission Settings dialog box open.
- 5** Click the **Services** tab.



The Services tab displays the following tasks that are available in the Services module:

Task	Description
Add Service	User group can add services to the Services module.
Modify Service	User group can modify services in the Services module. Note that this task enables you to specify the fields that the selected user group can modify.
Delete Service	User group can delete services from the Services module.
Link Service to Requirements	User group can link services to requirements in the Services module.
Update Service/Group	User group can update services or service groups. Note that selecting this task automatically enables the Modify Service task.
Add Service Folder	User group can add folders to the services tree.
Modify Service Folder	User group can modify folders in the services tree. Note that this task enables you to specify the fields that the selected user group can modify.
Delete Service Folder	User group can delete folders from the services tree.
Add Group	User group can add service groups to the Services module.
Modify Group	User group can modify service groups in the Services module. Note that this task enables you to specify the fields that the selected user group can modify.
Delete Group	User group can delete service groups from the Services module.
Link Group to Requirements	User group can link service groups to requirements in the Services module.
Emulate Services	User group can emulate services from Quality Center.
Add Change	User group can add changes to the Services module.

Task	Description
Modify Change	User group can modify changes in the Services module. Note that this task enables you to specify the fields that the selected user group can modify.
Delete Change	User group can delete changes from the Services module.
Customize Service Test	User group can specify settings for the Services module, using the Service Test link in Project Customization.

- 6** Select the tasks that the selected user group can use.
- 7** Click **OK** to close the Permission Settings dialog box.
- 8** Click **Save** to save your settings to the Groups page.

Customizing Module Access for User Groups

After you enable the HP Service Test Management extension for a project, you can control access to the Services module for each user group. You can enable access to all Quality Center modules including the Services module, or to all Quality Center modules excluding the Services module.

For more information on customizing module access for user groups, refer to the *HP Quality Center Administrator's Guide*.

To customize Services module access for user groups:

- 1 In the Project Customization window, click the **Module Access** link. The Module Access page opens.

Module Access

To modify access to Quality Center modules, select a cell and press the space bar or double-click.

Groups	Defects Module	Quality Center	Business Process Testing	Services
Developer	✗	✓	✓	✓
Project Manager	✗	✓	✓	✓
QATester	✗	✓	✓	✓
TAdmin	✗	✓	✓	✓
Viewer	✗	✓	✓	✓

The icon indicates the modules that the user group can access.

To select or clear a cell in the table, double-click the cell, or select the cell and press the space bar.

- 2 To select the Defects module only, select the **Defects Module** column. This clears all the other columns.
- 3 To select the Quality Center modules (including the Defects module), select the **Quality Center** column. This clears the **Defects Module** column.
- 4 To select the Services module, select the **Services** column. This selects the **Quality Center** column and clears the **Defects Module** column.
- 5 Click **Save** to save your changes.

Customizing Project Entities

You can customize the system fields and add new user-defined fields from the Project Entities page. You customize service fields under the **Service** entity, and service group fields under the **Service Group** entity.

For more information on customizing project entities, refer to the *HP Quality Center Administrator's Guide*. For detailed information on Quality Center entities and fields, refer to the *HP Quality Center Database Reference*.

To customize project entities:

- 1** In Quality Center, select **Tools > Customize**. The Project Customization window opens.
- 2** Click the **Project Entities** link. The Project Entities page opens.
- 3** Under Project Entities, expand the **Service** or **Service Group** entity.
- 4** Customize the system and user-defined fields as required.
- 5** Click **Save** to save your settings to the Project Entities page.

To view user-defined fields for a service or service group, select the **Details** tab for the service or service group, and then select the **Additional Fields** tab.

5

Getting Started with the Services Module

The Services module enables you to create and manage services and service groups, and generate service requirements and tests in Quality Center.

This chapter includes:

- ▶ Accessing the Services Module on page 65
- ▶ The Services Module Window on page 66
- ▶ Services Menu Bar on page 67
- ▶ Services Toolbars on page 68
- ▶ Service Repository and Service Groups Tabs on page 69

Accessing the Services Module

You create and manage services and service groups, and generate service requirements and tests in Quality Center from the Services module.

To access the Services module:

- 1** Log in to your Quality Center project. The Quality Center main window opens. For more information on logging in to Quality Center, refer to the *HP Quality Center User's Guide*.



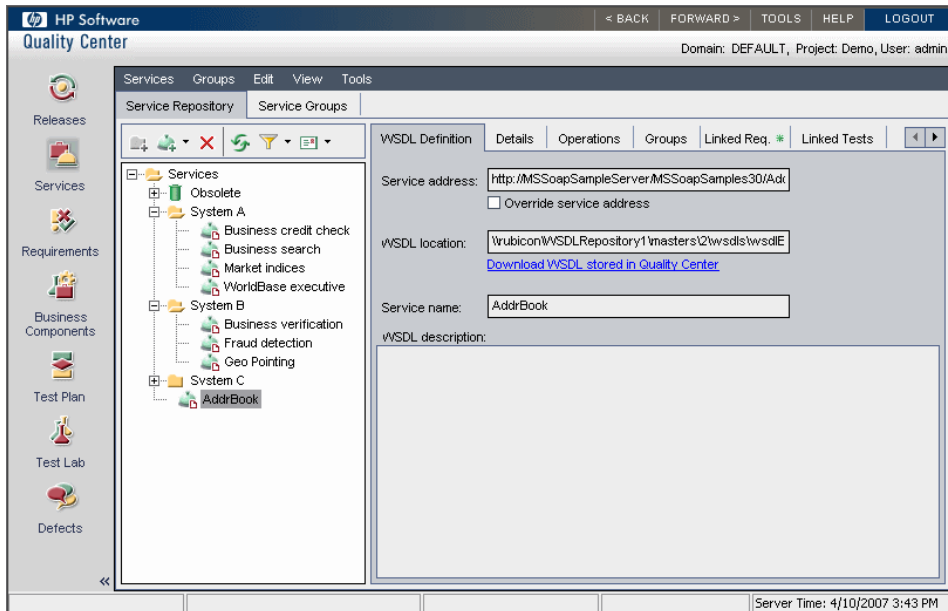
- 2 Click the **Services** button on the sidebar of the Quality Center window. The Services module opens. For more information on the Services module window, see “The Services Module Window” on page 66.

If the **Services** button is not displayed in the sidebar:

- ▶ Check with your system administrator that you are connected to a Quality Center server with Service Test Management. If Service Test Management is not installed on your current Quality Center server, disconnect and reconnect to a server with Service Test Management.
- ▶ Check that Service Test Management licenses are currently available on the Quality Center server. Contact your Quality Center Site Administrator or refer to the *HP Quality Center Administrator's Guide*.

The Services Module Window

The Services module window is shown below.



The Services module contains the following key elements:

- **Services menu bar.** Contains menus with Services module commands. For more information, see “Services Menu Bar” on page 67.
- **Service Repository/Service Groups toolbar.** Contains buttons for frequently used commands in the Service Repository and Service Groups tabs. For more information, see “Services Toolbars” on page 68.
- **Service Repository tab.** Displays services folders and individual services in your project, organized in a graphical hierarchy in the services tree. For more information, see “Service Repository and Service Groups Tabs” on page 69.
- **Service Groups tab.** Displays the service groups in your project in a list view. For more information, see “Service Repository and Service Groups Tabs” on page 69.

Services Menu Bar

The Services menu bar contains the following menus:

- **Services.** Contains commands that enable you to create services and services folders, update services, restore services, show/hide changed services, and generate requirements and tests. (This menu is enabled only when the Services Repository tab is selected.)
- **Groups.** Contains commands that enable you to create new service groups, update service groups, and generate requirements and tests. (This menu is enabled only when the Service Groups tab is selected.)
- **Edit.** Contains commands that enable you to cut, copy, paste, find, delete, and rename services, services folders, and service groups.
- **View.** Contains commands that enable you to expand and collapse services folders, filter, sort, and refresh services.
- **Tools.** Contains commands that enable you to emulate services using the Service Emulation tool. For more information on service emulation, see “Creating a Service Emulation” on page 216.
- **Analysis.** Contains a tool that enables you to analyze the coverage status of services. For more information, see “Analyzing Services” on page 211.

Services Toolbars

The Services toolbars contain buttons for frequently-used commands in the Service Repository tab and Service Groups tab. The toolbar buttons differ according to the tab selection.

Service Repository Toolbar

The Service Repository toolbar contains the following buttons:



New Folder. Adds a new folder to the services tree below the currently selected item.



Import Service/Create Definition Manually. Enables you to import a service definition based on a WSDL file or manually define a service. For more information on importing service definitions and manually defining services, see Chapter 6, “Creating Services.”



Delete. Removes the currently selected folder or service from the services tree. Deleting a services folder also deletes its subfolders and all of the services in the folders.

Any removed service that is linked to a test is moved to the **Obsolete** folder in the tree. Unused services are permanently deleted. For more information on working with the **Obsolete** folder, see “Removing and Restoring Services” on page 120.



Refresh Selected. Refreshes the data for the currently selected folder or service.



Set Filter/Sort. Enables you to locate required service tree items by setting filter or sort preferences. For more information on filtering and sorting, refer to the *HP Quality Center User's Guide*.



Send by E-mail. Opens the Send E-mail dialog box, enabling you to send service e-mail to recipients selected from a list or to the author of the service. For more information, see “Mailing Services” on page 105.

Service Groups Toolbar

The Service Groups toolbar contains the following buttons:



New Group. Adds a new group to the service groups list.



Delete. Removes the currently selected service group from the service groups list.



Refresh Selected. Refreshes the data in the service groups list.










Send by E-mail. Opens the Send E-mail dialog box, enabling you to send service group e-mail to recipients selected from a list or to the author of the service group. For more information, see “Mailing Service Groups” on page 133.

Service Repository and Service Groups Tabs

These tabs provide a complete overview of a service, a services folder, or a service group’s content. The following tabs are available in the right pane of the Services module when the Service Repository or Service Groups tab is selected:

- **Description tab.** Enables you to add or view a textual description of the folder contents. You can add or modify the text in the Description box. (This tab is displayed only when you select a services folder.)
- **WSDL Definition tab.** Displays data that is required to identify the selected service, including service address, WSDL location, and service name. For more information, see “Managing Service Definitions” on page 108.
- **Details tab.** Displays general details and attributes of the selected service or service group. For more information, see “Managing Service Details” on page 110 and “Viewing and Modifying Service Group Details” on page 128.
- **Operations tab.** Displays service operation data for the selected service. For more information, see “Managing Service Operations” on page 113.

- ▶ **Groups tab.** Lists the groups that are linked to the selected service. You can view, add, and delete groups in the groups grid. The tab includes an icon  if the selected service is associated with service groups. For more information, see “Viewing and Modifying Service Group Details” on page 128.
- ▶ **Services tab.** Lists the services that are linked to the selected group. You can view, add, and delete services assigned to groups in the assigned services grid. The tab includes an icon  if the selected group has services assigned to it. For more information, see “Viewing and Modifying Services Assigned to Service Groups” on page 129.
- ▶ **Linked Req tab.** Lists the requirements that are linked to the selected service or service group. You can add and remove requirements linked to services and service groups. The tab includes an icon  if the selected service or service group has requirement coverage. For more information, see “Linking Services to Requirements” on page 151.
- ▶ **Linked Tests tab.** Lists the tests that are linked to the selected service or service group through requirement coverage. The tab includes an icon  if the selected service or service group has linked tests. For more information, see “Linking Tests to Services” on page 161.
- ▶ **Linked Defects tab.** Lists the defects that are linked to the selected service or service group through requirement coverage. It also displays defects that are linked to tests, that are linked to the selected service or service group. The tab includes an icon  if the selected service or service group has linked defects. For more information, see “Viewing Linked Defects” on page 193.
- ▶ **Linked Services tab.** Lists the services that are linked to the selected service. This includes services that are impacted by the selected service and services that impact the selected service. For more information, see “Creating Service Dependencies” on page 91.
- ▶ **Changes tab.** Lists the changes in the selected service. The tab includes an icon  that indicates that changes have been made to the service, and the service should be reviewed. For more information, see “Reviewing Service Changes” on page 201.
- ▶ **Attachments tab.** Lists the files that have been associated with the selected service as attachments. The tab includes an icon  if the selected service has attachments. For more information, see “Adding Attachments to Services and Service Groups” on page 118.

6

Creating Services

You create services by importing service definitions, or by manually defining services in the Service Repository tab of the Services module.

This chapter includes:

- ▶ About Creating Services on page 71
- ▶ Working with Toolkits on page 72
- ▶ Creating a Services Tree on page 73
- ▶ Importing Service Definitions on page 74
- ▶ Creating Manually Defined Services on page 86
- ▶ Creating Requirement Coverage for Services on page 87
- ▶ Creating Service Dependencies on page 91
- ▶ Accessing Services on Secure Sites and Proxy Servers on page 95

About Creating Services

You create services in the Services module by adding services to the services tree. You can add services in two ways: you can import service definitions based on a WSDL file, or you can manually define services.

You can import a service definition from a file location, URL, UDDI or Systinet server. You specify the WSDL source file location, a toolkit for parsing the WSDL file, and a requirement coverage option for linking the service to a requirement. Requirement coverage allows you to connect the service to other Quality Center entities, such as tests, test sets, and defects.

You can also import a WSDL that resides in a secure location, or that is accessed through a proxy server. Once you enter the security or proxy information, it remains with the WSDL, enabling service updates and automatic synchronization. When you import a service definition, Service Test Management extracts the service name, service address (endpoint), and operations data from the WSDL file, and stores it in the Quality Center repository.

If you are using services that are not WSDL-based, or if you have no WSDLs available to test, you can create service definitions manually. When you define a service manually, Service Test Management creates an empty definition, and allows you to update the attributes.

After you import or define a service, you can view and modify information about the service in the Services. For more information, see Chapter 7, “Managing Services.”

Working with Toolkits

You can select a toolkit before importing a service definition, and Service Test Management imports the service definition using that toolkit. Service Test Management supports the .NET version 1.1, Axis version 1.3 Web Service, and a Generic toolkit. The Generic toolkit emulates a general toolkit that should be used when the other toolkits cannot be used, for example, when unexpected errors are encountered.

When selecting a toolkit, you should match the toolkit to the actual development environment. After you select a toolkit, it becomes permanently associated with the service definition.

Alternatively, you can instruct Service Test Management to detect the appropriate toolkit using Auto-detect (the default setting). Auto-detect attempts to parse the selected WSDLs using the available toolkits, according to the toolkit parsing order set in Project Customization. For more information on customizing the toolkit parsing order, see “Customizing the Services Module” on page 54.

Creating a Services Tree

Services are organized in a graphical hierarchy in the services tree of the Service Repository tab. You can organize related services in folders and subfolders, and drag and drop folders or subfolders to other folders in the tree.

At the top level of the services tree is the **Services** root folder, which contains the services folders. Under the **Services** root folder, you can create custom folders that represent various services structures. For example, you might create separate folders to represent services for different applications.

The **Obsolete** folder contains services that have been removed from the services folders but are still being used by tests stored in Quality Center. For more information on the Obsolete folder, see “Removing and Restoring Services” on page 120.

You cannot rename, move, or delete the **Services** folder or the **Obsolete** folder.

To create a services folder in the services tree:



- 1** Click the **Services** button in the sidebar. The Services module opens.
- 2** Click the **Service Repository** tab in the left pane.
- 3** Select the **Services** root folder, or another folder in the services tree.



- 4** Click the **New Folder** button in the tree toolbar. The New Folder dialog box opens.
- 5** Enter a descriptive name in the **Folder Name** box and click **OK**. A service folder name cannot include any of the following characters: \ ^ *.

The new folder is displayed under the folder you selected in step 3.

- 6** You can add a textual description of the folder contents in the **Description** tab.

Importing Service Definitions

You can import (and later update) service definitions based on WSDL files from a file location, URL, UDDI or Systinet server. You can also import WSDL files that reside in secure locations, and WSDL files accessed through proxy servers by supplying the relevant authentication credentials. For more information, see “Accessing Services on Secure Sites and Proxy Servers” on page 95.

When you import a service, you can link it to an existing requirement, a new requirement, a default requirement that Service Test Management creates for you, or you can link it later. Requirement coverage connects services to other Quality Center entities (tests, test sets, and defects), which helps you to keep track of the service and ensure compliance with your requirements throughout the testing process. For more information on requirement coverage, see “Creating Requirement Coverage for Services” on page 87.

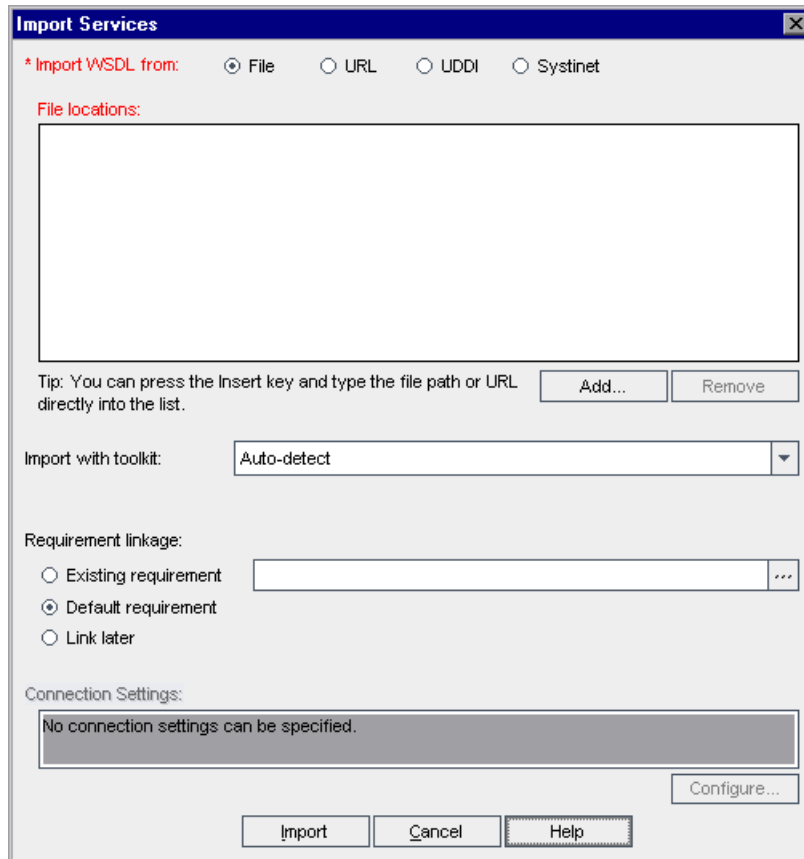
Note: If a WSDL file has multiple service definitions, a service entity is created for each definition.

To import a service definition:

- 1 Click the **Service Repository** tab in the left pane.
- 2 In the services tree, select the folder into which you want to import the service definition.



- 3 Choose **Services > New Service > Import Service**. The Import Services dialog box opens.



- 4 In the **Import WSDL from** section, select an import option:

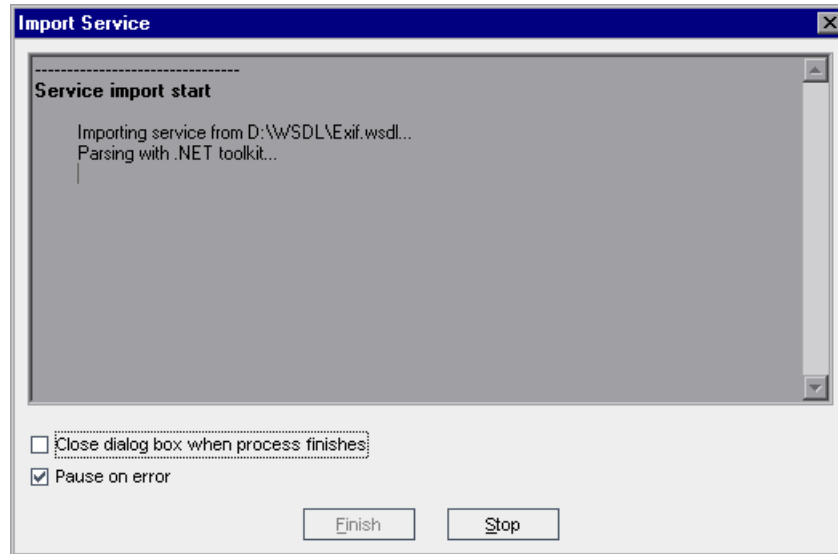
- **File.** Imports a service definition based on a WSDL file from a file system.
- **URL.** Imports a service definition based on a WSDL file from a URL.
- **UDDI.** Imports a service definition based on a WSDL file from a UDDI server.
- **Systinet.** Imports a service definition based on a WSDL file from a Systinet server.

- 5 Click **Add**, and follow the import procedures for the selected option.
 - ▶ For importing from a file, see “Importing Service Definitions from a File System” on page 79.
 - ▶ For importing from a URL, see “Importing Service Definitions from a URL” on page 80.
 - ▶ For importing from a UDDI, see “Importing Service Definitions from a UDDI Server” on page 81.
 - ▶ For importing from Systinet, see “Importing Service Definitions from Systinet” on page 83.
- 6 After selecting the service definitions you want to import, the selected services are displayed in the Import Services dialog box.
- 7 In the **Import with toolkit** box, select the toolkit for parsing the WSDL file from the toolkits list. To instruct Service Test Management to detect the appropriate toolkit, select **Auto-detect** (the default setting). For more information on selecting a toolkit, see “Working with Toolkits” on page 72.
- 8 In the **Requirement linkage** area, select an option for linking the selected services to a requirement.
 - ▶ **Existing requirement.** Enables you to link the services to a new or existing requirement in the requirements tree.
 - ▶ **Default requirement.** Enables you to link the services to a default requirement created by Quality Center.
 - ▶ **Link later.** Enables you to link the service later.

For more information on the requirement linkage options, see “Creating Requirement Coverage for Services” on page 87.
- 9 Connection settings enable you to set credentials required to access a WSDL located on a secure site, and to access a WSDL using a proxy server. To configure connection settings, click **Configure**, and follow the instructions described in “Accessing Services on Secure Sites and Proxy Servers” on page 95. If connections settings are specified, they are displayed in the **Connection Settings** box.

Note: You cannot configure connection settings for a service definition imported from a file system or a Systinet server.

- 10 Click **Import** to import the selected service definitions. The Import Services dialog box opens and the import process begins.








To automatically close the Import Services dialog box after the import process has finished, select **Close dialog box when process finishes**.

By default, Quality Center pauses the process each time it finds an error, and displays the error message in the Import Services dialog box. To continue with the import process, click **Continue**, or click **Stop** to end the process. If you do not want to view errors during the import process, clear the **Pause on error** check box.

- 11 To stop the import process at any time, click **Stop**.
- 12 When the import process has finished, click **Finish** to close the Import Services dialog box.

The successfully imported services are added to the services tree below the folder you selected in step 2 with the following icon:

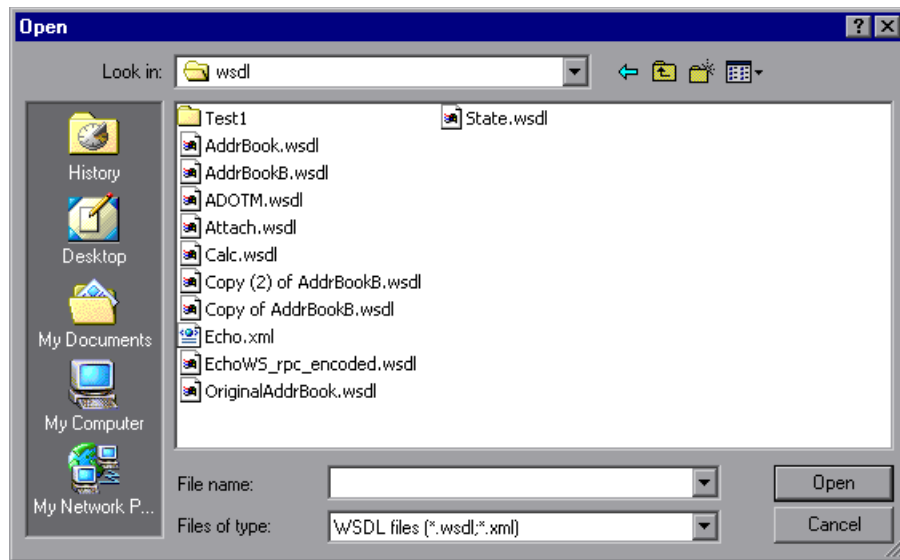
Icon	Command
	Import WSDL from File
	Import WSDL from URL
	Import WSDL from UDDI
	Import WSDL from Systinet
	Create Definition Manually

Importing Service Definitions from a File System

You can import service definitions based on WSDL files from a file system by browsing the file system, and selecting the files you want to import.

To import service definitions from a file system:

- 1 After performing steps 1- 5 of “Importing Service Definitions” on page 74, the Open dialog box opens with **Files of type** set to **WSDL files (*.wsdl and *.xml)**.



- 2 Browse to the directory where the WSDL files are located, select the files you want to import, and click **Open**. The Open dialog box closes, and the files are added to the import services list in the Import Services dialog box.

Tip: You can also import service definitions by pressing the **INSERT** key and typing the file path and name directly into the import services list.

- 3 To add WSDL files from other directories, click **Add**, and repeat this process.

- 4 To remove a service from the WSDL list in the Import Services dialog box, select the service and click **Remove**.
- 5 Continue with step 6 of “Importing Service Definitions” on page 74.

Importing Service Definitions from a URL

You can import service definitions based on WSDL files from a URL, by browsing Web pages and selecting the desired URL, or by typing the URL directly.

To import service definitions from a URL:

- 1 After performing steps 1- 5 of “Importing Service Definitions” on page 74, a Web browser opens.
- 2 In the **Address** box, type the URL, or navigate to the URL in Internet Explorer.
- 3 Close the browser. The selected URL is added to the import services list in the Import Services dialog box.

Tip: You can also import service definitions based on URLs by pressing the **INSERT** key and typing the URL directly into the import services list.

- 4 To import services from other URLs, click **Add**, and repeat this process.
- 5 To remove a service from the WSDL list in the Import Services dialog box, select the service and click **Remove**.
- 6 Continue with step 6 of “Importing Service Definitions” on page 74.

Importing Service Definitions from a UDDI Server

You can import service definitions based on WSDL files from a UDDI server. You can search for services published on a UDDI server by typing a service name.

To import a service definition from a UDDI server:

- 1 After performing steps 1- 5 of “Importing Service Definitions” on page 74, the Search for Service in UDDI dialog box opens.

Search for Service in UDDI

Select services published in a UDDI server

Find

Service name: Exact match Case sensitive

Server settings

Inquiry address: Version: 2

Service Name	Service Key	Service Description	Service WSDL
--------------	-------------	---------------------	--------------

2 To search by a service name:

- ▶ In the **Service name** box, type the service name.

To search for any string of characters in UDDI Version 2 or 3, use the percentage (%) wildcard. For example, A% finds all services that begin with the letter A. In addition, in UDDI Version 3, you can use an underscore (_) to indicate any value for a single character, and a backslash (\) as an escape character for the percentage sign, underscore, and backslash characters.

To search for services that exactly match the search text, select **Exact match**.

To search for services that match the case of the text string, select **Case sensitive**.

- ▶ To edit the server settings, click **Server Settings**. You can use the default UDDI service address and version if this was set in Project Customization, or type the service name in the **Inquiry address** box and select the **Version** used to query the server. For information on setting the default UDDI service address and version, see “Customizing the Services Module” on page 54.

To restore the default UDDI server inquiry service address and version, click **Restore Defaults**.

3 Click **Find**. The search results pane displays the following information:

Field	Description
Service Name	The service name in the UDDI server.
Service Key	The unique identifier for the service in the UDDI server.
Service Description	The description of the service in the UDDI server.
Service WSDL	The location of the WSDL file.

Note: If a service found in the search does not reference a WSDL file, the service is not listed in the search results, and a warning message is displayed.

- 4 Select the service definitions you want to import and click **OK**. The Search for Service in UDDI dialog box closes and the services are added to the UDDI services list in the Import Services dialog box.
- 5 To perform another UDDI search, click **Replace All**, and repeat steps 1- 4.

Note: If you perform another UDDI search, the services selected in the previous search will be lost.

- 6 To remove services from the UDDI services list in the Import Services dialog box, select the services and click **Remove**.
- 7 Continue with step 6 of “Importing Service Definitions” on page 74.

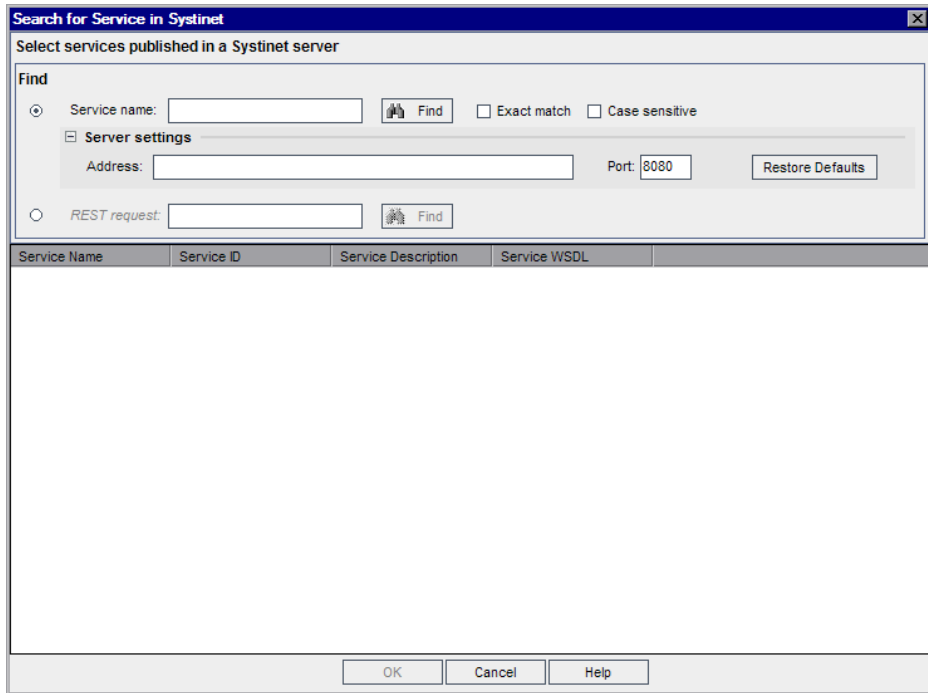
Importing Service Definitions from Systinet

You can import service definitions based on WSDL files from a Systinet server. You can search for services on a Systinet server by typing a service name or by typing a REST request.

Note: Only a Systinet 2 server with Service Pack 1 or later is supported.

To import a service definition from Systinet:

- 1 After performing steps 1- 5 of “Importing Service Definitions” on page 74, the Search for Service in Systinet dialog box opens.



- 2 To search by a service name:

- In the **Service name** box, type the service name. To search for any string of characters, use the asterix (*) wildcard. For example, **A*** finds all services that begin with the letter A.

To search for services that exactly match the search text, select **Exact match**.

To search for services that match the case of the text string, select **Case sensitive**.

- To edit the server settings, click **Server Settings**. You can use the default Systinet service address and port set in Project Customization, or type the **Address** and **Port** to be used for querying the server. For information on setting the default Systinet service address and port, see “Customizing the Services Module” on page 54. To restore the default Systinet server address and port, click **Restore Defaults**.

3 To search by a REST request, in the **REST request** box, type a request.

4 Click **Find**. The search results pane displays the following information:

Field	Description
Service Name	The service name in the Systinet registry.
Service ID	The unique identifier for the service in the Systinet registry.
Service Description	The description of the service in the Systinet registry.
Service WSDL	The location of the WSDL file.

Note: If a service found in the search does not reference a WSDL file, the service is not listed in the search results, and a warning message is displayed.

5 Select the service definitions you want to import and click **OK**. The Search for Service in Systinet dialog box closes and the services are added to the Systinet services list in the Import Services dialog box.

6 To perform another Systinet search, click **Replace All**, and repeat steps 1- 5.

Note: If you perform another Systinet search, the services selected in the previous search will be lost.

7 To remove services from the Systinet list in the Import Services dialog box, select the services and click **Remove**.

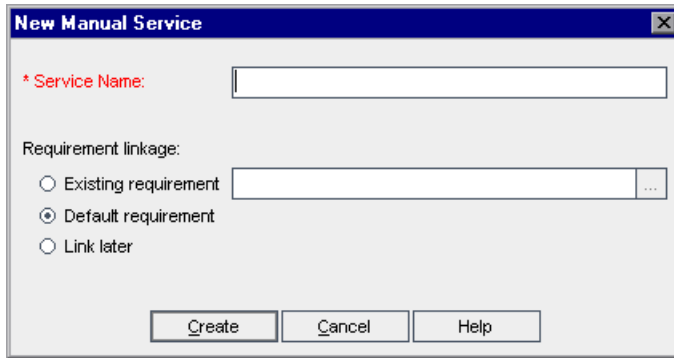
8 Continue with step 6 of “Importing Service Definitions” on page 74.

Creating Manually Defined Services

If you are using services that are not WSDL-based, or you have no WSDLs available to test, you can create empty service definitions under the active folder, and manually update the service attributes. This enables you to link existing requirements and tests to your services.

To create a manually defined service:

- 1 Click the **Service Repository** tab in the left pane.
- 2 In the services tree, select the folder into which you want to create the service definition, and choose **Services > New Service > Create Definition Manually**. The New Manual Service dialog box opens.



- 3 In the **Service Name** box, type a name for the service. The service name cannot exceed 255 characters or include any of the following characters: % * \ | ' : " / < > ? @ # \$
- 4 Under **Requirement linkage**, select an option for linking the selected services to a requirement.
 - **Existing requirement.** Enables you to link the services to a new or existing requirement in the requirements tree.
 - **Default requirement.** Enables you to link the services to a default requirement created by Quality Center.
 - **Link later.** Enables you to link the service later.

For more information on the requirement linkage options, see “Creating Requirement Coverage for Services” on page 87.

- 5 Click **Create**. The service is added to the services tree below the selected folder.
- 6 To add information about the service, click the **Details** tab, and enter the details in the **Description** box. For more information, see “Managing Service Details” on page 110.

Creating Requirement Coverage for Services

Service Test Management does not support direct links between services and tests, test instances, test sets, and defects. Instead, you link services to these Quality Center entities through requirement coverage. When you link a service to a requirement, all other Quality Center entities that are linked to the requirement are indirectly linked to the service. Requirement coverage helps you keep track of the relationship between your requirements and services, and ensures compliance with your requirements throughout the testing process.

When you import a service, you can link it to an existing requirement, a new requirement that you create manually, or a default requirement that Service Test Management automatically creates for you. Alternatively, you can delay linking requirements until after the import process, and link services manually. For more information on manually linking requirements, see Chapter 10, “Linking Services to Requirements”.

When you link a service to a requirement, Service Test Management creates a **Testing** requirement type for the service in the Requirements module. For more information on requirement types, refer to the *HP Quality Center User's Guide*.

This section describes:

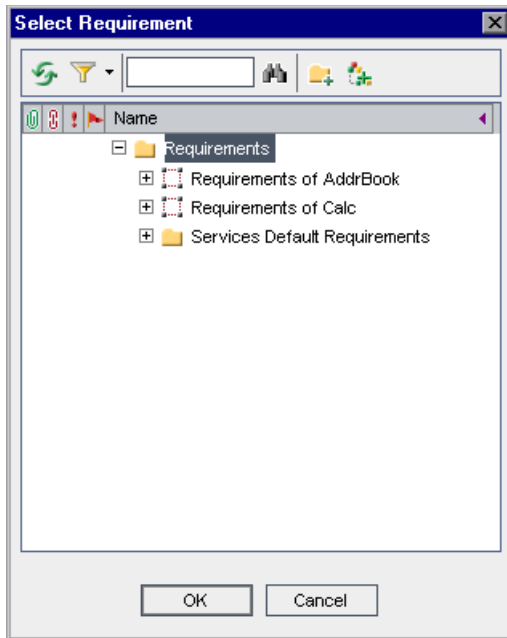
- ▶ Linking Services to a New or Existing Requirement
- ▶ Linking Services to a Default Requirement
- ▶ Delaying Service Requirement Linkage

Linking Services to a New or Existing Requirement

To add requirements coverage to imported services, you can select an existing requirement from the requirement tree, or add a new requirement anywhere in the tree.

To link a service to a new or existing requirement:

- 1 Select the services you want to import as described in steps 1- 6 of “Importing Service Definitions” on page 74. The selected services are displayed in the Import Services dialog box.
- 2 In the **Requirement linkage** section, select the **Existing requirement** option, and click the browse button. The Select Requirement dialog box opens.



- 3 To search for a specific requirement in the tree, type the name (or part of the name) of the requirement in the **Find** box and click the **Find** button. If the search is successful, the requirement is highlighted in the tree.



- 4 To filter and sort requirements in the tree, click the **Set Filter/Sort** button.



- 5 To refresh a requirement in the tree, select the requirement and click the **Refresh Selected** button.



6 To add a requirement folder, click the **New Folder** button. For more information on creating requirement folders, refer to the *HP Quality Center User's Guide*.



7 To add a requirement, click the **New Requirement** button. For more information on creating requirements, refer to the *HP Quality Center User's Guide*.

8 Select a requirement to link to the selected services, and click **OK**. The requirement location is displayed in the requirement box.

When you import services, Service Test Management creates a link between the requirement (in the Requirements module) and each service. Requirement coverage for each service is displayed in the Linked Requirements tab.

Linking Services to a Default Requirement

When you import services, you can link them to a default requirement instead of specifying an existing or new requirement. For each imported service, Service Test Management creates a requirement with the name Default Requirement of Service <service name>(<number>).

In Project Customization, you can specify a folder in which Service Test Management creates default requirements. For information on configuring the default requirement folder, see “Customizing the Services Module” on page 54.

To link a service to a default requirement:

- 1** Select the services you want to import as described in steps 1- 6 of “Importing Service Definitions” on page 74. The selected services are displayed in the Import Services dialog box.
- 2** In the **Requirement linkage** section, select the **Default requirement** option.
- 3** Click **OK**. Service Test Management creates a linked requirement for each imported service in the Linked Requirements tab.

Delaying Service Requirement Linkage

You can delay linking services to requirements until after the import service process is complete.

To delay service requirement linkage:

- 1** Select the services you want to import as described in steps 1- 6 of “Importing Service Definitions” on page 74. The selected services are displayed in the Import Services dialog box.
- 2** In the **Requirement linkage** section, select the **Link later** option.
- 3** Click **OK**. The services are imported without any requirement linkage.

After importing services, you can create requirement coverage by:

- ▶ Manually linking services to requirements. For more information, see Chapter 10, “Linking Services to Requirements.”
- ▶ Linking services to a **Default Requirement** when you create test or test set coverage. For more information on creating test coverage, see “Adding Tests Coverage Manually” on page 165. For more information on creating test set coverage, see “Creating Test Sets for Service Changes” on page 206.

Creating Service Dependencies

Service dependency defines a relationship between two or more services. As the operations of these linked services change, you can detect changes and track their impact on the linked services.

After adding services to the services tree, you can establish dependencies between the services. Using the Linked Services tab in the Services module, you can add dependency links to and from a selected service.

The screenshot shows the Service Repository interface with the 'Account' service selected in the Services tree. The 'Linked Services' tab is active, displaying two dependency grids.

Dependency To (Services impacted by Account)

Linked Service Name	Linked Service Type	Link Type
AddrBook	Url	Source
Calc	Url	Source
Calc_1	Url	Source
Calc_2	Url	Source

Dependency From (Services that impact Account)

Linked Service Name	Linked Service Type	Link Type
AccountService	Systinet	Target

The **Dependency To** grid indicates services that are impacted by a selected service. The **Dependency From** grid indicates services that impact a selected service.

If there are updates, Service Test Management identifies changes to the services and their impact on the linked services in the Changes tab (see “Updating Services and Analyzing Service Changes” on page 195.) To verify the impact of the changes, you can create test sets containing all tests linked to the services defined in the Linked Services tab. After running the test sets, you can verify whether these changes caused regression in service functionality and performance.

This section describes:

- Defining Service Dependencies
- Updating Service Dependencies
- Removing Service Dependencies

Defining Service Dependencies

You can define service dependencies in the Linked Services tab.

To define a service dependency:

- 1** Click the **Service Repository** tab in the left pane.
- 2** In the services tree, select a service and click the **Linked Services** tab.

The Linked Services tab displays the following columns:

Column	Description
Linked Service Name	The name of the linked service.
Linked Service Type	The service type. For example, imported from file, URL, UDDI, Systinet, or manual.
Link Type	The link type. For example, Source or Target.



- To set column appearance and order, click the **Select Columns** button.



- To refresh the grid, click the **Refresh** button.

- 3** Click the **Select** button to open the services tree in the right pane.



- To search for a specific service in the tree, type the name (or part of the name) of the test in the **Find** box and click the **Find** button. If the search is successful, the service is highlighted in the tree.



- To filter and sort services in the tree, click the **Set Filter/Sort** button.



- To refresh the tree, select the test and click the **Refresh** button.

4 Select a service from the tree:



- To add the service to the Dependency To grid, click the **Add Service Dependency** button and choose **Add Service Dependency (Dependency To)**.
- To add the service to the Dependency From grid, click the **Add Service Dependency** button and choose **Add Service Dependency (Dependency From)**.

The Dependency Details dialog box opens.

Define dependencies between service operations:

AddrBook Operation Account Operation

AddrBook Operations	Account Operations

5 To add dependencies between the service operations:


- a** In the <service name1> **Operation** list box, select an operation.
- b** In the <service name2> **Operation** list box, select the operation to which you want to create a dependency.
- c** Click **Add** to add the dependency between the service operations to the grid.
- d** You can add additional dependencies.
- e** Click **OK** to close the Dependency Details dialog box.

The service dependency is added to the appropriate grid in the Linked Services tab.

Updating Service Dependencies

You can update service dependencies in the Linked Services tab.


To update a service dependency:

- 1 Click the **Service Repository** tab in the left pane.
- 2 Select a service in the services tree, and click the **Linked Services** tab.
- 3 In the appropriate grid, select a service dependency link.
-  4 Click **Dependency Details** button. The Dependency Details dialog box opens.
- 5 To add additional service operation dependencies:
 - a In the <service name1> **Operation** list box, select an operation.
 - b In the <service name2> **Operation** list box, select the operation to which you want to create a dependency.
 - c Click **Add** to add the service operations to the grid.
- 6 To remove a service operation dependency, select a row in the grid and click **Remove**. Click **Yes** to confirm.
- 7 Click **OK** to close the Dependency Details dialog box.

Removing Service Dependencies

You can remove a service dependency from the Linked Service tab.

To remove a service dependency:

- 1 Click the **Service Repository** tab in the left pane.
- 2 Select a service in the services tree, and click the **Linked Services** tab.
- 3 In the appropriate grid, select a service dependency link.
-  4 Click the **Remove Service Dependency** button.
- 5 Click **Yes** to confirm.

Accessing Services on Secure Sites and Proxy Servers

When importing WSDL files from a URL, UDDI server, or Systinet server, the WSDL may require authentication if it resides in a secure location. Occasionally, access to the WSDL may be through a proxy server. Service Test Management supports the importing of WSDLs using security and WSDLs accessed through proxy servers.

After you enter the security or proxy information, it remains with the WSDL, visible through the Connection Settings box in the Import Services dialog box. If you enable the **Keep up to date** option to allow automatic synchronization, Service Test Management accesses the WSDL at its source using the authentication or proxy server settings.

Service Test Management supports importing WSDLs using security and WSDLs accessed through proxy servers, using basic and NTLM authentication.

It is recommended that you enter the authentication or proxy information while importing the WSDL. If however, the settings changed, you can modify them through the WSDL Definition tab.

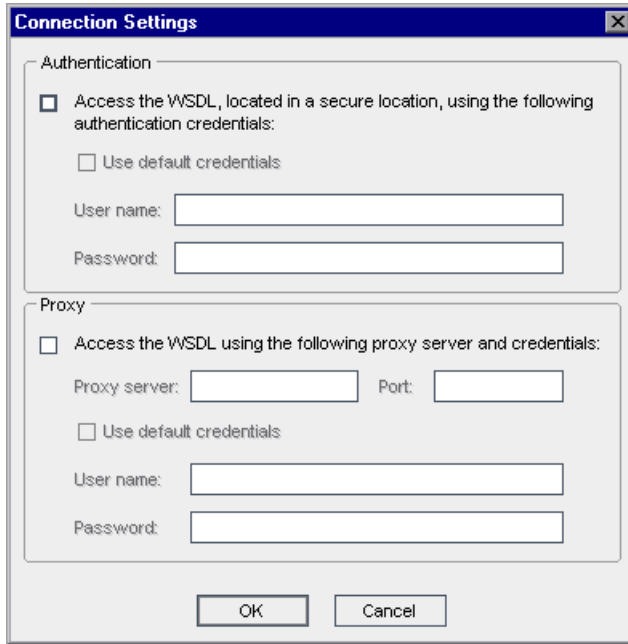
Note: You can set the default WSDL connection settings in the Project Customization window. For more information on customizing the connection settings, see “Customizing the Services Module” on page 54.

To configure the connection settings:

- 1 Select the WSDLs you want to import as described in “Importing Service Definitions” on page 74.

Note: You cannot configure connection settings for a service definition imported from a file system or a Systinet server.

- 2 In the **Connection Settings** section, click **Configure**. The Connection Settings dialog box opens.



- 3 To specify authentication details for accessing a WSDL on a secure site, in the **Authentication** section, select **Access the WSDL, located in a secure location, using the following authentication credentials**, and choose one of the following authentication options:

Option	Description
Use default credentials	Uses the Windows logon credentials of the user logged on to the machine for authentication.
User name and Password	Enter the user name and password to be used for authentication. Users that are not in the default domain must also type the domain before the user name. For example, domain1/alex_qc.

- 4** To specify details for accessing a WSDL through a proxy server, in the **Proxy** section, select **Access the WSDL using the following proxy server and credentials**. Type the **Proxy server** and **Port** used to access the WSDL, and choose one of the following connection options:

Option	Description
Use default credentials	Uses the Windows logon credentials of the user logged on to the machine.
User name and Password	Enter the user name and password to be used to access the proxy server.

- 5** Click **OK** to apply your settings. Once a service has been successfully imported, its connection credentials are stored in Service Test Management. If you attempt to import the secure service before specifying the necessary credentials, Service Test Management prompts you to enter the information. If you supply the incorrect, or no credentials, Service Test Management is unable to import the file.
- 6** To update or modify the authentication or proxy connection settings after you import a service, click the **WSDL Definition** tab, and click the **Connection Settings** button. Edit the required fields in the Connection Settings dialog box, and click **OK**.

7

Managing Services

After creating a service, you can view and modify service definitions and details, view operations and operation parameters, add attachments, and generate Excel reports. You can also remove and restore services and service groups and associate service groups with services.

This chapter includes:

- ▶ About Managing Services on page 100
- ▶ Viewing and Modifying Services on page 101
- ▶ Finding Folders and Services on page 103
- ▶ Copying Folders and Services on page 104
- ▶ Mailing Services on page 105
- ▶ Managing Service Definitions on page 108
- ▶ Managing Service Details on page 110
- ▶ Managing Service Operations on page 113
- ▶ Associating Service Groups with Services on page 116
- ▶ Adding Attachments to Services and Service Groups on page 118
- ▶ Generating Excel Reports on page 118
- ▶ Removing and Restoring Services on page 120

About Managing Services

After you import a service definition or manually define a service, you can view and modify service definitions and details. You can also generate Excel reports and delete service folders or remove services that are not required.




You can manage service data using the following tabs:

Tab	Description
WSDL Definition	Enables you to view the service definition, override the service address, and save the WSDL file to another location. For more information, see “Managing Service Definitions” on page 108.
Details	Enables you to view and modify general details and attributes of the service according to your requirements, including the toolkit used, the service creation date, and the user assigned to the service. For more information, see “Managing Service Details” on page 110.
Operations	Enables you to view the service operations and the operation’s parameters and tests for imported services. For more information, see “Managing Service Operations” on page 113.
Groups	Enables you to manually link services to service groups and view the service groups to which the service has been assigned. This enables you to organize services into logical groupings, and perform tasks on the entire service group. For more information, see “Viewing and Modifying Service Group Details” on page 128.
Linked Req.	Enables you to view and link requirements to services. For more information, see “Linking Services to Requirements” on page 151.
Linked Tests	Enables you to view and link tests to services. For more information, see “Linking Tests to Services” on page 161.

Tab	Description
Linked Defects	Enables you to view the defects linked to services. For more information, see “Viewing Linked Defects” on page 193.
Linked Services	Enables you to link services to other services to establish dependencies between them. For more information, see “Creating Service Dependencies” on page 91.
Changes	Enables you to keep track of service updates and analyze the impact of service changes. For more information, see Chapter 14, “Updating Services and Analyzing Service Changes.”
Attachments	Enables you to associate a file, URL, snapshot, image, or system information with a service as an attachment. For more information, see “Adding Attachments to Services and Service Groups” on page 118.

Viewing and Modifying Services

You can view and modify services and service folders in the services tree. When the Services module is first accessed, the services tree displays only the highest level folder or services in the hierarchy.

- ▶ A change alert icon  adjacent to a service indicates that the service status has changed. This indicates that changes have been made to the service, and these changes should be reviewed. For more information on viewing changes, see “Reviewing Service Changes” on page 201.
- ▶ To expand a folder in the tree, click the expand symbol  to the left of the folder name, or double-click the folder. Alternatively, choose **View > Expand**.
- ▶ To collapse a folder in the tree, click the collapse symbol  to the left of the folder name, or double-click the folder. Alternatively, choose **View > Collapse**.

- To change a folder or service name in the services tree, select the folder or service and click it. Alternatively, choose **Edit > Rename**. Then edit the item name and press ENTER.
- To move a folder or service in the tree, you can drag and drop the folder or service to the required position in the tree. Alternatively, right-click the folder or service, and choose **Cut**. Then right-click the required folder into which to paste the folder or service and choose **Paste**.



- To refresh a folder or service in the tree, select the folder or service and click the **Refresh Selected** button in the toolbar. To refresh all the folders and services in the tree, select the **Services** root folder and click the **Refresh Selected** button in the toolbar.



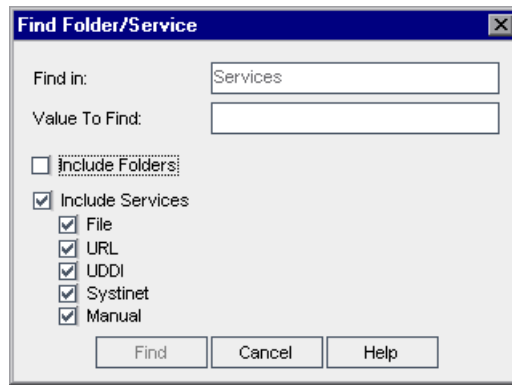
- To filter or sort the services in the tree, click the **Set Filter/Sort** button in the toolbar. Any currently applied filters or sort orders are displayed under the service tree toolbar. For more information on filtering and sorting a tree, refer to the *HP Quality Center User's Guide*.

Finding Folders and Services

You can search for a particular folder or service in the services tree using the Find command. If you have applied filters to the tree, the search is restricted to the folders and services currently displayed.

To find a value:

- 1 In the services tree, select the folder or service that you want to search, and choose **Edit > Find**. The Find Folder/Service dialog box opens.



The name of the selected folder, or the folder in which the selected service is located, is displayed as read-only in the **Find in** box.

- 2 In the **Value To Find** box, type or select the value to find.
- 3 You can select **Include Folders** to search for the value in all subfolders of the selected folder.
- 4 You can select **Include Services** to search for the value in all services in the selected folder and its subfolders. If this option is selected, you can choose which service types to include in your search.
- 5 Click **Find**. Quality Center attempts to locate the folder or service. If the search is successful, the Search Results dialog box opens and displays a list of possible matches. Select a result from the list and click the **Go To** button to highlight the folder or service in the services tree.

Copying Folders and Services

You can copy an existing service or folder and paste it to another location in the services tree, or to another project. When copying a service to another project, the source and target projects must be open in separate browsers.

If a copied folder or service has the same name as a folder or service that already exists in the target folder or service, a duplicate name warning message is displayed. Click **OK**. The folder or service is copied to the new position in the services tree, and a suffix, for example `_Copy_1`, is automatically added to the folder or service name.

Services within folders that are copied in the services tree are also copied. You can then use the settings of the copied services as the basis for new services.

To copy an existing folder or service:

- 1** In the services tree, right-click the folder or service that you want to copy, and choose **Copy**.
- 2** Right-click the folder into which you want to paste the new folder or services, and choose **Paste**. The folder or services is copied to the new position in the services tree.
- 3** If you want to change the name of the copied folder or service, right-click the folder or service in the tree, choose **Rename**, and then enter a new name.
- 4** To modify settings of the copied service, select the service in the tree, and modify the settings in the Services tabs.

Mailing Services

You can send e-mail about a service to other users in your Quality Center project. This enables you to routinely inform development and quality assurance personnel about the status of your services. A link is included in the e-mail message that enables the recipient to go directly to the service.

Note: By default, Quality Center sends e-mail in HTML format. To send e-mail as plain text instead, edit the **MAIL_FORMAT** parameter in the **Site Configuration** tab in Site Administration. For more information, refer to the *HP Quality Center Administrator's Guide*.

To mail a service:

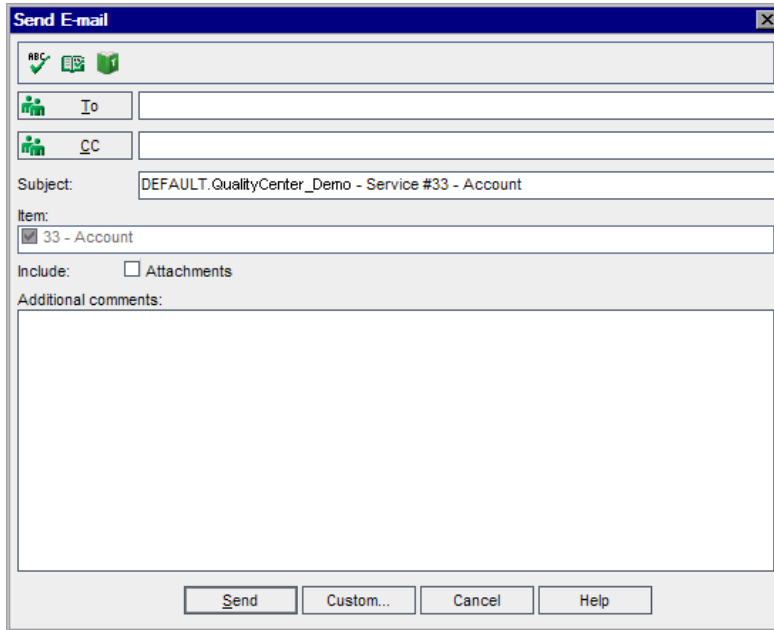
1 In the services tree, select a service.



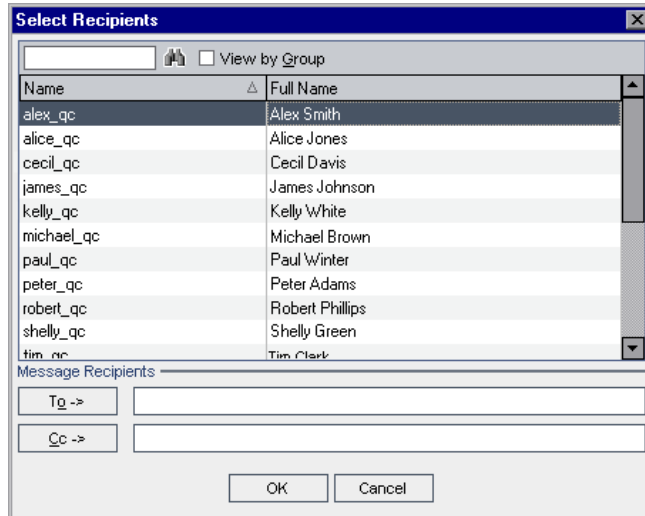
2 To send a service to a user, click the **Send by E-mail** button.

To send a service to the user who wrote the service, click the **Send by E-mail** arrow and choose **Send by E-mail to Created By**.

The Send E-mail dialog box opens. When sending a service to the user who wrote the service, the user name is displayed in the **To** box.



- 3 To add a recipient name, type a valid user name. Alternatively, click the **To** button or **CC** button to select users. The Select Recipients dialog box opens.



You can sort the users list, search for users, group users by user groups, and select users from the list or from a group tree. Select the users or user groups to which you want to send the e-mail, and click **OK**.

- 4 In the **Subject** box, type a subject for the e-mail.
- 5 Choose whether you want to include the **Attachments** of the service.
- 6 In the **Additional comments** box, add any comments you may have.
- 7 To check the spelling in the dialog box:



- ▶ Click the **Check Spelling** button to check the spelling for the selected word or text box. If there are no errors, a confirmation message opens. If errors are found, the Spelling dialog box opens and displays the word together with replacement suggestions.



- ▶ Click the **Spelling Options** button to open the Spelling Options dialog box, enabling you to configure the way spelling is checked.



- ▶ Click the **Thesaurus** button to open the Thesaurus dialog box and display a synonym, antonym, or related word for the selected word. You can replace the selected word or look up new words.

- 8 Click **Custom** to customize the e-mail. In the Select Fields dialog box, you can specify fields to include in the e-mail.
- 9 Click **Send** to send the e-mail.

Managing Service Definitions

You can view the service definition, override the service address, save the WSDL file to another location, and modify the connection settings in the WSDL Definition tab.

To view or edit a service definition:

- 1 Click the **Service Repository** tab in the left pane.
- 2 Select a service in the services tree, and click the **WSDL Definition** tab.

The screenshot shows a software interface with a tabbed menu at the top. The active tab is "WSDL Definition". Other tabs include "Details", "Operations", "Groups", "Linked Req.", "Linked Tests", "Linked Defects", and "Linked Services". Below the tabs, there are several input fields and a checkbox:

- Service address:** Override Systinet address
- Systinet Key:**
- WSDL location:** [Download WSDL stored in Quality Center](#)
- Service name:**

Below these fields is a section titled "Systinet description:" containing the text: "AccountService - http://company.com/accountsvc/account (generated from WSDL)".

The WSDL Definition tab contains the following information:

Field	Description
Service address	The service deployment location, to which service requests are sent. Quality Center displays by default the endpoint address specified in the WSDL file.
Systinet Key	The URL address of an XML artifact in a service catalog.
WSDL location	The location of the WSDL file that is displayed by default when importing the service.
Service name	The native service name in the WSDL file that is displayed by default when importing the service.
UDDI Key	A unique identifier of the service on the UDDI server, used to locate the service definition when updating the service. (Only available for services imported from UDDI.)
WSDL/UDDI/Systinet Description	The description of the service in the WSDL file or on the UDDI or Systinet server that is displayed by default when importing the service.

- 3** To change the service name in the services tree, right-click a service and choose **Rename**. Edit the service name and press ENTER.
- 4** To override the service address declared in the WSDL file or on the UDDI or Systinet server and use a different machine, select the **Override service/UDDI address/Systinet address** check box, and type a different address in the **Service address** box. To revert to the original service address, clear the check box.

Tip: Overriding the service address is useful, for example, when the address used for a deployed service is different from that used while the service is being developed.

- 5 To save the WSDL file stored in the Quality Center repository to another location, click **Download WSDL stored in Quality Center**, and select the location to which you want to download the file.
- 6 To view or modify the authentication or proxy settings for a WSDL, click **Connection Settings**. For more information, on configuring connection settings, see “Accessing Services on Secure Sites and Proxy Servers” on page 95.

Note: The **Connection Settings** button is not available for service definitions imported from a file system.

Managing Service Details

You can view and modify general details and attributes of the service in the Details tab.

To view or modify service details:

- 1 Click the **Service Repository** tab in the left pane.

2 Select a service in the services tree, and click the **Details** tab.

The screenshot shows a web interface with several tabs: WSDL Definition, Details (selected), Operations, Groups, Linked Req., and Linked Tests. The 'Details' tab is active and contains the following sections:

- Service Details:**
 - Toolkit used: Axis (dropdown)
 - Creation date: 8/29/2006 (dropdown)
 - Created by: admin (dropdown)
 - Assigned to: (empty dropdown)
- Import Details:**
 - Last updated: 8/29/2006 2:09:44 PM (text input)
 - Keep up to date (checkbox)
- Description:**
 - A large empty text area for the service description.

The Details tab contains the following information:

Field	Description
Toolkit used	The name of the Web services toolkit used when importing the service.
Created by	The user name of the user who created the service.
Creation date	The date the service was created in the services tree.
Assigned to	The name of the user to whom the service implementation is assigned.
Last updated	The date and time that the service was last updated.

Field	Description
UDDI server	The URL address and version of the UDDI server from which the service definition is imported (read-only).
Systinet server	The URL address and port of the Systinet server from which the service definition is imported (read-only).
Deletion date	The date the service was deleted (for services in the Obsolete folder only).
Deleted from path	The path of the deleted service (for services in the Obsolete folder only).
Description	You can type your own description of the service in this box.

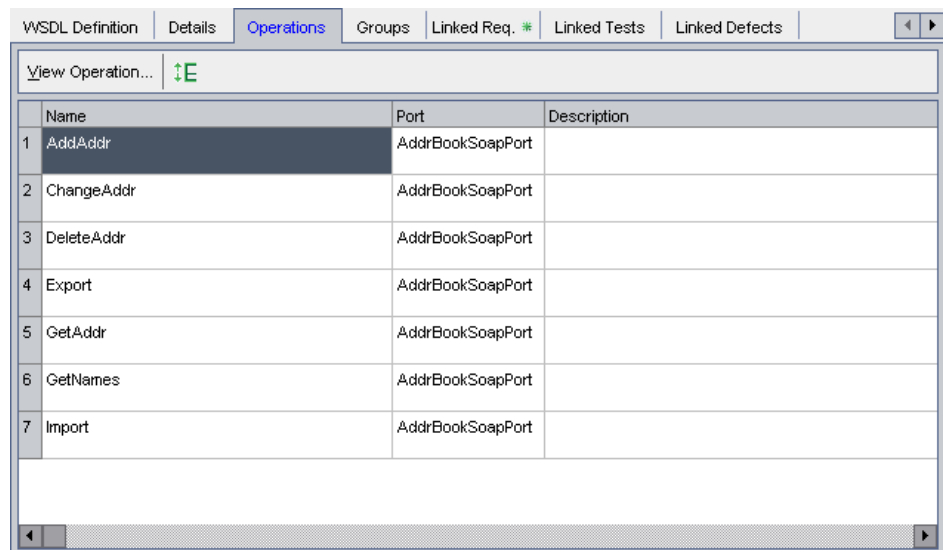
- 3** Modify the information as required.
- 4** To update the service definition from the WSDL file each time the service is loaded, select **Keep up to date**. For more information on updating services, see “Updating Services and Service Groups” on page 198.

Managing Service Operations

You can view service operations and the operation's parameters and tests for imported services in the Operations tab. Operations are the various methods being exposed by the service. For example, a simple calculator service includes an add, divide, multiply, and subtract operation. Parameters are the operation request data and response data.

To view service operations:

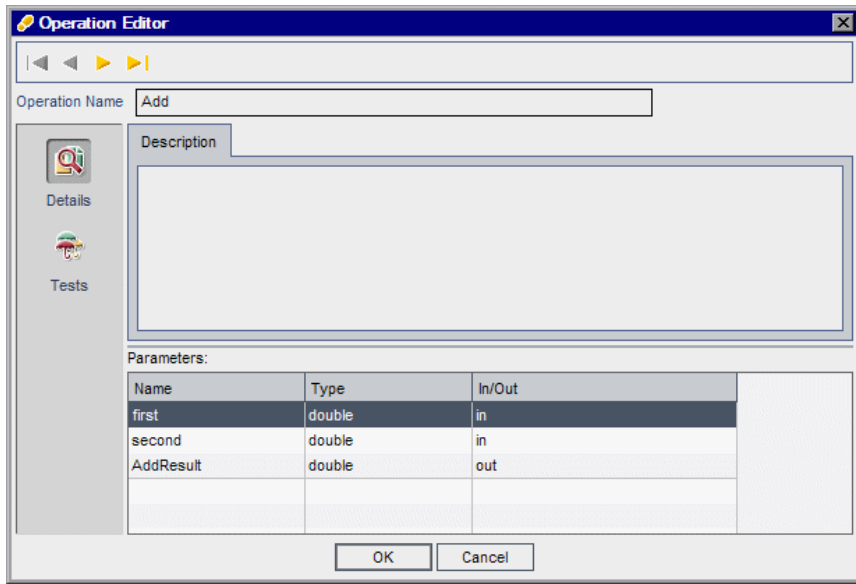
- 1 Click the **Service Repository** tab in the left pane.
- 2 Select a service in the services tree, and click the **Operations** tab.



The operations grid contains the following information:

Column	Description
Name	Displays the name of the operation.
Port	Displays the port connected to the service for each operation.
Description	Displays the description of the operation.

- 3 To view the operation's parameters and tests, select the operation you want to view in the operations grid, and click the **View Operation** button. The Operation Editor opens. By default, the Details view is displayed.



The Operation Editor contains the following views:

View	Description
Details	Lists the parameters for the operation.
Tests	Lists the tests that cover the operation. For more information, see “Viewing the Operation’s Tests” on page 115.

You can proceed through the operations in a service using the browse buttons:



Click the **First Operation** button to display the first operation in the service, or the **Previous Operation** button to display the preceding operation.



Click the **Next Operation** button to display the subsequent operation in the service, or the **Last Operation** button to display the final operation in the service.

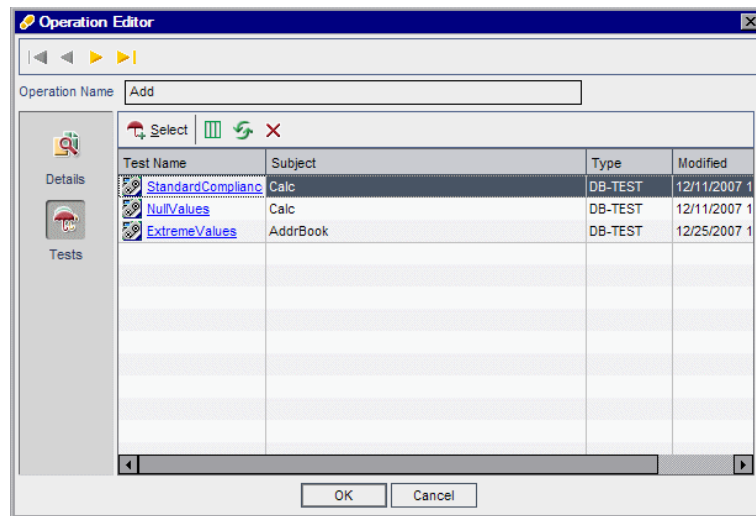
Click **OK** to close the Operation Editor.

Viewing the Operation's Tests

You can view the relationship between operations and tests in the Operation Editor.

To view the operation's tests:

- 1 Select the operation you want to view in the operations grid, and click the **View Operation** button. The Operation Editor opens.
- 2 Click **Tests** on the sidebar.



- 3 To add additional tests, click the **Select** button. The Test Plan Tree is displayed in the right pane.



- To search for a specific test in the tree, type the name (or part of the name) of the test in the **Find** box and click the **Find** button. If the search is successful, the test is highlighted in the tree.



- To filter and sort tests in the tree, click the **Set Filter/Sort** button.



- To refresh the tests in the tree, click the **Refresh All** button.



- To add a test to the test set, in the Test Plan Tree tab, select a test or a test folder and click the **Add to Test Set** button. The test is added to the grid. Only tests that match the current filter are added.



- Click the **Close** button to hide the Test Plan Tree tab in the right pane.



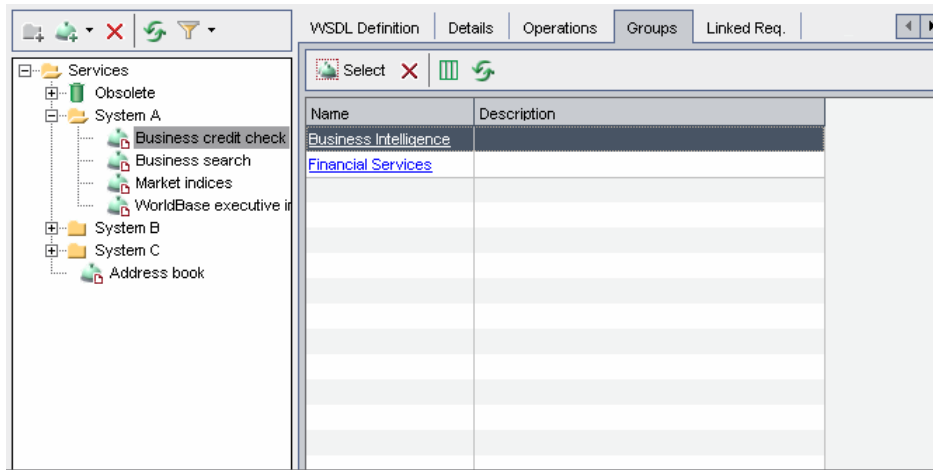
- 4 To delete a test from the grid, select the test and click the **Remove a Test** button.
- 5 To go to the test in the test plan tree, click a test in the grid.

Associating Service Groups with Services

You can associate service groups with services, and view information about associated service groups in the Groups tab.

To associate service groups with services:

- 1 Click the **Service Repository** tab in the left pane.
- 2 Select a service in the services tree, and click the **Groups** tab.



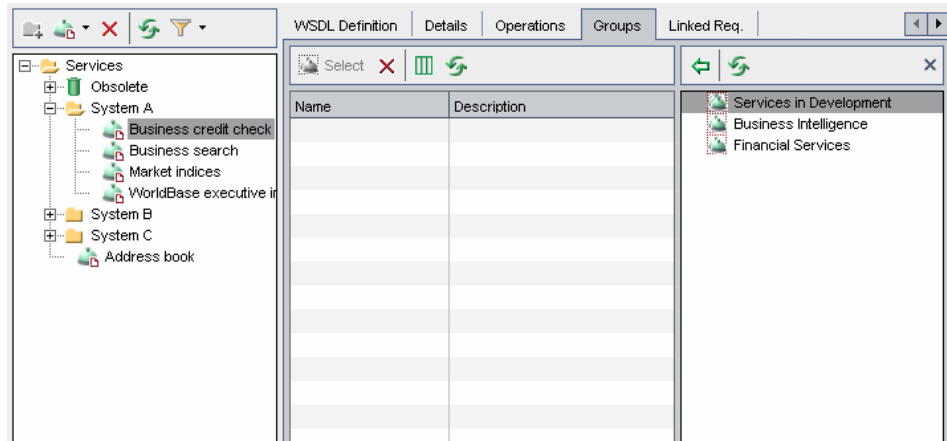
The groups grid contains the following information:

Column	Description
Name	The group name.
Description	A description of the group.
Assigned To	The user to whom the group is assigned.

Column	Description
Created By	The login name of the user who created the service group.
Creation Date	The date on which the group was created.



- 3** To set column appearance and order in the groups grid, click the **Select Columns** button. For more information on arranging columns, refer to the *HP Quality Center User's Guide*.
- 4** To go to an associated service group in the Service Groups tab, click the group name in the groups grid.
- 5** To associate service groups with a service, click the **Select** button. The service groups list is displayed in the right pane.



- 6** To refresh a group in the service groups list, select the group and click the **Refresh** button.



- 7** In the service groups list, select the service groups you want to associate with the service, and click the **Associate Service Group with Service** button. Alternatively, you can double-click the group, or drag the group to the groups grid. The group is added to the groups grid.



- 8** Click the **Close Service Groups List** button in the upper-right of the service groups list to hide the service groups list.



- 9 To remove associated service groups, select the groups to remove, and click the **Remove Associated Service Group from Service** button in the Groups toolbar. The association between the selected service groups and the service is removed.

Adding Attachments to Services and Service Groups

The Attachments tab enables you to associate an attachment with a service or service group. An attachment can be a file, URL, snapshot, an image from the clipboard, or system information, and is identified by its name, associated application icon, size, and latest modification date and time. You can add, modify, and delete attachments.

The Attachments tab includes an icon  if the selected service or service group has any attachments.

The Attachments tab for services and service groups has the same functionality as the Attachments tab for other test types. For more information on adding attachments, refer to the *HP Quality Center User's Guide*.

Generating Excel Reports

You can generate Excel reports that enable you to export service and service group data to Microsoft Excel and analyze the data from within Excel. This enables you to use Excel to analyze your data and present it in graphical form. These reports are based on SQL queries performed on the project's database, and the results are saved as an Excel file. You can also run a Visual Basic script on the extracted data to process and analyze the data.

When using Service Test Management, the following entities are added to the entities pane in the Query tab of the Analysis module: **Service**, **Service Change**, **Service Folder**, **Service Group**, **Service Group to Requirement relation**, **Service Operation to Component relation**, **Service Operation to Test relation**, **Service to Group relation**, **Service to Requirement relation**, **WSDL Operation**, and **WSDL Operation Parameters**. These entities contain an Excel Reports folder that stores your SOA-related queries. It also provides default queries that you can use to analyze your services.

For example, you could create a pivot table to summarize Services module data, such as to display in tabular format the status count for the different service coverage statuses.

	A	B	C	D	E	F	G	H
1	Sum of Status Count	Coverage Status						
2	Service Name	Failed	N/A	No Run	Not Completed	Not Covered	Passed	Grand Total
3	CheckCredit	2		2		3	11	18
4	DepositMoney	6		1	5	2	5	19
5	TransferMoney		3	1			20	24
6	WithdrawMoney	2	1		7		8	18
7	Grand Total	10	4	4	12	5	44	79

PivotTable Field List

Drag items to the PivotTable report

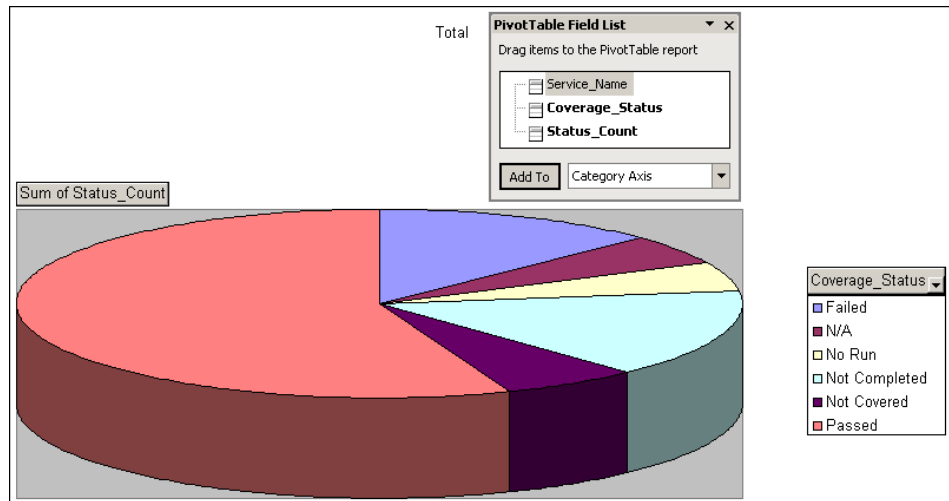
Service_Name

Coverage_Status

Status_Count

Add To: Row Area

You can also display this information in the form of a pie chart report.



For details on how to generate Excel reports, refer to the *HP Quality Center User's Guide*.

Removing and Restoring Services

You can delete a folder or remove a service that is not required. Services that are not linked to **Using tests** in Quality Center are permanently deleted. A Using test is a test that is actually using the service—it has a call to one or more operations of the service and there are links between the services's operations and the test in Quality Center. These links are created when the test is saved to Quality Center from Service Test (see “Viewing the Linked Tests Tab” on page 164) or when tests are generated using the Requirement and Test Generation wizard (see Chapter 9, “Generating Service Requirements and Tests”). Services that are linked to one or more Using tests in Quality Center are transferred to the **Obsolete** folder. You cannot copy obsolete services.

You can restore services in the **Obsolete** folder to their original position in the services tree if the folder still exists in the tree, or you can drag them to a different location in the services tree.

This section describes:

- ▶ Removing Folders and Services
- ▶ Restoring Obsolete Services


Removing Folders and Services

If you remove a service folder in the services tree, its subfolders and all the services in the folders are removed. Services contained in the folders that are linked to Using tests in Quality Center are transferred to the **Obsolete** folder. For more information on Using tests, see “Viewing the Linked Tests Tab” on page 164.

To remove a service entirely, you must stop all tests from using the service. You can stop a test using a service by opening the test in Service Test, and removing all Web service calls to the service. After you have removed all calls to the service, you can then delete the service from the **Obsolete** directory.

For more information on viewing linked tests, see Chapter 11, “Linking Tests to Services.”

To remove a folder or service:

- 1 Click the **Service Repository** tab in the left pane.
- 2  Select the folder or service in the services tree and click the **Delete** button in the toolbar. Click **Yes** to confirm.

The folder or service is removed from the services tree. If services are currently linked to Using tests in Quality Center, click **Yes** to transfer them to the **Obsolete** folder, or click **No** to cancel the operation.



Tip: To view a removed service in the **Obsolete** folder in the services tree, you must first refresh the folder. Select the **Obsolete** folder and click the **Refresh Selected** button in the tree toolbar.

Restoring Obsolete Services

You can restore services in the **Obsolete** folder to their original position in the services tree, if the folder still exists in the tree. If the folder no longer exists, you can transfer a service to another position in the services tree by dragging it from the **Obsolete** folder to the required position.

To restore a service:

- 1 Click the **Service Repository** tab in the left pane.
- 2 In the **Obsolete** folder in the services tree, select the service you want to restore.

- 3** To view information on the deleted service, click the **Details** tab.

The screenshot shows a web-based interface with a tabbed menu at the top. The 'Details' tab is selected. Below the tabs, there are two sections: 'Service Details' and 'Import Details'. The 'Service Details' section contains several input fields: 'Toolkit used' (dropdown menu with '.NET' selected), 'Creation date' (dropdown menu with '7/23/2006' selected), 'Created by' (dropdown menu with 'admin' selected), 'Assigned to' (empty dropdown menu), 'Deletion date' (text box with '7/23/2006'), and 'Deleted from path' (text box with 'Services\Folder2'). The 'Import Details' section contains a 'Last updated' field with a timestamp '7/23/2006 1:21:13 PM' and a checkbox labeled 'Keep up to date' which is currently unchecked.

The **Deletion date** box displays the date on which the service was deleted.

The **Deleted from Path** box displays the path of the folder where the service was last located.

For information about other boxes in the Details tab, see “Managing Service Details” on page 110.

- 4** To restore the service, choose **Services > Restore Service**. The service is restored to its original location in the services tree.

Alternatively, select the service in the **Obsolete** folder and drag it to the appropriate folder in the services tree.

8

Working with Service Groups

You can organize services into logical groupings, and perform tasks on the entire service group.

This chapter includes:

- ▶ About Working with Service Groups on page 123
- ▶ Creating a Service Group on page 124
- ▶ Creating Requirement Coverage for Service Groups on page 125
- ▶ Viewing and Modifying Service Group Details on page 128
- ▶ Viewing and Modifying Services Assigned to Service Groups on page 129
- ▶ Mailing Service Groups on page 133
- ▶ Removing Service Groups on page 136

About Working with Service Groups

In an organization, services have a context. For example, services may be located on the same server, may be exposed at part of the same application, or may take part in the same business process. In the Services module, you use the Service Groups tab to create service groups representing logical groupings. You might, for example, organize services into groups representing different physical deployments, business processes or transactions, or application types such as Enterprise Resource Planning (ERP) or Customer Relationship Management (CRM). After you create service groups, you can assign services to service groups, and perform tasks on the entire service group. The same service can be assigned to multiple service groups.

Creating a Service Group

Service groups are organized alphabetically in a list in the Service Groups tab. Each row in the service group list displays a separate service group.

To create a service group:

- 1 Click the **Service Groups** tab in the left pane.
- 2 Choose **Groups > New Group** or click the **New Group** button in the tree toolbar. The New Service Group dialog box opens.



New Service Group

* Group Name:

Requirement linkage:

Existing requirement

Default requirement

Link later

- 3 In the **Group Name** box, enter a descriptive name for the service group (maximum length 255 characters).
- 4 In the **Requirement linkage** area, select an option for linking the selected service group to a requirement.
 - ▶ **Existing requirement.** Enables you to link the service group to a new or existing requirement in the requirements tree.
 - ▶ **Default requirement.** Enables you to link the service group to a default requirement created by Quality Center.
 - ▶ **Link later.** Enables you to link the service group later.

For more information on the requirement linkage options, see “Creating Requirement Coverage for Service Groups” on page 125.

- 5 Click **OK**. The new service group is added to the service groups list.

Creating Requirement Coverage for Service Groups

You use requirement coverage to connect service groups to other Quality Center entities (tests, test sets, and defects) through the requirement. When you create a service group, you can link it to an existing requirement, a new requirement that you create manually, or a default requirement that Service Test Management automatically creates for you. Alternatively, you can delay linking requirements until after creating a service group, and link the group in the Linked Requirements tab. Note that you cannot link a service group to a test or test instance until you have created requirement coverage. For more information on linking requirements in the Linked Requirements tab, see “Adding Requirement Coverage Manually” on page 155.

When you link a service group to a requirement, Service Test Management creates a **Testing** requirement type for the service in the Requirements module. For more information on requirement types, refer to the *HP Quality Center User's Guide*.

This section describes:

- ▶ Linking Service Groups to a New or Existing Requirement
- ▶ Linking Service Groups to a Default Requirement
- ▶ Delaying Service Group Requirement Linkage

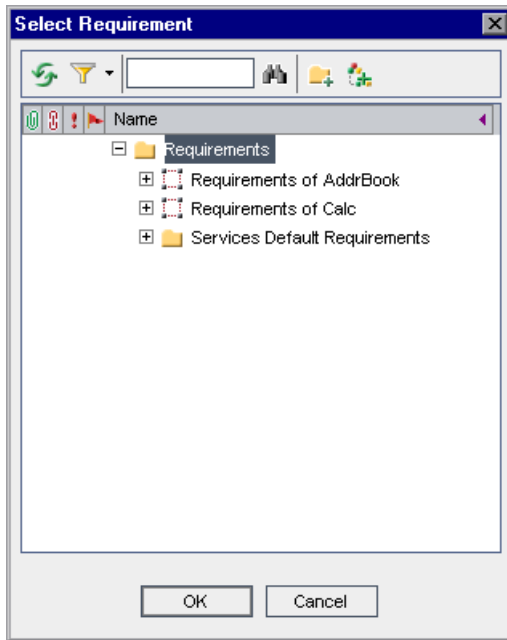
Linking Service Groups to a New or Existing Requirement

To add requirements coverage to a service group, you can select an existing requirement from the requirement tree, or add a new requirement anywhere in the tree.

To link a service group to a new or existing requirement:

- 1 Perform steps 1- 3 of “Creating a Service Group” on page 124.

- 2 In the **Requirement linkage** section, select the **Existing requirement** option, and click the browse button. The Select Requirement dialog box opens.



- 3 To search for a specific requirement in the tree, type the name (or part of the name) of the requirement in the **Find** box and click the **Find** button. If the search is successful, the requirement is highlighted in the tree.



- 4 To filter and sort requirements in the tree, click the **Set Filter/Sort** button. For more information on filtering and sorting a tree, refer to the *HP Quality Center User's Guide*.



- 5 To refresh a requirement in the tree, select the requirement and click the **Refresh Selected** button.



- 6 To add a requirement folder, click the **New Folder** button. For more information on creating requirement folders, refer to the *HP Quality Center User's Guide*.



- 7 To add a requirement, click the **New Requirement** button. For more information on creating requirements, refer to the *HP Quality Center User's Guide*.

- 8 Select a requirement to link to the service group, and click **OK**. The requirement location is displayed in the requirement box.

When you create a service group, Service Test Management creates a link between the requirement (in the Requirements module) and the group. Requirement coverage for the service group is displayed in the Linked Requirements tab.

Linking Service Groups to a Default Requirement

When you create service groups, you can link them to a default requirement instead of specifying an existing or new requirement. For each service group, Service Test Management creates a requirement with the name Default Requirement of Service Group <service group name>(<number>).

In Project Customization, you can specify a folder in which Service Test Management creates default requirements. For information on configuring the default requirement folder, see “Customizing the Services Module” on page 54.

To link a service group to a default requirement:

- 1 Perform steps 1- 3 of “Creating a Service Group” on page 124.
- 2 In the **Requirement linkage** section, select the **Default requirement** option.
- 3 Click **OK**. Service Test Management creates a linked requirement for each imported service in the Linked Requirements tab.

Delaying Service Group Requirement Linkage

You can delay linking service groups to requirements until after creating service groups. Note that you must link a service group to a requirement before you can link it to a test.

To delay service group requirement linkage:

- 1 Perform steps 1- 3 of “Creating a Service Group” on page 124.
- 2 In the **Requirement linkage** section, select the **Link later** option.
- 3 Click **OK**. The service group is created without any requirement linkage.

- 4 After creating a service group, you can create requirement coverage by:
 - ▶ Manually linking service groups to requirements as described in “Adding Requirement Coverage Manually” on page 155.
 - ▶ Linking service groups to a **Default Requirement** when you create test coverage. For more information on creating test coverage, see “Adding Tests Coverage Manually” on page 165.

Viewing and Modifying Service Group Details

You can view and modify a service group’s attributes in the Details tab.

To view or modify service group details:

- 1 Click the **Service Groups** tab in the left pane. The service groups in the project are displayed in the service groups list.
- 2 Select a service group in the service groups list, and click the **Details** tab.

The screenshot shows a web interface for viewing service group details. At the top, there are several tabs: "Details" (which is active), "Services" with a green asterisk, "Linked Req." with a green asterisk, "Linked Tests", "Linked Defects", and "Attachments". Below the tabs, there are two rows of fields. The first row contains "Created by:" with a dropdown menu showing "admin" and a "Creation date:" with a dropdown menu showing "8/23/2006". The second row contains "Assigned to:" with an empty dropdown menu. Below these fields is a "Description:" label followed by a text area containing the text: "This group holds financial services related to our accounting systems and e-commerce platform."

The Details tab contains the following information:

Field	Description
Created by	The login name of the user who created the service group.
Creation date	The date that the service group was created in the services tree.
Assigned to	The user to whom the service group is assigned.
Description	A description of the service group.

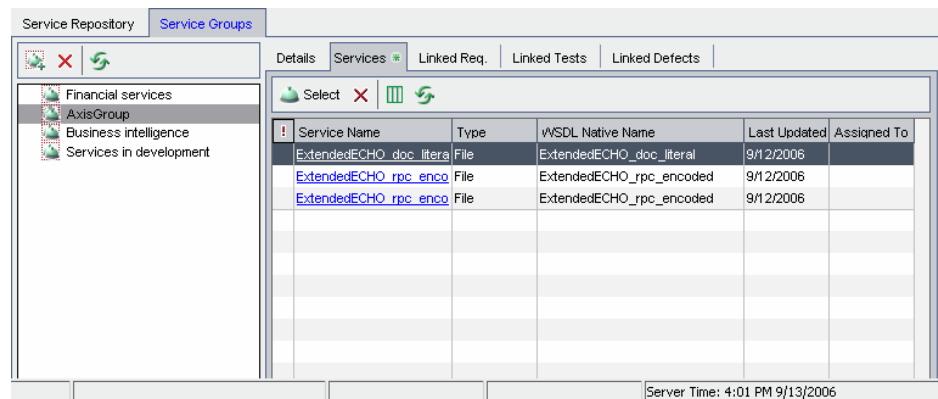
- 3 Modify the information as required.

Viewing and Modifying Services Assigned to Service Groups

You can view services that are assigned to a service group in the Services tab. The Services tab contains a grid that displays information about each assigned service, with a link to the service. You can view, add, and delete assigned services in the services grid.

To assign a service to a service group:

- 1 Click the **Service Groups** tab in the left pane. The service groups in the project are displayed in the service groups list.
- 2 Select a service group in the service groups list, and click the **Services** tab.



The services grid contains the following columns:

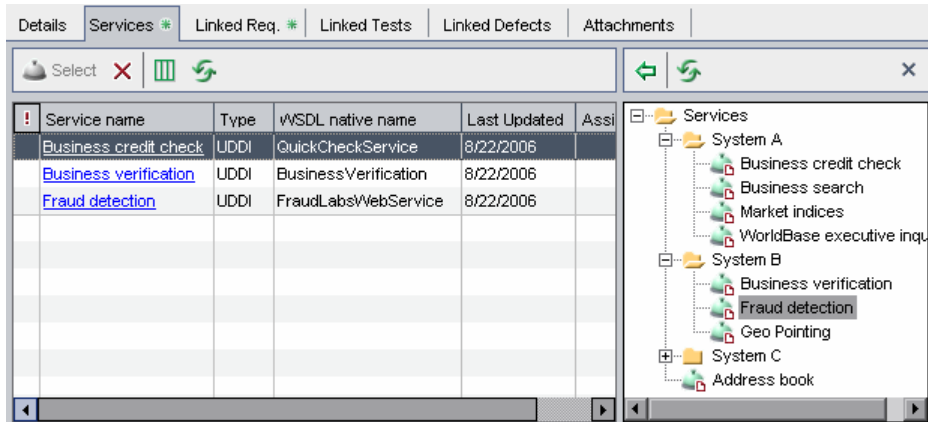
Column	Description
Address Data	Address data for the service.
Address Overridden	Indicates whether the service address has been overridden.
Assigned To	The user to whom the service is assigned.
Authentication Default Credentials	“Y” indicates that the WSDL is accessed using authentication default credentials. “N” indicates that the WSDL is accessed using an authentication user name and password or that no authentication credentials are required.
Authentication User Name	The authentication user name for accessing the WSDL on a secure site.
Comments	Displays comments about the service.
Created By	The login name of the user who created the service group.
Creation Date	The date on which the service was created. By default, the creation date is set to the current database server date. You can click the down arrow to display a calendar to select a different creation date.
Deleted On	The date the service was deleted.
Description	A description of the service.
Has changed	Indicates whether a service property has changed.
Last Updated	The time and date the service was last updated.
Original Location	The original location of the WSDL file.
Port Type	The port type.
Proxy Default Credentials	“Y” indicates that the WSDL is accessed using proxy default credentials. “N” indicates that the WSDL is accessed using a proxy user name and password or that no proxy credentials are required.
Proxy Port	The proxy port number.

Column	Description
Proxy Server	The proxy server name.
Proxy User Name	The user name to access the proxy server
Service Address	The service address of the endpoint application.
Service Name	The service name.
Systinet Key	The location of the WSDL file in the Systinet registry.
Systinet Server	The service name in the Systinet registry.
Systinet Server Port	The Systinet server port number.
Systinet Version	The Systinet server version. Only a Systinet 2 server with Service Pack 1 or later is supported.
Toolkit	The name of the Web services toolkit used when importing the service.
Type	The service type. For example, imported from file, URL, UDDI, Systinet, or manual.
UDDI Server	The name of the service on the UDDI server.
UDDI Service Key	The service key assigned by the UDDI registry.
UDDI Version	The version of the UDDI specification. This includes Version 2 and Version 3.
Up To Date	Indicates whether the service definition from the WSDL file is updated each time the service entity is loaded.
Update Time	The time at which the service was updated.
Use Authentication	Indicates whether authentication credentials are used for accessing the WSDL on a secure site.
Use Proxy	Indicates whether proxy credentials are used for accessing the WSDL.
WSDL Location	The source location of the WSDL file.
WSDL Native Name	The native service name in the WSDL file.




- 3 To set column appearance and order in the services grid, click the **Select Columns** button.

- 4 To rename a service group, choose **Edit > Rename**. Edit the service group name and press ENTER.
- 5 To assign services to a service group, click the **Select** button. The services tree opens in the right pane.



- 6 Select the service you want to assign to the group, and click the **Assign Service to Service Group** button. Alternatively, you can double-click a service, or drag a service from the services tree to the services grid. The service is added to the services grid.

Tip: A change alert icon  adjacent to a service indicates that the service status has changed. This indicates that changes have been made to the service, and these changes should be reviewed. For more information on viewing service changes, see “Reviewing Service Changes” on page 201.



- 7 Click the **Close Services Tree** button in the upper-right of the service repository tree to hide the tree.



- 8 To remove services from a service group, select the services to remove and click the **Remove Service from Service Group** button in the Services tab. The selected services are removed from the services grid.

Mailing Service Groups

You can send e-mail about a service group to other users in your Quality Center project. This enables you to routinely inform development and quality assurance personnel about the status of your service groups. A link is included in the e-mail message that enables the recipient to go directly to the service group.

Note: By default, Quality Center sends e-mail in HTML format. To send e-mail as plain text instead, edit the **MAIL_FORMAT** parameter in the **Site Configuration** tab in Site Administration. For more information, refer to the *HP Quality Center Administrator's Guide*.

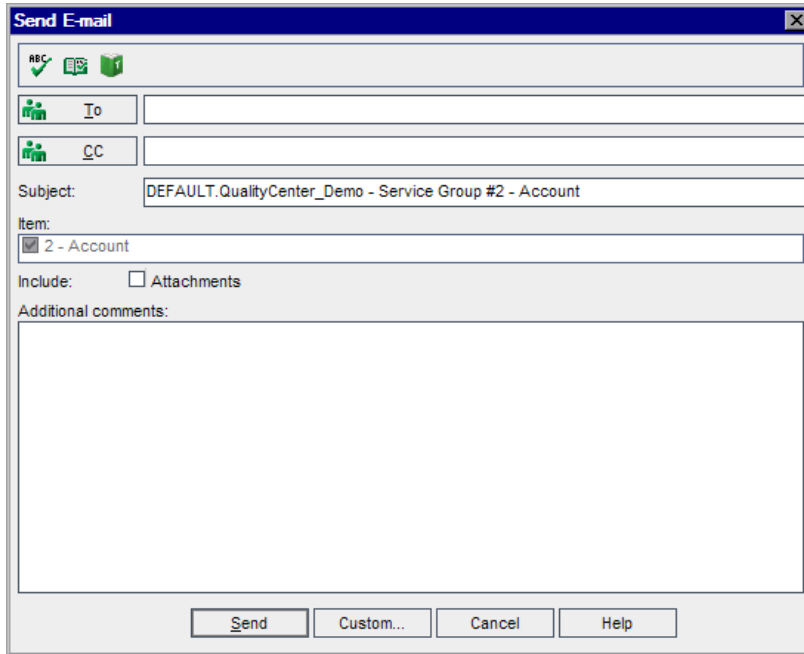
To mail a service group:

- 1 In the service groups list, select a service group.
- 2 To send a service group to a user, click the **Send by E-mail** button.

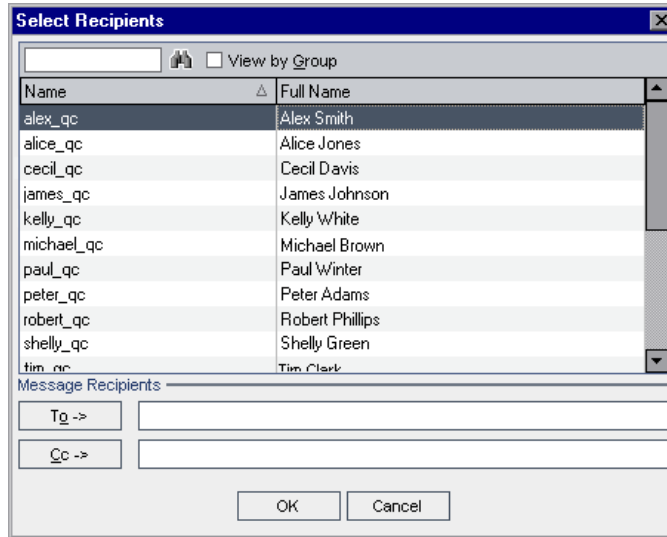


To send a service group to the user who wrote the service group, click the **Send by E-mail** arrow and choose **Send by E-mail to Created By**.

The Send E-mail dialog box opens. When sending a service group to the user who wrote the service group, the user name is displayed in the **To** box.



- 3 To add a recipient name, type a valid user name. Alternatively, click the **To** button or **CC** button to select users. The Select Recipients dialog box opens.



You can sort the users list, search for users, group users by user groups, and select users from the list or from a group tree. Select the users or user groups to which you want to send the e-mail, and click **OK**.

- 4 In the **Subject** box, type a subject for the e-mail.
- 5 Choose whether you want to include the **Attachments** of the service.
- 6 In the **Additional comments** box, add any comments you may have.
- 7 To check the spelling in the dialog box:



- ▶ Click the **Check Spelling** button to check the spelling for the selected word or text box. If there are no errors, a confirmation message opens. If errors are found, the Spelling dialog box opens and displays the word together with replacement suggestions.



- ▶ Click the **Spelling Options** button to open the Spelling Options dialog box, enabling you to configure the way spelling is checked.




- ▶ Click the **Thesaurus** button to open the Thesaurus dialog box and display a synonym, antonym, or related word for the selected word. You can replace the selected word or look up new words.

- 8 Click **Custom** to customize the e-mail. In the Select Fields dialog box, you can specify fields to include in the e-mail.
- 9 Click **Send** to send the e-mail.

Removing Service Groups

You can delete a service group that is not required from the service groups list. Deleting a service group removes the association between the service group and its services.

To remove a service group:

- 1 Click the **Service Groups** tab in the left pane.
- 2  Select a group from the service groups list, and click the **Delete** button in the toolbar. Alternatively, right-click the service group and choose **Delete**. The service group is removed from the service groups list.

9

Generating Service Requirements and Tests

You can generate service requirements and tests automatically using the Requirement and Test Generation wizard. Alternatively, you can create an empty service test and link it to a requirement. You can then modify the test script.

This chapter includes:

- ▶ About Generating Service Requirements and Tests on page 137
- ▶ Selecting Testing Aspects on page 138
- ▶ Generating Service Requirements and Tests Automatically on page 141
- ▶ Creating Empty Service Tests on page 147
- ▶ Reviewing the Generated Requirements and Tests on page 149

About Generating Service Requirements and Tests

To test your SOA environment, you can create requirements and tests manually, or use the Requirement and Test Generation wizard to automatically generate requirements and test scripts.

The Requirement and Test Generation wizard guides you through the process of creating requirements and scripts to test your services and service groups. Through the wizard, you indicate which aspects of the service you want to test. These aspects include interoperability with different toolkits, boundary testing, and standard compliance.

After you select the testing aspects, Service Test Management generates a set of requirements, or requirements and tests linked to the service or to services in the service group. Only requirements are linked to services and service groups. The tests are indirectly linked to services or service groups through requirements. These requirements and tests provide pre-packaged testing methodologies and service information that specify which parts of the SOA environment need to be tested, and what to test in each part.

Generated requirements provide a textual description of the testable feature and the expected behavior, based on a template of the specified testing aspects adapted to the selected services. Generated tests describe the test objective and provide an implementation of that testing objective. They include the test operations and arguments for specific testing types. After generating requirements and tests, you can customize them to your particular requirements.

You can also link services and service groups to manually created requirements, and indirectly to tests through requirements. For more information on linking services and service groups to requirements and tests, see Chapter 10, “Linking Services to Requirements” and Chapter 11, “Linking Tests to Services.”

Selecting Testing Aspects

The Requirement and Tests Generation wizard helps you create requirements and tests that verify different aspects of your service. Service Test Management creates a separate requirement for each aspect and sub-aspect, and a separate test for each sub-aspect. It only creates a separate test for an aspect if it has no sub-aspects.

By default, Service Test Management supports the following testing aspects:

Testing Aspect	Description
Positive Testing	Generates a full positive test that checks each operation of the service.
Standard Compliance	Checks the service's compliancy with industry standards such as WS-I and SOAP.

Testing Aspect	Description
Service Interoperability	<p>Tests the interoperability of the service's operations with all supported Web Services toolkits.</p> <p>Contains the following sub-aspects:</p> <ul style="list-style-type: none"> ▶ .NET Framework. Tests that the services are fully interoperable with .NET Framework WSE 2 Toolkit by calling all of its operations with default/expected values. ▶ Axis/Java Based Web Services. Tests that the services are fully interoperable with Axis 1.3 Web Services Framework by calling all of its operations with default/expected values. ▶ Generic Toolkit (Deprecated). Tests that the services are fully interoperable with Generic Toolkit (Deprecated) by calling all of its operations with default/expected values.
Security Testing	<p>Tests service security. Contains the following sub-aspects:</p> <ul style="list-style-type: none"> ▶ SQL Injection Vulnerability. Checks if the service is vulnerable to SQL injections by injecting SQL statements and errors into relevant parameters. ▶ Cross-site Scripting (XSS). Attempts to hack the service by injecting code into a Web site that will disrupt its functionality.

Testing Aspect	Description
<p>Boundary Testing</p>	<p>Using the negative testing technique, creates tests to manipulate data, types, parameters, and the actual SOAP message to test the service to its limits.</p> <p>Contains the following sub-aspects:</p> <ul style="list-style-type: none"> ▶ Extreme Values. Provides invalid data types to the services and verifies they are not accepted. ▶ Null Values. Provides NULL parameters to the services to verify they are not accepted.
<p>Load Testing</p>	<p>Available for generating requirements only. Contains the following sub-aspects:</p> <ul style="list-style-type: none"> ▶ Longevity. Tests that the system can sustain a consistent number of concurrent Vusers executing transactions using near-peak capacity, over a minimum 24-hour period. ▶ Stress Test. Tests the maximum load that can be placed on the application. ▶ Overload (Sustainability) Test. Tests how well the hardware allocated for the application can support the number of anticipated users. ▶ Volume Test. Tests that the system can handle a massive data entry. ▶ Scalability Test. Repeated stress, overload, volume, and longevity tests with different server or network hardware configurations.

You can customize the default testing aspects and define additional aspects using Project Customization. For more information, see “Customizing the Services Module” on page 54.

Generating Service Requirements and Tests Automatically

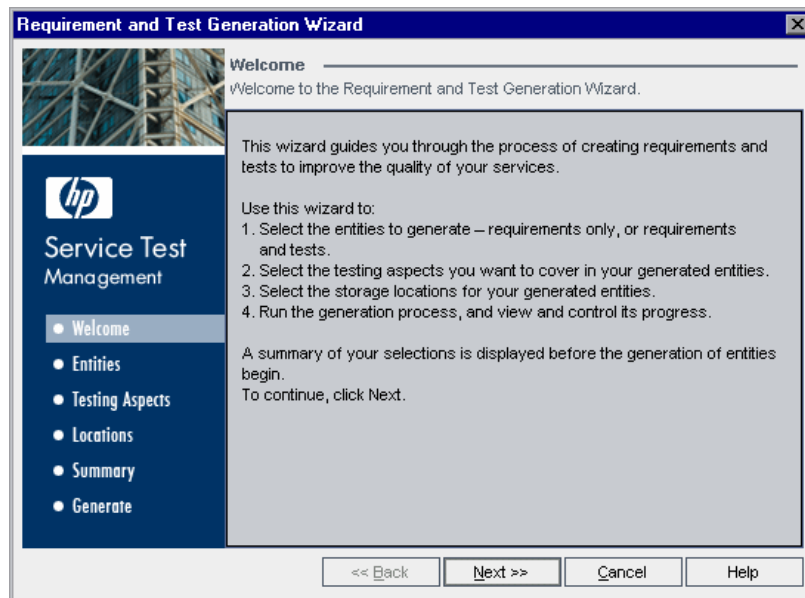
The Requirement and Test Generation wizard guides you through the steps of creating automatic requirements and test scripts.

To generate service requirements and tests:

1 Open the Requirement and Test Generation wizard.

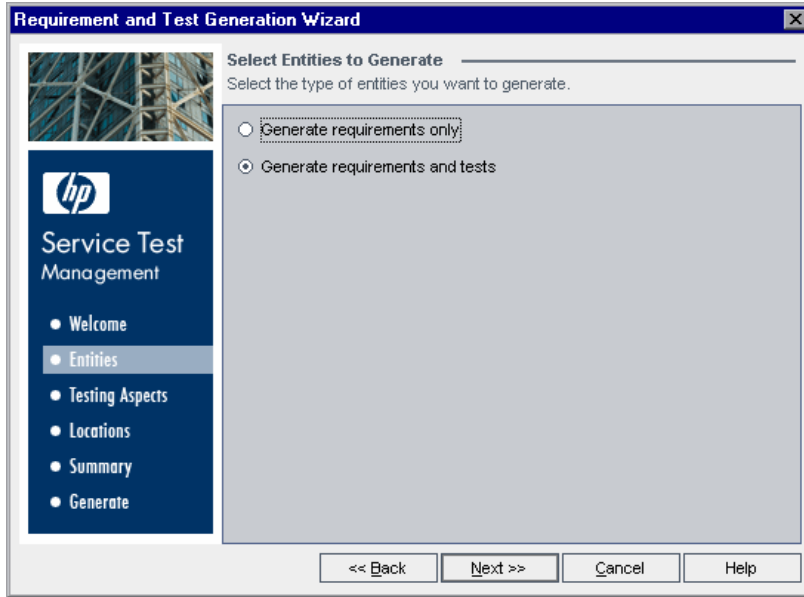
- For a service, select a service in the services tree, and choose **Services > Generate Requirements/Tests**.
- For a service group, select a group in the service groups list, and choose **Groups > Generate Requirements/Tests**.

The Requirement and Test Generation wizard opens and displays an overview of the generation process.



Click **Next** to continue.

2 Select the entities you want Service Test Management to generate.

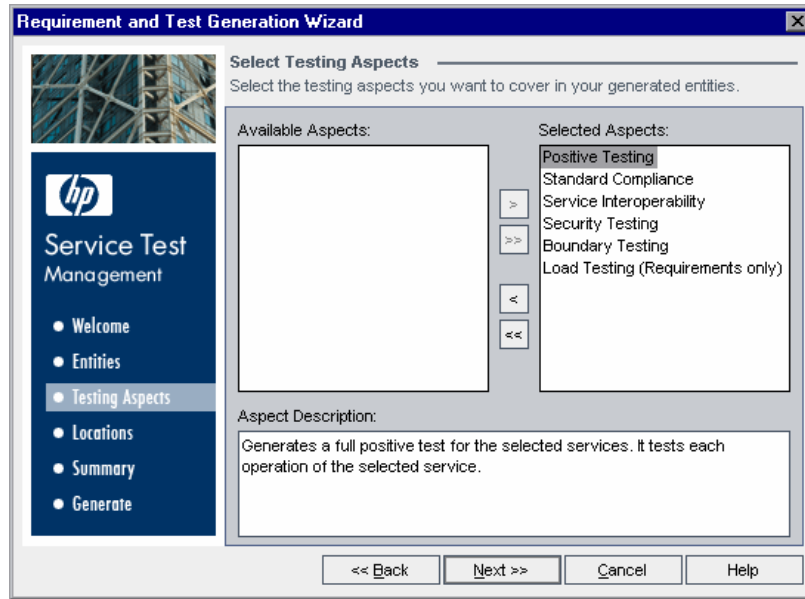


You can generate requirements, or requirements and tests.

- ▶ **Generate requirements only.** If selected, Service Test Management generates a set of requirements linked to the service that provide a textual description of the testable feature and the expected behavior, based on a template of the specified testing aspects adapted to the selected services.
- ▶ **Generate requirements and tests.** If selected (default setting), Service Test Management generates a set of requirements (see description above) and tests that are indirectly linked to the service through the requirements. The tests describe the test objective, based on a template of the specified testing aspects adapted to the selected services. Whenever possible, generated tests provide an implementation of the test objective by describing the test operations.

Click **Next** to continue.

3 Specify the testing aspects you want to cover in the generated entities.

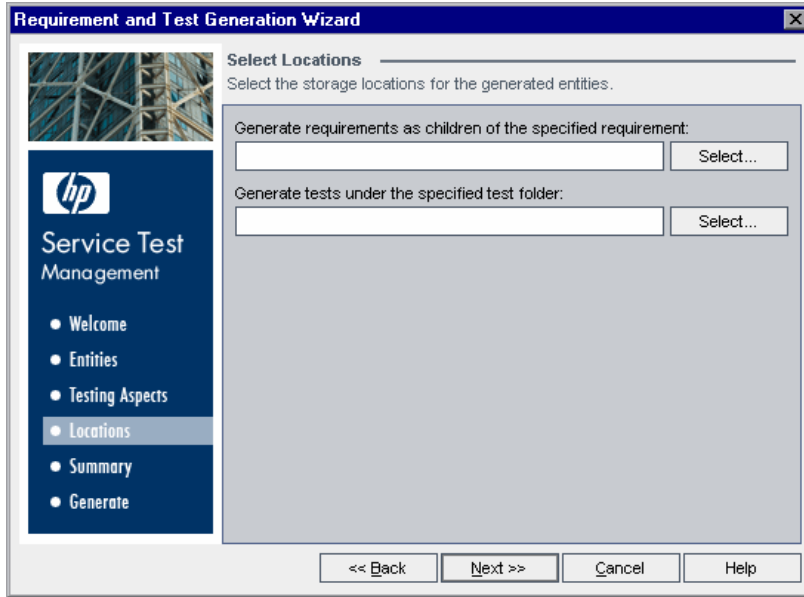


Available Aspects contains the aspects available for testing. **Selected Aspects** contains the aspects currently selected for requirement and test generation. By default, all testing aspects are selected. For more information on the testing aspects, see “Selecting Testing Aspects” on page 138.

Using the arrows, move the aspects you want to test from the **Available Aspects** list to the **Selected Aspects** list. To move all the testing aspects from one list to the other, click the double arrow buttons (>> and <<).

Click **Next** to continue.

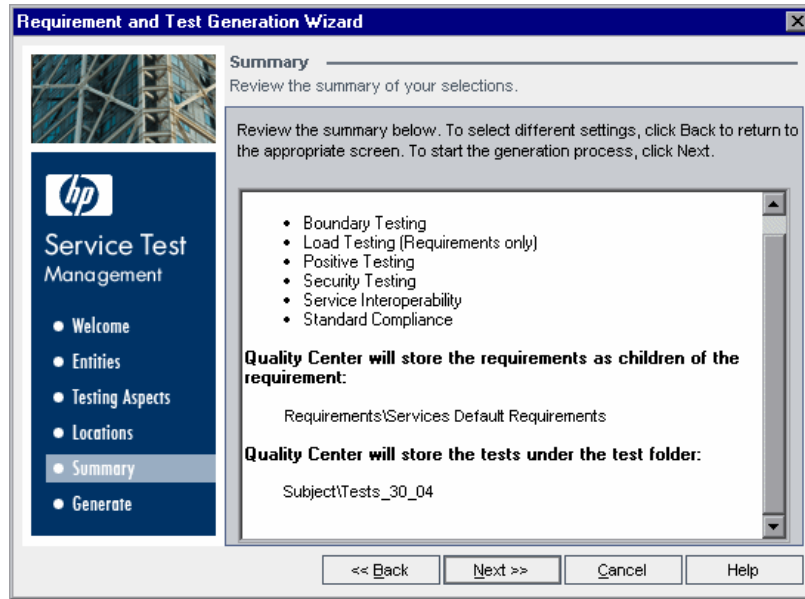
4 Specify where you want store the generated entities.



To select a storage location for an entity, click **Select**. The Select <entity> dialog box opens. You can search for, filter, sort, and refresh requirements and test folders in the requirements/test folder tree. Choose the location in Quality Center where you want to store the generated entities.

Click **Next** to continue.

5 Review the generation summary.

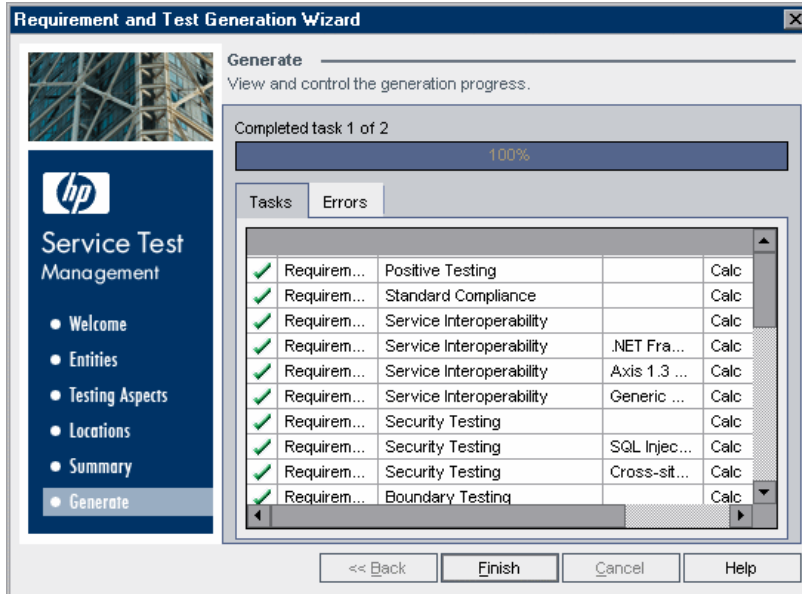


The generation settings that you selected are displayed in a read-only window.

To select different settings, click **Back**.

To begin the generation process, click **Next**.

6 View generation progress.



The generation progress is displayed in the progress bar. If Service Test Management is unable to create a specific requirement or test, it displays a message specifying the nature of the failure.

Review the generation summary information displayed in the **Tasks** tab and the **Errors** tab to make sure the generation process completed successfully.

When the generation process has completed, click **Finish** to close the wizard.

Creating Empty Service Tests

After you create a service in the Services module, you can create an empty test and link it to a requirement. You can then edit the test and modify the test script. For more information on editing tests, see “Viewing and Editing Service Tests” on page 176.

Note: You can also create a service test in the Test Plan module. To create a test, in the Create New Test dialog box, select **DB-TEST** from the Test Type list. For more information on creating tests, refer to the *HP Quality Center User's Guide*.

To create an empty service test:

- 1 Select a service in the services tree, and choose **Services > Create Empty Test**. The Create Empty Test wizard opens.

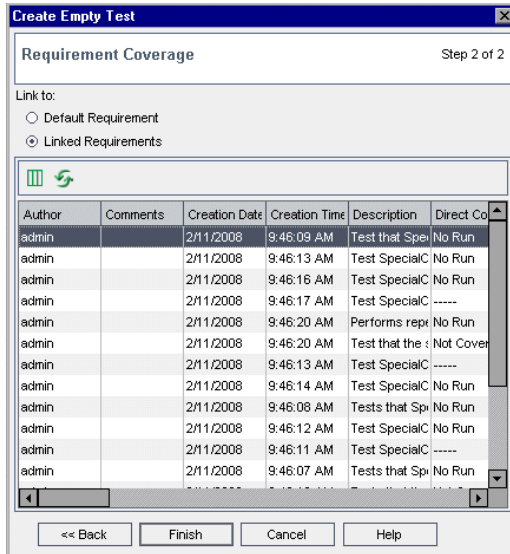
The screenshot shows a dialog box titled "Create Empty Test" with a close button (X) in the top right corner. The dialog is divided into a header section labeled "Test Properties" and "Step 1 of 2". Below the header, there are three labeled fields:

- * Test Type: A dropdown menu currently showing "DB-TEST".
- * Test Name: An empty text input field.
- * Test Folder: An empty text input field followed by a browse button (three dots).

 At the bottom of the dialog, there are four buttons: "<< Back", "Next >>", "Cancel", and "Help".

- 2 In the **Test Name** box, type a name for the test.
- 3 In the **Test Folder** box, select a subject folder in the test plan tree.

4 Click **Next**. The Requirement Coverage page opens.



5 Select a requirement option for linking to the empty test:

- ▶ **Default Requirement.** Creates a link between the default service requirement and the test. The linked requirements grid is not available when you select this option. If a service has no requirement coverage, you must select this option to create requirement coverage for a service. If the default requirement does not exist, Service Test Management creates a default requirement and links it to the selected test.
- ▶ **Linked Requirement.** Enables you to specify which service requirement to link to the test. Select a requirement from the linked requirements grid. This option is not available if the service has no linked requirements.



To set column appearance and order in the linked requirements grid, click the **Select Columns** button. For more information on arranging columns in a grid, refer to the *HP Quality Center User's Guide*.



To refresh the linked requirements grid, click the **Refresh** button.

6 Click **Finish** to close the wizard.

7 Click **OK**.

Reviewing the Generated Requirements and Tests

After the generation process has successfully completed, you can review the generated entities in the Linked Requirements and Linked Tests tab. If you generated requirements and tests, the requirements are directly linked to the service, and the tests are linked to the service through requirement coverage.

After generating requirements or requirements and tests, you can do the following:

Action	Description
Edit the generated requirements	You can modify the details, attachments, service coverage, test coverage, and defect links for any requirement to suit your specific testing objectives. For example, you might want to define customized thresholds that are not reflected in your service definitions. For more information on defining requirements, refer to the <i>HP Quality Center User's Guide</i> .
Edit the generated tests	You can use HP Service Test to refine the generated tests to expand their scope and purpose. For more information, see "Viewing and Editing Service Tests" on page 176.
Configure run-time settings for test instances	You can view the script's run-time settings, and configure run-time settings for test instances in the Test Lab module. For more information, see "Configuring Run-Time Settings from Quality Center" on page 178.
Configure parameters for test instances	You can configure parameters for test instances in the Test Lab module. For more information, see "Configuring Test Instance Parameters from Quality Center" on page 181.
Manually link requirements	You can manually link requirements to a service or service group. For more information on linking services to requirements, see Chapter 10, "Linking Services to Requirements."

Action	Description
Manually add test coverage	You can manually add test coverage to a service or service group. For more information, see Chapter 11, “Linking Tests to Services.”
Run the service test	You can run the service test. For more information, see “Running Service Tests” on page 184.

10

Linking Services to Requirements

Requirements describe what needs to be tested in your application. Each service you import to the Services module must be linked to a requirement before it can be linked to other entities. You can generate a requirement for a service when you create it, or you can manually link it later.

This chapter includes:

- ▶ About Linking Services to Requirements on page 151
- ▶ Linking Requirements to Services or Service Groups on page 153
- ▶ Linking Services to Requirements on page 157

About Linking Services to Requirements

Requirement coverage is used to connect services to other Quality Center entities (tests, test sets, and defects) through the requirement. This helps you keep track of the relationship between your requirements and services, and ensures compliance with your requirements throughout the testing process. After you have created tests, you associate assigned requirements with tests and defects. In this way, you can keep track of your testing needs at all stages of the testing process. If a requirement changes, you can immediately identify which tests and defects are affected, and who is responsible.

To test services in Service Test Management, they must first be linked to requirements. When you import a service, you can link the service to an existing requirement, a new requirement that you create manually, or to a default requirement that Service Test Management automatically creates for you. Alternatively, you can delay linking to requirements until after the import process, and link requirements manually, or have Service Test Management automatically generate requirements for your services and service groups using the Requirement and Test Generation wizard (see “Generating Service Requirements and Tests Automatically” on page 141).

You can manually link requirements by selecting new or existing requirements and linking them to a service or service group in the Linked Requirements tab of the Services module. Alternatively, you can select services and manually link them to a requirement in the Services tab of the Requirements module.

Linking Requirements to Services or Service Groups

You can manually link requirements to a service or service group in the Linked Requirements tab of the Services module. The linked requirements grid lists the requirements that are covered by the selected service or service group.

The Coverage Chart enables you to view the status of requirements linked to services and service groups. The coverage is displayed in the form of a pie chart report.

Name	Description	Direct Cover Status
Generic Mercury Solution	Test Data echoing service and its operations with Gen	Not Covered
Data echoing service cross site scripting	Test Data echoing service for cross site scripting.	Not Covered
Data echoing service null values testing	Test Data echoing service and its operations with null \	Not Covered
Data echoing service load testing	Test Data echoing service and its operations with com	Not Covered
Data echoing service scalability test	Repeating stress, overload, volume and longevity tests	Not Covered
Data echoing service longevity test	Longevity test makes sure that the system can sustain	Not Covered
Data echoing service SQL injections.volo	Test Data echoing service and its operations for SQL ir	Not Covered
Data echoing service boundary testing	Test Data echoing service in the negative testing techn	Failed
Data echoing service huge values testing	Test Data echoing service and its operations with huge	Not Covered
Axis 1.3 Web Services Framework	Test Data echoing service and its operations with Axis	Not Covered

Coverage Chart

Category	Count	Percentage
Failed	2	4.76 %
Not Covered	40	95.24 %

Server Time: 12:08 PM 8/28/2006

For more information on linking requirements, refer to the *HP Quality Center User's Guide*.

This section describes:

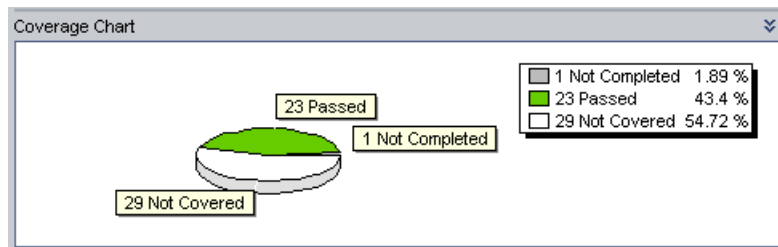
- ▶ Viewing the Linked Requirements Tab
- ▶ Adding Requirement Coverage Manually
- ▶ Removing Requirement Coverage

Viewing the Linked Requirements Tab

You can view requirements linked to services and service groups in the Linked Requirements tab. You can also view the coverage status in the form of a pie chart report in the Coverage Chart.

To view the Linked Requirements tab:

- 1 Select a service or service group.
- 2 Click the **Linked Req.** tab. The linked requirements grid displays the requirements that are linked to the selected service or service group.
- 3 To refresh the requirements in the linked requirements grid, click the **Refresh** button.
- 4 To set column appearance and order in the linked requirements grid, click the **Select Columns** button. For more information on arranging columns in a grid, refer to the *HP Quality Center User's Guide*.
- 5 To go to a requirement in the requirements tree, click the requirement in the linked requirements grid. Alternatively, right-click the requirement and choose **Go To Requirement in Requirements Tree**.
- 6 To view the coverage chart, click the **Show** button on the lower-right of the Linked Requirements tab to display the Coverage Chart for the service. The Coverage Chart is displayed.



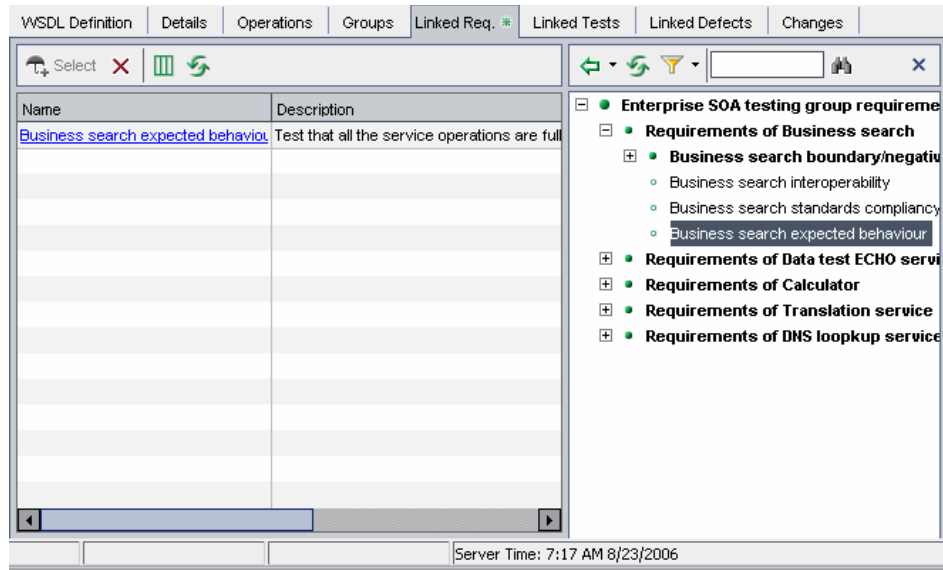
The Coverage Chart is a pie chart that graphically displays the requirements coverage for the service, grouped according to test status.

Adding Requirement Coverage Manually

You can manually add requirements coverage to a service or service group in the Linked Requirements tab.

To add requirement coverage manually:

- 1 Select a service or service group, and click the **Linked Req.** tab.
- 2 In the Linked Requirements tab, click the **Select** button to open the requirements tree in the right pane.



- 3 To search for a specific requirement in the tree, type the name (or part of the name) of the requirement in the **Find** box and click the **Find** button. If the search is successful, the requirement is highlighted in the tree.



- 4 To filter and sort requirements in the tree, click the **Set Filter/Sort** button.



- 5 To refresh a requirement in the tree, select the requirement and click the **Refresh Selected** button.

6 Select a requirement to link to the service or service group:



- ▶ Click the **Add to Coverage (Without Children)** button to add the requirement without the requirement's child requirements. Alternatively, double-click the requirement.
- ▶ Click the **Add to Coverage** arrow and choose **Add to Coverage (Include Children)** to add the requirement, including its child requirements.

The requirement is added to the linked requirements grid.



7 Click the **Close** button to hide the requirements tree.

Removing Requirement Coverage

You can remove a service's or service group's requirement coverage. Removing requirement coverage also removes its test coverage and defect linkage.

To remove requirement coverage

- 1 Select a service or service group whose requirement coverage you want to remove.
- 2 Click the **Linked Req.** tab.

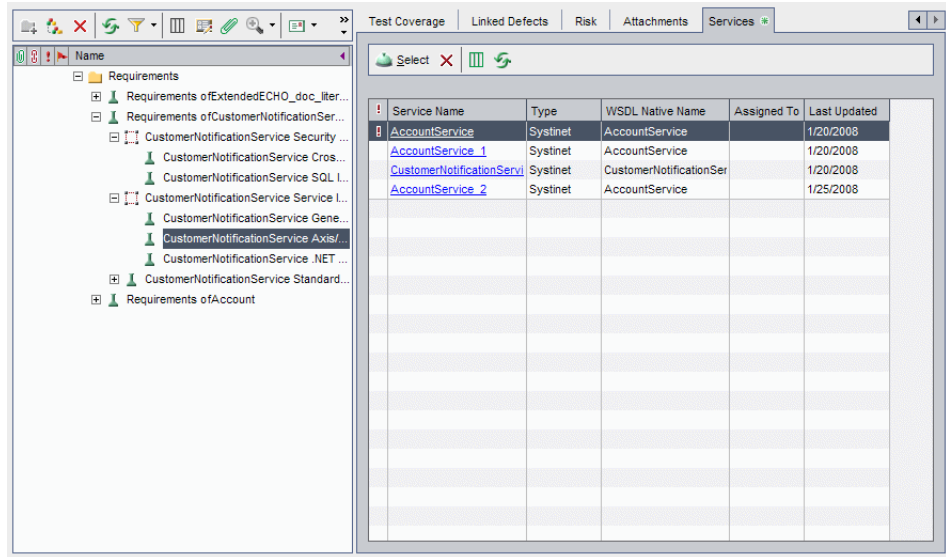


- 3 In the linked requirements grid, select the requirements to delete, and click the **Remove Selected** button. Click **Yes** to confirm.

The links between the selected requirements and the service or service group and all its related entities are removed.

Linking Services to Requirements

You can manually link services to requirements in the Services tab of the Requirements module. The services grid lists the services that are covered by the requirement.



For more information on the columns displayed in the services grid, see “Viewing and Modifying Services Assigned to Service Groups” on page 129

This section describes:

- Viewing the Services Tab
- Adding Service Coverage
- Removing Service Coverage

Viewing the Services Tab

You can view services linked to requirements in the Services tab.

To view the Services tab:

- 1 Select a requirement.
- 2 Click the **Services** tab. The services grid displays the services that are linked to the selected requirement.
- 3 To refresh the services in the services grid, click the **Refresh** button.
- 4 To set column appearance and order in the services grid, click the **Select Columns** button. For more information on arranging columns in a grid, refer to the *HP Quality Center User's Guide*.
- 5 To go to a service in the services tree, click the service in the services grid. Alternatively, right-click the service and choose **Go To Service**.



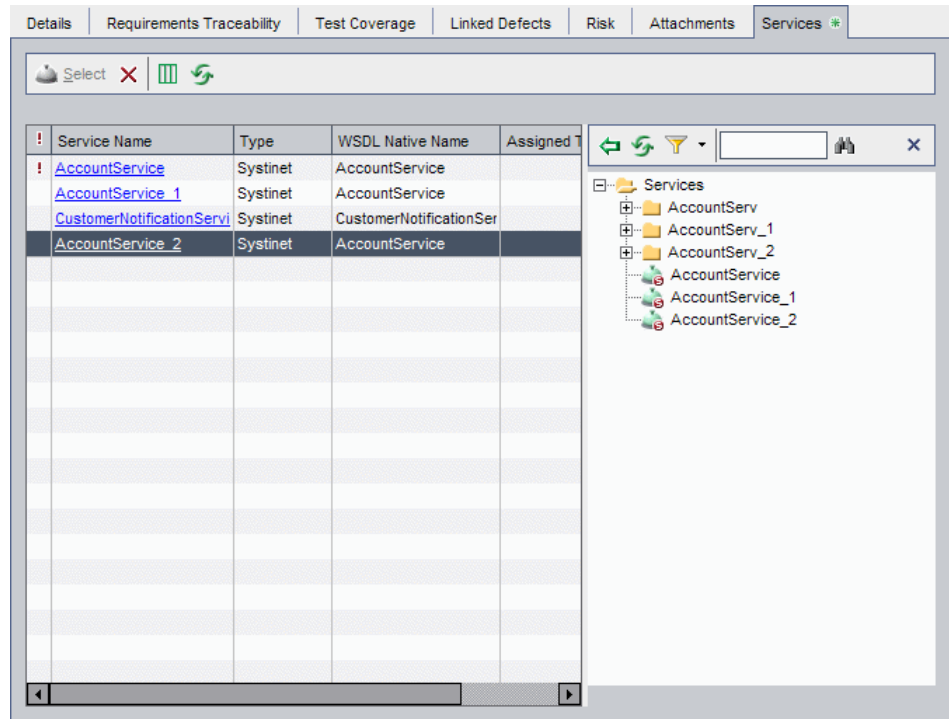
Adding Service Coverage

You can manually add service coverage to a requirement in the Services tab.

To add service coverage:

- 1 Select a requirement, and click the **Services** tab.

- 2 In the Services tab, click the **Select** button to open the services tree in the right pane.




- 3 To search for a specific service in the tree, type the name (or part of the name) of the service in the **Find** box and click the **Find** button. If the search is successful, the service is highlighted in the tree.
- 4 To filter and sort service in the tree, click the **Set Filter/Sort** button.
- 5 To refresh a service in the tree, select the requirement and click the **Refresh Selected** button.
- 6 Select a service to link to the requirement and click the **Add Covered Services** button. Alternatively, double-click the service. The service is added to the services grid.
- 7 Click the **Close** button to hide the services tree.

Removing Service Coverage

You can remove a requirement's service coverage. Removing service coverage also affects coverage for other related entities.

To remove service coverage

- 1 Select a requirement whose service coverage you want to remove.
- 2 Click the **Services** tab.
- 3  In the services grid, select the service to delete, and click the **Remove Selected** button. Click **Yes** to confirm.

The links between the selected service and the requirement and all its related entities are removed.

11

Linking Tests to Services

To test the quality and performance of your services, you generate tests and link them to your services and service groups through requirement coverage.

This chapter includes:

- About Linking Tests to Services on page 161
- Linking Tests to Services or Service Groups on page 162
- Linking Services to Tests on page 170

About Linking Tests to Services

Tests describe the test objective and an implementation of the testing objective. They include the test operations and the expected outcome of each test. You can generate tests and link them to your services and service groups through requirements coverage, or you can instruct Service Test Management to generate a set of tests that are automatically linked to services or service groups through requirements (see Chapter 9, “Generating Service Requirements and Tests”).

To link tests manually, after you create a service and link requirements to the service, you can link the requirements to tests in the Test Plan module or Requirements module. Alternatively, you can link tests to a service or service group in the Linked Tests tab of the Services module. Note that a service must have requirement coverage before it can be indirectly linked to a test. For more information on linking requirements to services, see “Creating Requirement Coverage for Services” on page 87.

Note: You can also create coverage between test instances and services or service groups. You can enable this feature using the **ALLOW_REQ_COVERAGE_BY_TEST_INSTANCE** parameter in Site Administration. For more information on this parameter, refer to the *HP Quality Center Administrator's Guide*.

Linking Tests to Services or Service Groups

You can manually link tests to a service or service group in the Linked Tests tab by adding them from the test plan tree to the Covering Tests grid. Covering tests are aimed at validating the service's functionality, and the linkage is manually defined by the user.

In addition, you can add Using Tests to a service or service group. These are tests with a script based on the service, that call one or more operations of the service. These tests, which are created in HP Service Test and stored in Quality Center, are displayed in the Using tests grid of the Linked Tests tab.

The screenshot shows the 'Linked Tests' tab in the HP Quality Center interface. It features two main sections: 'Covering tests' and 'Using tests'.

Covering tests:

Entity Name	Entity Status	Coverage Type	Plan: Subject
PositiveTesting	▶ No Run	Test	Calc
StandardCompliance	▶ No Run	Test	Calc
InteropDotNet	▶ No Run	Test	Calc
InteropAxis	▶ No Run	Test	Calc
InteropHP	▶ No Run	Test	Calc
SqlInjection	▶ No Run	Test	Calc
CrossSiteScripting	▶ No Run	Test	Calc

Using tests:

Test Name	Subject	Status	Type	Modified
PositiveTesting	Calc		DB-TEST	5/7/2007
StandardCompliance	Calc		DB-TEST	5/7/2007
InteropDotNet	Calc		DB-TEST	5/7/2007
InteropAxis	Calc		DB-TEST	5/7/2007
InteropHP	Calc		DB-TEST	5/7/2007

The Covering tests grid contains the following information:

Column	Description
Entity Name	The linked entity name.
Entity Status	The current status of the entity.
Coverage Type	The description of the test (Test for a test and Test Instance for a test instance in a test set).
Plan: Subject	The subject folder in the test plan tree in which the test resides.
Plan: Comments	Displays comments about the test.
Plan: Creation Date	The date on which the test was created. By default, the creation date is set to the current database server date. Click the down arrow to display a calendar and select a different creation date.
Plan: Description	A description of the test.
Plan: Designer	The name of the test's designer.
Plan: Estimated DevTime	The time estimated to design and develop the test.
Plan: Execution Status	The current execution status of the test.
Plan: Modified	The date and time of the last change to the test.
Plan: Path	The path of this test relative to the Tests directory in the server repository.
Plan: Status	The planning status of the test. The default status is Design.
Plan: Template	Indicates whether the manual test or QuickTest Professional test is a test template. The value in this column is "Y" if the test is a test template, or empty if it is not. For more information on manual template tests, refer to the <i>HP Quality Center User's Guide</i> .
Plan: Test Name	The name of the test, and a link to the test in the test plan tree or test sets tree.

Column	Description
Plan: Testing Aspect Type	The aspects of the service that are tested.
Plan: Type	The type of test. For example, MANUAL or WinRunner.

The Using tests grid contains the following additional information:

Column	Description
Test ID	A unique numeric ID for the test, assigned automatically by Quality Center. The Test ID is read-only.

This section describes:

- Viewing the Linked Tests Tab
- Adding Tests Coverage Manually
- Removing Test Coverage

Viewing the Linked Tests Tab

You can view tests linked to services and service groups in the Linked Tests tab. The Linked Tests tab contains the following tests grids:

- **Covering tests.** Displays tests linked to the service that are aimed at validating the service's functionality. This linkage is manually defined by the user.
- **Using tests.** Displays tests with a script based on the service, that call one or more operations of the service. These tests are created in HP Service Test and stored in Quality Center. To link Using tests to a service's requirements coverage, you must select the test and add it to coverage.

To view the Linked Tests tab:

- 1** Select a service or service group.
- 2** Click the **Linked Tests** tab.



3 To set column appearance and order in the Covering tests grid or the Using test grid, click the **Select Columns** button. For more information on arranging columns in a grid, refer to the *HP Quality Center User's Guide*.

4 To go to a test in the test plan tree, click the test link in the Covering tests grid. Alternatively, right-click the test and choose **Go To Test in Test Plan Tree**.

5 To go to a test in the Test Lab module, right-click the test in the Covering tests grid and choose **Go To Test in Test Set**.



6 To refresh the tests in the Covering tests grid or Using tests grid, click the **Refresh All** button.

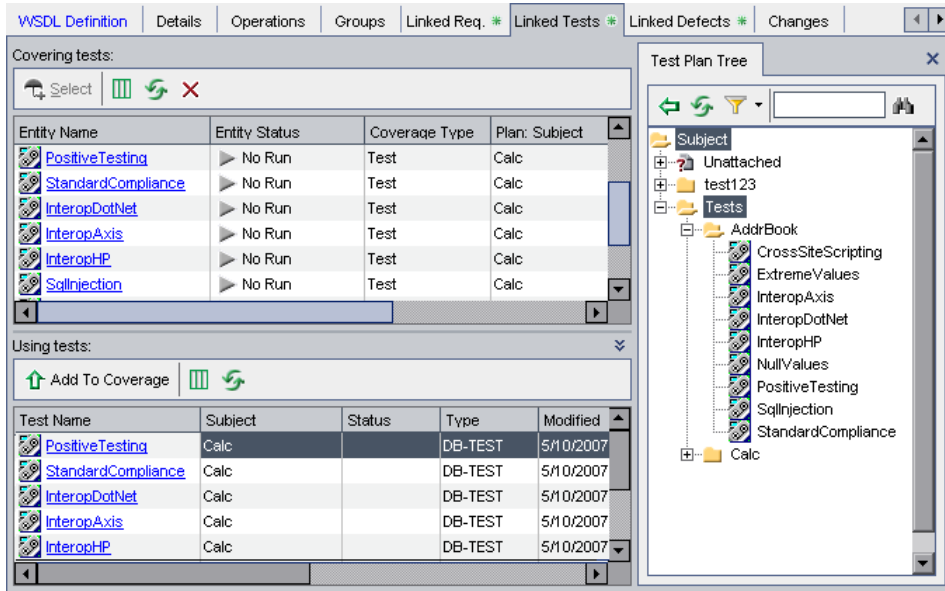
Adding Tests Coverage Manually

You can add test coverage to a service or service group in the Linked Tests tab.

To add test coverage manually:

1 Select a service or service group, and click the **Linked Tests** tab.

- 2 In the Linked Tests tab, click the **Select** button to open the test plan tree in the right pane.



- 3 To search for a specific test in the tree, type the name (or part of the name) of the test in the **Find** box and click the **Find** button. If the search is successful, the test is highlighted in the tree.



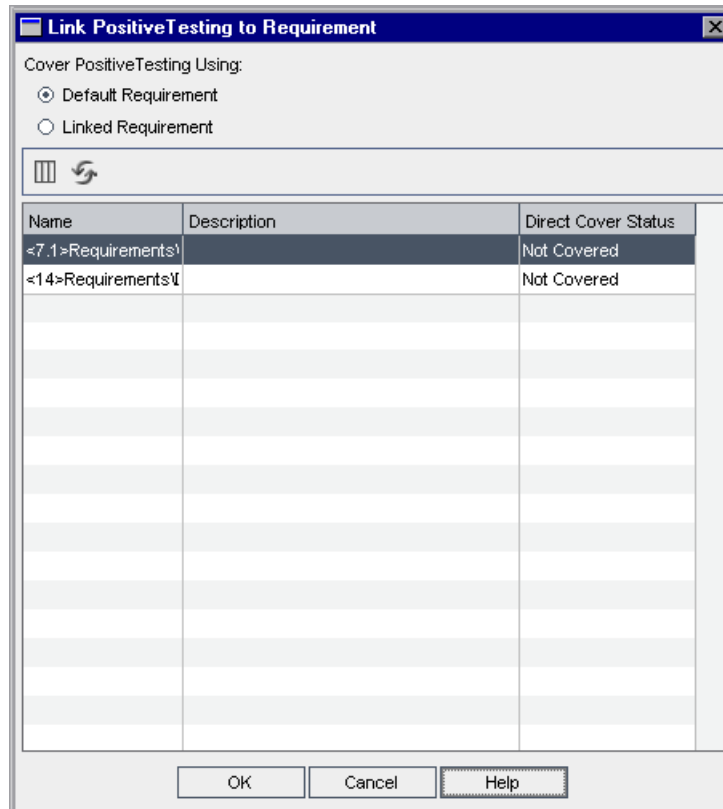
- 4 To filter and sort tests in the tree, click the **Set Filter/Sort** button.



- 5 To refresh a test in the tree, select the test and click the **Refresh Selected** button.



- 6 Select a test or test folder to link to the service or service group. Click the **Add to Coverage** button. The Link <test_name> to Requirement dialog box opens displaying the requirements linked to the service.



- 7 Select a requirement option for linking to the test or tests in a test folder. If a test folder contains more than one test, all the tests are linked to the service or service group through the same requirement.

- **Default Requirement.** Creates a link between the default service requirement and the test or tests in a test folder. The linked requirements grid is not available when you select this option. If a service has no requirement coverage, you must select this option to create requirement coverage for a service or service group. If the default requirement does not exist, Service Test Management creates a default requirement and links it to the selected test or tests in a test folder.
- **Linked Requirement.** Enables you to specify which service requirement to link to the test or tests in a test folder. Select a requirement from the linked requirements grid. This option is not available if the service or service group has no linked requirements.



To set column appearance and order in the linked requirements grid, click the **Select Columns** button. For more information on arranging columns in a grid, refer to the *HP Quality Center User's Guide*.



To refresh the linked requirements grid, click the **Refresh** button.

Click **OK**. The test is added to the Covering tests grid.

If you select a test folder, only tests that match your current filter are added to the test linkage.



- 8 Click the **Close** button to hide the test plan tree.



- 9 To add a Using test to a service's or service group's requirements coverage, select a test in the Using tests grid and click the **Add To Coverage** button. The test is added to the Covering tests grid.

Removing Test Coverage

You can remove test coverage from the Linked Tests tab. Removing test coverage may affect coverage for other related entities.

To remove test coverage:

- 1 Select a service or service group whose test coverage you want to remove.

2 Click the **Linked Tests** tab.

3 In the Covering tests grid, select the test you want to remove.



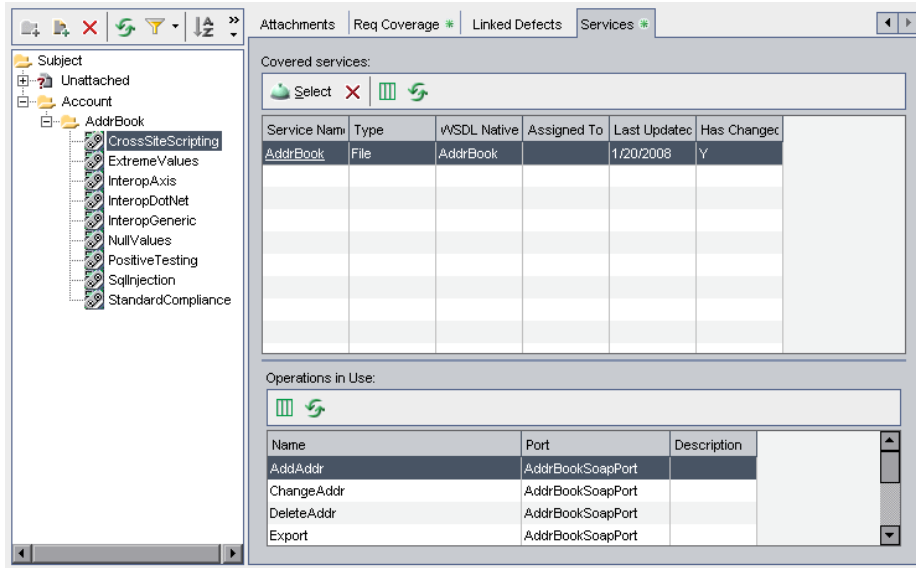
4 Click the **Remove from Coverage** button to remove the selected test. A confirm box indicates whether or not the selected test affects coverage of other entities.

5 Click **Yes** to confirm you want to remove test coverage.

The links between the selected test and the requirements (the ones which make it a covering test of this service), are removed. Links between requirements and services are unaffected.

Linking Services to Tests

You can manually link services to a test in the Services tab by adding them from the services tree to the Covered services grid. In addition, you can view the operations used by the test in the Operations in Use grid.



For information on the columns described in the Covered services grid, see “Linking Services to Requirements” on page 157. For information on the columns described in the Operation in Use grid, see “Managing Service Operations” on page 113.



This section describes:

- Viewing the Services Tab
- Adding Service Coverage Manually
- Removing Service Coverage

Viewing the Services Tab

You can view services linked to tests in the Services tab. The Covered services grid displays services linked to the test. The Operations in Use grid displays the operations used by the test.

To view the Services tab:

- 1** In the test plan tree, select a test.
- 2** Click the **Services** tab.
-  **3** To set column appearance and order in the Covering services grid or the Operations in Use grid, click the **Select Columns** button. For more information on arranging columns in a grid, refer to the *HP Quality Center User's Guide*.
- 4** To go to a service in the services tree, click the service link in the Covering services grid. Alternatively, right-click the service and choose **Go To Service**.
-  **5** To refresh the services in the Covering services grid or Operations in Use grid, click the **Refresh** button.

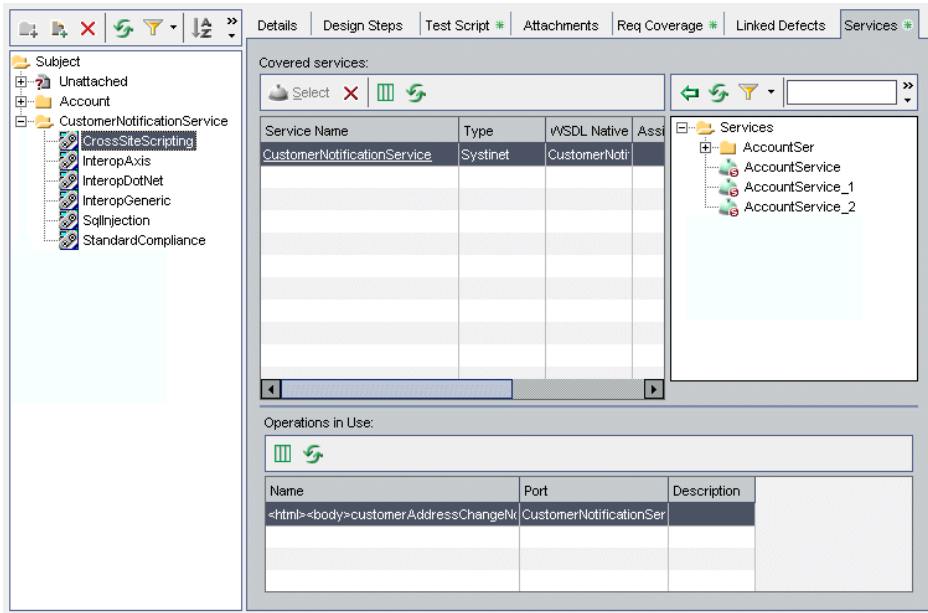
Adding Service Coverage Manually

You can add service coverage to a test in the Services tab.

To add service coverage manually:

- 1** In the test plan tree, select a test.
- 2** Click the **Services** tab.

- 3 In the Services tab, click the **Select** button to open the services tree in the right pane.



- 4 To search for a specific test in the tree, type the name (or part of the name) of the test in the **Find** box and click the **Find** button. If the search is successful, the test is highlighted in the tree.



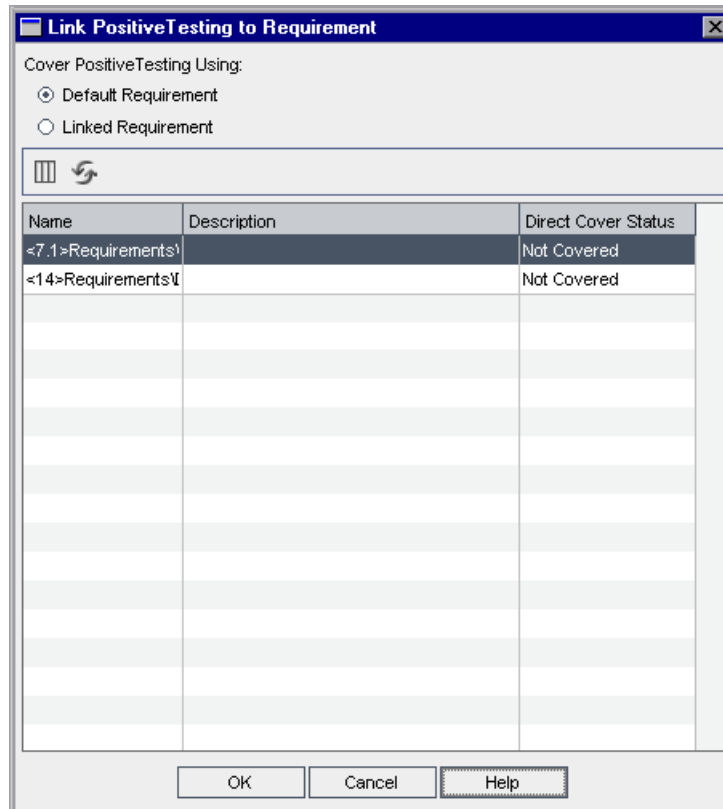
- 5 To filter and sort tests in the tree, click the **Set Filter/Sort** button.



- 6 To refresh a test in the tree, select the test and click the **Refresh Selected** button.



- 7 Select a service to link to the test. Click the **Add to Coverage** button. The Link <test_name> to Requirement dialog box opens displaying the requirements linked to the service.



8 Select a requirement option for linking to the test.

- ▶ **Default Requirement.** Creates a link between the default service requirement and the test. The linked requirements grid is not available when you select this option. If a service has no requirement coverage, you must select this option to create requirement coverage for a service or service group. If the default requirement does not exist, Service Test Management creates a default requirement and links it to the selected test or tests in a test folder.
- ▶ **Linked Requirement.** Enables you to specify which service requirement to link to the test. Select a requirement from the linked requirements grid. This option is not available if the service or service group has no linked requirements.



To set column appearance and order in the linked requirements grid, click the **Select Columns** button. For more information on arranging columns in a grid, refer to the *HP Quality Center User's Guide*.



To refresh the linked requirements grid, click the **Refresh** button.

Click **OK**. The service is added to the Covering services grid.




9 Click the **Close** button to hide the services tree.

Removing Service Coverage

You can remove service coverage from the Services tab. Removing service coverage may affect coverage for other related entities.

To remove service coverage:

- 1** Select a test whose service coverage you want to remove.
- 2** Click the **Services** tab.
- 3** In the Covering services grid, select the service you want to remove.
-  **4** Click the **Remove from Coverage** button to remove the selected service. A confirm box indicates whether or not it affects coverage of other entities.
- 5** Click **Yes** to confirm you want to remove the coverage.

12

Running Service Tests

After you have generated service tests, you can edit the tests and test configuration settings to suit your specific testing objectives. You can then create and run test sets containing services, and view service test results.

This chapter includes:

- ▶ About Running Service Tests on page 176
- ▶ Viewing and Editing Service Tests on page 176
- ▶ Configuring Run-Time Settings from Quality Center on page 178
- ▶ Configuring Test Instance Parameters from Quality Center on page 181
- ▶ Creating Tests Sets for Service Tests on page 184
- ▶ Running Service Tests on page 184
- ▶ Viewing Test Results on page 189

About Running Service Tests

After generating tests, you can modify the details, attachments, service coverage, test coverage, and defect links for any test to suit your specific testing objectives. You can also view the script's run-time settings and customize the way the Vuser script is run. If a script has parameters, you can assign values to them, or change the existing parameter values from within Quality Center. Note that you can view and customize run-time settings and parameters for a test instance in the Test Lab module only.

Before you run the tests, you create test sets containing these tests. You can then run the tests and view results in the Test Lab module of Quality Center. You can run the tests individually, or you can run them as part of a test set containing multiple tests of all types.

When you run a test, HP Service Test opens and runs the test under the test configuration. When the test finishes, Service Test reports the test results back to Quality Center, and saves them as part of the test run.

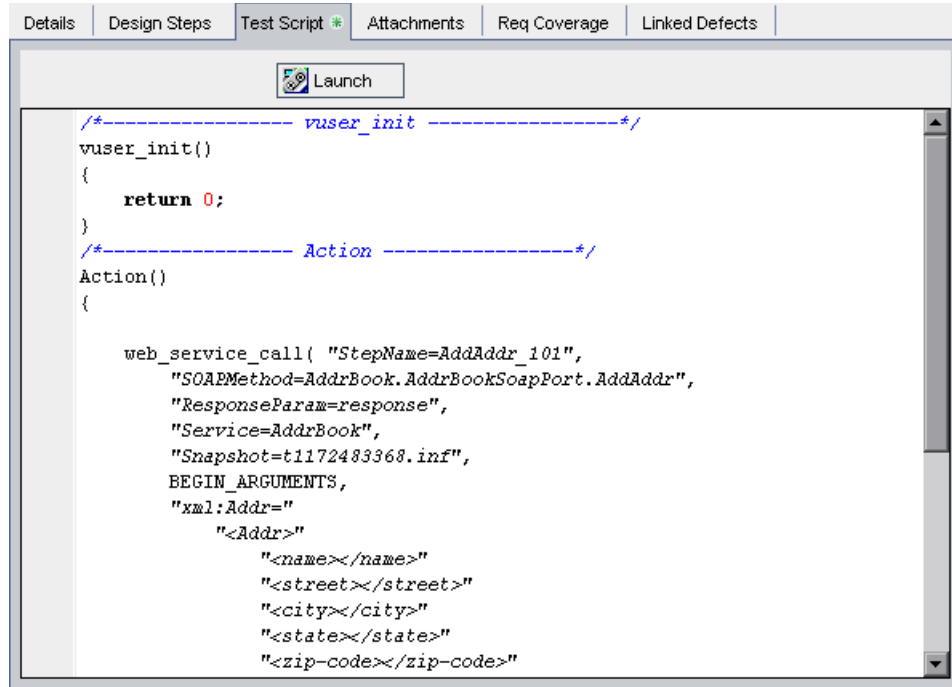
Viewing and Editing Service Tests

After generating the tests, you can view the test script in the Quality Center Test Plan module. If you have installed Service Test on your machine, you can edit tests to suit your specific testing objectives. You can add and remove service operation invocations, update argument data, add validation steps on service responses, and configure security and attachment data.

You edit tests using Service Test depending on your installation. You can open a generated test for editing by launching Service Test for the generated test from Quality Center, or by opening Service Test, and connecting to the Quality Center project to access the generated test. For more information on connecting to Quality Center from Service Test and using Service Test to modify service scripts, refer to the *HP Service Test User's Guide*.

To view or edit a service test:

- 1 Click the **Test Plan** module button, and select a service test in the test plan tree.
- 2 Click the **Test Script** tab to view the test script.



The screenshot shows a software interface with several tabs: Details, Design Steps, Test Script (selected), Attachments, Req Coverage, and Linked Defects. Below the tabs is a 'Launch' button. The main area contains a C++ test script with the following code:

```

/*----- vuser_init -----*/
vuser_init()
{
    return 0;
}
/*----- Action -----*/
Action()
{
    web_service_call( "StepName=AddAddr_101",
        "SOAPMethod=AddrBook.AddrBookSoapPort.AddAddr",
        "ResponseParam=response",
        "Service=AddrBook",
        "Snapshot=t1172483368.inf",
        BEGIN_ARGUMENTS,
        "xml:Addr="
            "<Addr>"
                "<name></name>"
                "<street></street>"
                "<city></city>"
                "<state></state>"
                "<zip-code></zip-code>"
    );
}

```

- 3 Click the **Launch** button to open the test script in Service Test. You can edit the script directly in the tool and save the changes.

Note: When you run the script in Service Test, the results are not reflected in Service Test Management.

Configuring Run-Time Settings from Quality Center

You can view the script's run-time settings and customize the way the Vuser script is run in the **Configuration** view of the Test Lab module. When you override a script's run-time settings from Quality Center, the modified settings are saved to the test in Quality Center and do not affect the settings in the Service Test script.

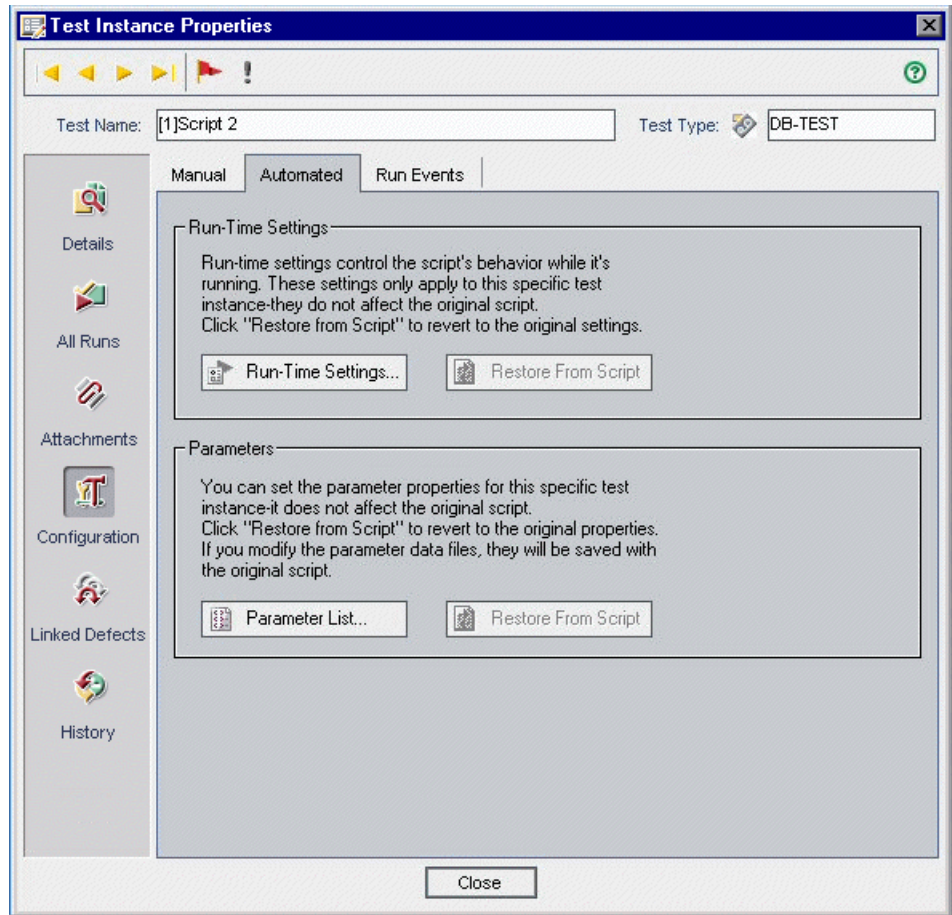
To configure the script's run-time settings from Quality Center:

- 1 Click the **Test Lab** module button, and select the **Execution Grid**.

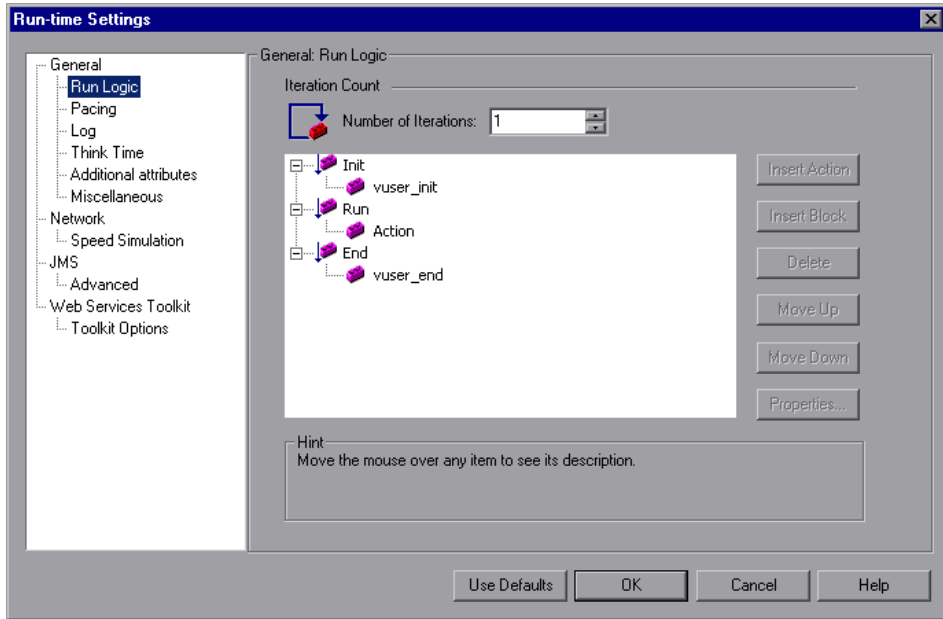


- 2 Select a service test, and click the **Test Instance Properties** button. Alternatively, choose **Tests > Test Instance Properties**. The Test Instance Properties dialog box opens.

- 3 In the Test Instance Properties dialog box, click **Configuration** on the sidebar and click the **Automated** tab.



- 4 In the **Run-Time Settings** section, click **Run-Time Settings**. The Run-Time Settings dialog box opens.



The Run-Time Settings dialog box displays the settings that you set using Service Test. If you did not set run-time settings for a script, the default Service Test settings are displayed.

For information on each specific run-time setting, refer to the *HP Service Test User's Guide*.

Modifying the run-time settings affects only the test settings in Quality Center. When you modify run-time settings, they are saved for each test within the test plan and do not overwrite the files inside the script.

- 5 Click **OK** to close the Run-Time Settings dialog box and save the changes.

Note: To restore the initial settings, in the Test Instance Properties dialog box, click **Restore From Script**.

- 6 Click **OK** to close the Test Instance Properties dialog box and return to the Execution Grid.
- 7 Run the test or test set. If you modified the run-time settings in Quality Center, the script runs using the modified settings.

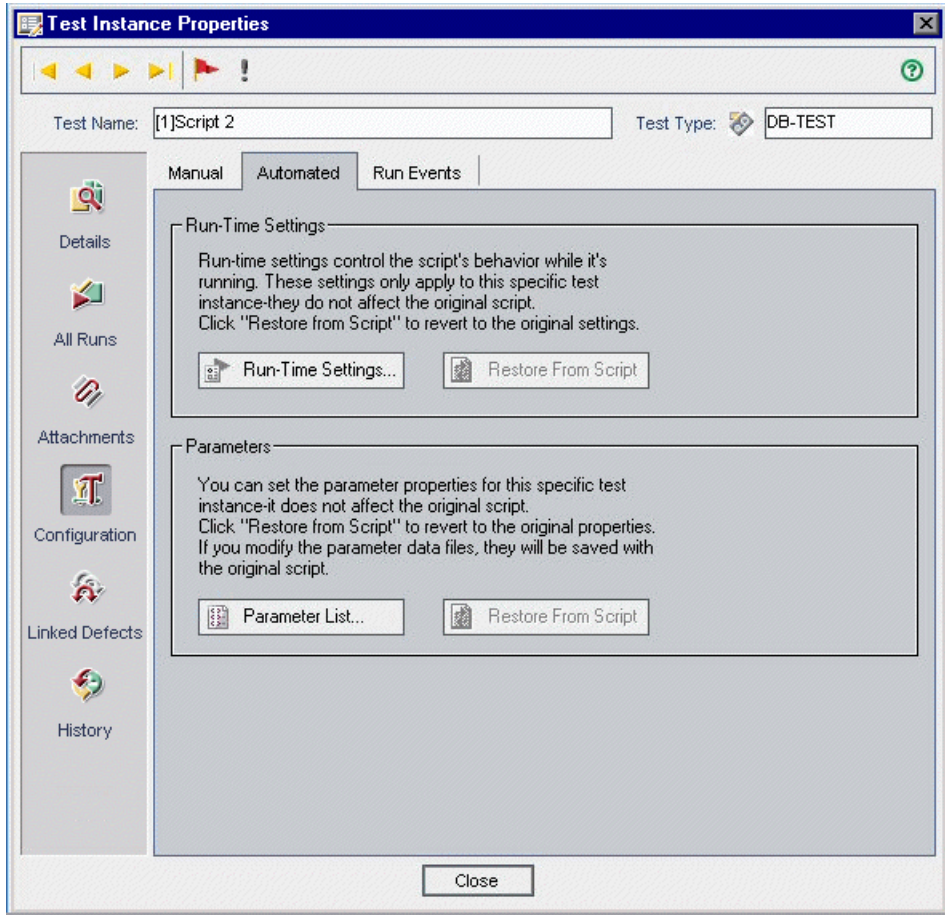
Configuring Test Instance Parameters from Quality Center

You can take a script that has test instance parameters, and assign values to them, or change the existing parameter values from within Quality Center. Since the script is saved in Quality Center, you do not need to change the script each time you replay it. You override the parameter values set in a script from the Configuration view of the Test Lab module.

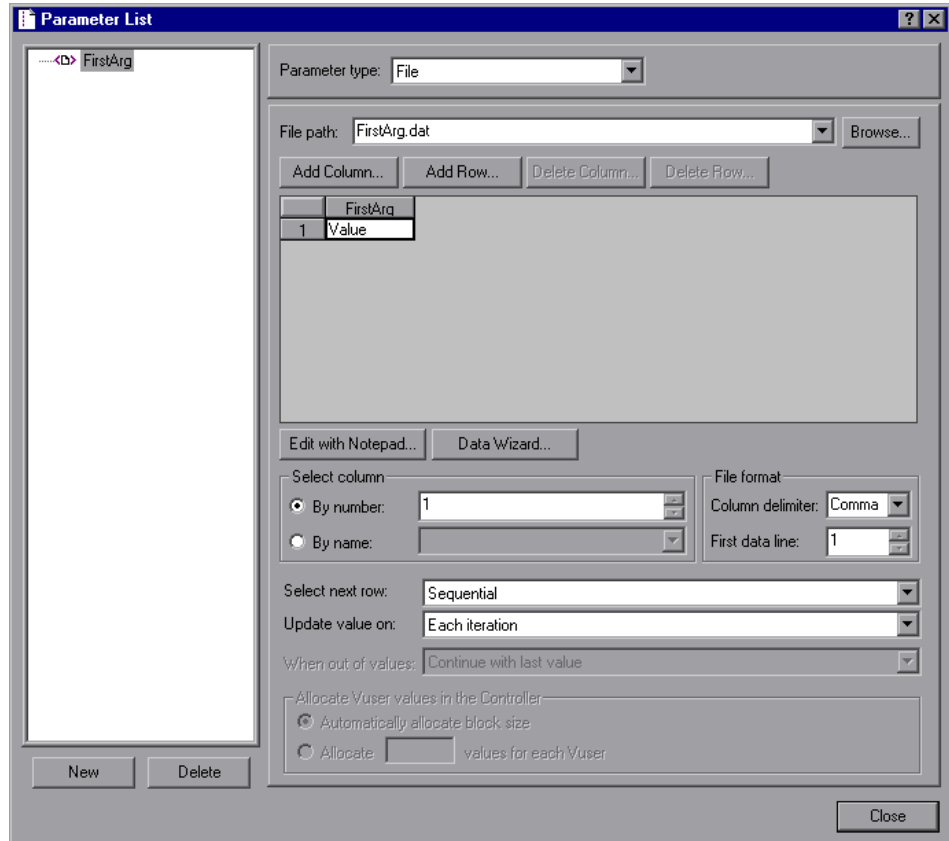
To change test instance parameters:

- 1 Click the **Test Lab** module button, and select the **Execution Grid**.
- 2 Select a service test, and click the **Test Instance Properties** button. Alternatively, choose **Tests > Test Instance Properties**.

- 3 In the Test Instance Properties dialog box, click **Configuration** on the sidebar and click the **Automated** tab.



- 4 In the **Parameters** section, click **Parameter List**. The Parameter List dialog box opens.



You can view and edit the value of each parameter. Any changes that you make to a parameter value are implemented in the next test run.

Note: Changing a parameter value affects all test sets using the test.

For more information on working with parameters, refer to the *HP Service Test User's Guide*.

- 5 Click **OK** to close the Parameter List dialog box and save the changes.

- 6 To restore the initial settings, in the Test Instance Properties dialog box, click **Restore From Script**.
- 7 Click **OK** to close the Test Instance Properties dialog box.
- 8 Run the test or test set. If you modified the parameters in Quality Center, the script runs using the modified settings.

Creating Tests Sets for Service Tests

After you have created service tests, you create test sets in the Test Lab module and choose which tests to include in each set. A test set is a group of tests in a Quality Center project designed to achieve specific testing goals.

Suppose you want to test a service to ensure it functions properly. You also want to use the same test sets as a basis for subsequent versions of the service after a change has been made to a service. In the test sets tree, you can create the folder **Calc_Service1.0** for the first version of a calculator service and add tests sets. Each test set contains tests for checking a specific component of the application, for example, standard compliance, interoperability, security and so on.

For details on creating test sets, refer to the *HP Quality Center User's Guide*.

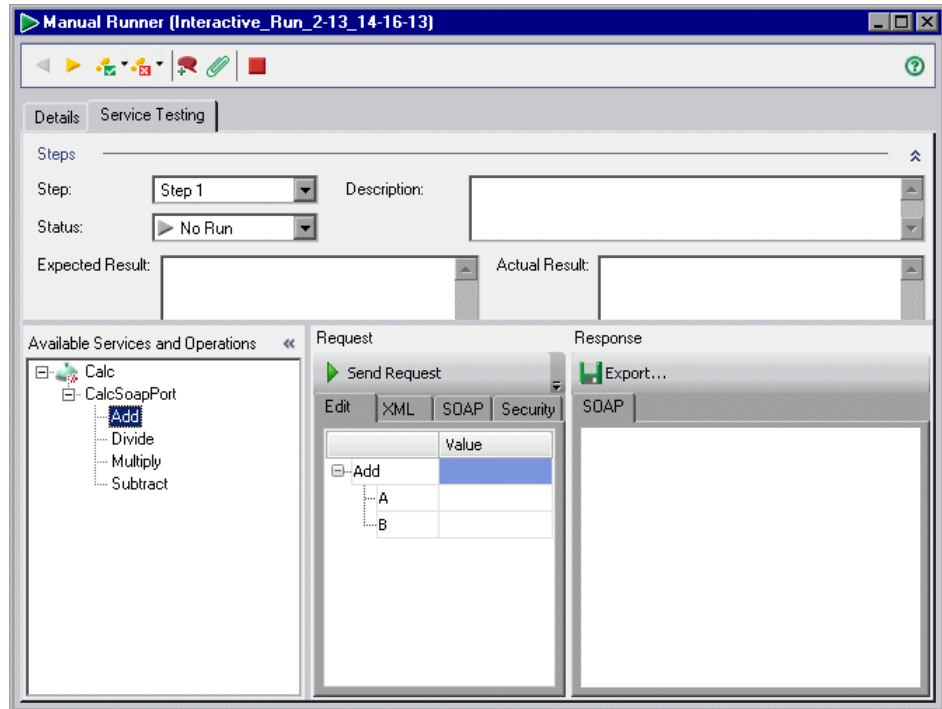
Running Service Tests

After you have defined test sets, you can begin executing service tests. You can run an entire test set or specific tests. You can run tests automatically or manually. For more information on running tests automatically, refer to the *HP Quality Center User's Guide*.

To run a service test manually, open the Manual Runner dialog box, follow the test steps, and compare the expected results with the actual outcome. When a step refers to a service, select its operation and enter its parameter values. You then submit your request to call the operation. After running the request, the results are displayed.

To run a service test manually:

- 1 In the Test Lab module, select a test set from the test set tree.
- 2 In the Execution Grid tab, select a service test (**DB-TEST** test type).
- 3 Click the **Run** arrow and choose **Run Manually**. The Manual Runner dialog box opens and displays the Service Testing tab.



The Steps section displays the first step. The Service Testing section displays the available services and operations.

- 4 Under **Test Steps**, follow the instructions detailed in the first test step description.

If a step requires running a service request, under **Available Services and Operations**, you can expand a service and select an operation to run. For more information, see “Sending Service Operation Requests” on page 188.

5 To select an execution status for a step, you can:



- ▶ Click the **Pass Selected** button and choose **Pass Selected Step** if the actual result is the same as the expected result. A green check is added to the step and the step status changes to Passed. To pass all the test steps at once, click the **Pass Selected** button and choose **Pass All**.



- ▶ If the actual result is different from the expected result, type the actual result in the **Actual Result** box, click the **Fail Selected** button and choose **Fail Selected Step**. A red X is added to the step and the step status changes to Failed. To fail all the test steps at once, click the **Fail Selected** button and choose **Fail All**.

- ▶ In the **Status** box, select an execution status. The status can be one of the following: Failed, N/A, No Run, Not Completed, Passed.



6 Click the **Next Step** button to display the next step.

7 Perform the remaining steps.

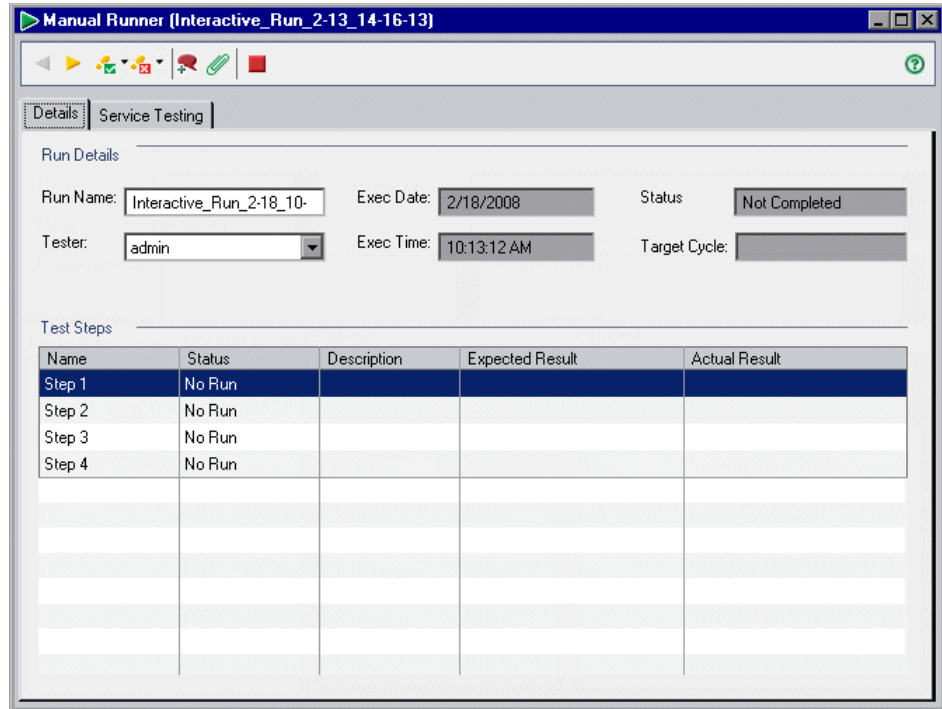


8 To add a defect to the test run, click the **New Defect** button. The New Defect dialog box opens. Quality Center automatically creates a link between the test run and the new defect. For more information, refer to the *HP Quality Center User's Guide*.



9 To add an attachment, click the **Attach to Run** button. An attachment can be a file, URL, snapshot of your application, an item from the Clipboard, or system information. For more information on attachments, refer to the *HP Quality Center User's Guide*.

10 To view the test run details, click the **Details** tab.



Under **Run Details**, you can edit the following run information:

- **Run Name.** The name of the test run.
- **Tester.** The user name of the person who executes the test.

Under **Test Steps**, you can review all test steps.



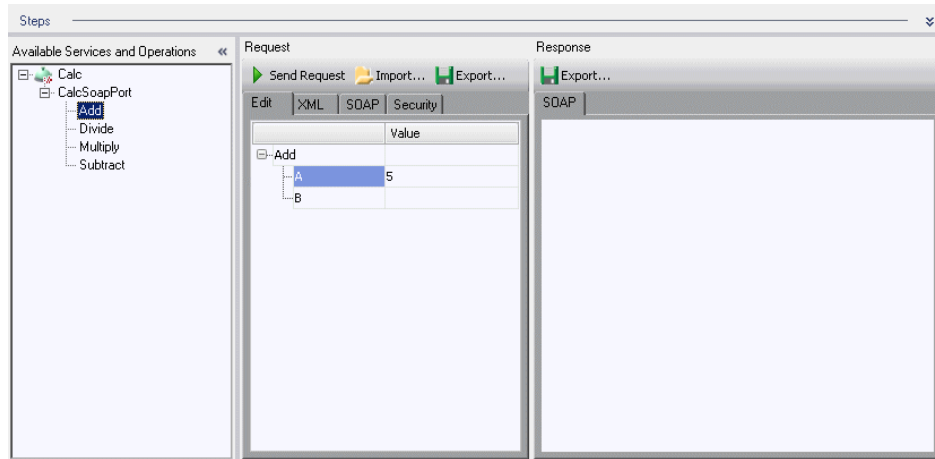
11 Click the **Stop** button when you complete the test run.

Sending Service Operation Requests

You can submit a service operation request to the server. After running the request, the results are displayed. Service requests can be imported and exported.

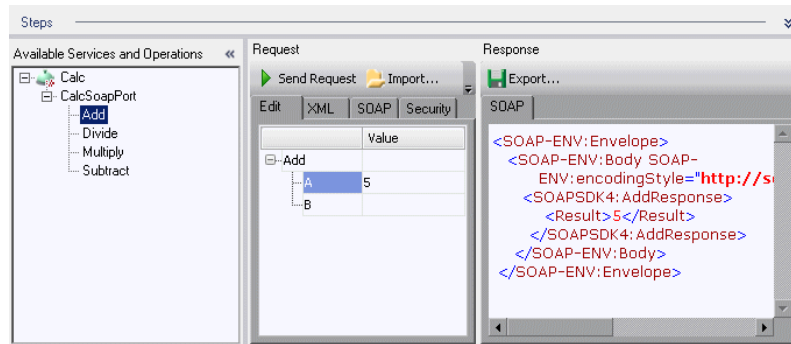
To send a service operation request:

- 1 If a step requires running a service request, under **Available Services and Operations**, expand a service and select an operation. The parameters are displayed in the Edit tab.



- 2 In the **Edit** or **XML** tab, type the expected parameter values. Alternatively, click the **Import** button to import values from a file.
- 3 To export the parameter values to file, click the **Export** button.
- 4 To view the SOAP request to be submitted, click the **SOAP** tab.
- 5 To define an authentication setting method for submitting requests, click the **Security** tab.

- 6 Click the **Send Request** button to submit the request. The results are displayed under Response, in the SOAP tab.



- 7 To export the results to file, click the **Export** button.

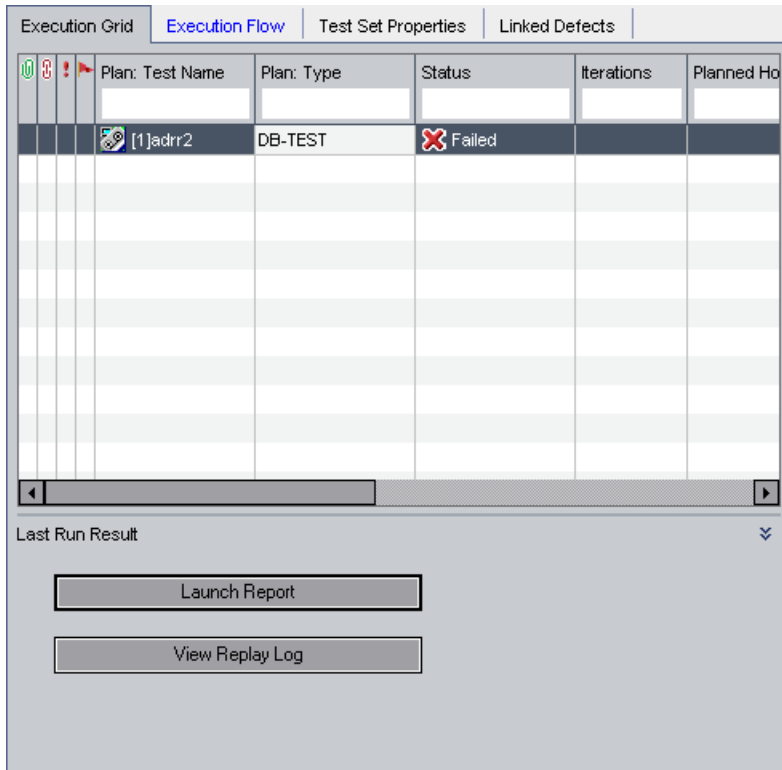
Viewing Test Results

After you have run the test sets, you can verify the service behavior and analyze the results in various formats:

- ▶ View a report for each script action and a replay log from the Execution Grid. For more information, see “Viewing the Test Results Report and Log File” on page 190.
- ▶ View the results using Quality Center graphs, reports, and documents. For more information, refer to the *HP Quality Center User's Guide*.
- ▶ View service level status through requirement coverage. For more information, see “Viewing the Linked Requirements Tab” on page 154.
- ▶ Generate Excel reports that enable you to analyze service and service group data from within Excel. For more information, see “Generating Excel Reports” on page 118.

Viewing the Test Results Report and Log File

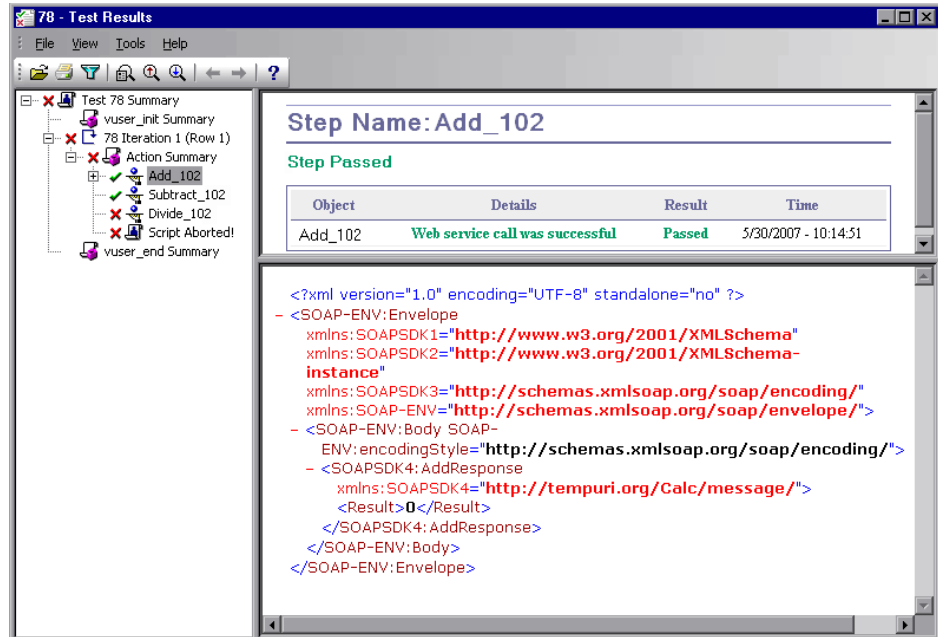
After you run a test set, you can view a summary of the test results using the Test Results viewer. The viewer also shows the results of the checkpoints. You can also view a replay log of the test run.



To view the Test Results report:

- 1 Click the **Test Lab** module button, and select the **Execution Grid**.
- 2 Click the **Launch Report** button. Test results for each script action are displayed in the Test Results viewer.

Test results are divided into iterations, actions, and steps.

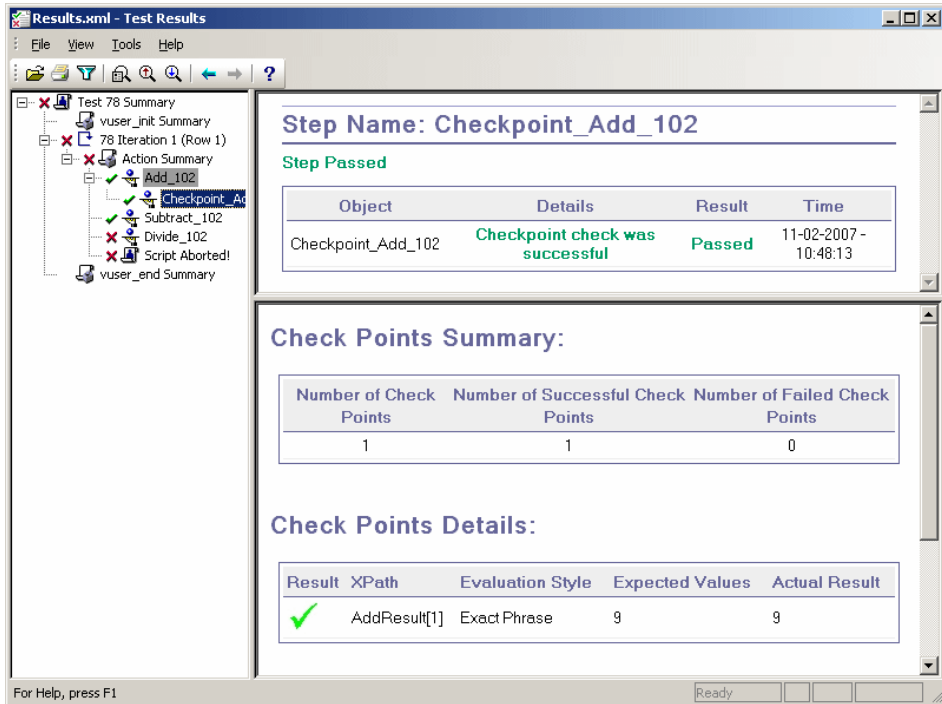


The results report marks a successful step with a green check mark and a failed step with a red X. An iteration is only marked as successful if all of its steps and actions have succeeded.

For Web Service calls, the lower pane of the Results window displays the contents of the SOAP response.

The Results window also shows checkpoint results. It provides a summary with a reason for the failure. It also provides the Expected Value and Actual Results.

To view the checkpoint details, expand the appropriate step in the left pane and click the **Checkpoint** node.



For more information about working with test results, refer to the *HP Service Test User's Guide*.

To view the replay log:

- 1** Click the **Test Lab** module button, and select the **Execution Grid**.
- 2** Click the **View Replay Log** button. The test's replay log is displayed in a text editor. You can examine the messages in the replay log to see whether the test ran without errors.

13

Viewing Linked Defects

You can link defects to tests or requirements that cover the service or service group. You can then view defects linked to your services and service groups and track the progress of defect resolution.

This chapter includes:

- About Viewing Linked Defects on page 193
- Viewing Defects Linked to Services or Service Groups on page 194

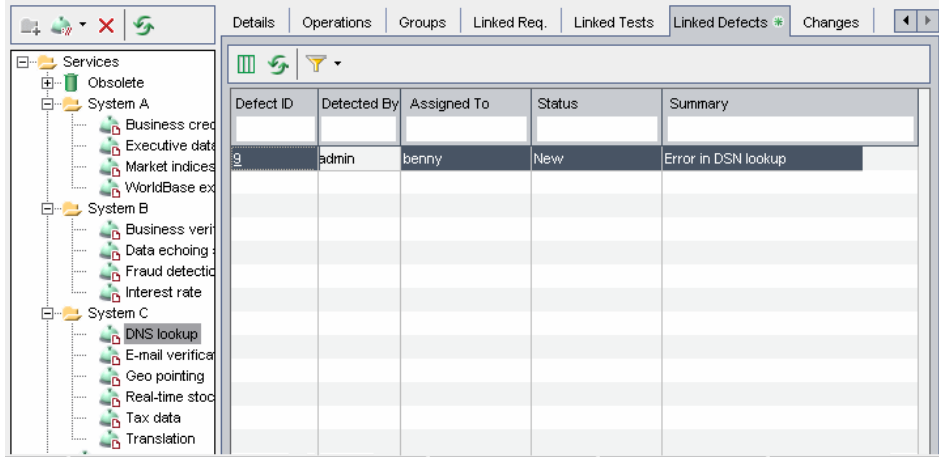
About Viewing Linked Defects

Service Test Management does not support direct links between services and defects. Instead, defects are indirectly linked to services and service groups through requirements. After you create defects and link them to a test or requirement that covers the service or service group, you can view these linked defects in the Linked Defects tab of the Services module. Defect linkage is useful, for example, when a new test is created specifically for a defect. By creating this linkage, you can determine whether the test should be run based on the status of the defect.

When you link a requirement to a service or service group, Service Test Management adds a direct link to the requirement and indirect links to any defects linked to the requirement and to defects linked to tests covered by the requirement.

Viewing Defects Linked to Services or Service Groups

The Linked Defects tab enables you to display the defects that are linked to the currently selected service or service group. The tab displays a grid containing information about each linked defect, with a link to the defect. You can view and modify defect details in the linked defects grid.



For more information on viewing linked defects, refer to the *HP Quality Center User's Guide*.

14

Updating Services and Analyzing Service Changes

Change impact analysis helps you minimize the risk of changes in SOA environments by detecting changes to services and establishing their impact.

This chapter includes:

- About Using Change Impact Analysis on page 196
- The Service Change Workflow on page 197
- Updating Services and Service Groups on page 198
- Reviewing Service Changes on page 201
- Creating Test Sets for Service Changes on page 206
- Running Test Sets on page 209
- Updating the Change and Service Status on page 210

About Using Change Impact Analysis

Change impact analysis helps you assess the impact of changes to services in your service tests. When you update a service or service group, Service Test Management compares the latest definition from the WSDL file to the WSDL definition stored in Quality Center. If there are changes at the operation signature level or in the data structure of an argument, Service Test Management lists these changes in the Changes tab. For each change, Service Test Management displays a description of the change, an assessment of the change-risk, and the change status. It also flags the changed service in the services tree and the Services tab (if the service is assigned to service groups).

To verify the changes, you can create test sets containing all tests linked to the updated service, or only those tests that are using service operations affected by the changes. Each test set must be linked to a requirement that covers the service. If a service does not have requirement coverage, Service Test Management lets you link the service to a default requirement, which is covered by the test set. All tests in a test set are linked to a service through the requirement.

After creating a test set, you can run the linked or affected tests in the test set to verify whether these changes caused regression in service functionality and performance. You can also trace changes to any linked requirements, tests, test sets, and defects. This enables you to immediately identify which entities are affected, and who is responsible for them.

The Service Change Workflow

The Service Change Workflow is an explanation of the steps involved in testing service changes. By default, it is displayed in the right pane of the Changes tab.

The Service Change Workflow contains the following steps:

1 Update a service.

Update the service definition stored in Quality Center with the latest definition from the WSDL file. Service Test Management flags the changed service in the services tree and Services tab. For more information, see “Updating Services and Service Groups” on page 198.

2 Review the changes in the service.

Review the changes in the Changes tab, and determine the severity of the change based on the change type, change description, and change risk. For more information, see “Reviewing Service Changes” on page 201.

3 Analyze impact of change on linked tests.

Evaluate the tests that are currently linked to the service in the Linked Tests tab, and add additional tests if necessary. For more information on tests linked to services, see “Viewing the Linked Tests Tab” on page 164.

4 Create regression test sets to check the changes.

Create a test set folder for the test sets in the Test Lab module, and then create test sets containing the tests you want to run to verify these changes in the Changes tab. For more information, see “Creating Test Sets for Service Changes” on page 206.

5 Run the test sets.

Run the test sets from the Quality Center Test Lab module. For more information, see “Running Test Sets” on page 209.

6 Update the status of the changed service according to run results.

Verify the behavior of the changed service and update the change status in the Changes tab. For more information on change status, see “Reviewing Service Changes” on page 201.

7 View service coverage.

After all changes have been successfully tested, review the coverage in the Linked Req. tab. For more information, see “Viewing the Linked Requirements Tab” on page 154.

8 Update the change status.

When you are satisfied with the quality of a service, remove the service change alert. For more information, see “Updating the Change and Service Status” on page 210.

Updating Services and Service Groups

You use the update service or update group services features to check for changes in a service or group of services. If changes are found in the service WSDL file, the service definition and operations data stored in Quality Center is updated. You can update the service from the latest WSDL file located at the same location from which the service was imported, or from a different location if the WSDL file was moved. If you update the service from a different file location, you must update the service from the same location type that was originally used (file, URL, UDDI, or Systinet).

You can also update WSDLs that reside on secure locations and WSDLs accessed through proxy servers provided the correct authentication credentials have been supplied. For more information on authentication and proxy settings, see “Accessing Services on Secure Sites and Proxy Servers” on page 95.

You can update individual services from the Service Repository tab, or all services in a service group from the Service Groups tab. When you update a service, Service Test Management displays changes in the Changes tab for the selected service, and flags the changed service in the services tree and Services tab. For more information, see “Reviewing Service Changes” on page 201.

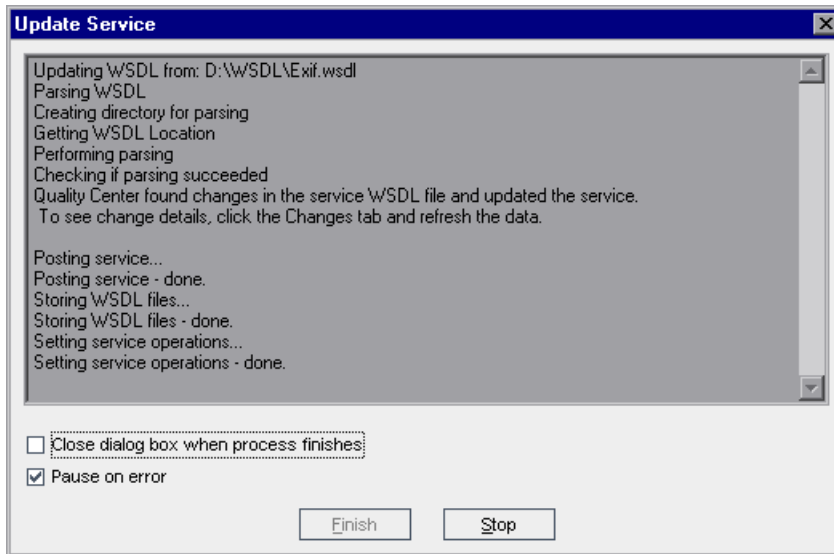
Note: If **Keep up to date** is selected in the Details tab, the service definition is automatically updated from the WSDL file each time the service is loaded.

To update a service or services in a group:

- 1** Select the service or service group you want to update in the services tree or service groups list.
- 2** Choose one of the following update options:
 - To update a service using the same WSDL location, choose **Services > Update Service > Update Service**.
 - To update services in a service group using the same WSDL location, choose **Groups > Update Group Services**.
 - To update a service using a different WSDL location, choose **Services > Update Service > Update Service from**, and select the WSDL you want to update from. You cannot update services in a service group using different WSDL locations.

Note: When updating a service from a UDDI or Systinet server, the selected service must have a WSDL file whose definition has the same service name as the original WSDL used to import the service. You can only select a single service to use as the new source for the import.


- 3 The Update Service dialog box opens and the update process begins. Service Test Management checks for changes in the WSDL file and informs you if the service was updated.



To automatically close the Update Service dialog box after the update process has finished, select **Close dialog box when process finishes**.


By default, Quality Center pauses the process each time it finds an error, and displays the error message in the Import Services dialog box. To continue with the import process, click **Continue**, or click **Stop** to end the process. If you do not want to view errors during the import process, clear the **Pause on error** check box.

- 4 To stop the update process at any time, click **Stop**.
- 5 When the update process is finished, click **Finish** to close the Update Service dialog box.

Tip: If a service is updated, Service Test Management displays a service change alert icon  next to the service in the services tree and in the Services tab (for services assigned to groups), and in the Changes tab for the selected service.


- 6 Click the service's **Changes** tab to view change details. For more information, see “Reviewing Service Changes” on page 201.

Reviewing Service Changes

You can view changes to a service in the Changes tab. Service Test Management displays a service change alert icon  in the Changes tab. This indicates the service status has changed, and that the service should be reviewed.

The changes grid displays information about each service change, including a description of the change, the part of the WSDL file and service affected by the change, the change status, and an assessment of the change-risk. In addition, you can add, modify and delete service changes from the changes grid.

To review service changes:

- 1 Select a service that has been updated. A service change alert icon  next to a service in the services tree or Services tab (for services assigned to groups), indicates that a service has been updated and contains changes.

- 2 Click the **Changes** tab. The changes grid lists the changes that were made to the service.




Part Type	Part Name	Change Type	Change Risk	Change Status	Created By	Creation Time
Operation	operation	Updated	Medium	New	admin	
Service	m_service4	Added	Low	New	admin	
Service	m_service4	Updated	Medium	New	admin	
Port	New Port	Removed	High	New	admin	



Linked Req. * Linked Tests * Linked Defects Linked Services * **Changes !** Attachments

+ ✖ ↺ ↻ ⌵ 📁 Create Test Set...

Description

The changes grid contains the following information:

Column	Description
Change Risk	<p>The business risks and costs associated with the change. A change can have one of the following risk levels:</p> <ul style="list-style-type: none"> ▶  High. Changes that are likely to affect functionality and fail any test that is not updated. High-risk changes include operation removal and parameter changes. ▶  Medium. Changes may affect functionality, but may not necessarily fail existing tests. Medium-risk changes include service changes (notification that some of the service files have changed). ▶  Low. Changes are unlikely to fail or affect existing functionality or implemented tests. Low-risk changes include operation additions (as they do not affect existing functionality), service address changes (deployment only), and port type changes.
Change Status	<p>The current status of the change. By default, the change status is New. Update the status throughout the change analysis process as follows:</p> <ul style="list-style-type: none"> ▶ New. There is a change in the service. ▶ In test. The change is being tested. ▶ Verified. The change was tested and did not cause a regression. ▶ Obsolete. The change does not affect the service.
Change Type	<p>The type of change is indicated as follows:</p> <ul style="list-style-type: none"> ▶ Added. A service operation was added. ▶ Removed. A service operation was removed. ▶ Updated. Changes were made to the argument structure of the operation. Details of these changes are displayed in the Description column.
Created By	<p>The user name of the person who run the update that created the changes.</p>
Creation Date	<p>The date on which the change was made. By default, the creation date is set to the current database server date.</p>
Creation Time	<p>The time at which the change was made. By default, the creation time is set to the current database server time.</p>

Column	Description
Description	<p>A description of the service change and suggested tests to verify. For service operation changes (where Part Type is Operation and Change Type is Updated), the change description contains details of the argument that was added or removed from the operation.</p> <p>To display the description of the change in a separate pane, click the Show Description button   in the lower-right part of the Changes tab. The Description pane is displayed below the changes list. Click the button again to hide the pane.</p>
Owner	The user name of the person who is responsible for the service.
Part Name	The part of the WSDL file affected by the change.
Part Type	The part of the service affected by the change (Operation , Service , or Port).
Severity	The severity level of the change, determined by the user (High , Medium , Low).



Tip: To display an explanation of the steps involved in testing service changes, click the **Show Help Panel** button in the upper-right part of the Changes tab. Click the button again to hide the panel. For more information, see “The Service Change Workflow” on page 197.

3 To add a new change, perform the following steps:



a Click the **New Change** button. The the New Change dialog box opens.

b Enter the relevant field details.



c To add additional changes, click the **New Change** button.

d Click **OK** to close the New Change dialog box and add the changes to the grid.

4 To edit a change, perform the following steps:



a Select a change in the changes grid and click the **Change Details** button. The Change Details dialog box opens.

b You can proceed through the changes in the changes grid using the browse buttons:



Click the **First Change** button to display the first change, or the **Previous Change** button to display the preceding change.



Click the **Next Change** button to display the subsequent change, or the **Last Change** button to display the final change in the grid.

c Update the details.



d To add additional changes, click the **New Change** button.

e Click **OK** to close the Change Details dialog box and save your changes.



5 To delete a change from the changes grid, click the **Remove Selected** button.



6 To set column appearance and order in the grid, click the **Select Columns** button. For more information on arranging columns in a grid, refer to the *HP Quality Center User's Guide*.



7 To refresh a change in the grid, select the change and click the **Refresh** button.



8 To filter, sort, and group changes in the grid, click the **Set Filter/Sort** button. For more information on filtering, sorting, and grouping a grid, refer to the *HP Quality Center User's Guide*.

9 To create a test set to verify service changes, click the **Create Test Set** button. For more information, see “Creating Test Sets for Service Changes” on page 206.



10 To hide the service change alert icon, choose **Services > Service Change Alert**.

Creating Test Sets for Service Changes

After reviewing changes in a service and evaluating the tests affected by the change, you can create test sets to verify the changes. You can create one or more test sets containing the tests you want to run. This enables you to perform specific tests for the detected changes. If necessary, you can reduce the total testing effort required by selecting only the tests affected by these changes. You create test sets in the Changes tab.

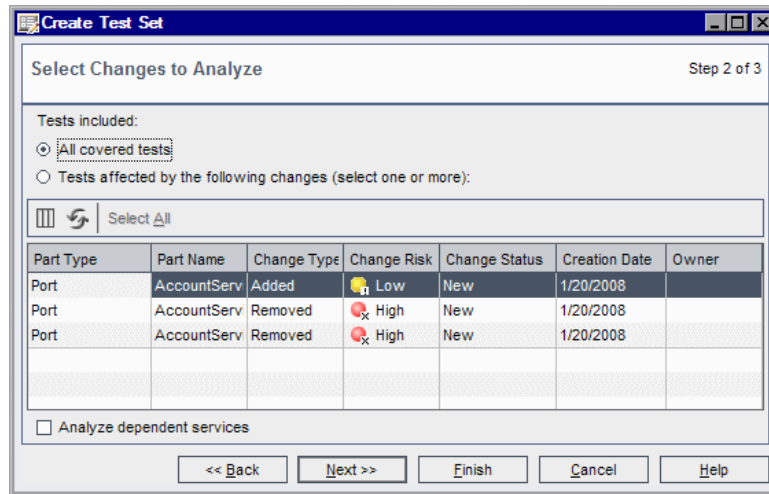
Each test set must be linked to a requirement that is linked to a service. If a service or service group does not have requirement coverage, Service Test Management enables you to link the service or service group to a default requirement, which is then linked to the test set. All test instances in a test set are linked to a service through the requirement.

To create a test set for service changes:

- 1 Click the **Changes** tab, and select the service for which you want to verify changes.
- 2 Click the **Create Test Set** button. The Create Test Set page opens.

- 3 In the **Test Set folder** box, select the folder under which you want to save the test set you are creating. Note that you cannot add a test set directly to the **Root** folder. If you have not created a test set folder for the test set, click **Cancel** and create the folder in the Test Lab module.

- 4 In the **Test set name** box, you can accept the default name <service_name>_TestSet_<date>, or type a name for the test set.
- 5 In the **Requirement linkage** section, select a requirement to link to the test set.
 - **Existing requirement.** Enables you to specify which service requirement to link to the test set. You can link the test set to a new or existing requirement. For more information, see “Linking Services to a New or Existing Requirement” on page 88. This option is not available if the service has no linked requirements.
 - **Default requirement.** Creates a link between the default service requirement and the test set. If the service has no linked requirements, you must select this option to create requirement coverage for the service or service group. Service Test Management creates a default requirement and links it to the test set.
- 6 Click **Next**. The Select Changes to Analyze page opens.



- 7 Select the changes to be included in the test set:
 - **All covered tests.** Includes all tests covering the service. This does not include test scripts that used some of the service operations if they were not linked to the service.

- ▶ **Tests affected by the following changes (select one or more).** Includes tests covering the service that were affected by the selected changes. Service Test Management detects the test scripts that are using service operations affected by the change.

- ▶ In the grid, select the changes that you want to include. To select more than one change, hold down the CTRL key and select the changes that you want to include. To select all changes, click **Select All**.



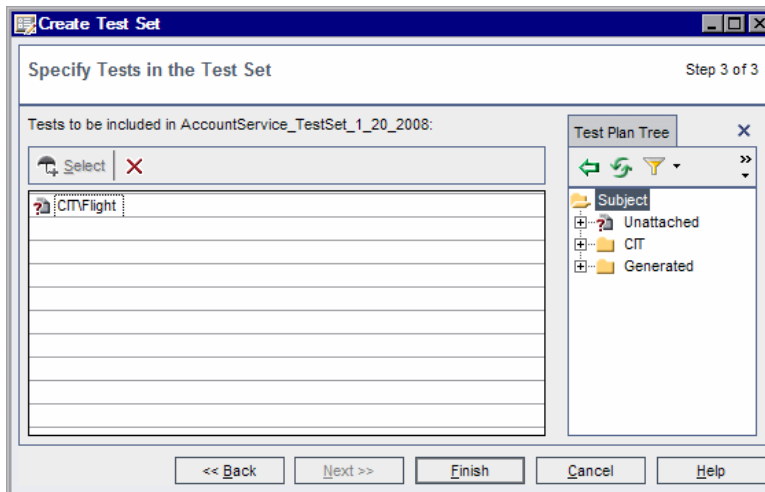
- ▶ To set column appearance and order in the grid, click the **Select Columns** button. For more information on arranging columns in a grid, refer to the *HP Quality Center User's Guide*.



- ▶ To refresh a change in the grid, select the change and click the **Refresh** button.

8 Select **Analyze dependent services** to include tests covering dependent services. For more information, see “Creating Service Dependencies” on page 91.

9 Click **Next**. The Specify Tests in the Test Set page opens and displays the tests that are suggested to be included in the test set.



10 Specify the tests to include in the test set.

- Click the **Select** button to display the Test Plan Tree tab in the right pane.



- To search for a specific test in the tree, type the name (or part of the name) of the test in the **Find** box and click the **Find** button. If the search is successful, the test is highlighted in the tree.



- To filter and sort test in the tree, click the **Set Filter/Sort** button.



- To refresh the tests in the tree, click the **Refresh All** button.



- To add a test to the test set, in the Test Plan Tree tab, select a test or a test folder and click the **Add to Test Set** button. The test is added to the grid. Only tests that match the current filter are added.



- Click the **Close** button to hide the Test Plan Tree tab in the right pane.



- To remove a test from the test set, select the test and click the **Remove a Test** button. To delete more than one test, hold down the CTRL key and select the tests you want to delete, then click the button.

11 Click **Finish**. Service Test Management creates a test set containing the tests you selected.

Running Test Sets


After you create test sets to test the impact of changes made to services in a SOA environment, you can run these test sets in Quality Center's Test Lab module. After you have run the test sets, you can verify the service behavior and analyze the test results using Quality Center graphs, reports, and documents. For details on running test sets and analyzing test results, refer to the *HP Quality Center User's Guide*.

After all changes have been tested, review the coverage status of the parent requirement created for the changes set in the Linked Requirements tab, and verify the changes. For more information, see "Viewing the Linked Requirements Tab" on page 154.

Updating the Change and Service Status

After all the changes have been successfully tested and you are satisfied with the quality of a service, you can update the status for each change, and remove the service change alert icon.

To update the change and service status:

- 1** Select an updated service in the services tree, and click the **Changes** tab.
- 2** In the changes grid, select the change whose status you want to update.
- 3** Click in the **Change Status** column, and click the **Change Status** arrow. Select a change status:
 - If the change was tested and did not cause a regression, change the status to **Verified**.
 - If the change does not affect the service, change the status to **Obsolete**.
-  **4** To remove the service change alert icon for the service, choose **Services > Service Change Alert**. This removes the change icon from the Changes tab, services tree, and Services tab. Select **Services > Service Change Alert** again to redisplay the service change alert icon.

15

Analyzing Services

Using drill-down charts, you can analyze the requirement coverage status of your services.

This chapter includes:

- ▶ About Analyzing Services on page 211
- ▶ Working with Service Analysis on page 212

About Analyzing Services

You analyze services using charts that display the status of testing aspects and their requirements. You can analyze either a specific service or all the services in your project.

You can use two levels of drill-down charts. The upper-level chart displays the status of the service. This status is based on the overall test coverage of the requirements associated with the service, grouped by aspects. The lower-level chart displays the status of a selected aspect. From the lower-level chart, you can navigate directly to a specific requirement.

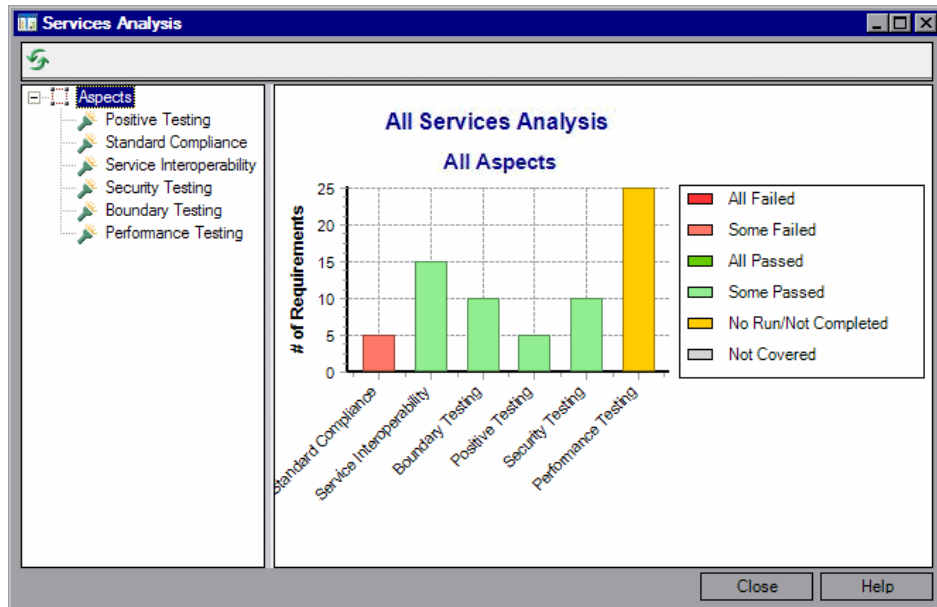
Working with Service Analysis

You can analyze services according to the test coverage of requirements.

To work with service analysis:

- 1 You can analyze all services or a single service, as follows:
 - ▶ To analyze all services, in the Service module, choose **Analysis > Analyze All Services**.
 - ▶ To analyze a single service, select a service in the services tree. Choose **Analysis > Analyze Selected Service**. Alternatively, right-click and choose **Analyze Service Analysis**.

The Service Analysis window opens.



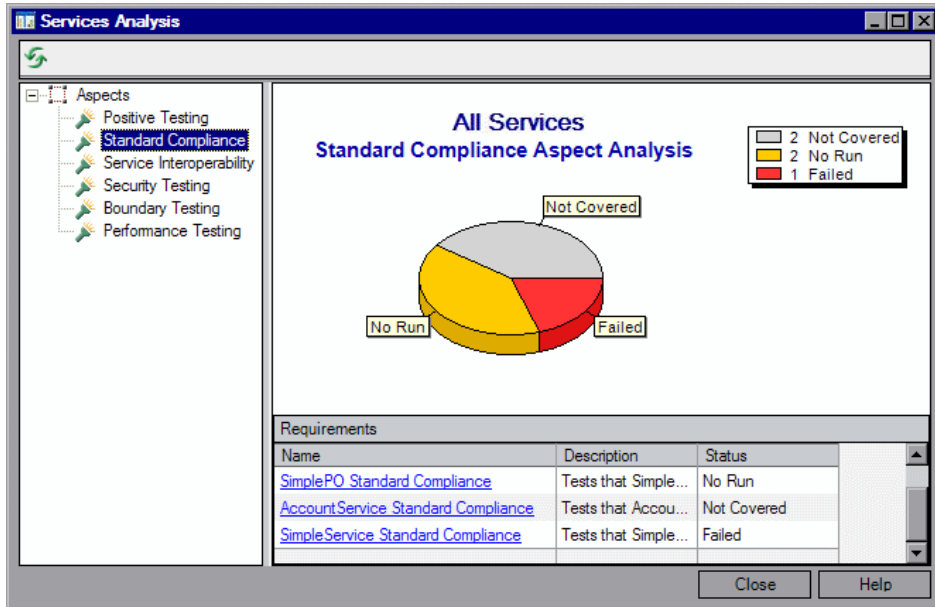
The left pane displays a tree of aspects. By default, the **Aspects** root item is selected. The right pane displays a service analysis chart showing the number of requirements and statuses for all aspects.

Each bar in the chart represents an aspect. The names of the aspects appear along the x-axis. The height of the bar represents the number of requirements in that aspect and its sub-aspects. The number appears along the y-axis. The color of the bar represents the aspect's status. For example, red indicates that all related tests failed; deep green indicates that all related tests passed. A key of the color codes is displayed in the legend to the right of the chart.

The aspect statuses are derived from the direct cover statuses of the requirements associated with the aspect.

Aspect Status	Description
All Failed	All the aspect's requirements are assigned the Failed status.
Some Failed	At least one of the aspect's requirements is assigned the Failed status.
All Passed	All the aspect's requirements are assigned the Passed status.
Some Passed	At least one of the aspect's requirements is assigned the Passed status. All other requirements have either the No Run, Not Completed or Not Covered status.
No Run/Not Completed	All the aspect's requirements are assigned either the No Run, Not Completed or Not Covered status.
Not Covered	All the aspect's requirements are assigned the Not Covered status.

- 2 To analyze a testing aspect, in the left pane, expand the aspects tree and select an aspect. Alternatively, select a bar in the Service analysis chart. The Aspect Analysis chart opens.



Each segment in the pie represents a direct cover status that can be assigned to requirements. The names of the statuses appear in labels alongside the segments. The relative size of the segments represents the number of requirements in the aspect and its sub-aspects that are assigned that status.

The Requirements grid below lists the requirements associated with the selected aspect and its sub-aspects, including a description and the status of each requirement.

- 3 To go to a particular requirement, select a link in the requirements grid. The requirement opens in the Requirements module.



- 4 To refresh the chart, click the **Refresh** button. If you click this button in the Aspect Analysis view, you will return to the Service Analysis view.

16

Integration with HP Service Test

HP Service Test integrates with Service Test Management to let you create tests and emulated services to check and assess the quality of applications and services in your SOA systems.

This chapter includes:

- Creating Tests with HP Service Test on page 215
- Creating a Service Emulation on page 216
- Using Emulated Services in Vuser Scripts on page 225
- Emulating Services from Quality Center on page 227

Creating Tests with HP Service Test

Service Test Management works together with Service Test to provide an efficient method for storing and retrieving Vuser scripts, scenarios or session steps, and collecting results. You store Service Test scripts in a Quality Center project and organize them into unique groups. Using Service Test, you create tests for your Web services, edit tests generated using Service Test Management, run tests, view results, and reuse services.

For more information on working with Service Test, refer to the *HP Service Test User's Guide*.

Creating a Service Emulation

Service Test provides a Service Emulation tool for creating an emulation of a service to test other Web services in your environment.

The emulated service lets you design and run tests at early stages of development when the actual service is inaccessible. For example if the development of the service is incomplete or if the service's host is unavailable, you can use an emulated service to test other services in your application.

In the Service Emulation interface, you associate a WSDL document to the service which indicates its operations and parameters. You specify rules and delays to define the service's behavior.

The steps in creating an emulated service are:

- ▶ Starting the Emulation Server
- ▶ Troubleshooting the Server
- ▶ Selecting a Host
- ▶ Adding a New Service
- ▶ Setting the Emulated Service's Behavior
- ▶ Manipulating Emulated Services

Starting the Emulation Server

The Service Emulation tool provides a Tomcat server through which you can run emulated services. The installation program installs an Axis servlet which allows you to run the service on the Tomcat server running on the local machine.

To create or run emulated services on your local machine, you must manually start the emulation service.

To start the emulation service:

Choose **Start > Programs > HP Service Test > Start Emulation Service.**

To stop the emulation service:

Choose **Start > Programs > HP Service Test > Stop Emulation Service**.

You can also manually start and stop the service from the Services dialog box (**Start Programs > Administrative Tools > Services**). The service is called **HP ServiceEmulation**.

To check whether or not the server is active, enter the following URL into your browser: <http://localhost:8080/ServiceEmulation/index.jsp>.

Troubleshooting the Server

If the Service Emulation console indicates that the server is not accessible, even after a manual start, you can try the following troubleshooting tips:

- ▶ Make sure the server is up. Enter the following URL into your browser: <http://localhost:8080/ServiceEmulation/index.jsp>. If the server is down, start it manually from the Start menu.
- ▶ Verify that port 8080 is available. If it is not, release the port and restart the server.
- ▶ Open the Apache Tomcat log files under the `<product install dir>\Service Test\apache-tomcat-5.5.17\logs` directory and determine the reason that the server did not load. Fix the problem and reload the server.
- ▶ When emulating a service, if you encounter a warning “Service is not activated” in the endpoint location of your emulated service, perform one or more of the following actions:
 - ▶ Verify that the service is active. Select the service in the left pane and click the **Activate Service** button in the right pane, if it is visible.

- If the service is already active, check its URL. Copy the URL from the WSDL Location in the Emulated Service's right pane, and paste it into a browser, removing the suffix **?wsdl** from the string. For example, instead of `http://localhost:8080/axis/services/MyService?wsdl`, use `http://localhost:8080/axis/services/MyService`. If your browser opens a valid page, then your service is active. To use this emulated service, import the original WSDL into Service Test. Then override the address and set it to the URL you previously used in the browser.

For more information about integrating your emulated service into your test, see “Using Emulated Services in Vuser Scripts” on page 225.

Selecting a Host

The first step in creating an emulated service is choosing a host for the emulated services. The setup installs a Tomcat server on your local machine. You can also specify external servers, upon which the Tomcat server is installed.

By default, the Service Emulation tool uses localhost as the emulation server.

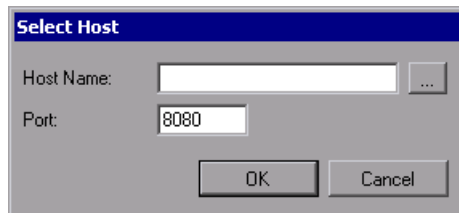
To add an external host:

- 1 Open the Service Emulation tool. Choose **Start > Programs > HP Service Test > Service Emulation Console**.

Tip: You can also open the Service Emulation tool from Quality Center Services module by choosing **Tools > Run Service Emulation Console**.



- 2 Choose **Main > New Host** or click the **Add Host** button to open the Select Host dialog box.



- 3 Browse for a host in your network, or enter the host name directly. If applicable, change the port setting from the default value, 8080.
- 4 Click **OK**. The host is added to the list in the window's left pane.

Tip: If you have a conflict with the 8080 port, edit the **Server.xml** file in the **apache-tomcat-5.5.17\conf** folder under the Service Test installation. Change the port from 8080 to another port. Create a new localhost server with the new port number.

Adding a New Service

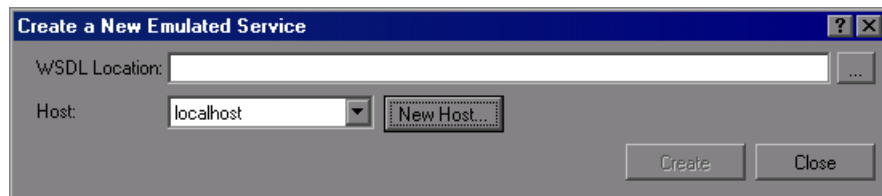
For each host that you added, you can create emulated services. You create a service by specifying a WSDL file that defines the operations and parameters of the service. When you specify a WSDL file, the Service Emulation tool uses the current structure of the WSDL to define the structure of the service's input and output data.

If the original WSDL changes, it is not reflected in your emulated service. To use an updated WSDL, recreate the emulated service.

To define a new service:

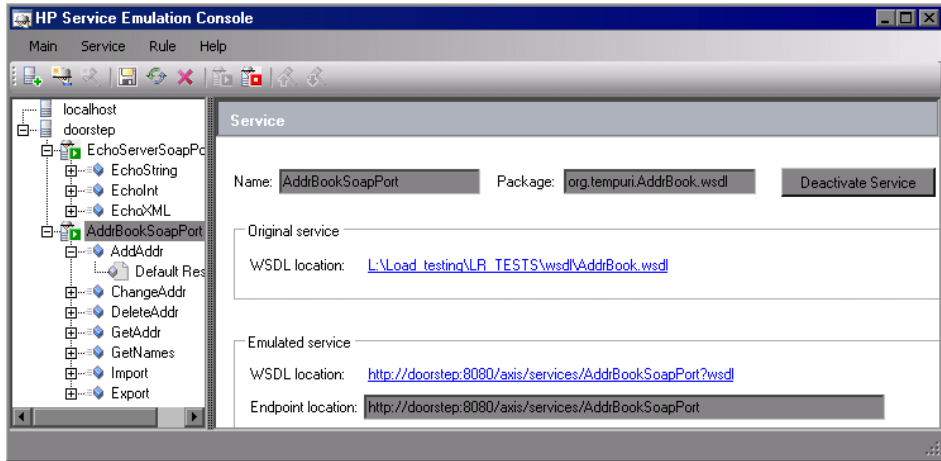


- 1 Choose **Main > New Emulated Service** or click the **New Emulated Service** button to open the Create a New Emulated Service dialog box.



- 2 Enter the full path or URL of the WSDL in the **WSDL Location** box, or click the Browse button to the right of the box, to locate the WSDL.
- 3 Choose a host from the list, or click **New Host** to add a new one.

- 4 Click **Create** to add the new service. All services are listed in the window's left pane.



- 5 To delete a specific service, select it in the left pane and choose **Delete** from the right-click menu.

Setting the Emulated Service's Behavior

The Service Emulation lets you specify a behavior for each of the operations defined in the WSDL. You specify the behavior of the service's operations by:

- ▶ Providing the Default Response
- ▶ Setting Rules

Providing the Default Response

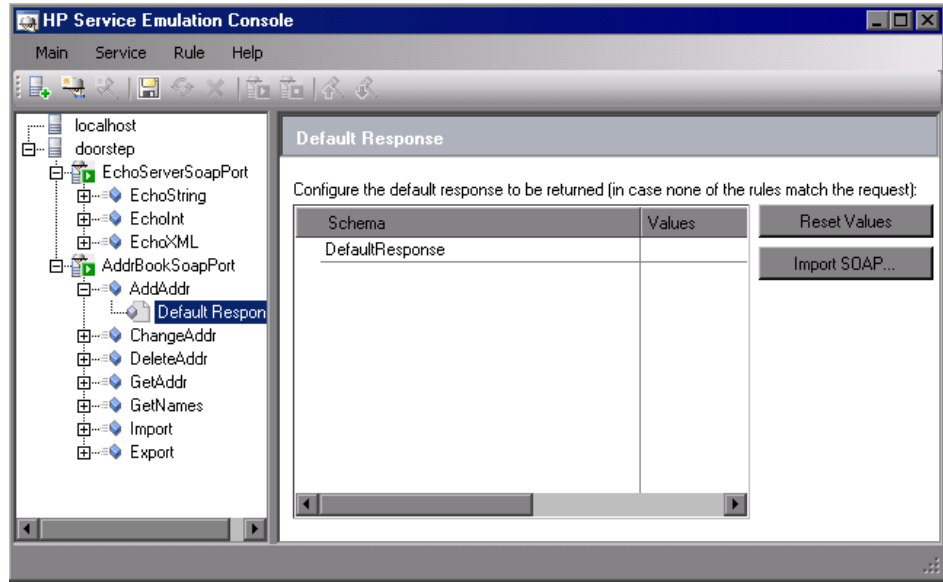
The default response is the default values that you expect the operation to provide.

You can manually specify the values for the default response, or you can import them from an XML file containing sample results.

To specify a default response:

- 1 Expand the service and desired operation in the left pane.

- 2 Select the **Default Response** node of your service. The right pane shows a Default Response table.



- 3 In the **Values** column, specify a default response value.
- 4 To import values from the SOAP response, click **Import SOAP**.
- 5 Select the XML file with a valid SOAP response and click **OK**.
- 6 To instruct the service to use the default response values, click **Reset Values**.

Setting Rules

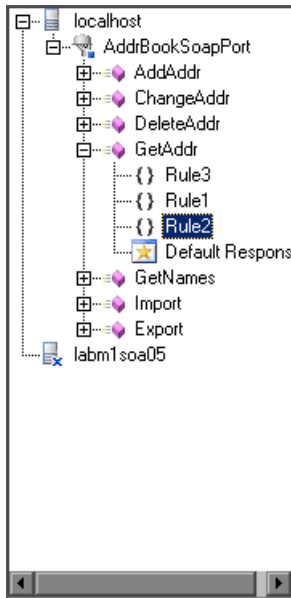
In addition to setting the default response, you can also set behavior rules. Through rules, you define a distinct behavior for the service—the expected response based on the request or input data.

You can set the rules manually, or by importing them from an existing XML SOAP file.



To set rules manually, you insert values for one or more of the arguments and the corresponding response. For example, for an add operation, you could specify 4 as the first argument, 5 as the second argument, and a result of 9.



If necessary, you can exclude a specific argument. This is useful if you want your service to return a particular response, ignoring the value of one of the arguments. For example, for a multiplication operation, you can set a rule indicating that if the first argument is 0, the results are 0, regardless of the value of the second argument.

You can set multiple rules for your operation. You place the rules in order of priority—the higher rules have priority over the lower ones in case of a conflict. In the following example, Rule 3 has the highest priority.



To set a rule manually:

- 1 Expand the service and desired operation in the left pane.
- 2  Select the operation in the left pane and click the **New Rule** button or choose **Add New Rule** from the right-click menu.
- 3 Specify values for the request and response.
- 4 Select the check boxes adjacent to each of the arguments that you want to impact the rule.
- 5  Click **Save** to save all of the modifications you made to the service.

- 6 To import values from a SOAP file, click **Import SOAP** and specify an XML file containing the SOAP message. You can import SOAP messages for both the request and the response.
- 7 For additional rules, repeat the above steps.
-  8 To move a rule up and raise its priority, use the **Move Rule Up** button or right-click and choose **Move up**.
-  9 To move a rule down, use the **Move Rule Down** button or right-click and choose **Move down**.

Manipulating Emulated Services

After you create your emulated services you can manipulate them by:


- Reloading an Emulated Service
- Inserting Delays for Operations
- Deactivating and Activating a Service
- Changing Port Numbers

Reloading an Emulated Service

Reloading emulated services reverts to the last saved version of the service on the host. Any rules that were not saved are lost. If another user saved changes to the service from a different machine, by reloading the service, you will bring those changes on to your machine.

This feature is useful if you made changes and you want to discard them and revert back to the saved version. Another use for this feature is if another user modified the service behavior, you can reload the service to get their changes.

To reload a service:

- 1 Select the service you want to reload.
-  2 Click the **Reload** button or choose **Reload** from the right-click menu.

Inserting Delays for Operations

To more accurately emulate a service, you can insert a delay time for the response of each operation. This delay emulates a delay in the response of the server after the application submitted a request.

To insert a delay:

- 1 Select an operation in the left pane.
- 2 In the right pane, enter the delay in seconds.

Deactivating and Activating a Service

After you create a service, you can deactivate it temporarily instead of deleting it. If you deactivate a service, it is ignored in your tests, but it is still available if you need to implement it in the future.

In the list of emulated services, a green box indicates that a service is active and a red box indicates that it not active.



To deactivate a service, select it in the left pane and click the **Deactivate Service** button or click **Deactivate Service** in the right pane.



To activate a service that was previously deactivated, select it in the left pane and click the **Activate Service** button or click **Activate Service** in the right pane.

Changing Port Numbers

You can modify the port of your emulated service by changing the port number in the emulation's configuration file. The configuration file, `httpd.conf`, is stored in Service Test's `apache/conf` directory.

To modify the port number:

- 1 Open the `httpd.conf` file with any text editor.
- 2 Modify the entry "Listen 80" to the desired port number, for example "Listen 8080."
- 3 Modify the entry which contains "ServerName localhost:80" to indicate the desired port, for example "ServerName localhost:8080."

Restart the Apache server. Select **Programs > Start > HP Service Test > Start Emulation Server**.

Using Emulated Services in Vuser Scripts

After you create an emulated service, you can import it into your Vuser script for testing purposes.

To use an emulated service:

- 1 In the Service Emulation console, select a service in the left pane and copy the **Endpoint location** from the right pane to the clipboard.



- 2 In Service Test, Open the Service Management window. Select **SOA Tools > Manage Services** or click the **Service Management** toolbar button.
- 3 If you have not already imported the service you want to emulate, click **Import** to import a WSDL. If you have already imported the service that you want to emulate, select it in the left pane.

4 Enable the **Override address** option.

The screenshot shows a configuration window for a UDDI service. The window has a tab labeled 'UDDI' and a 'Description' header. Under the 'WSDL' section, the 'WSDL location' is set to 'L:\Load_testing\LR_TESTS\wsdl\AddrBook.wsdl', the 'Service name' is 'AddrBook', and the 'Last synced' date is '06/09/2006 12:13:21'. There is a 'Synchronize' button and an unchecked checkbox for 'Keep up to date'. The 'Address' section shows the 'Service address' as 'http://localhost:8080/axis/services/AddrBookSoapPort' and a checked checkbox for 'Override address'. The 'Details' section has a 'Description' field which is currently empty. At the bottom, the 'Created by' field is 'jay' and a green status icon indicates 'The WSDL file associated with this service passed validation with no errors.'

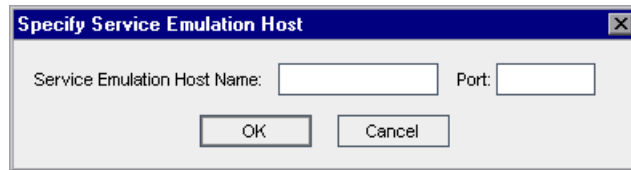
5 Paste the Endpoint location into the **Service address** box. During the test run, the service will respond to that location.

Emulating Services from Quality Center

After you create rules for an emulated service, you can emulate the service from Quality Center by choosing a host for the emulated service. You can only emulate a service on a machine that has a Service Emulation client.

To select a host from Quality Center:

- 1 Open the Service Emulation tool. In the Quality Center Services module, choose **Tools > Emulate Service**. The Specify Service Emulation Host dialog box opens.



- 2 In the **Service Emulation Host Name** box, enter the host name.
- 3 In the **Port** box, enter the port number.
- 4 Click **OK** to emulate the service on the host machine.

Quality Center attempts to contact the emulation host and create an emulated service. A message is displayed if the service is successfully emulated or if an error occurs during emulation. If the emulation completed successfully, Quality Center overrides the service address to the emulated service address. This allows any script testing that service to run using the emulated service.

Index

A

- accessing the Services module 65
- Add Change task 60
- Add Covered Service button
 - Services tab 159
- Add Group task 60
- Add Service Folder task 60
- Add Service task 60
- Add to Coverage button
 - Linked Req tab 156
 - Linked Tests tab 167, 173
- Add/Edit Aspects button 56, 57
- Add-in, HP Service Test Add-in for Quality Center 41
- Address Data, Services tab 130
- Address Overridden, Services tab 130
- Adobe Reader 13, 14
- analyzing services 211
- Aspect Management dialog box 57
- aspects
 - default 138
 - managing 57
- Assign Service to Service Group button,
 - Services tab 132
- Assigned To
 - Details tab 111
 - Groups tab 116
 - Services tab 130
- Associate Service Groups with Service button, Groups tab 117
- Attachments tab, Services module 70
- Authentication Default Credentials, Services tab 130
- authentication settings 95
- Authentication User Name, Services tab 130
- Axis/Java based Web services 139

B

- Boundary testing
 - extreme values 140
 - null values 140

C

- Change Details dialog box 205
- Change Risk, Changes tab 203
- Change Status, Changes tab 203
- Change Type, Changes tab 203
- Changes tab, Services module 70, 201
- Check Spelling button
 - Send Mail 107, 135
- Close Service Groups List, Groups tab 117
- Close Services Tree button, Services tab 132
- Comments
 - Linked Tests tab 163
- Comments, Services tab 130
- connection settings
 - authentication 95
 - proxy 95
- Connection Settings dialog box 95
- Connection Settings, customization 55
- conventions, typographical 15
- copying services 104
- coverage grid
 - Linked Req tab 154
 - Req Coverage tab 194
 - Services tab 158
- Coverage Type, Linked Tests tab 163
- Create Definition Manually button, services tree 78
- Create Empty Test wizard 147
- Create Test Set wizard 206

Index

- Created By
 - Changes tab 203
 - Groups tab 117
 - Services tab 130
- creating empty tests 147
- Creation Date
 - Changes tab 203
 - Details tab 111
 - Groups tab 117
 - Linked Tests tab 163
 - Services tab 130
- Creation Time, Changes tab 203
- Cross-site Scripting (XSS) 139
- Custom button 108, 136
- customization
 - Connection Settings 55
 - default requirements 56
 - default Systinet server 55
 - default UDDI server 56
 - toolkit order 56
- Customize Service Test task 61
- customizing
 - service entities 63
 - service group entities 63
 - Service module access for user groups 61
 - Services module settings 54
 - user group permissions 59
- D**
 - default response, emulated service 220
 - Delete Change task 61
 - Delete Group task 60
 - Delete Service Folder task 60
 - Delete Service task 60
 - Deleted from path, Details tab 112
 - Deleted On, Services tab 130
 - deleting services 120
 - Deletion date, Details tab 112
 - Dependency Details dialog box 93
 - Description
 - Changes tab 204
 - Details tab 112
 - Linked Tests tab 163
 - Operations tab 113
 - Services tab 130
 - WSDL Definition tab 109
 - Description pane 204
 - Description tab, Services module 69
 - Designer, Linked Tests tab 163
 - Details tab, Services module 69, 110
 - Documentation Library 12
 - Download WSDL stored in Quality Center 110
- E**
 - Emulate Services task 60
 - emulated service
 - activating 224
 - deactivating 224
 - default response 220
 - from Quality Center 227
 - in Vuser scripts 225
 - inserting delays 224
 - manipulating 223
 - reloading 223
 - setting behavior 220
 - setting rules 221
 - emulation server
 - starting 216
 - stopping 216
 - Entity Name, Linked Tests tab 163
 - Entity Status, Linked Tests tab 163
 - Estimated DevTime, Linked Tests tab 163
 - Execution Status, Linked Tests tab 163
 - extensions, enabling HP Service Test Management for projects 40
- F**
 - filtering services 102
 - Find button
 - Linked Req tab 126
 - Find Folder/Service command 103
 - Find Folder/Service dialog box 103
 - finding folders and services 103
- G**
 - generic toolkit (deprecated) 139
 - Getting Started 13

Go To Service command, Services tab 171
 Go To Test in Test Plan Tree command,
 Linked Tests tab 165
 Go To Test in Test Set command 165
 Group Description, Groups tab 116
 Group Name, Groups tab 116
 Groups tab, Services module 70, 116

H

Has changed, Services tab 130
 Help on this page command 12
 HP Service Test Add-in for Quality Center 41
 HP Service Test, managing scripts using
 Quality Center 215

I

Import from File button, services tree 78
 Import from Systinet button, services tree 78
 Import from UDDI button, services tree 78
 Import from URL button, services tree 78
 Import Services button, services tree 68
 importing service definitions 74
 from file system 79
 from Systinet 83
 from UDDI 81
 from URL 80
 installation
 HP Service Test Add-in 41
 Service Test Management 28

L

Last updated, Details tab 111
 Last Updated, Services tab 130
 Link Group to Requirements task 60
 Link Service to Requirements task 60
 Link to Requirement dialog box 167, 173
 Link Type, Linked Services tab 92
 Linked Defects tab, Services module 70
 Linked Reqs tab, Services module 70
 Linked Service Name, Linked Services tab 92
 Linked Service Type, Linked Services tab 92
 linked services
 creating 91
 removing 94

 updating 94
 Linked Services tab 91
 Linked Tests tab
 Services module 70
 viewing 164
 linking requirements (to services)
 adding requirements 153, 155
 removing requirements 156
 linking services (to requirements)
 adding service 158
 adding services 157
 removing services 160
 linking to service groups 125
 linking to services 87
 Load testing
 longevity 140
 overload 140
 scalability 140
 stress 140
 volume 140
 loading the SOA license 39
 Longevity testing 140

M

mailing service groups 133
 mailing services 105
 Manual Runner 184
 manually defining a service 86
 menu bar, Services module 67
 Modified, Linked Tests tab 163
 Modify Change task 61
 Modify Group task 60
 Modify Service Folder task 60
 Modify Service task 60
 Module Access page 62
 Module Access, customizing 61

N

Name, Operations tab 113
 New Aspect dialog box 57
 New Change dialog box 204
 New Folder button, services tree 68
 New Folder dialog box, services tree 73
 New Group button, service groups list 69

Index

New Manual Service dialog box 86
New Service dialog box 86

O

Obsolete folder 198
Operation Editor 113
Operation Editor dialog box 114, 115
operation requests 188
operation rules 221
Operations tab, Services module 69
Original Location, Services tab 130
Overload testing 140
Override service address 109
Override Systinet address 109
Override UDDI address 109
Owner, Changes tab 204

P

Part Name, Changes tab 204
Part Type, Changes tab 204
Path, Linked Tests tab 163
Permission Settings dialog box 59
permissions, changing 59
Port Number, Operations tab 113
Port Type, Services tab 130
Positive Testing 138
Project Extensions tab 40
projects, enabling the HP Service Test
 Management extension 40
Proxy Default Credentials, Services tab 130
Proxy Port, Services tab 130
Proxy Server, Services tab 131
proxy settings 95
Proxy User Name, Services tab 131

Q

Quality Center, managing scripts with 215

R

Readme 13, 14
Refresh button
 Changes tab 205
 Services tab 159

Refresh Selected button, services tree 68, 69
Remove Associated Service Groups from
 Service button, Groups tab 118
Remove from Coverage button, Linked Req
 tab 169, 174
Remove Selected button, Linked Req tab 156,
 160
Remove Service from Service Group, Services
 tab 132
removing services 120
renaming services 104
requirement coverage
 service groups 125
 services 87
Requirement generation properties file 43
RequirementGen.xml 43
requirements
 viewing services coverage 158
requirements coverage, adding requirements
 141
requirements tree, showing in Test Plan
 module 141, 142
requirements, customizing the default
 requirements 56
restoring obsolete services 121
rules, setting 221
running service tests 184

S

Scalability testing 140
Search Results dialog box, services tree 103
Security testing
 cross-site scripting (XSS) 139
 SQL injection vulnerability 139
Select button
 Groups tab 117
 Linked Req tab 155
 Linked Tests tab 166
 Services tab 132, 159, 172
Select Fields dialog box 108, 136
Select Recipients dialog box 107, 135
Select Req button 115, 209
Select UDDI Service dialog box 81
Selecting a Host 218
Send by E-mail button, service groups list 69

- Send by E-mail button, services tree 68
- Send by E-mail dialog box 105, 133
- Service Address, Services tab 131
- Service address, WSDL Definition tab 109
- Service Change Alert command 205, 210
- service dependencies
 - creating 91
 - removing 94
 - updating 94
- service emulation
 - adding new emulations 219
 - overview 216
- service groups
 - adding 69
 - assigning services to 128
 - creating 124
 - deleting 136
 - mailing 69, 133
 - specifying general details 129
 - viewing properties 128
- Service Interoperability testing
 - .NET Framework 139
 - Axis/Java based Web services 139
 - generic toolkit (deprecated) 139
- Service Name, Services tab 131
- Service name, WSDL Definition tab 109
- service operation requests 188
- service testing, overview 17
- service tests
 - creating empty test 147
 - running 184
 - submitting operation requests 188
- services
 - adding attachments 118
 - analyzing 211
 - copying 104, 136
 - creating folders 73
 - deleting 120
 - finding 103
 - importing 74
 - importing from file system 79
 - importing from Systinet 83
 - importing from UDDI 81
 - importing from URL 80
 - linked 91, 94
 - manually defining 86
 - Operations tab 113
 - providing definitions 108
 - providing details 110
 - removing 120
 - renaming 104
 - restoring 121
 - updating 198
 - viewing requirements coverage 154
- services coverage (tests), removing 174
- services folders, creating 73
- services group list
 - deleting service groups 69
- Services module
 - accessing 65
 - customizing 54
 - menu bar 67
 - tabs 69
 - toolbar 68
 - window 65
 - window elements 67
- Services tab
 - Permission Settings dialog box 59
 - Services module 70
 - viewing 170
- services tree
 - adding new folders 68
 - adding new services 68
 - creating 73
 - deleting services and folders 68
 - importing service from file 78
 - importing service from Systinet 78
 - importing service from UDDI 78
 - importing service from URL 78
 - mailing services 68, 105
 - manually create service definition 78
 - refreshing services and folders 68, 69
 - setting filter/sort 68
- Set Filter/Sort button, services tree 68
- Severity, Changes tab 204
- Show Service Change Workflow button 204
- SOA license 39
- sorting services 102
- Spelling Options button
 - Send Mail 107, 135
- SQL injection vulnerability 139
- Standard Compliance testing 138

Index

- Status, Linked Tests tab 163
- Stress testing 140
- Subject, Linked Tests tab 163
- Systinet
 - customizing the default settings 55
 - importing service definitions from 83
- Systinet Key
 - Services tab 131
 - WSDL Definition tab 109
- Systinet Server
 - Details tab 112
 - Services tab 131
- Systinet Server Port, Services tab 131
- Systinet Version, Services tab 131

T

- tabs, Services module 69
- tasks, changing permissions 59
- Template, Linked Tests tab 163
- terminology 19
- test coverage (services), removing 168
- Test ID, Linked Tests tab 164
- Test Name, Linked Tests tab 163
- test plan tree 115, 209
- Test Results
 - replay log 190
 - report 190
- Testing Aspect Type, Linked Tests tab 164
- testing aspects
 - default 138
 - managing 57
- tests
 - creating empty 147
 - running 184
 - submitting operation requests 188
- Thesaurus button
 - Send Mail 107, 135
- toolbars, Services module 68
- Toolkit used, Details tab 111
- Toolkit, Services tab 131
- toolkits, customizing the toolkit order 56
- Type
 - Linked Tests tab 164
 - Services tab 131
- typographical conventions 15

U

- UDDI Key, WSDL Definition tab 109
- UDDI server
 - Details tab 112
 - Services tab 131
- UDDI Service Key, Services tab 131
- UDDI Version, Services tab 131
- UDDI, customizing the default settings 56
- uninstalling Service Test Management 45
- Up To Date command, Services tab 131
- Update Service dialog box 200
- Update Service/Group task 60
- Update Time, Services tab 131
- updating services 198
- Use Authentication, Services tab 131
- Use Proxy, Services tab 131
- user group
 - customizing module access 61
 - setting permissions 59
- user-defined fields, customizing 63

V

- View Operation button 114, 115
- Volume testing 140
- Vuser scripts, Quality Center integration 215

W

- What's New command 13
- WSDL Definition tab, Services module 69, 108
- WSDL Location
 - Services tab 131
 - WSDL Definition tab 109
- WSDL Native Name, Services tab 131