

# HP ALM Performance Center

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## Installation Guide

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# Welcome to This Guide

Welcome to the *HP Performance Center Installation Guide*. This guide describes how to install HP ALM Performance Center components. To install HP ALM Performance Center, you must first install HP ALM, as described in the *HP Application Lifecycle Management Installation Guide*.

## How This Guide is Organized

The *HP Performance Center Installation Guide* describes the system prerequisites and installation process for HP ALM Performance Center.

It contains the following parts:

### **Part I    Getting Started**

Provides an overview of the installation flow, the system components, and the data flow. In addition provides installation prerequisites and considerations for the Performance Center components, and outlines required services.

### **Part II    Installation and Configuration**

Describes how to install HP ALM Performance Center components and provides initial and optional configuration instructions.

### **Part III    Upgrade and Migration**

Describes how to upgrade from earlier versions of Performance Center to the current version, including data and project migration.

## **Part IV Working with Firewalls**

Describes how to set up the ALM Performance Center components to communicate with other ALM Performance Center components that are located over a firewall.

## **Part V Troubleshooting**

Troubleshoots issues that may arise related to the installation of the Performance Center components.

## Documentation Library Guides

The 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>).

Reference	Description
<b>Using this Documentation Library</b>	Explains how to use the Documentation Library and how it is organized.
<b>What's New?</b>	Describes the newest features in the latest version of ALM. To access, select <b>Help &gt; What's New</b> .
<b>Product Feature Movies</b>	Short movies that demonstrate the main product features. To access, select <b>Help &gt; Product Feature Movies</b> .
<b>Readme</b>	Provides last-minute news and information about ALM.

## HP Application Lifecycle Management (ALM) Guides

Guide	Description
<b>HP ALM User Guide</b>	Explains how to use ALM to organize and execute all phases of the application lifecycle management process. It describes how to specify releases, define requirements, plan tests, run tests, and track defects.
<b>HP ALM Administrator Guide</b>	Explains how to create and maintain projects using Site Administration, and how to customize projects using Project Customization.
<b>HP ALM Lab Management Guide</b>	Explains how to use Lab Management to manage lab resources used for functional and performance testing on remote hosts.
<b>HP ALM Tutorial</b>	A self-paced guide teaching you how to use ALM to manage the application lifecycle management process.

Guide	Description
<b>HP ALM Installation Guide</b>	Describes the installation and configuration processes for setting up ALM Server.
<b>HP Business Process Testing User Guide</b>	Explains how to use Business Process Testing to create business process tests.

## HP ALM Performance Center Guides

Guide	Description
<b>HP ALM Performance Center Quick Start</b>	A self-paced guide giving the Performance Center user a high level overview of creating and running performance tests.
<b>HP ALM Performance Center Guide</b>	Explains to the Performance Center user how to create, schedule, run, and monitor performance tests. Explains to the Performance Center administrator how to configure and manage Performance Center projects.
<b>HP ALM Performance Center Installation Guide</b>	Describes the installation processes for setting up Performance Center Servers, Performance Center Hosts and other Performance Center components.
<b>HP ALM Performance Center Troubleshooting Guide</b>	Provides information for troubleshooting problems while working with HP ALM Performance Center.

## HP ALM Best Practices Guides

Guide	Description
<b>HP ALM Agile Testing Best Practices Guide</b>	Provides best practices for implementing agile testing principles.
<b>HP ALM Business Models Module Best Practices Guide</b>	Provides best practices for working with the Business Models module.
<b>HP ALM Database Best Practices Guide</b>	Provides best practices for deploying ALM on database servers.

Guide	Description
<b>HP ALM Entities Sharing Best Practices Guide</b>	Provides best practices for sharing entities.
<b>HP ALM Project Planning and Tracking Best Practices Guide</b>	Provides best practices for managing and tracking releases.
<b>HP ALM Project Topology Best Practices Guide</b>	Provides best practices for structuring projects.
<b>HP ALM Upgrade Best Practices Guide</b>	Provides methodologies for preparing and planning your ALM upgrade.
<b>HP ALM Versioning and Baselining Best Practices Guide</b>	Provides best practices for implementing version control and for creating baselines.
<b>HP ALM Workflow Best Practices Guide</b>	Provides best practices for implementing workflows.

### **HP ALM Performance Center Best Practices Guides**

Guide	Description
<b>HP Performance Center of Excellence Best Practices</b>	Provides best practices for successfully building and operating Performance Centers of Excellence.
<b>HP Performance Monitoring Best Practices</b>	Provides best practices for monitoring the performance of applications under test.

## HP ALM API References

Guide	Description
<b>HP ALM Project Database Reference</b>	Provides a complete online reference for the project database tables and fields.
<b>HP ALM Open Test Architecture API Reference</b>	Provides a complete online reference for the ALM COM-based API. You can use the ALM open test architecture to integrate your own configuration management, defect tracking, and home-grown testing tools with an ALM project.
<b>HP ALM Site Administration API Reference</b>	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 ALM users, projects, domains, connections, and site configuration parameters.
<b>HP ALM REST API Reference</b>	Provides an online reference for the ALM REST-based API. You can use the REST API to access and work with ALM data.
<b>HP ALM COM Custom Test Type Developer Guide</b>	Provides a complete online guide for creating your own testing tool and integrating it into the ALM environment using native COM development tools.
<b>HP ALM .NET Custom Test Type Developer Guide</b>	Provides a complete online guide for creating your own testing tool and integrating it into the ALM environment using a combination of DCOM and .NET classes.



## Additional Online Resources

The following additional online resources are available from the ALM **Help** menu:

Part	Description
<b>Troubleshooting &amp; Knowledge Base</b>	Opens the Troubleshooting page on the HP Software Support Web site where you can search the Self-solve knowledge base. Choose <b>Help &gt; Troubleshooting &amp; Knowledge Base</b> . The URL for this Web site is <a href="http://h20230.www2.hp.com/troubleshooting.jsp">http://h20230.www2.hp.com/troubleshooting.jsp</a> .
<b>HP Software Support</b>	<p>Opens the HP Software Support Web site. This site enables you to browse the Self-solve knowledge base. You can also post to and search user discussion forums, submit support requests, download patches and updated documentation, and more. Choose <b>Help &gt; HP Software Support</b>. The URL for this Web site is <a href="http://www.hp.com/go/hpsoftwaresupport">www.hp.com/go/hpsoftwaresupport</a>.</p> <p>Most of the support areas require that you register as an HP Passport user and sign in. Many also require a support contract.</p> <p>To find more information about access levels, go to: <a href="http://h20230.www2.hp.com/new_access_levels.jsp">http://h20230.www2.hp.com/new_access_levels.jsp</a></p> <p>To register for an HP Passport user ID, go to: <a href="http://h20229.www2.hp.com/passport-registration.html">http://h20229.www2.hp.com/passport-registration.html</a></p>
<b>HP Software Web site</b>	Opens the HP Software Web site. This site provides you with the most up-to-date information on HP Software products. This includes new software releases, seminars and trade shows, customer support, and more. Choose <b>Help &gt; HP Software Web site</b> . The URL for this Web site is <a href="http://www.hp.com/go/software">www.hp.com/go/software</a> .
<b>Add-ins Page</b>	Opens the HP Application Lifecycle Management Add-ins Page, which offers integration and synchronization solutions with HP and third-party tools.

Welcome to This Guide

# Part I

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## Getting Started



# 1

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## Before You Install

This chapter provides information that will help you prepare for the Performance Center component installations.

**This chapter includes:**

- ▶ Performance Center Components and Data Flow on page 22
- ▶ System Component Considerations on page 29
- ▶ General Pre-installation Considerations on page 33
- ▶ Required Services on page 35
- ▶ Performance Center Prerequisite Software on page 36

## Performance Center Components and Data Flow

This section describes the HP ALM Performance Center system.

This section includes:

- ▶ "System Advantages" on page 22
- ▶ "Architecture and Components" on page 23
- ▶ "Applications" on page 24
- ▶ "Communication Paths" on page 25
- ▶ "Coexistence of Installed Components" on page 27
- ▶ "Load Considerations" on page 27

### System Advantages

The ALM Performance Center system offers the following advantages:

- ▶ Performance Center leverages all the ALM features.
- ▶ The ALM Performance Center system provides an end-to-end process lifecycle.
- ▶ The ALM Performance Center system consolidates functional and performance assets.

## Architecture and Components

This section describes the architecture and components of HP ALM Performance Center.

- ▶ **ALM server.** Provides a platform for core ALM functionality.
  - ▶ **ALM Client.** Users log in to ALM (user site), Site Administration (project and user management), or Lab Management from their client machine.
  - ▶ **ALM server Repository.** Used for file storage.
  - ▶ **ALM Database.** Contains a schema per Performance Center project, as well as a separate schema for Lab Management and Site Administration.

For more details about ALM technology, see the *HP Application Lifecycle Management Installation Guide*.

- ▶ **HP Performance Center Server.** Hosts the Performance Center Web pages that enable you to design performance tests, configure monitors, reserve testing resources, run and monitor test runs, and analyze test results.
- ▶ **Lab Management.** The center for managing lab resources (such as hosts and host pools), and for managing Performance Center assets (such as Performance Center server, licenses, and usage reports).
- ▶ **HP Performance Center Hosts.** Used to control performance tests, generate load, and analyze data. Performance Center hosts can be configured as Controllers, load generators, or data processors:
  - ▶ **Controller.** The manager of a performance test. The Controller receives scripts, runtime settings, and a list of load generators to use. The Controller issues instructions to the load generators including which scripts to run, how many Vusers to run per script, and scheduler settings. At the conclusion of the test run, the Controller collates the data. There is only one Controller per performance test.
  - ▶ **Load Generator.** Generate load by running virtual users (Vusers). The Controller dictates the manner in which they start and stop running. There can be any number of load generators for a given test.
  - ▶ **Data Processor.** Used for analyzing and publishing performance test results.

## Applications

The following standalone applications integrate with your Performance Center system:

- ▶ **HP Virtual User Generator (VuGen).** Generates Vusers by recording actions that typical end-users would perform on your application. VuGen records your actions into automated Vuser scripts which form the foundation of your performance tests.
- ▶ **HP Analysis.** Provides graphs and reports with in-depth performance analysis information. Using these graphs and reports, you can pinpoint and identify the bottlenecks in your application and determine what changes need to be made to your system to improve its performance.
- ▶ **MI Listener.** Needed when running Vusers and monitoring applications over a firewall.
- ▶ **Monitors Over Firewall Agent.** Used to monitor servers that are located over a firewall.

Use the diagram and table in the "Communication Paths" and "Load Considerations" sections, to determine which machines to allocate for which performance testing tasks.

For example, you can combine a number of components that have a light load on a single machine. For details on which components can be installed together, see "Coexistence of Installed Components" on page 27.

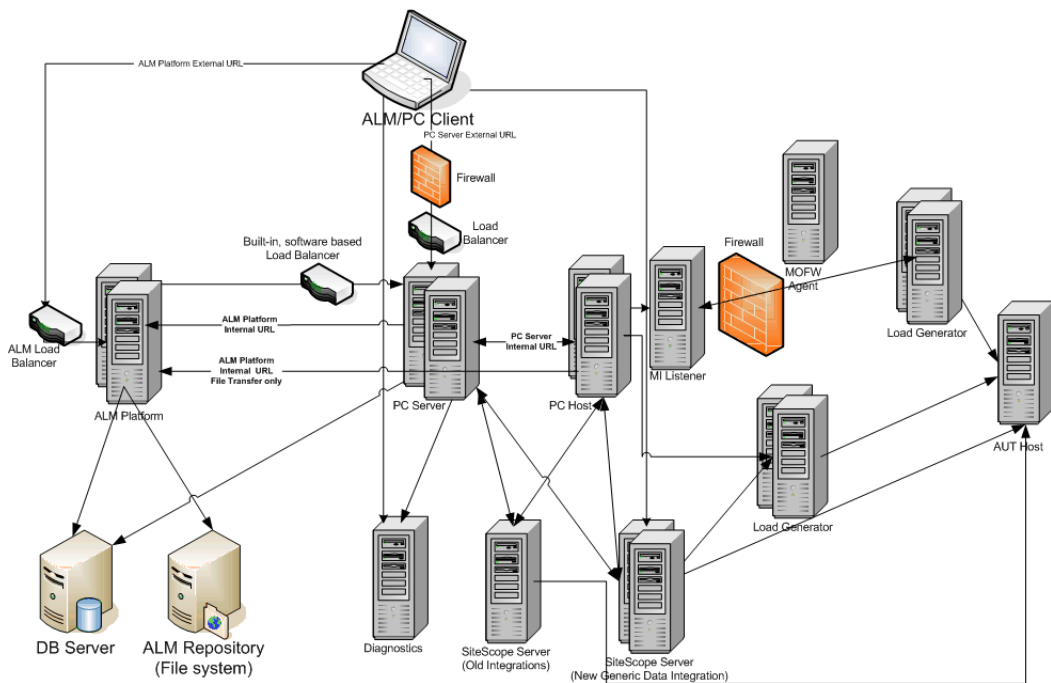


## Communication Paths

When installing HP ALM Performance Center, it is important to consider the communication paths between the various components, and their resource demands. This information helps you configure your system to evenly distribute the load, and prevent overloading any particular resource.

When running a performance test, Performance Center components share information with ALM components via a distinct system of communication. Understanding which components communicate with one another and the method of communication is essential for configuring your system.

The following diagram illustrates the communication paths and protocols of the ALM Performance Center system:



The following table displays the connection ports that are opened by default on the various ALM Performance Center components:



Component	Ports
ALM server	HTTP (8080/80) *: <ul style="list-style-type: none"> <li>▶ For Jetty Web server: 8080</li> <li>▶ For IIS Web server: 80</li> </ul>
Performance Center Server	HTTP (80) * TCP (3333, 54245)
Performance Center Host	HTTP (8731) TCP (3333, 5001, 5002, 5003, 54245, 54345)
Database	TCP (1433 (SQL)), 1521 (Oracle))
Repository	NetBIOS
Diagnostics Server	HTTP (80, 2006) * TCP (54345)
Standalone Load Generator	TCP (5001, 5002, 5003, 54245, 54345)
MI Listener	HTTP/TCP (443) TCP (50500)
Application under test	Any; HTTP (Random)
SiteScope - Topology	HTTP (8080) *
SiteScope - Monitor Profiles	HTTP (8888) *

\* HTTPS is also supported on this component.

## Coexistence of Installed Components

The following table describes which components can and cannot coexist on the same machine.

Need to install Installed Application	Analysis SA	VuGen SA	LG SA	MOFW	MI Listener	Diagnostics Mediator	Snapshot Viewer	LR	PCS	Host
Analysis SA	--	✓	✓	✓	✗	✗	✓	✗	✗	✗
VuGen SA	✓	--	✓	✓	✗	✗	✓	✗	✗	✗
Load Generator SA	✗	✗	--	✗	✗	✗	✗	✗	✗	✗
MOFW	✗	✗	✗	--	✗	✗	✗	✗	✗	✗
MI Listener	✗	✗	✗	✗	--	✗	✗	✗	✗	✗
Diagnostics Mediator	✗	✗	✗	✗	✗	--	✗	✗	✗	✗
Snapshot Viewer	✓	✓	✗	✗	✗	✗	--	✗	✗	✗
LoadRunner (LR)	✗	✗	✗	✗	✗	✗	✗	--	✗	✗
PC Server (PCS)	✗	✗	✗	✗	✗	✗	✗	✗	--	✗
Host	✗	✗	✗	✗	✗	✗	✗	✗	✗	--

 Supported
  Blocked

## Load Considerations

The following table provides some basic installation considerations for each Performance Center component:

Machine	Quantity in the system	Load Considerations
Performance Center Server	At least two	<p>Heavy load.</p> <p>To balance the load, ALM has built in load balancing capabilities.</p> <p>For additional load balancing support, you can install multiple Performance Center Servers.</p> <p>For more information on load balancing, see HP Software Self-solve knowledge base article KM1052520 (<a href="http://h20230.www2.hp.com/selfsolve/document/KM1052520">http://h20230.www2.hp.com/selfsolve/document/KM1052520</a>).</p>

Machine	Quantity in the system	Load Considerations
Performance Center Hosts: <ul style="list-style-type: none"> <li>➤ Controller</li> <li>➤ Load Generator</li> <li>➤ Data Processor</li> </ul>	At least one of each	Controller has heavy load. Load generator has medium load. Data processor has medium to high load. It is recommended to designate spare Controllers and load generators for fault-tolerance and high availability purposes. <b>Note:</b> <ul style="list-style-type: none"> <li>➤ You can configure a host as a Controller + Load Generator, but this is not recommended because running Vusers consumes a lot of resources. Running Vusers on the Controller host is only appropriate for performance tests that have a very small number of Vusers.</li> <li>➤ You can configure a host as a Controller + Data Processor, but this is not recommended because data processing might consume high amounts of CPU and resources.</li> </ul>
MI Listener	At least one, if you are monitoring over a firewall	Medium load. <ul style="list-style-type: none"> <li>➤ Standalone installation is required.</li> <li>➤ Cannot exist on a machine running IIS.</li> </ul>
Monitor Over Firewall machine	At least one, if you are monitoring over a firewall	Light load. Standalone installation is required.
SiteScope (optional)	One	Light load.

## System Component Considerations

The Performance Center system includes several components. This section provides pre-installation considerations for each of the components.

---

**Note:** For system requirement details for each component, see the *HP Application Lifecycle Management Readme*.

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- "Performance Center Server" on page 29
- "Performance Center Host" on page 31
- "Standalone Load Generator (Windows)" on page 31
- "Standalone Load Generator (Linux)" on page 31
- "Standalone VuGen and Standalone Analysis" on page 32
- "MI Listener" on page 32
- "Monitor Over Firewall Machine" on page 32
- "ERP and CRM Mediator" on page 32
- "SiteScope Server" on page 33

### Performance Center Server

- We strongly recommend installing the Performance Center Server on a clean machine with a new image.
- Performance Center Servers conduct Performance Center administration, test design, run operations, monitoring, and the user interface services for these operations. Because performance test run operations create heavy load on the Performance Center Server, we recommend installing **at least two Performance Center Servers** in your system. Using built-in load balancers, calls to and from ALM are balanced among the Performance Center Servers in a round-robin fashion.
- Before you install the Performance Center Server, you must install Microsoft Internet Information Services (IIS 6/7/7.5).

- ▶ During installation, the following Web Service Extensions are enabled on all Performance Center Servers using IIS:
  - ▶ **Active Server Pages**
  - ▶ **ASP.NET**
  - ▶ **IIS 7 or 7.5 Management Compatibility**
- ▶ On all Performance Center Servers using IIS 6.0, **IWAM\_<machine\_name>** must exist, and must belong to the **Administrators** or **IIS Worker Process** groups.
- ▶ To install a Performance Center Server, you must have full local administrative rights on the designated machine.
- ▶ During installation of the Performance Center Server, the default Performance Center system user, **IUSR\_METRO** (password **P3rfoRm@1nce**), is created in the **Administrators** user group of the machine. Ensure that there is no security system in place that will remove the system user from the Administrators group.
- ▶ If Performance Center is working with an Oracle database, ensure that the Oracle client installed on the Performance Center Server machine is at least the same version as on the Oracle server, and that connectivity is established with the Oracle Server. For details, see "Establishing Connectivity with Oracle" on page 119.
- ▶ You must install the 32-bit Oracle client installation, regardless of whether you are running the Performance Center Server on a 32-bit or 64-bit operating system.
- ▶ If you install the Oracle client after installing the Performance Center Server, you **must** restart the machine after installing the Oracle client.
- ▶ Oracle Monitoring: If you need to define Oracle monitors, ensure that you install the Performance Center Server in a directory whose path does not include any of the following characters: ( ) ; \* \ / " ~ & ? { } \$ % | < > + = ^ [ ]. For example, on a 64-bit machine, do not install the Performance Center Server in the default installation directory (**C:\Program Files (x86)\...**), as this path includes illegal characters.

- ▶ Microsoft Windows Script Host should be version 5.6 or later. To verify the version number, navigate to the <**Windows installation directory**>\Windows\system32 directory. Right-click **wscript.exe** and select **Properties**. In the **Version** tab, verify the file version number.

### **Performance Center Host**

- ▶ To install a Performance Center Host, you must have full local administrative rights on the designated machine.
- ▶ During installation of Performance Center hosts, a default Performance Center system user, **IUSR\_METRO** (password **P3rfoRm@1nce**), is created in the Administrators user group of the machine. Ensure that there is no security system in place that will remove the system user from the Administrators group.

### **Standalone Load Generator (Windows)**

- ▶ You cannot install the Standalone Load Generator on the same machine as the Performance Center Server or Performance Center host.
- ▶ If both Standalone VuGen and Standalone Analysis are to be installed on the machine where you want to install the Standalone Load Generator, make sure to install the Standalone Load Generator last.
- ▶ During installation of the Standalone Load Generator, the default Performance Center system user, **IUSR\_METRO** (password **P3rfoRm@1nce**), is created in the **Administrators** user group of the machine. Ensure that there is no security system in place that will remove the system user from the Administrators group.

### **Standalone Load Generator (Linux)**

- ▶ You can install the Standalone Load Generator on Linux to run Vusers. The Linux Vusers interact with the Controller that is installed on a Windows machine. For more information, see "Installing HP Load Generator on Linux" on page 78.

## Standalone VuGen and Standalone Analysis

- ▶ If you are installing the Standalone Load Generator on the same machine as Standalone applications (VuGen or Analysis), install the Standalone applications first, and the Standalone Load Generator last.

## MI Listener

- ▶ The MI Listener must be installed on a standalone machine.
- ▶ The MI Listener cannot be installed on a machine running IIS.

## Monitor Over Firewall Machine

- ▶ The Monitor Over Firewall agent must be installed on a standalone machine.

## ERP and CRM Mediator

- ▶ The ERP and CRM Mediator must be installed on a machine that resides in the same LAN as the monitored ERP/CRM server, preferably on a dedicated machine. It is not recommended to install the Mediator on a Siebel or Oracle server that is involved in the performance test.

---

**Note:** When using SAP Diagnostics, ensure that a SAPGUI client is installed on the same machine as the ERP/CRM Mediator.

---

- ▶ By default, the ERP/CRM Mediator agent is installed to run as a service. After installing the agent, verify that it is running as a service and not as a process. If it is running as a process, you must stop the process and run the agent as a service.
- ▶ For information about configuring the ERP/CRM Mediator after installation and using the ERP and CRM Mediator to collect diagnostics data, see the *HP ALM Performance Center Guide*.



## SiteScope Server

- SiteScope is used for monitoring applications.
- Refer to the *HP SiteScope Deployment Guide* for minimum requirements.

## General Pre-installation Considerations

This section includes pre-installation considerations for all Performance Center components.

- Before you begin installing, you should decide which machine is to be used for what purpose. Consider the expected load on each machine when determining which components to install on which machines. For more details, see "Coexistence of Installed Components" on page 27, and "Load Considerations" on page 27.
- Ensure that the server time on the ALM server and Performance Center component machines is synchronized.
- **Default Web Site** must be configured on the machines that have IIS installed on them. To check if this is configured, right-click **My Computer**, and select **Manage**. The Computer Management console opens. Expand the **Services and Applications** node, check that **Default Web Site** is displayed in the **Internet Information Services** folder, and that its ID=1. If it is not defined there, or if the ID is not defined as 1, you should contact your system administrator or reinstall IIS.
- For installation of standalone applications, you must manually install the prerequisite software. For the list of required prerequisites, see "Performance Center Prerequisite Software" on page 36. For details on installing the prerequisites in silent mode, see "Installing Performance Center Silently" on page 65.
- For standalone installations, you must manually install the prerequisite application, **.NET Framework 3.5 SP1**, from the Performance Center Installation DVD (`..\Setup\Common\dotnet35_sp1`).
- You cannot install Performance Center components on machines with existing LoadRunner installations. Before installing Performance Center, ensure that you have removed all versions of LoadRunner from the machine.

- ▶ Hyper-Threading must be disabled. Performance Center does not support Intel Hyper-Threading technology. Hyper-Threading can be disabled in the BIOS.
- ▶ Ensure that the operating system and the database are both configured for the same language. If not, some texts displayed in Performance Center will be corrupted. For example, if you are working with German, ensure that you are working on a German operating system, and that the database is configured for German.
- ▶ **IUSR\_<machine\_name>** must exist on the Performance Center Server.

## Required Services

Before you install Performance Center components, check that the services defined in the table below are running on each component machine and that the startup type for each service is defined as **Automatic**.

---

**Note:** The default settings for running the services on the operating system may differ from one version to another. You should go through all of the services on each machine to ensure that the required services are running.

---

Machine	Services
<b>All Performance Center Servers and Hosts</b>	<ul style="list-style-type: none"> <li>➤ IPSEC Services (for TCP/IP security)</li> <li>➤ NTLM Security support provider</li> <li>➤ Remote Procedure Call (RPC)</li> <li>➤ Management Instrumentation (for Performance Center health check)</li> <li>➤ Event Log (optional— used for debugging)</li> <li>➤ COM+ services (Event System and System application)</li> <li>➤ HTTP SSL (for SSL)</li> <li>➤ System Event Notification (for COM+)</li> </ul>
<b>Performance Center Servers</b>	<ul style="list-style-type: none"> <li>➤ IIS Admin Service (Microsoft Service)</li> <li>➤ Workstation</li> <li>➤ TCP/IP NetBIOS Helper</li> <li>➤ World Wide Web Publishing Service (Microsoft Service)</li> <li>➤ Distributed Transaction Coordinator (MSDTC)</li> </ul>
<b>Performance Center Hosts</b>	<ul style="list-style-type: none"> <li>➤ Remote Registry Service (Windows Service)</li> </ul>

## Performance Center Prerequisite Software

Before you can install Performance Center, some prerequisite software (for example, .NET Framework 4.0) must be installed on your machine. During installation, Performance Center checks whether the prerequisite software is installed on your machine. Performance Center enables you to automatically install missing software from the Performance Center disk.

The following table provides a list of the prerequisite software and how Performance Center detects whether the software is installed.

Prerequisite Software	Machines	Means of detection
.NET Framework 3.5 SP1	<ul style="list-style-type: none"> <li>▶ All Performance Center Server and Host machines</li> <li>▶ Standalone VuGen</li> <li>▶ Standalone Analysis</li> <li>▶ Standalone Load Generator</li> </ul>	Searches the registry key: HKLM\Software\Microsoft\NET Framework Setup\NDP\v3.5
.NET Framework 4.0	<ul style="list-style-type: none"> <li>▶ All Performance Center Server and Host machines</li> <li>▶ Standalone VuGen</li> <li>▶ Standalone Analysis</li> <li>▶ Standalone Load Generator</li> </ul>	Searches the registry key: HKLM\Software\Microsoft\NET Framework Setup\NDP\v4.0
Microsoft Data Access Components (MDAC) 2.8 SP1 (or later)	<ul style="list-style-type: none"> <li>▶ All Performance Center Server and Host machines</li> <li>▶ Standalone VuGen</li> <li>▶ Standalone Analysis</li> <li>▶ Standalone Load Generator</li> </ul>	Searches the registry key: HKLM\Software\Microsoft\Data Access
Microsoft Core XML Services (MSXML) 6.0	<ul style="list-style-type: none"> <li>▶ All Performance Center Server and Host machines</li> <li>▶ Standalone VuGen</li> <li>▶ Standalone Analysis</li> <li>▶ Standalone Load Generator</li> </ul>	Queries the existence and version of: %systemroot%\system32\msxml6.dll

Prerequisite Software	Machines	Means of detection
Microsoft Visual C++ 2005 Service Pack 1 Redistributable Package MFC Security Update (x86)	<ul style="list-style-type: none"> <li>▶ All Performance Center machines</li> <li>▶ Standalone VuGen</li> <li>▶ Standalone Analysis</li> <li>▶ Standalone Load Generator</li> </ul>	Queries the MSI manager for the GUID: {86C9D5AA-F00C-4921-B3F2-C60AF92E2844}
Microsoft Visual C++ 2005 Service Pack 1 Redistributable Package MFC Security Update (x64)	<ul style="list-style-type: none"> <li>▶ All Performance Center machines</li> <li>▶ Standalone VuGen</li> </ul>	Queries the MSI manager for the GUID: {A8D19029-8E5C-4E22-8011-48070F9E796E}
Microsoft Visual C++ 2008 Service Pack 1 Redistributable Package MFC Security Update (x86)	<ul style="list-style-type: none"> <li>▶ All Performance Center machines</li> <li>▶ Standalone VuGen</li> <li>▶ Standalone Analysis</li> <li>▶ Standalone Load Generator</li> </ul>	Queries the MSI manager for the GUID: {DE2C306F-A067-38EF-B86C-03DE4B0312F9}
Microsoft Visual C++ 2008 Service Pack 1 Redistributable Package MFC Security Update (x64)	<ul style="list-style-type: none"> <li>▶ All Performance Center machines</li> <li>▶ Standalone VuGen</li> </ul>	Queries the MSI manager for the GUID: {FDA45DDF-8E17-336F-A3ED-356B7B7C688A}

Prerequisite Software	Machines	Means of detection
Microsoft Visual C++ 2010 Service Pack 1 Redistributable Package MFC Security Update (x86)	<ul style="list-style-type: none"> <li>▶ All Performance Center Server and Host machines</li> <li>▶ Standalone VuGen</li> <li>▶ Standalone Analysis</li> <li>▶ Standalone Load Generator</li> </ul>	<p>Queries the MSI manager for the GUID:</p> <p>{1F4F1D2A-D9DA-32CF-9909-48485DA06DD5}</p>
Microsoft Windows Installer 3.1	<ul style="list-style-type: none"> <li>▶ All Performance Center Server and Host machines</li> <li>▶ Standalone VuGen</li> <li>▶ Standalone Analysis</li> </ul>	<p>Looks for one of the following:</p> <ul style="list-style-type: none"> <li>▶ Registration of the WindowsInstaller.Installer.com object version 3 or later</li> <li>▶ MSI.dll version 3 or later in the %systemroot%</li> </ul>
Web Services Enhancements (WSE) 3.0 for Microsoft .NET Redistributable Runtime MSI	<ul style="list-style-type: none"> <li>▶ All Performance Center Server and Host machines</li> <li>▶ Standalone VuGen</li> <li>▶ Standalone Analysis</li> <li>▶ Standalone Load Generator</li> </ul>	<p>Queries the MSI manager for the GUID:</p> <p>{E3E71D07-CD27-46CB-8448-16D4FB29AA13}</p>
Web Services Enhancements (WSE) 2.0 SP3 for Microsoft .NET Redistributable Runtime MSI	<ul style="list-style-type: none"> <li>▶ All Performance Center Server and Host machines</li> <li>▶ Standalone VuGen</li> <li>▶ Standalone Analysis</li> <li>▶ Standalone Load Generator</li> </ul>	<p>Runtime installation GUID {F3CA9611-CD42-4562-ADAB-A554CF8E17F1}</p> <p>Full installation GUID {6F 396FFB-CC3A-4335-BC0B-2AEF38F4492C}</p>

Prerequisite Software	Machines	Means of detection
Internet Information Services (IIS)	<ul style="list-style-type: none"> <li>▶ Performance Center Server</li> </ul>	<p>HKLM\SOFTWARE\Microsoft\InternetStp</p> <p>Looks for both Major and Minor numbers.</p> <p>Supports the following versions:</p> <ul style="list-style-type: none"> <li>▶ 6.0 (Windows 2003)</li> <li>▶ 7.0 (Windows 2008)</li> <li>▶ 7.5 (Windows 2008R2)</li> </ul>
Strawberry Pearl 5.10.1	<ul style="list-style-type: none"> <li>▶ Standalone VuGen</li> </ul>	<p>Queries the MSI manager for the GUID:</p> <p>{C977182F-221A-337A-B681-963808E0023A}</p>
Windows Imaging Component (WIC)	<ul style="list-style-type: none"> <li>▶ All Performance Center Server and Host machines</li> <li>▶ Standalone VuGen</li> <li>▶ Standalone Analysis</li> <li>▶ Standalone Load Generator</li> </ul>	<p>Queries the version of:</p> <p>%systemroot%\system32\WindowsCodecs.dll</p>





# Part II

---

## Installation and Configuration



# 2

---

## Installing HP ALM Performance Center

This chapter describes how to install HP ALM Performance Center 11.50 components.

**This chapter includes:**

- ▶ Installation Flow on page 44
- ▶ Installing HP Application Lifecycle Management on page 46
- ▶ Installing and Configuring Performance Center Servers and Hosts on page 47
- ▶ Configuring Performance Center in Lab Management on page 61
- ▶ Installing Performance Center Silently on page 65
- ▶ Installing Standalone Components (Windows) on page 75
- ▶ Installing HP Load Generator on Linux on page 78
- ▶ Installing Additional Components on page 89
- ▶ Repairing the Performance Center Installation on page 91
- ▶ Uninstalling Performance Center Components on page 91

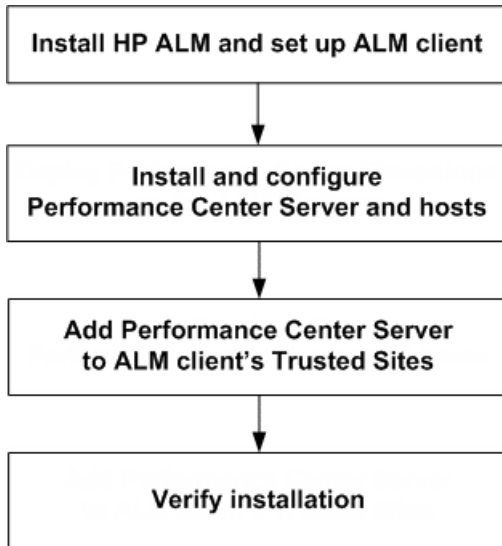
## Installation Flow

This section describes the steps required to install HP ALM Performance Center 11.50 components.

---

**Note:** To install HP ALM Performance Center 11.50 components, you must have full local administrative rights on the designated machines.

---



**To install HP ALM Performance Center:****1 Install the components according to the following checklist:**


---

**Note:** Each HP ALM Performance Center version is certified with a specific HP ALM version. Ensure you are installing Performance Center on a corresponding version of HP ALM. Corresponding versions are published on the HP download site. For more details, contact HP Software Support.

---

✓	Component	Action	New Installation	Page
	ALM Server	Install ALM server	✓	46
	Performance Center Server	Install Performance Center server	✓	47
	Performance Center Hosts	Install Performance Center host	✓	47
	Standalone Components (optional)	Install Performance Center Standalone applications (Windows)	✓	75
		HP Load Generator on Linux	✓	78

**2 Ensure that the ALM client browser's Trusted Sites list includes Performance Center Server.**

For details, see step 14 on page 61.

**3 Verify that the installation was successful.**

For details, see Chapter 3, "Post Installation Verification."

## Installing HP Application Lifecycle Management

As a prerequisite to installing HP ALM Performance Center 11.50 components, you must install HP Application Lifecycle Management 11.50.

---

**Note:** Each HP ALM Performance Center version is certified with a specific HP ALM version. Ensure you are installing Performance Center on a corresponding version of HP ALM. Corresponding versions are published on the HP download site. For more details, contact HP Software Support.

---

### To install HP Application Lifecycle Management 11.50:

- 1** Install the appropriate version of HP ALM for your system. For details on installing HP ALM 11.50, refer to the *HP Application Lifecycle Management Installation Guide*, or the documentation for the localized ALM version with which you are working.

---

**Note:** Ensure that ALM is installed on a certified operating system. Consult the ALM System Configurations section of the HP ALM Readme for a full list of recommended and supported operating systems for HP ALM Performance Center.

---

- 2** Set up the HP ALM client machine with the correct browser configuration. For details, refer to the *HP Application Lifecycle Management Installation Guide*.

## Installing and Configuring Performance Center Servers and Hosts

This section describes how to install and configure the Performance Center Server and Performance Center hosts.

---

**Note:** If you are upgrading or migrating to HP ALM Performance Center 11.50 from an earlier version of Performance Center, follow the instructions in Chapter 5, "Working with Previously Created Performance Center Projects."

---

### Pre-Installation Considerations:

- ▶ Before you install the Performance Center components, review the pre-installation information, described in Chapter 1, "Before You Install."
- ▶ To install a Performance Center Server or Performance Center host, you must have full local administrative rights on the designated machine.
- ▶ If the Performance Center installation directory is located on a network drive, it is recommended to map the network drive before you run the installation.
- ▶ To enable running the installation from a network location, make sure that the network location path is added to the Trusted Sites of the machine on which you are running the installation.
- ▶ If you are installing a Performance Center Server or Performance Center host using a Remote Desktop connection (RDP), you must install through the console.
- ▶ If you are working with an Oracle database, ensure that the Oracle client is installed on the Performance Center Server (with **Administrator** installation type), and that connectivity has been established with the Oracle Server. Ensure that the **tnsnames.ora** file contains the same TNS entry for the source and target database server.

**Note:** You must install the 32-bit Oracle client installation, regardless of whether you are running the Performance Center Server on a 32-bit or 64-bit operating system.

- ▶ The Performance Center Server and the Performance Center host cannot be installed on the same machine.

To install a Performance Center Server or Performance Center host:

**1 Launch the Performance Center installer.**

Insert the HP ALM Performance Center installation DVD and run **setup.exe** (<installation disk root directory>\setup.exe).

**2 Select an installation option.**

The setup program starts and displays the installation menu page.



Select **Performance Center Server** or **Performance Center Host**.



**Note:** If you know in advance that a particular host machine is to be used as a load generator only, we recommend that you install the Standalone Load Generator for the following reasons:

- The installation requires less disk space
- Moving the Load Generator's setup files is less time consuming than moving the setup files of the Performance Center Host

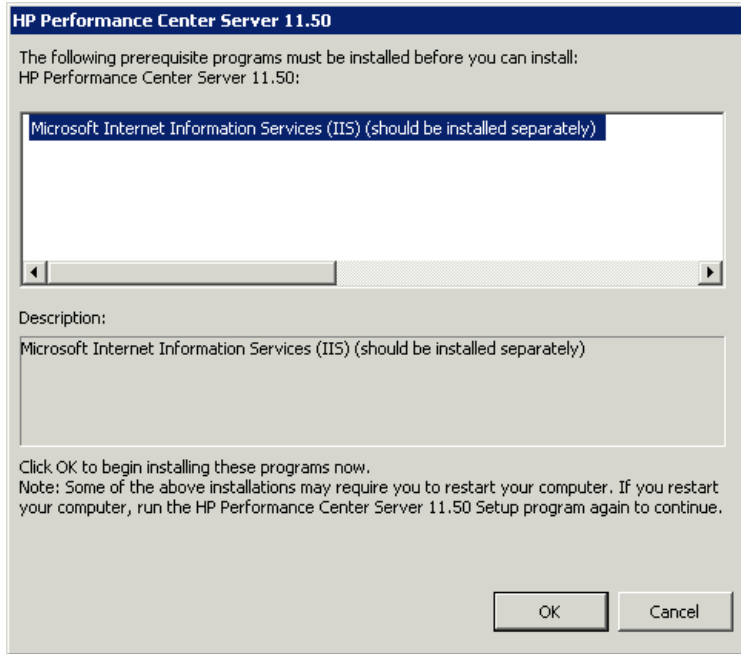
For details on installing the Standalone Load Generator, see "Installing Standalone Components (Windows)" on page 75.

To install a load generator on Linux, see "Installing HP Load Generator on Linux" on page 78.

---

**3 If necessary, install prerequisite software.**

Some prerequisite software must be installed on the machine before installing the Performance Center component. If any of the prerequisite software is not already installed on the machine, the following dialog box opens:



**Note:**

- ▶ **Performance Center Server installation:** If Microsoft Internet Information Services (IIS) 6/7/7.5 is listed on this page, it is recommended that you close the installation, install IIS, and restart the installation. However, if you choose to continue with the installation, you will have to re-run the post installation configuration before the server machine can be used. To re-run the configuration wizard, choose **Start menu > Programs > HP Software > HP Performance Center Server > Tools** (for more details, see 9 on page 55).
  - ▶ If you are working with Windows 2008 64-bit R2 Operating System, you must install .NET Framework 3.5 SP1 from the Server Manager Feature list.
- 

Click **OK** and follow the on-screen instructions to install the prerequisite software before continuing with the Performance Center component installation. You cannot continue with the Performance Center component installation unless all the prerequisite software is installed.

---

**Note:** If you are prompted to restart the machine after installing the prerequisite software, you must do so before continuing with the installation. After rebooting the machine, run **setup.exe** again to continue with the installation. If the installation continues from where it left off before rebooting, we recommend starting the setup again—the installer will detect the installed prerequisites and continue with the installation.

---

For a full list of prerequisite software, see "Performance Center Prerequisite Software" on page 36.

**4 Start the installation.**

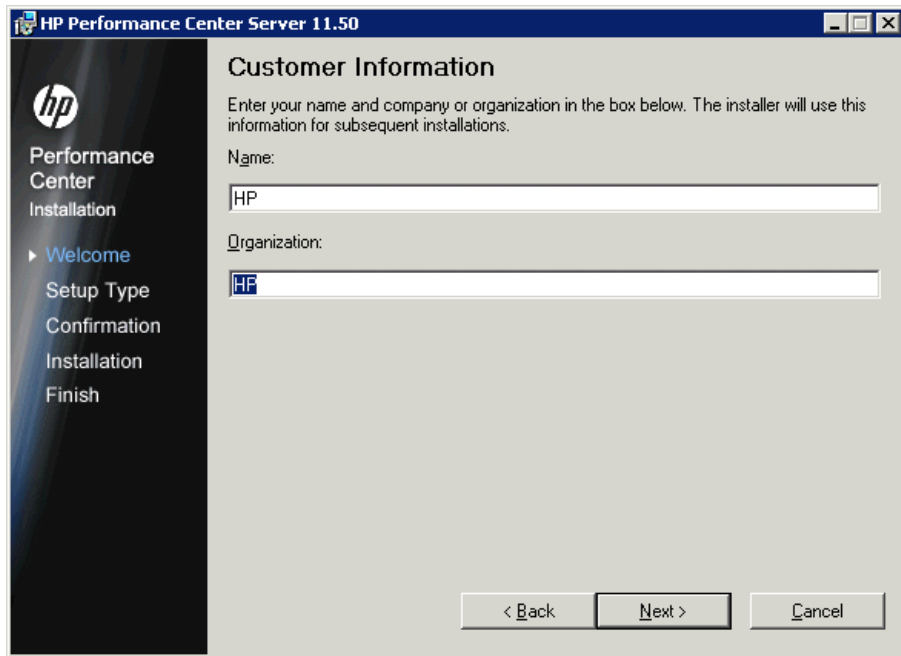
The Performance Center Setup Wizard opens, displaying the Welcome page for the relevant Performance Center component. Click **Next**.

**5 Review the License agreement.**

To accept the terms of the license agreement, select **I Agree**. Click **Next**.

**6 Register your customer information on your computer.**

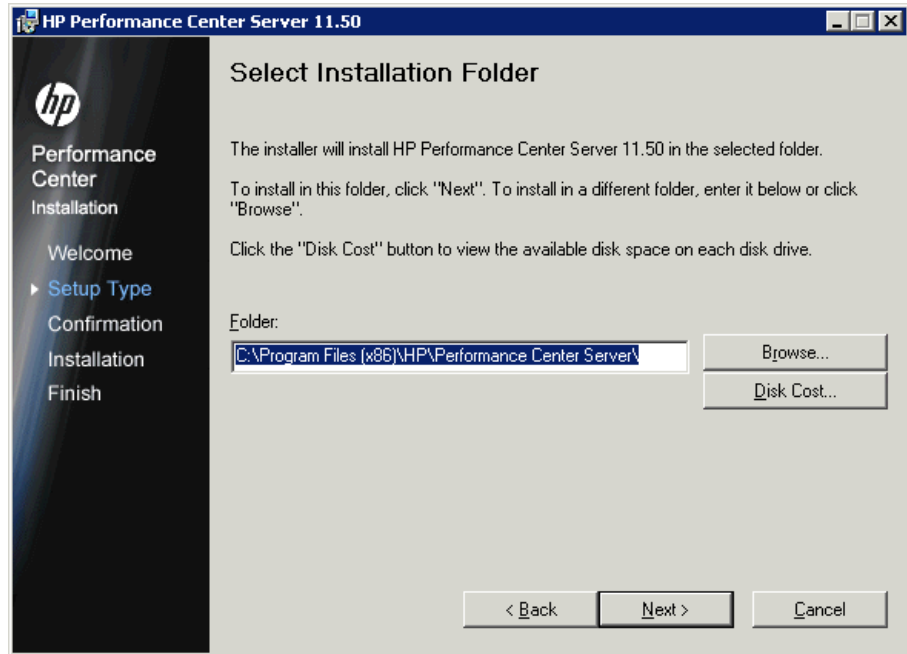
On the Customer Information page, enter your name and organization name, and click **Next**.



## 7 Select an installation folder.

Specify the location in which to install the Performance Center component. To browse possible locations, click the **Browse** button, select a location, and click **OK**.

To check required and available disk space on each drive, click **Disk Cost**.

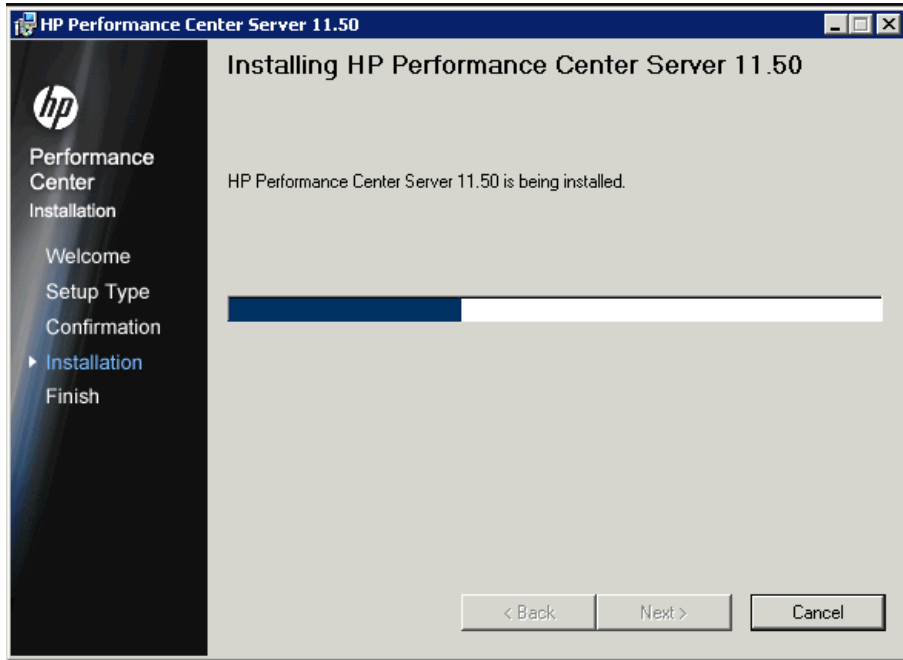


Click **Next**.

**8 Start the installation process.**

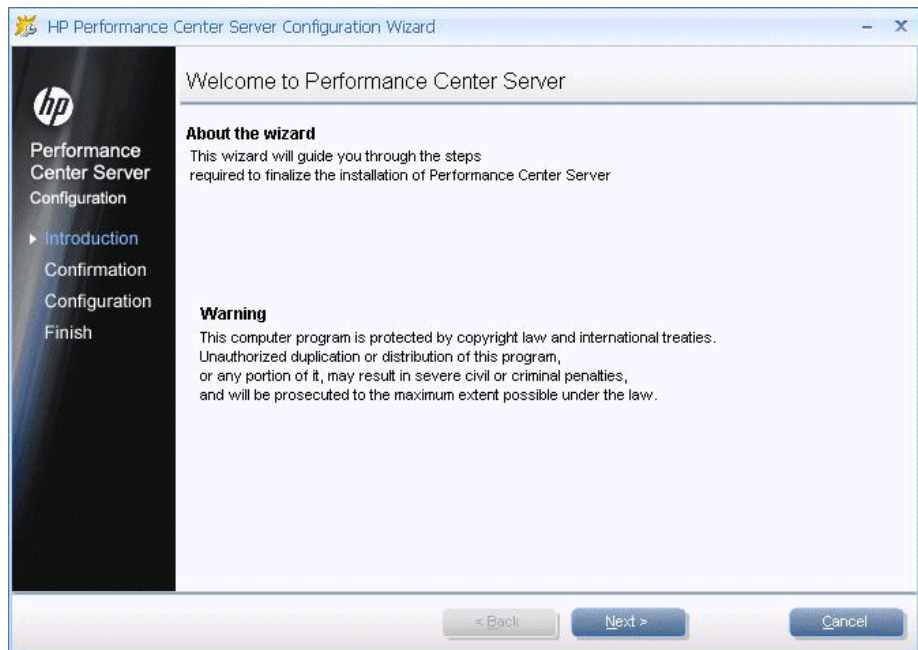
The wizard prompts you to confirm the details and start the installation. To review or change any settings, click **Back**.

Click **Next** to start the installation. The wizard displays the installation progress.



**9 Upon completion of the installation, configure the component.**

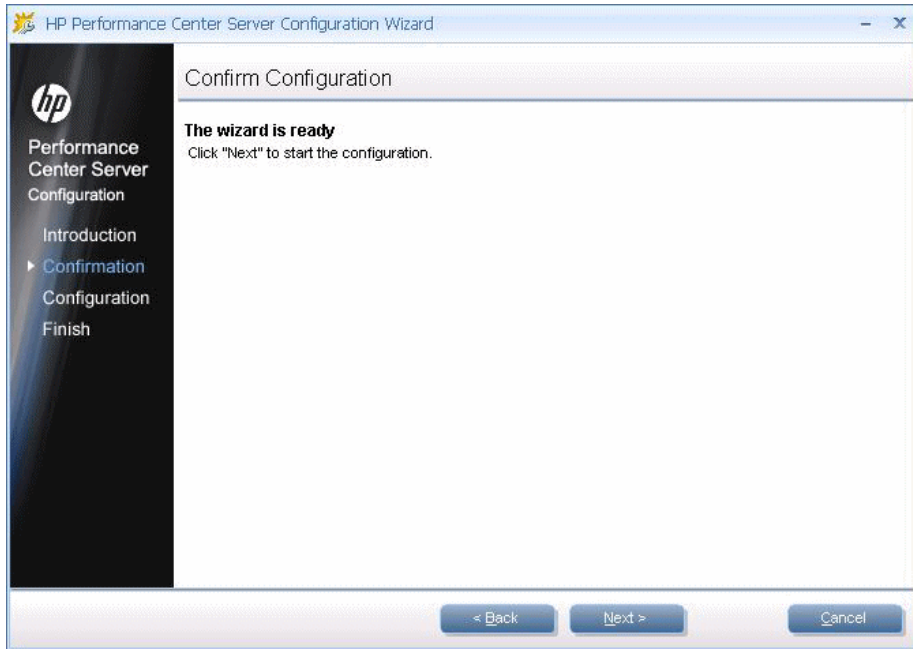
The Welcome page of the Configuration wizard opens.



Click **Next**.

**10 Confirm the configuration.**

The Confirm Configuration page opens.

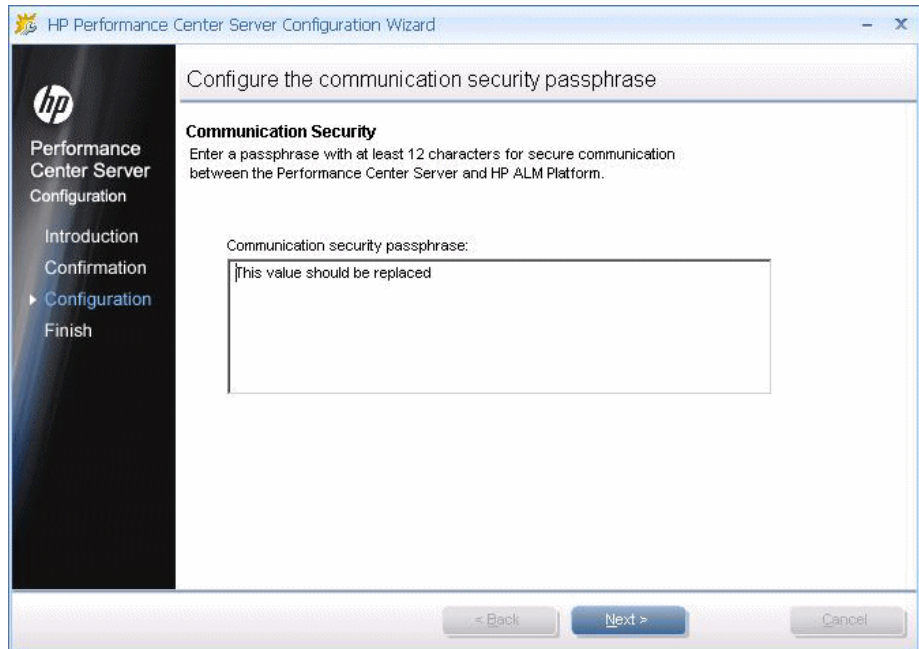


Click **Next**.



## 11 Performance Center Server only: Enter the Communication Security passphrase.

Enter the Communication Security passphrase for secure communication between the Performance Center Server and ALM. This must be identical to the passphrase defined during the ALM installation. You can view the passphrase in **Site Administration > Site Configuration** tab > **COMMUNICATION\_SECURITY\_PASSPHRASE** parameter. For more details, refer to the *HP Application Lifecycle Management Administrator Guide*.

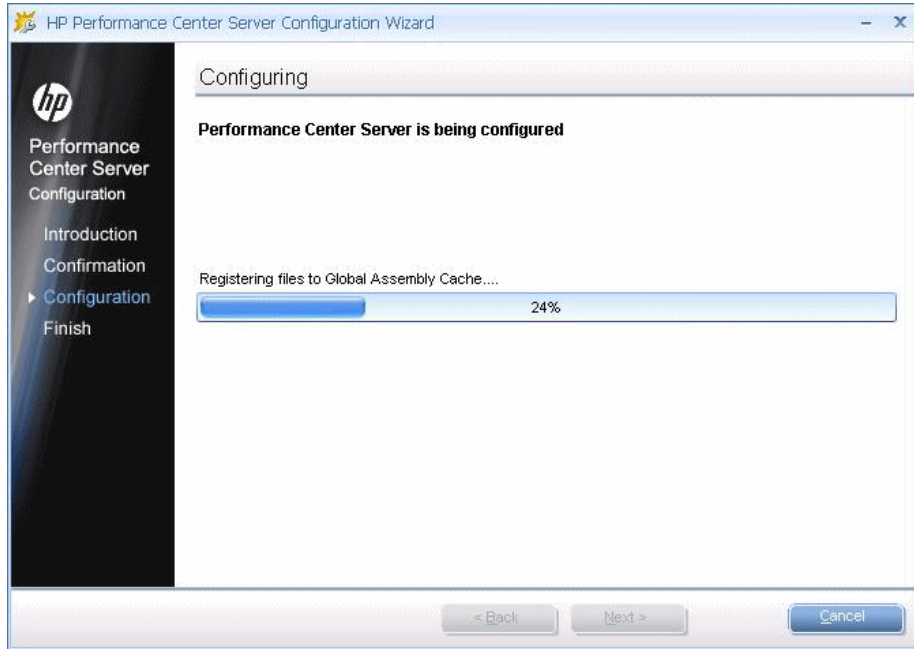


The screenshot shows a window titled "HP Performance Center Server Configuration Wizard". The main heading is "Configure the communication security passphrase". Below this, the section is titled "Communication Security" and contains the instruction: "Enter a passphrase with at least 12 characters for secure communication between the Performance Center Server and HP ALM Platform." A text input field is labeled "Communication security passphrase:" and contains the placeholder text "This value should be replaced". At the bottom of the window, there are three buttons: "< Back", "Next >" (highlighted in blue), and "Cancel". On the left side of the window, there is a navigation pane with the HP logo and the following menu items: "Performance Center Server Configuration", "Introduction", "Confirmation", "Configuration" (which is selected with a blue arrow), and "Finish".

Click **Next**.

## 12 The background configuration starts.

The wizard displays the progress bar as it performs the configurations on the relevant component.



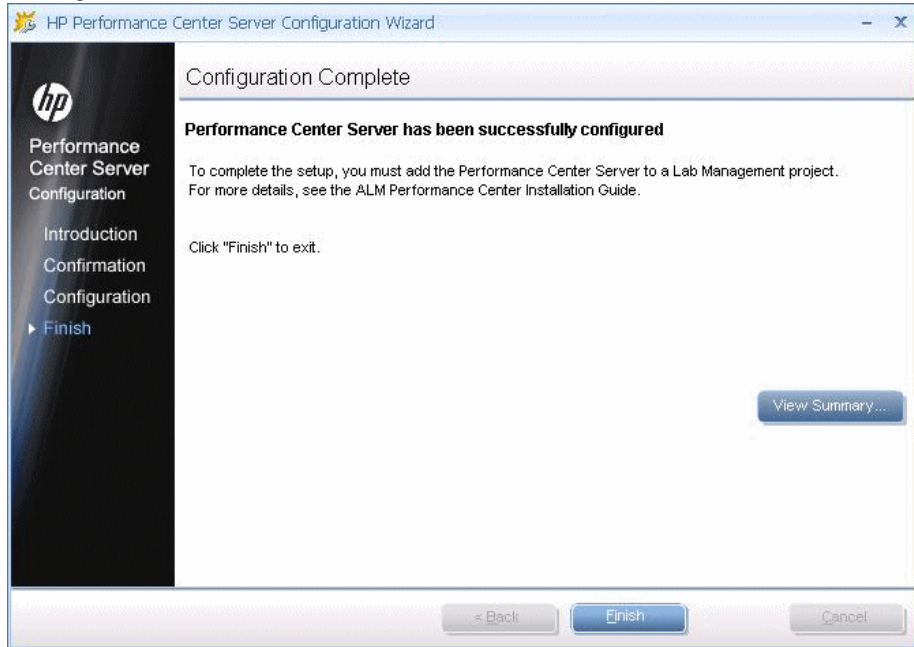
The wizard performs the following configurations on the relevant component:

Configuration	PC Server	PC Host
Copies and registers files on the machine	Yes	Yes
Creates the Performance Center system user, <b>IUSR_METRO</b> (default password: <b>P3rfoRm@1nce</b> ), and adds it to the machine's Administrators group. For information about changing the system user, see the <i>HP ALM Performance Center Guide</i> .	Yes	Yes
Configures DCOM objects	Yes	Yes

Configuration	PC Server	PC Host
Adds the Performance Center path to the environment variables	Yes	Yes
Installs Performance Center services <ul style="list-style-type: none"> <li>➤ DataCollectionAgent</li> <li>➤ RemoteManagement Agent Service</li> </ul>	Yes	Yes
Installs Performance Center services <ul style="list-style-type: none"> <li>➤ Performance Center Agent Service</li> <li>➤ Performance Center Load Testing Service</li> </ul>	--	Yes
Configures IIS: <ul style="list-style-type: none"> <li>➤ Creates virtual directories and application pools</li> <li>➤ Configures IIS application pools to work as 32-bit application pools</li> <li>➤ Sets the .Net version for the application pools to .Net 4 (v4.0.30319).</li> </ul> IIS6: <ul style="list-style-type: none"> <li>➤ Installs extensions (if not already installed): ASP .Net, Active Server Pages, and enables them</li> </ul> IIS7: <ul style="list-style-type: none"> <li>➤ Enables Windows communication foundation</li> <li>➤ Adds rules: Web-ASP, Web-Asp-Net, Web-Mgmt-Compat, Web-Metabase, web-static-content</li> </ul>	Yes	--

### 13 Close the configuration wizard and exit the Performance Center Installer.

When the configuration is complete, the wizard confirms the configuration status.



Click **View Summary** to view a summary of the configuration.

Click **Finish** to exit the Configuration wizard.

Click **Finish** to exit the Installation wizard.

On the Performance Center installation menu page, click **Exit**.

---

**Note:** If prompted, restart the computer.

---

**14 Add the Performance Center Server to the Trusted Sites of the ALM client browser.**

Ensure that the Performance Center Server is listed in the Trusted Sites of the ALM client browser.

- a** In Internet Explorer, select **Tools > Internet Options**. The Internet Options dialog box opens.
- b** In the **Security** tab, select **Trusted Sites**, and click **Sites**.
- c** If you are not using SSL, ensure that the **Require Server verification (https:) for all sites in this zone** option is not selected.
- d** In the **Add this website to the zone** box, enter the Performance Center Server internal URL (`http://<ALM server name>[:port number]/qcbn`), and click **Add**.

**15 Perform additional Performance Center configuration steps.**

- a** Define Performance Center servers on ALM. For more details, see Adding the Performance Center Server to the System on page 62.
- b** Define Performance Center license and host keys. For more details, see Setting the License Keys on page 63.
- c** Define Performance Center hosts. For more details, see Adding Performance Center Hosts on page 64.

## Configuring Performance Center in Lab Management

After running the Performance Center Server installation and the Performance Center Server Configuration wizard, you must perform additional configuration steps in Lab Management before you can use the product.

This section includes:

- "Logging In to Lab Management" on page 62
- "Adding the Performance Center Server to the System" on page 62
- "Setting the License Keys" on page 63
- "Adding Performance Center Hosts" on page 64

## Logging In to Lab Management

All Performance Center administration tasks are done in Lab Management.

### To log in to Lab Management:

- 1 Open the Web browser and type the ALM URL  
http://<ALM server name>[:port number]/qcbn.  
The ALM Options window opens.
- 2 Click **Lab Management**, enter the user name and password of a Site Administrator, and click **Login**.

## Adding the Performance Center Server to the System

To use the Performance Center Server, it must be defined in ALM.

---

**Note:** From a performance and fault tolerance perspective, it is strongly recommended to define at least two Performance Center Servers.

---

### To define the Performance Center Server:

- 1 Log in to Lab Management. See "Logging In to Lab Management" on page 62.
- 2 On the Lab Management sidebar, under **Servers**, select **PC Servers**.

**3** For each Performance Center Server:

- a** In the PC Servers module, click **New PC Server**.
- b** Enter the details of the Performance Center Server as follows:

---

**Note:** To allow for proper communication between ALM and Performance Center servers, make sure that you validate the correct internal and external URLs of the Performance Center Servers. The internal URL must be accessible from within ALM and the Performance Center Servers. The external URL can include the relevant port, unless it was defined as part of the URL.

---

- ▶ **Name.** The name of the Performance Center Server.
- ▶ **External URL.** The URL for accessing the Performance Center Server from external sources.
- ▶ **Internal URL.** The URL for accessing the Performance Center Server from within the system. For example, the Performance Center Server and ALM communicate with each other through this URL.
- ▶ **Status.** Make sure that the Performance Center Server's status is **Operational** so that ALM and other Performance Center components can access it.

**Setting the License Keys**

After you add the Performance Center Server to ALM, you are required to enter the Performance Center license and the Performance Center host license keys.

- ▶ The **Performance Center license** enables you to use the product and run load tests. This license determines the number of performance tests that you can run concurrently, and the total number of Vusers available for the performance tests.
- ▶ The **Performance Center Host license** defines the Vuser protocols, monitors, and modules that are available on each host machine. This license also determines the number of Vusers available per protocol.

**To set the license keys:**

- 1** Log in to Lab Management. See "Logging In to Lab Management" on page 62.
- 2** On the Lab Management sidebar, under **Performance Center**, select **PC Licenses**.
- 3** In the **Performance Center Licenses** section, click **Add License Key** to add a single Performance Center license key. Alternatively, click **Add License from File** to add multiple license keys simultaneously.
- 4** In the **Host Licences** section, click **Add License Key** to add a single host license key. Alternatively, click **Add License from File** to add multiple host license keys simultaneously

If valid, the host license is updated on all the relevant host machines.

The license is not updated on the following machines as they do not require a host license:

- Standalone load generators on Window platforms
- Standalone load generators on Linux

## **Adding Performance Center Hosts**

To work with the Performance Center hosts, you must first add them to ALM. To add a host, you must first define the host's location in ALM. If the host is a load generator over a firewall, you must define the MI Listener through which the load generator will communicate with the Performance Center Server.

---

**Note:**

- Before adding a host, ensure that at least one Performance Center server is in an operational state.
  - When adding the hosts, fields in red marked with an asterisk (\*) are mandatory, including the type of **operating system**, and the **purpose** of the host. For details, see the *HP ALM Performance Center Guide*.
-



To add hosts:

**1 Log in to Lab Management.**

See "Logging In to Lab Management" on page 62.

**2 Add the host's location.**

**a** Under **Lab Resources**, select **Locations**.



**b** In the Host Locations module, click the **New Host Location** button, and enter the host location's details.

**3 For a host over a firewall, add the MI Listener.**

**a** Under **Performance Center**, select **MI Listeners**.



**b** In the MI Listeners module, click the **New MI Listener** button, and enter the MI Listener's details.

**4 Add the host.**

**a** Under **Lab Resources**, select **Hosts**.



**b** In the Hosts module, click the **New Testing Host** button, and enter the host's details. In particular:

- In the **Installation** field, select the type of host installation:  
**Windows Host; Windows Standalone LG; UNIX Load Generator.**
- In the **Purpose** field, select a purpose for the host.

## Installing Performance Center Silently

A **silent installation** is an installation that is performed automatically, without the need for user interaction. This section describes how to perform a silent installation of Performance Center components.

Before you perform the installation, review the pre-installation information, including the system requirements, described in Chapter 1, "Before You Install."

This section includes:

- "Silent Installation of Prerequisite Software" on page 66
- "Setting Up the Silent Configuration" on page 70
- "Silent Installation of Performance Center Server and Performance Center Hosts" on page 71
- "Silent Installation of the Standalone Load Generator" on page 73

## **Silent Installation of Prerequisite Software**

Install the prerequisite software silently by running the relevant commands as follows:

---

**Note:** Some of the paths in the table below include the **<environment>** parameter, which represents the language of the environment on which you are working. Replace this parameter as follows:

- For an English environment, replace with EN
  - For a Korean environment, replace with KOR
  - For a Japanese environment, replace with JPN
  - For a Chinese environment, replace with CHS
-

Prerequisite Software	Command
.NET Framework 4.0	<pre>&lt;Installation_Disk_Root_Directory&gt;\Setup\Common\dotnet40\dotnetfx40.exe /LCID /q /norestart /c:"install /q"</pre> <p><b>Note:</b> If you are prompted to restart the computer after installing this software, you must do so before continuing with the installation.</p>
.NET Framework 3.5 SP1	<p>► <b>For Windows Server 2008 and earlier:</b>  <pre>&lt;Installation_Disk_Root_Directory&gt;\Setup\Common\dotnet35_sp1\dotnetfx35_sp1.exe /quiet</pre></p> <p>► <b>For Windows 2008 R2:</b></p> <ul style="list-style-type: none"> <li>► <b>32-bit:</b> %windir%\SysNative\dism.exe /Online /Enable-Feature /FeatureName:NetFx3 /norestart</li> <li>► <b>64-bit:</b> %windir%\dism.exe /Online /Enable-Feature /FeatureName:NetFx3 /norestart</li> </ul> <p><b>Note:</b> If you are prompted to restart the computer after installing this software, you must do so before continuing with the installation.</p>
Microsoft Visual C++ 2010 Service Pack 1 Redistributable Package MFC Security Update (x86)	<pre>&lt;Installation_Disk_Root_Directory&gt;\Setup\Common\vc2010sp1_mfc_security_update_x86\vc redistrib_x86.exe /q /norestart</pre>
Microsoft Visual C++ 2005 Service Pack 1 Redistributable Package MFC Security Update	<pre>&lt;Installation_Disk_Root_Directory&gt;\Setup\Common\vc2005sp1_mfc_security_update_x86\vc redistrib_x86.exe /q:a /c:"msiexec /i vcredist.msi /qn" "</pre>
Microsoft Visual C++ 2005 Service Pack 1 Redistributable Package MFC Security Update (x64)	<pre>&lt;Installation_Disk_Root_Directory&gt;\Setup\Common\vc2005sp1_mfc_security_update_x64\vc redistrib_x64.exe /q:a /c:"msiexec /i vcredist.msi /qn" "</pre>

Prerequisite Software	Command
Microsoft Visual C++ 2008 Service Pack 1 Redistributable Package MFC Security Update (x86)	<Installation_Disk_Root_Directory>\Setup\Common\vc2008sp1_mfc_security_update_x86\vc_redist_x86.exe /q:a /c:"msiexec /i vc_red.msi /qn" "
Microsoft Visual C++ 2008 Service Pack 1 Redistributable Package MFC Security Update (x64)	<Installation_Disk_Root_Directory>\Setup\Common\vc2008sp1_mfc_security_update_x64\vc_redist_x64.exe /q:a /c:"msiexec /i vc_red.msi /qn" "
Windows Imaging Component (WIC)	<p>► <b>For 32-bit machine:</b>            &lt;Installation_Disk_Root_Directory&gt;\Setup\Common\dotnet40\wic_x86_enu.exe /q /norestart</p> <p>► <b>For 64-bit machine:</b>            &lt;Installation_Disk_Root_Directory&gt;\Setup\Common\dotnet40\wic_x64_enu.exe /q /norestart</p>
Microsoft Data Access Components (MDAC) 2.8 SP1 (or later)	<Installation_Disk_Root_Directory>\Setup<environment>\prerequisites\mdac28\mdac28.exe /q:A /C:"setup /QNT"
Microsoft Core XML Services (MSXML) 6.0	<p><b>For x86:</b> msiexec /log c:\msxml.log /quiet /l            &lt;Installation_Disk_Root_Directory&gt;\Common\msxml6\msxml6.msi</p> <p><b>For x64:</b> msiexec /log c:\msxml.log /quiet /l            &lt;Installation_Disk_Root_Directory&gt;\Common\msxml6\msxml6_x64.msi</p> <p><b>For ia64:</b> msiexec /log c:\msxml.log /quiet /l            &lt;Installation_Disk_Root_Directory&gt;\Common\msxml6\msxml6_ia64.msi</p>
Microsoft Windows Installer 3.1	<Installation_Disk_Root_Directory>\Setup\Common\msi31\WindowsInstaller-KB893803-v2-x86.exe /q /norestart

Prerequisite Software	Command
Web Services Enhancements (WSE) 3.0 for Microsoft .NET Redistributable Runtime MSI	<pre>msiexec /log c:\WSE3.log /quiet /I &lt;Installation_Disk_Root_Directory&gt;\Setup\Common\wse30\MicrosoftWSE3.0Runtime.msi /quiet /norestart</pre>
Web Services Enhancements (WSE) 2.0 SP3 for Microsoft .NET Redistributable Runtime MSI	<pre>msiexec /log c:\WSE2.log /qn /i &lt;Installation_Disk_Root_Directory&gt;\Setup\Common\wse20sp3\MicrosoftWSE2.0SP3Runtime.msi /quiet /norestart</pre>
<p>Internet Information Services (IIS)</p> <p><b>Note:</b> Performance Center Server only!</p>	<p>► <b>Use the following to install IIS6 on Windows 2003:</b></p> <pre>Sysocmgr.exe /i:sysoc.inf /r /q C:\&lt;WINDOWS directory&gt;\Microsoft.NET\Framework\v2.0.50727\aspnet_regiis.exe -i</pre> <p>► <b>Use the following to install IIS7 on Windows 2008:</b></p> <pre>start /w pkgmgr /iu:IIS-WebServerRole;WAS-WindowsActivationService;WAS-ProcessModel;WAS-NetFxEnvironment;WAS-ConfigurationAPI</pre> <p>For more details, see: <a href="http://learn.iis.net/page.aspx/136/install-typical-iis-workloads/">http://learn.iis.net/page.aspx/136/install-typical-iis-workloads/</a></p>

## Setting Up the Silent Configuration

This section describes how to customize the file used for silent configuration of the Performance Center Server. The **UserInput.xml** file—installed with the Performance Center Extension—contains parameters for the Performance Center Server and Performance Center Host configurations.

For the Performance Center Server configuration, you can customize the parameters in the **UserInput.xml** file. You then instruct the Installer to use the customized file for the silent configuration input.

### To configure the properties in the UserInput.xml file:

- 1 Copy the **UserInput.xml** file from the installation DVD (`..\Setup\Install\Server\TARGETDIR\dat\Setup\PCS\Xml\`) to another location.
- 2 Open the copy of the file and enter a user-defined value for the following property:

Property	Description
<b>LW_CRYPTO_INIT_STRING</b>	The Communication Security passphrase used for secure communication between the Performance Center Server and ALM.  <b>Note:</b> This passphrase must be identical to the passphrase defined during the ALM installation.

- 3 Save the **UserInput.xml** file.
- 4 Specify the location of the saved file when running the silent installation command.

## Silent Installation of Performance Center Server and Performance Center Hosts

This section describes how to run the silent installation of the Performance Center Server and Performance Center hosts on a Windows platform.

The silent installation is followed by the silent configuration which calls the **UserInput.xml** file for configuration parameters. You can customize the parameters in this file for the Performance Center Server configuration.

### To perform a silent installation of Performance Center:

- 1** For the Performance Center Server installation: Set up the .xml file that provides the input for the initial Performance Center Server configuration that runs directly after the installation. For details, see "Installing Standalone Components (Windows)" on page 75.
- 2** Install the prerequisite software and the Performance Center component.
  - a** Install the prerequisite software. For instructions, see "Installing Standalone Components (Windows)" on page 75.

---

**Note:** If you are prompted to restart the computer after installing the prerequisite software, you must do so before continuing with the installation.

---

- b** After you have installed all the prerequisite software, install the Performance Center component by running the appropriate command from the command line.

**Performance Center Server:**

Silent installation with non-customized UserInput.xml	msiexec /i <Installation_Disk_Root_Directory>\Setup\Install\Server\PCServer.msi ADDLOCAL=PCCore TARGETDIR="<Target_Installation_Directory>" /qnb
Silent installation with customized UserInput.xml	msiexec /i <Installation_Disk_Root_Directory>\Setup\Install\Server\PCServer.msi ADDLOCAL=Core USER_CONFIG_FILE_PATH="<full path to UserInput file>" TARGETDIR="<Target_Installation_Directory>" /qnb

where **<full path to UserInput file>** is the path to your customized UserInput.xml file and **<Target\_Installation\_Directory>** is the directory in which to install the Performance Center Server.

**Performance Center Host:**

For 32-bit	msiexec /i <Installation_Disk_Root_Directory>\Setup\Install\Host\PCHost_x86.msi ADDLOCAL=Core TARGETDIR="<Target_Installation_Directory>" /qnb
For 64-bit	msiexec /i <Installation_Disk_Root_Directory>\Setup\Install\Host\PCHost_x64.msi ADDLOCAL=Core TARGETDIR="<Target_Installation_Directory>" /qnb

where **<Target\_Installation\_Directory>** is the directory in which you want to install the Performance Center host.



---

**Note:**

You can also install in silent mode using the **setup.exe** file. This enables you to install the prerequisites in silent mode automatically before running the MSI installation in silent mode. Using this option also invokes the correct MSI file depending on the operating system platform.

**Server installation:**

```
<Installation_Disk_Root_Directory>\Setup\En\setup_server.exe /s  
USER_CONFIG_FILE_PATH="<full path to UserInput file>"  
TARGETDIR="<Target_Installation_Directory>" /qnb
```

**Host installation:**

```
<Installation_Disk_Root_Directory>\Setup\En\setup_host.exe /s  
TARGETDIR="<Target_Installation_Directory>" /qnb
```

where **<full path to UserInput file>** is the path to your customized UserInput.xml file and **<Target\_Installation\_Directory>** is the directory in which to install the Performance Center Server or Host.

---

## Silent Installation of the Standalone Load Generator

This section describes how to perform a silent installation of the standalone load generator.

---

**Note:** For instructions on installing the HP Load Generator silently on Linux, see "Silent Installation of the HP Load Generator on Linux" on page 84.

---

**To perform a silent installation of the standalone load generator:**

- 1** Install all the prerequisite software except for IIS. For details, see "Silent Installation of Prerequisite Software" on page 66.
- 2** Extract the Load Generator installation files to a local directory:
  - a** Insert the DVD labeled **HP ALM Performance Center 11.50 - Standalone Applications**, and click **Load Generator**.
  - b** In the **Save files in folder** box, enter the name of the local directory where you want to save the installation files.
- 3** Run the following command from the command line:

```
msiexec /i "<Installation_Folder>\HP_LoadGenerator.msi" /qb
```

where **<Installation\_Folder>** is the local directory where you saved the installation files.

- 4** After you silently install the load generator, you need to install the Performance Center agent service and the Remote Management agent service.
  - a** To install the Performance Center agent service, run the following command from the command line:

```
"<load_generator_installation_directory>\Load  
Generator\launch_service\bin\magentservice.exe" -install
```

- b** To install the Remote Management agent service, run the following command from the command line:

```
"<load_generator_installation_directory>\Load  
Generator\al_agent\bin\alagentservice.exe" -install IUSR_METRO  
<IUSR_METRO Password>
```

## Installing Standalone Components (Windows)

You can install standalone components that provide advanced features for working with HP ALM Performance Center.

To install a load generator on Linux, see "Installing HP Load Generator on Linux" on page 78.

---

**Note:** For all standalone applications, you must first manually install the prerequisite applications. For more details, see "Silent Installation of Prerequisite Software" on page 66

---

This section includes:

- "Available Standalone Components for Windows" on page 76
- "Installing Standalone Components" on page 77

## Available Standalone Components for Windows

The following standalone components are available. To install these components, see "Installing Standalone Components" on page 77.

- ▶ **HP Load Generator.** Instead of installing a Performance Center Host and then configuring it as a load generator, you can install a standalone version of the load generator. This host can behave only as a load generator, unlike the Performance Center host, which can also be configured as a Controller or data processor.

---

**Note:** If you know in advance that a particular host machine is to be used as a load generator only, we recommend that you install the standalone Load Generator for the following reasons:

- ▶ The installation requires less disk space
- ▶ Moving the Load Generator's setup files is less time consuming than moving the setup files of the Performance Center Host

- 
- ▶ **HP Virtual User Generator.** HP Virtual User Generator (VuGen) generates virtual users, or Vusers, by recording actions that typical end-users would perform on your application. VuGen records your actions into automated Vuser scripts which form the foundation of your performance tests.
  - ▶ **HP LoadRunner Analysis.** HP Analysis provides graphs and reports with in-depth performance analysis information. Using these graphs and reports, you can pinpoint and identify the bottlenecks in your application and determine what changes need to be made to your system in order to improve its performance.
  - ▶ **MI Listener.** The MI Listener is one of the components needed to run Vusers and monitor applications over a firewall. To install, run **SetupMIListener.exe**. For more information about firewalls in Performance Center, see Part IV, "Working with Firewalls."
  - ▶ **Monitor Over Firewall Agent.** Used to monitor servers that are located over a firewall. For more information about firewalls in Performance Center, see Part IV, "Working with Firewalls."

## Installing Standalone Components

This section describes the installation process for standalone components.

### To install any of the standalone components:

- 1** Insert the HP ALM Performance Center Additional Components installation disk (DVD 2) and run the setup (<**installation disk root directory**>\setup.exe). The setup program displays the installation menu page.
- 2** Select one of the following options:
  - ▶ **Load Generator.** Installs the standalone Load Generator for Windows.
  - ▶ **Virtual User Generator.** Installs Standalone VuGen. For more details, see the *HP LoadRunner Installation Guide*.
  - ▶ **Analysis.** Installs Standalone Analysis. For more details, see the *HP LoadRunner Installation Guide*.
  - ▶ **MI Listener.** Installs the MI Listener component. For more details, see the *HP LoadRunner Installation Guide*.
  - ▶ **Monitor Over Firewall.** Installs the Monitor Over Firewall component. For more details, see the *HP LoadRunner Installation Guide*.
- 3** **MI Listener/Monitor Over Firewall installations only:** Follow the instructions in the installation wizard. After installation, the configuration wizard opens, requesting the name of the product you are working with. Select **Performance Center**.

## Installing HP Load Generator on Linux

This section describes how to install the HP Load Generator on Linux. It includes the following steps:

### 1 Review system requirements

Before you install the HP Load Generator on Linux, review the system requirements as described in "Linux System Requirements" on page 79.

### 2 Install the HP Load Generator

- You install HP Load Generator using the **HP Load Generator Setup wizard**. The wizard runs the installation of the native package. For more information, see "Installing Using the Setup Wizard" on page 80.
- Advanced users can install the The HP Load Generator native package directly using **Native package commands**. For example, if you are using a remote deployment tool to install the HP Load Generator on multiple machines, you may need to use native package commands. For more information, see "Using Native Package Commands" on page 83.
- To install the HP Load Generator on Linux silently, see "Silent Installation of the HP Load Generator on Linux" on page 84.

### 3 Configure your environment

Before you can begin working with the load generator you need to configure your environment. This involves setting the appropriate environment variables, checking access to the load generator, and verifying the installation. See "After Installing the HP Load Generator on Linux" on page 85.

## Linux System Requirements

This section describes the system requirements necessary for installing the HP Load Generator on a Linux machine.

The following table describes the memory requirements for installing the HP Load Generator on a Linux machine.

<b>Memory (RAM)</b>	512 MB minimum <b>Note:</b> Memory depends on protocol type and system under test and can vary greatly.
<b>Available Hard Disk Space</b>	500 MB minimum

This section describes the supported operating systems on which you can install a Linux HP Load Generator.

OS Type	OS Version	Platform
Red Hat Linux	<ul style="list-style-type: none"> <li>▶ Enterprise Linux 5.0</li> <li>▶ Enterprise Linux 6.0</li> </ul>	<ul style="list-style-type: none"> <li>▶ <b>CPU Type:</b> Intel Core, Pentium, AMD or compatible</li> <li>▶ <b>Speed:</b> 1 GHz minimum. 2 GHz or higher recommended</li> </ul>

---

**Note:** The HP Load Generator supports all X Servers.

---

## Installing Using the Setup Wizard

This section describes how to install the HP Load Generator on Linux using the setup wizard. You use the same setup wizard for all Linux platforms.

**1** Ensure that you are logged in as **root user**.

**2** Launch the setup wizard.

Run the following command to launch the setup wizard:

```
<LoadGenerator Linux installation disk>/<platform>/installer.sh
```

The setup wizard welcome screen opens.

```
-----  
Welcome to the HP Load Generator 11.50 Setup Wizard  
-----  
This wizard will guide you through the steps required to install HP Load Generator 11.50 on the computer.  
  
WARNING: This computer program is protected by copyright law and international treaties. Unauthorized duplication or distribution of this program, or any portion of it, may result in several civil or criminal penalties, and will be prosecuted to the maximum extent possible under the law.  
  
> To continue, select "Next"  
> To abort the setup wizard, select "Cancel"  
  
Select [ Next[n], Cancel[c] ] :
```

Select **Next** to continue.

**3** Review the License agreement.

```
-----  
LICENSE AGREEMENT  
-----  
  
Please take a moment to read the License Agreement, located in:  
/media/sf_products/LT/LT-LR/linux32_release/LR_Apollo/SetupBuilder/Output  
/UNIX/LG_UnixCD/Linux/sequencer/resources/EULA/EULA .  
  
>To review the full License Agreement, select "View Agreement"  
>To accept the agreement terms, select "Agree"  
>To go back to the previous step, select "Back"  
>To abort the setup wizard, select "Cancel"  
  
Select: [ View Agreement[v], Agree[a], Back[b], Cancel[c] ] :
```



To view the entire license agreement, select **View Agreement**.

If the terms of the license agreement are acceptable to you, select **Agree** to continue.

#### 4 Select the installation directory

```
-----
SELECT INSTALLATION DIRECTORY
-----
```

The installer will install HP Load Generator 11.50 in the following directory:  
/opt/HP/HP\_LoadGenerator.

```
> To install in this directory, select "Next"
> To install in a different directory, select "Select different directory"
> To go back to the previous step, select "Back"
> To abort the setup wizard, select "Cancel"
```

```
Select [ Next[n], Select different directory[s], Back[b], Cancel[c] ]:
```

Select **Different Directory** to install the load generator in a different directory, or select **Next** to install the load generator in the **/opt/HP/HP\_LoadGenerator** directory.

#### 5 Start the installation process.

The wizard prompts you to confirm the installation.

```
-----
CONFIRMATION
-----
```

The HP Load Generator 11.50 features you selected for installation are:

```
+LoadGenerator
  -LoadGenerator-11.50.000-Linux2.6.rpm
```

```
Size:
  283909 KB
```

HP Load Generator 11.50 will be installed in the following directory:  
/opt/HP/HP\_LoadGenerator.

```
> To start the HP Load Generator 11.50 installation, select "Install"
> To go back to the previous step, select "Back"
> To abort the setup wizard, select "Cancel"
```

```
Select [ Install[i], Back[b], Cancel[c] ]:
```

Select **Install** to start the installation process.

The Installation screen opens, displaying the progress of the installation.

```
-----  
INSTALLATION  
-----  
  
LOG FILE: Native OS Install output log directory:  
"/var/log/27.02.12_10-56-05_HP_LoadGenerator_11.50.000_iHP_log.txt".  
  
Tail log to track detailed progress.  
          Installing Package: LoadGenerator-11.50.000-Linux2.6.rpm started.  
....
```

## 6 Complete the installation.

When the installation is complete, the Finish screen opens.

```
-----  
FINISH  
-----  
  
HP Load Generator 11.50 has been successfully installed in the /opt/HP/HP_LoadGen  
erator directory  
  
LOG FILE: Install log directory:  
/var/log/27.02.12_10-56-05_HP_LoadGenerator_11.50.000_iHP_log.txt  
  
> To complete the setup wizard, select "Finish"  
> To view the output log, select "View Log"  
  
Select [ Finish[f], View Log[v] ]:
```

- Select **View Log** to view the complete log of the installation process.
- Select **Finish** to complete the installation.

## 7 Configure your environment.

After you install the load generator, configure your environment as described in "After Installing the HP Load Generator on Linux" on page 85.

## Using Native Package Commands

You can run the HP Load Generator installation using native package commands. The native package name for the HP Load Generator is **LoadGenerator**.

There is a separate native package for each OS platform located at: **<HP Load Generator Linux installation disk>/<Platform>/packages/packages\_<Platform>/<package file>**.

---

**Note:** This section contains general reference information about native package commands. For detailed information about the native package commands, refer to your relevant operating system documentation.

---

**To install the HP Load Generator using native package commands:**

**1** Run the installation command described below:

Platform	Install Command	Get Package Information Command	Uninstall Command
Linux	<pre>rpm --nodeps -i --nomd5 &lt;path to rpm file&gt;</pre> <p><b>For example:</b></p> <pre>rpm --nodeps -i --nomd5 /dev/cdrom/Linux/packages/packages_Linux/LoadGenerator-11.50.000-Linux2.6.rpm</pre>	<pre>rpm -q LoadGenerator</pre>	<pre>rpm -e LoadGenerator</pre>

**2** Run the **run\_after\_install.sh** script located in the **/opt/HP/HP\_LoadGenerator** directory.

## Silent Installation of the HP Load Generator on Linux

This section describes how to install the HP Load Generator on Linux silently.

- 1 (Optional) You can store the load generator content on a different directory than the installation directory. For more details, see "Creating Symbolic Links" on page 84.
- 2 Run the installation command as described below:

Platform	Silent Installation Command	Example
Linux	<code>rpm --nodeps -i --nomd5 &lt;path to rpm file&gt;</code>	<code>rpm --nodeps -i --nomd5 /dev/cdrom/Linux/packages/packages_Linux/LoadGenerator-11.50.000-Linux2.6.rpm</code>

- 3 Run the `run_after_install.sh` script located in the `/opt/HP/HP_LoadGenerator` directory.

### Creating Symbolic Links

This section describes how to create a symbolic link for all platforms.

Assume for example that the installation directory is `/opt/HP/HP_LoadGenerator` and that you want to store the load generator content in `/usr/HP/HP_LoadGenerator`.

- 1 Create the new directory. For example:

```
mkdir -p /usr/HP/HP_LoadGenerator
```

- 2 Make sure that the directory `/opt/HP` exists. If it does not exist, create the directory as follows:

```
mkdir -p /opt/HP
```

- 3 Create a symbolic link from `/opt/HP/HP_LoadGenerator` to the other directory. For example:

```
In -s /usr/HP/HP_LoadGenerator
/opt/HP/HP_LoadGenerator
```

In the above example, the symbolic link called `HP_LoadGenerator` in the directory `/opt/HP` points to the directory `/usr/HP/HP_LoadGenerator`.

## After Installing the HP Load Generator on Linux

This section describes the configuration steps you need to complete before you can begin working with the HP Load Generator on Linux.

To complete the setup process:

- 1 **Set the appropriate environment variables.** See "Setting Environment Variables" on page 85.
- 2 **Verify your Linux installation.** See "Verifying the HP Load Generator Installation on Linux" on page 87.
- 3 **Check that the Controller can access the load generator.** See "Checking Controller Connection" on page 88.

## Setting Environment Variables

To work with the load generator, your Linux startup configuration file needs to include specific environment variables. At the end of the load generator installation, the installer creates the `env.csh` script. **For C Shell users**, this script is used to set the appropriate environment variables. (See "Setting Environment Variables For C Shell Users" below).

**Bourne and Korn shell** users need to set the variables manually. (See "Setting Environment Variables For Bourne and Korn Shell Users" on page 86.)

The following environment variables need to be included:

- ▶ **M\_LROOT.** The location of the Linux Load Generator installation directory
- ▶ **PATH.** The location of the Linux Load Generator *bin* directory.

- **LD\_LIBRARY\_PATH.** The location of Linux Load Generator's dynamic libraries.

If you are running Vusers for a protocol that requires a client installation (for example, Oracle), make sure that the path for the client libraries is included in the dynamic library path environment variable (LD\_LIBRARY\_PATH or SHLIB\_PATH).

To check the dynamic libraries used by your application, type:

```
ldd application_name
```

### Setting Environment Variables For C Shell Users

At the end of the load generator installation, the installer creates the **env.csh** script. This script is used to set the appropriate environment variables.

To set the environment variables, users need to add the **env.csh** script to their **.cshrc** startup configuration file.

Add the following line in the **.cshrc** startup configuration file:

```
source <load generator installation directory>/env.csh
```

For example:

```
source /opt/HP/HP_LoadGenerator/env.csh
```

### Setting Environment Variables For Bourne and Korn Shell Users

**Bourne and Korn shell** users need to set the environment variables manually in the **.profile** startup configuration file. Use the following example to set up your environment variables:

```
# LoadRunner settings #
#Chooses a path based on the location of the machine dependent LR installation #

M_LROOT={replace w/ LR Linux installation path} ; export M_LROOT
LD_LIBRARY_PATH=${M_LROOT}/bin; export LD_LIBRARY_PATH

PATH=${M_LROOT}/bin:${PATH}; export PATH

# End LoadRunner setting #
```

## Verifying the HP Load Generator Installation on Linux

The installation includes a setup verification utility, **verify\_generator**, that checks the load generator setup on your Linux machine. It checks environment variables and your **.cshrc** or **.profile** file to verify that they are set up correctly.

It is strongly recommended that you run **verify\_generator** after an HP Load Generator installation, before attempting to invoke the application.

The **verify\_generator** utility checks the following items:

- There are at least 128 file descriptors
- The **.rhost** permissions have been defined properly: **-rw-r--r--**
- The host can be contacted by using **rsh** to the host. If not, it checks for the host name in **.rhosts**
- **M\_LROOT** is defined
- **.cshrc** or **.profile** defines the correct **M\_LROOT**
- **.cshrc** or **.profile** exists in the home directory
- The current user is the owner of the **.cshrc** or **.profile**
- A Linux Load Generator installation exists in **\$M\_LROOT**
- The executables have executable permissions
- **PATH** contains **\$M\_LROOT/bin**, and **/usr/bin**
- The **rstatd** daemon exists and is running

**To run the `verify_generator` utility:**

- 1 Before you run the **`verify_generator`** utility, make sure that you have set the **DISPLAY** environment variable on your machine.
- 2 From the **<load generator installation directory>/bin**, run the following command:

```
verify_generator
```

For example:

```
/opt/HP/HP_LoadGenerator/bin/verify_generator
```

If you want to receive detailed information about the checks you can use the **-v** option, as follows:

```
verify_generator -v
```

- 3 View the results.
  - ▶ If the settings are correct, **`verify_generator`** returns **OK**.
  - ▶ If they are incorrect, **`verify_generator`** returns **Failed** and a suggestion on how to correct the setup.

### **Checking Controller Connection**

By default, the Controller connects remotely to the load generator using **rsh** (remote shell). You need to make sure that the load generator can be remotely accessed by the Controller.

- 1 On the load generator machine, go to the **.rhosts** file, located in the user home directory.
- 2 In the **.rhosts** file, verify that the Controller is included in the list of machines. If it is not listed, add it to the list.
- 3 If the Controller still cannot connect to the load generator, contact your system administrator.



## Installing Additional Components

You can install additional components that provide advanced features for working with Performance Center. You install these components from the **Additional Components** directory, located in the root directory of the installation disk. The following components are available:

- ▶ **Agent for Citrix Server.** Installs an optional component on the server machine that enhances VuGen's capabilities in identifying Citrix client objects.
- ▶ **Agent for Microsoft Terminal Server.** Used for extended RDP protocol record-replay. This component runs on the server side, and is used to create and run enhanced RDP scripts.
- ▶ **Assembly Crawler for Analysis API.** Installs a command-line utility to build a .NET configuration file for a LoadRunner Analysis API application. For more information, refer to the *Analysis API Reference*.
- ▶ **HP Diagnostics Mediator.** Gathers and correlates offline transaction data for the ERP/CRM diagnostics modules.
- ▶ **HP Performance Validation SDK.** Provides the tools to create a custom protocol for running performance tests on a previously unsupported application. For more information, see the *HP Performance Validation SDK Developer's Guide*.
- ▶ **IDE Add-ins.** Installs a component that enables you to create and run scripts written in your standard development environment, in the application's native language. Select an add-in from the **IDE Add-ins** directory, and run the add-in's executable file.
- ▶ **LRTCPDump.** A trace file containing a log of all TCP traffic over the network. Using a sniffer application, you obtain a dump of all of the network traffic. The sniffer captures all of the events on the network and saves them to a capture file.
- ▶ **Mobile Sniffer Agent.** The sniffer captures all of the events on the network and saves them to a capture file.
- ▶ **Monitor Probe for Microsoft COM+ Server Components.** Configures the server machine for COM+ monitoring.

- ▶ **MQ Tester.** Installs a component on the VuGen machine in order to generate scripts that load IBM MQ Series.
- ▶ **SAP Tools.** The following SAP tools are available:
  - ▶ **SAPGUI Spy.** Helps examine the hierarchy of GUI Scripting objects on open windows of **SAPGUI Client for Windows**. To install the SAPGUI Spy component, copy the three files **mscomctl.ocx**, **Msflxgrd.ocx**, and **msvbvm60.dll** from the **SAP\_Tools\SapGuiSpy\System32VBdlls** directory to your **C:\WINNT\system32** directory, and register the files. To register each file, select **Run** from the Windows Start menu and type: `regsvr32 <File name>`. Run **SapSpy.exe** from the **SAP\_Tools** directory.
  - ▶ **SAPGUI Verify Scripting.** Helps you verify whether the SAPGUI Scripting API is enabled. To install the Verify Scripting component, run **VerifyScripting.exe** from the **SAP\_Tools\VerifySAPGUI** directory.
  - ▶ **Verify RFC User.** Determines whether the SAP user you specified to connect to the SAP system has permissions to invoke the required RFC functions necessary for working with SAP Diagnostics. To install the Verify RFC User component, copy **RFCTFunctionsCollection.dll** from the **Verify RFC User** directory to your local hard drive. Then register the file by selecting **Run** from the Windows Start menu and typing: `regsvr32 RFCTFunctionsCollection.dll`. In the **Verify RFC User** directory, load **AddMTSDestinationsFolder.reg** by double-clicking the file. Then run **VerifyRFCUser.exe**.
- ▶ **Snapshot Viewer.** The Snapshot Viewer enables you to view snapshot-on-error pages captured from Web Vusers during performance test runs. The viewer displays snapshots from files with **.SOE** and **.INF** extensions. A Snapshot on Error (**.SOE**) file is a zipped file containing one or more snapshots in **.INF** format. To install, run **\Applications\SetupSnapshotViewer.exe**.
- ▶ **WebtrendsExporter.** This tool enables you to export Webtrends data into a PAL data set file.
- ▶ **WinPcap.** Installs the WinPcap utility. WinPcap allows the user to capture network traffic into a file for later analysis. WinPcap is used in the Server Side Recording feature in the VuGen Web Services protocol. For more information about WinPcap, see <http://www.winpcap.org/>.

## Repairing the Performance Center Installation

If you have errors in your original Performance Center installation, such as missing or corrupt files, shortcuts and registry entries, you can repair them using the Performance Center Setup Wizard.

**To repair your Performance Center installation:**

- 1** Insert the Performance Center installation disk into your disk drive.
- 2** From the Windows Control Panel, open the Add/Remove Programs dialog box.
- 3** Select **HP Performance Center <component>** from the list of currently installed programs and click **Change**. The Performance Center Setup Wizard opens, displaying the Welcome page. Click **Next**.
- 4** On the Maintenance Type page that opens, select **Repair**.

Click **Next** and follow the instructions in the wizard to complete the repair process.

## Uninstalling Performance Center Components

This section describes how to uninstall Performance Center components from Windows and UNIX machines.

### Uninstalling the Performance Center Server and Hosts

You can uninstall Performance Center servers and hosts using the Performance Center Setup Wizard or using the silent commands.

**To uninstall Performance Center components using the setup wizard:**

- 1** From the Windows Control Panel, open the Add/Remove Programs dialog box.
- 2** From the list of currently installed programs, select **HP Performance Center** and click **Remove**.
- 3** Follow the instructions in the wizard to complete the uninstall process.

**To uninstall Performance Center components silently:**

- ▶ Run the applicable command from the command line.

- ▶ **Performance Center Server:**

```
msiexec /uninstall  
"<Installation_Disk_Root_Directory>\Setup\Install\Server\PCServer.msi" /qnb
```

- ▶ **Performance Center Host:**

```
msiexec /uninstall  
"<Installation_Disk_Root_Directory>\Setup\Install\Host\PCHost_x64.msi" /qnb
```

Or

```
msiexec /uninstall  
"<Installation_Disk_Root_Directory>\Setup\Install\Host\PCHost_x86" /qnb
```

## **Uninstalling the HP Load Generator from Linux**

You can use the Maintenance wizard to uninstall the HP Load Generator.

---

**Note:** You can also uninstall the HP Load Generator using native package commands as described in "Using Native Package Commands" on page 83.

---

- 1** Make sure that you are logged in as **root user**.
- 2** Make sure that the load generator is not connected to any Controller machine.
- 3** Make sure that the `m_agent_daemon` process is not running on your machine.
- 4** Launch the maintenance wizard by running the following command:

```
/var/opt/HP/iHP/HP_LoadGenerator/11.50.000/installer.sh
```

- 5** Follow the remaining instructions in the wizard to uninstall the HP Load Generator.

# 3

---

## Post Installation Verification

This section describes how to verify that the installation of the Performance Center Server and hosts was successful. The environment for this process should be a staging environment, including a Performance Center Server and two to three Performance Center hosts.

---

**Note:** You can run a full validation on your ALM-Performance Center system from Lab Management, in the System Health module's System Check tab. For more details, see the *HP ALM Lab Management Guide*.

---

**This chapter includes:**

- Administrator Workflow on page 93
- Performance Tester Workflow on page 97

### Administrator Workflow

This section describes the workflow for the Performance Center administrator.

**1 Log on to Site Administration.**

- a** Open the Web browser and type the ALM URL  
`http://<ALM platform server>[:port number]/qcbn.`

The ALM Options window opens.

- b** Click **Site Administration**, enter the user name and password of a Site Administrator, and click **Login**.

**2 Create a project administrator user.**

- a** In Site Administration, select the **Site Users** tab and click **New User**. The New User dialog box opens.
- b** Enter the details of the project administrator user, and click **OK**.
- c** Select the user, click **Password**, enter the password, and click **OK**.

**3 Create a domain.**

- a** In Site Administration, select the **Site Projects** tab and click **Create Domain**. The Create Domain dialog box opens.
- b** Enter a name for the new domain, and click **OK**.

**4 Create a new project.**

In the **Site Projects** tab, select the domain you just created, and click **Create Project**. Follow the steps to create the project. When prompted:

- a** Add the project administrator user you created above to the **Selected Project Administrators** list.
- b** **HP ALM (consolidated license):** Select **ALM Lab Extension**.

**5 Assign more project administrators to the project - optional.**

- a** Click the **Site Projects** tab.
- b** In the Projects list on the left, select the project you created.
- c** In the right pane, click the **Project Users** tab.
- d** Add another user, and select **Project Administrator**.

**6 Log on to Lab Management.**

- a** Open the Web browser and type the ALM URL `http://<ALM platform server>[:port number]/qcbn`.  
The ALM Options window opens.
- b** Click **Lab Management**, enter the user name and password of a Site Administrator, and click **Login**.

## 7 Verify the Performance Center configuration.

On the Lab Management sidebar:

- ▶ Under **Servers**, select **PC Servers** and verify that the Performance Center Server is listed.
- ▶ Under **Performance Center**, select **PC Licenses** and verify that the Performance Center license and Host license are displayed.

For more details, see "Configuring Performance Center in Lab Management" on page 61.

## 8 Define additional hosts for the staging environment.

For the staging environment, you should have two to three Performance Center hosts, where at least one host purpose is configured as Controller, and at least one host purpose is configured as Load Generator.

---

**Note:** When adding hosts, fields in red marked with an asterisk (\*) are mandatory. Make sure to include the operating system type, and the purpose of the host. For more details, see the *HP ALM Lab Management Guide*.

---

- a** In Lab Management, under **Lab Resources**, select **Hosts**.
- b** Click the **New Testing Host** button. The New Host dialog box opens, enabling you to define the host details.



## 9 Create host pools.

**a** In Lab Management, under **Lab Resources**, select **Pools**.



**b** Click the **New Host Pool** button. The New Host Pool dialog box opens, enabling you to define a new host pool.

**c** In the Host Pools module, right-click the new host pool and select **Host Pools Details**.



**d** In the Host Pool Details dialog box, select **Linked Hosts**, and click the **Add Hosts to Pool** button.

**e** In the Add Hosts to Pools dialog box, select the hosts to add to the pool, and click **Add**. The hosts are added to the pool.

## 10 Define project settings.

**a** In Lab Management, select **Project Settings**.

**b** Right-click the project and select **Project Settings Details**. In the Project Settings Details dialog box, define the project's settings. In particular, set the Vuser limit, Host limit, and Concurrent run limit. Also, select the host pool you created above for the project.



## Performance Tester Workflow

This section describes the workflow for the Performance Center tester.

### 1 Log on to a Performance Center project.

Log on to the project you created in the administration workflow with the user credentials you created.

### 2 Create a monitor profile.

---

**Note:** The monitor profile is selected for a performance test when you design the test.

---

**a** On the ALM sidebar, under **Testing**, select **Test Resources**.



**b** Click the **New Resources Folder** button and specify a name for the folder.

**c** In the tree, right-click the new folder, and select **New Resource**.

**d** In the New Resource dialog box, in the **Type** box, select **Monitor Profile**, and give the profile a name.

**e** In the tree, select the new monitor profile, and in the right pane, click the **Monitors Configuration** tab.



**f** Click the **Add Monitor** button.

**g** In the Add New Monitors dialog box, select the monitor that you want to add to the profile. The relevant Edit Monitor dialog box opens.

**h** Enter the details of the server to be monitored, and select the counters that you want to monitor.

### 3 Create a topology.

---

**Note:** The topology is selected for a performance test when you design the test.

---

You can create a topology that graphically displays the logical components that make up the application under test (AUT) and the relationships between the components.

This provides a useful method for managing your inventory of AUT hosts and enables topology-oriented monitoring and analysis.



- a** On the ALM sidebar, under **Performance Center**, select **Topologies**.
- b** Click the **New Topology** button. The New Topology dialog box opens.
- c** Enter the topology details. If you want to add SiteScope monitors to the topology, specify the SiteScope server details. Click **OK**. The Topology Designer window opens.
- d** (Optional) Define your AUT hosts. For each host, click the **New AUT Host** button on the toolbar, and enter the AUT host's details. These hosts are automatically added to your project's AUT host pool.

---

**Note:** An AUT host pool is created automatically as soon as you add an AUT host.

---

- e** From the palette on the left, select relevant server/component nodes for your topology, and drag them onto the Topology canvas.
- f** To connect two nodes, click one node and drag the mouse to another node.
- g** (Optional) For each node, select the node and enter the relevant properties in the **Properties** pane in the top-right corner of the Topology Designer.

- h** To configure a SiteScope monitor on a node, select the node and click the **Configure Monitors** button. The Configure Monitors dialog box opens.
- i** Create a new SiteScope monitor: Define the monitor type, the instance (where necessary), and the data collection interval.

---


**Note:** If an AUT host is assigned to the node, it is passed to SiteScope as a remote host and inserted as a default monitored server for all monitors created on the node.

---

- j** Click **Save and Close** to save the topology.

#### 4 Create a performance test.

You create performance tests in the Test Plan module.

- a** On the ALM sidebar, under **Testing**, select **Test Plan**.
-  **b** Click the **New Folder** button, and specify a name for the folder.
- c** In the tree, right-click the new folder and select **New Test**.
- d** In the New Test dialog box, in the **Type** box, select **Performance Test**, and enter a name for the test.

#### 5 Upload Vuser scripts.

You can upload Vuser scripts either directly from VuGen or from within the Test Plan module.

---

**Note:**

- You select scripts for a performance test when you design the test.
  - When uploading a script in the Test Plan module, the script must be zipped and must be saved locally.
-

**To upload scripts in the Test Plan module:**



- a** On the ALM sidebar, under **Testing**, select **Test Plan** module.
- b** Click the **Upload VuGen Script** button.
- c** In the Upload Scripts dialog box, in the **Select Folder** box, select the folder you created in step 4 above as the location to save the script.
- d** In the **Select Scripts** fields, click **Select** to navigate to the location of the scripts. You can upload five scripts at a time.
- e** Click **Upload**.

**6 Design the performance test.**

The following steps guide you through designing a performance test with a basic workload, using default settings. Some options and steps may vary if you change any of the default settings.

**a Open the Performance Test Designer.**

On the ALM sidebar, under **Testing**, select **Test Plan**. In the tree, right-click the test that you created above, and select **Edit Test**. The Performance Test Designer window opens, displaying the Workload tab.

**b Select a workload.**

In the Workload Types dialog box, select the default workload type: Basic Schedule, by test, by number.

**c Assign a Controller.**

By default, a dedicated Automatch Controller is selected.

---

**Note:** A dedicated Automatch Controller functions as a Controller only, and cannot perform the functions associated with other hosts, such as load generators or data processors.

---

**d Add Vuser scripts.**

Click the **Select Scripts** button. The scripts you uploaded are displayed in the Scripts Tree in the right pane. Select scripts for the test, and click the left arrow button to add them to the test. A Vuser group is created for each script, with a default of 10 Vusers.

**e Distribute load generators among the Vuser groups.**

In the **LG Distribution** box, keep the default selection, **Assign all to each group**, and in the **LG** box, enter the desired number of load generators to be assigned to each group—enter **1**.

**f Define a test schedule.**

In the Global Scheduler pane, keep the default scheduler actions or modify them as desired. The available scheduler actions are:

- ▶ **Initialize.** Instructs the Scheduler to prepare the Vusers so that they are ready to run.
- ▶ **Start Vusers.** Instructs the Scheduler to start running the Vusers.
- ▶ **Duration.** Instructs the Scheduler to continue running the current action for the specified amount of time.
- ▶ **Stop Vusers.** Instructs the Scheduler to stop the running Vusers.

---

**Tip:** The schedule graph on the right of the Scheduler pane provides a graphical representation of the schedule actions defined in the Actions grid.

---

**g Select monitor profiles.**

Click the **Monitors** tab and click **Add Monitor Profile**. The defined monitor profiles are displayed in the Monitor Profiles Tree in the right pane. Select monitor profiles for the test, and click the left arrow button to add them to the Monitor Profiles grid.



**h Select a topology.**



Click the **Topology** tab and click **Select Topology**. The topology you created earlier appears in the Topologies Tree in the right pane. Select the topology, and click the left arrow button to select it for the test.

**i Save the test.**

When you are finished designing the test, click **Save**. A message is displayed in the bottom-left corner of the Performance Test Designer window. Verify that the test was saved without errors and is valid.

**7 Add the test to a test set.**



- a** On the ALM sidebar, under **Testing**, select **Test Lab**.
- b** Click the **New Folder** button. Specify a name for the folder.
- c** In the tree, right-click the new folder, and select **New Test Set**. The New Test Set dialog box opens.
- d** Enter a name for the test set, and in the **Type** box, select **Performance**.
- e** In the tree, select the new test set, and in the right pane, click the **Execution Grid** tab.
- f** Click **Select Tests**. The performance tests defined in the Test Plan module are displayed on the right, under the Test Plan Tree tab. Select the desired test and drag it to the execution grid.

**8 Reserve a timeslot for the test.**

Decide on a time in the future to run the test, and reserve a timeslot to ensure that the required resources are available.



- a** Under **Testing**, select **Timeslots**.
- b** In the Timeslots module calendar view, click the **New Timeslot** button. The Timeslot Reservation dialog box opens.
- c** Define the following information:
  - **Name**. Enter a name for the timeslot.
  - **Start Time**. Enter a start time for the timeslot.
  - **Duration**. Set the duration for the performance test.

- ▶ **Test.** Navigate to the test set you created above, and link the test instance to the timeslot. The number of Vusers and the hosts (Controller and load generators) defined in the test are displayed under **Vusers** and **Requested Hosts** respectively.
- ▶ **Vusers.** You can reserve more Vusers in addition to those defined for the test.
- d** To set the test to start running at the beginning of the timeslot, select **Autostart**.
- e** (Optional) Click **Add Automatch Host** or **Add Specific Host** to reserve additional load generators for the timeslot. There must be a Controller and at least one load generator requested for the timeslot.
- f** Click **Calculate Availability**. ALM calculates the availability of the requested resources during the selected timeslot. The result of this calculation is displayed in the Timeslot Status tab, as well as graphically on the time chart.

If the timeslot cannot be reserved, reselect your resources taking into account the reasons displayed in the Timeslot Status tab.
- g** If the requested resources are available, click **Submit** to save the timeslot.

## 9 Run the test.

- a** Under **Testing**, select **Test Plan**.
- b** Right-click the test in the tree, and select **Run Test**. The Select Timeslot dialog box opens, displaying available timeslots for running the test, including the timeslot you created above.

---

**Note:** If no timeslot was reserved in the Timeslots module, the Select Timeslot dialog box can be used to create one.

---

- c** Select a timeslot in the grid and click **Run**.

---

**Note:** Running a test directly from the Test Plan module should only be used as a shortcut option, and not as a complete test execution method. The Test Lab module is specifically designed to manage test execution, and it is recommended to always first add the test to a test set before considering using the shortcut provided. The main purpose of the shortcut is to enable running previously designed tests without having to return each time to the Test Lab module.

---

### **10 Track existing performance test runs.**

Under **Testing**, select **Test Lab**, and click the **Test Runs** tab. In this tab, you can track the state of existing test runs, as well as perform other post-run actions, such as collate, analyze, recalculate the SLA, and generate and view HTML reports.



# 4

---

## Performance Center Configuration Options

The Performance Center system comes with default configuration settings. These settings enable you to use Performance Center for its intended purpose. This chapter describes additional tuning and configuration to help you get the most out of your Performance Center system.

---

**Note:** Not all the procedures in this chapter are suitable for all usage scenarios. You should assess which procedures are suitable to your system's needs.

---

**This chapter includes:**

- ▶ Configuring Host Security Settings on page 106
- ▶ Configuration for Windows XP Professional on page 107
- ▶ Configuring IIS on Performance Center Machines to Use SSL on page 108
- ▶ Working with Performance Center Agent on page 115
- ▶ Configuration for HP Load Generator (Linux) on page 117
- ▶ Establishing Connectivity with Oracle on page 119
- ▶ Enabling Downloading Standalone Applications on page 120
- ▶ Enabling MS-SQL Windows Authentication on page 123

## Configuring Host Security Settings

The need to secure communication channels from hackers attacking the corporate networks is critical. The ability to secure communication channels ensures confidentiality, integrity, and the user's authenticity within the scope of the testing application.

Secure communication is established between Performance Center hosts using a **security key**. This security key must be defined on each host. Then, as long there is one host with security enforced, secure channels can be established between that host and other hosts.

You configure initial security settings locally on the host using the **Host Security Setup** utility. To run this utility, on the host machine select **Start > Program Files > Performance Center Host > Tools > Host Security Setup**.

Another utility, the **Host Security Manager**, which is installed on the Performance Center Server machine, can be used to remotely and simultaneously update security settings on all the hosts. You can use the Host Security Manager to:

- Update the security key of all the hosts in the system simultaneously.
- Change the mode of security on selected hosts. That is, you can enforce selected hosts to communicate over secure channels, or allow selected hosts to communicate over non-secure channels.

---

**Note:** Initial security settings must be set locally on each host using the Host Security Setup utility. After that, the Host Security Manager utility can be used to update security settings on all of the hosts.

---

For more information about configuring secure host communication, see the *HP ALM Performance Center Guide*.

## Configuration for Windows XP Professional

If you are running Windows XP, the Windows Firewall is turned on by default. The firewall does not allow Performance Center components to function as designed and must be turned off on all host machines on which the upload/download features are used.

---

**Note:** Turning off the Windows Firewall increases the risk to your computer's security.

---

### To turn off the Windows Firewall:

- 1** Select **Start > Settings > Control Panel > Security Center** (not in Advanced look of Control Panel).
- 2** Click **Windows Firewall**.
- 3** In the General tab select **Off**.

For each process that needs the firewall, you can unblock the process by:

- clicking the unblock button in the popup window that indicates that the program needs it
- tuning the Windows Firewall manually from the Exceptions tab

## Configuring IIS on Performance Center Machines to Use SSL

IIS (Microsoft Internet Information Server) is a prerequisite software for the Performance Center Servers. You can configure the IIS Performance Center virtual directories (**PCS** and **LoadTest**) to use SSL (Secure Socket Layer).

This section describes how to configure IIS Performance Center virtual directories to use SSL.

### Before You Configure IIS

IIS uses port 443 to work over SSL. However, certain Performance Center components may also be configured to use this port. Therefore, you need to ensure that port 443 is available to be used by IIS and configure these Performance Center components to use a port other than 443.

---

**Note:** The **Remote Management agent** may be configured to use port 443.

---

### Changing the Port on the Remote Management Agent

On all Performance Center Server machines, you need to change the port being used by the Remote Management agent for over firewall communication.

**To change the port on the Remote Management agent:**

- 1** On the Performance Center Server machine, open <Performance Center Server installation directory>\al\_agent\dat\mdrv.dat in a text editor.
- 2** In the [launcher] section add the following line:

```
OFWPort=<port_number>
```

where <port\_number> is the port you want to open. Enter a number other than 443.

- 3** In the same directory, open the file **channel\_configure.dat** in a text editor.

- 4 In the **[General]** section add the following line:

```
OFWPort=<port_number>
```

where **<port\_number>** is the port you want to open. Enter the same number that you entered in step 2.

- 5 Restart the Remote Management agent service for the configuration changes to take effect. To restart the service, select **Start > Run** and type `services.msc`. The Services dialog box opens. Locate the service **RemoteManagement Agent Service** and restart it.

## Configuring IIS to Work Over SSL

This section describes the basic steps involved in setting up IIS on the Performance Center Server machine to use SSL.

**To configure IIS to use SSL on the Performance Center Server machine:**

- 1 Create the SSL certificate.
- 2 Install the certificate you created onto the relevant machine that you are configuring for SSL.
- 3 Install the certificate on the Performance Center Server that needs to communicate with the relevant machine that you are configuring for SSL.

The certificate should appear in the Microsoft Management Console under **Certificates (Local Computer) > Trusted Root Certification**.

---

**Note:** For more information about how to configure IIS with SSL, see <http://support.microsoft.com/>

---

## Configure IIS to Support Internal Communication

The following steps must be performed to enable secure internal communication on the Performance Center Server and Hosts.

### To support internal communication on the Performance Center Server:

- 1 Configure IIS to support SSL on port 443 as described above.
- 2 Edit the **web.config** file located in the following path: `<install path>\PCS`
  - a Under the `<system.servicemodel><services>` tag, there are six areas where the following comment appears: **Uncomment to enable SSL**. Uncomment the XML lines which appear thereafter. For example:

Before:

```
<!-- Uncomment to enable SSL -->
<!-- endpoint binding="basicHttpBinding"
bindingConfiguration="BasicHttpBinding_TransportSecurity"
contract="HP.PC.PCS.ILabService">
<identity><dns value="localhost"/></identity>
</endpoint -->
```

After:

```
<!-- Uncomment to enable SSL -->
<endpoint binding="basicHttpBinding"
bindingConfiguration="BasicHttpBinding_TransportSecurity"
contract="HP.PC.PCS.ILabService">
<identity><dns value="localhost"/></identity>
</endpoint>
```

- b Under the `<system.servicemodel><behaviors>` tag, there are six areas where the **httpsGetEnabled** parameter is set to **false**. Change each one so that the parameter is set to **true**. For example:

Before:

```
<serviceMetadata httpGetEnabled="true" httpsGetEnabled="false" />
```

After:

```
<serviceMetadata httpGetEnabled="true" httpsGetEnabled="true" />
```

- 3 Add the Performance Center Server to ALM and define the Internal URL to connect through port 443. The URL must begin with **https**.

**To support internal communication on a host:**

- 1 Configure SSL on the host for port 8731. For details, refer to the Microsoft Web Site: How To Configure a Port with an SSL Certificate, using the following URL: <http://msdn.microsoft.com/en-us/library/ms733791.aspx>.
- 2 Edit the **LtopSvc.exe.config** file located in the following path: **<install path>\bin**
  - a Under the **<system.servicemodel><bindings><basicHttpBinding>** tag, there are two areas where the following comment appears:  
**Uncomment to enable SSL**. Uncomment the XML lines which appear thereafter. For example:

Before:

```
<binding name="BasicHttpBinding_ILoadTestingService"
closeTimeout="00:10:00"
    openTimeout="00:01:00" receiveTimeout="00:20:00"
sendTimeout="00:10:00"
    allowCookies="false" bypassProxyOnLocal="false"
hostNameComparisonMode="StrongWildcard"
    maxBufferSize="2147483647" maxBufferPoolSize="2147483647"
maxReceivedMessageSize="2147483647"
    messageEncoding="Text" textEncoding="utf-8" transferMode="Buffered"
    useDefaultWebProxy="true">
    <readerQuotas maxDepth="2147483647"
maxStringContentLength="2147483647" maxArrayLength="2147483647"
    maxBytesPerRead="2147483647"
maxNameTableCharCount="2147483647" />
    <!-- Uncomment to enable SSL -->
    <!--<security mode="Transport">
    <transport clientCredentialType="None"/>
    </security>-->
</binding>
```

After:

```
<binding name="BasicHttpBinding_ILoadTestingService"
closeTimeout="00:10:00"
    openTimeout="00:01:00" receiveTimeout="00:20:00"
sendTimeout="00:10:00"
    allowCookies="false" bypassProxyOnLocal="false"
hostNameComparisonMode="StrongWildcard"
    maxBufferSize="2147483647" maxBufferPoolSize="2147483647"
maxReceivedMessageSize="2147483647"
    messageEncoding="Text" textEncoding="utf-8" transferMode="Buffered"
    useDefaultWebProxy="true">
    <readerQuotas maxDepth="2147483647"
maxStringContentLength="2147483647" maxArrayLength="2147483647"
    maxBytesPerRead="2147483647"
maxNameTableCharCount="2147483647" />
    <!-- Uncomment to enable SSL -->
    <security mode="Transport">
        <transport clientCredentialType="None"/>
    </security>
</binding>
```



- b** Under the `<system.servicemodel><services>` tag, switch between the non-secured and secured endpoints and base addresses. For example:

Before:

```
<endpoint contract="HP.PC.LTOP.Services.ILoadTestingService"
address="LoadTestingService" name="basicHttp" binding="basicHttpBinding"
bindingConfiguration="BasicHttpBinding_ILoadTestingService"/>

    <!-- Use the first endpoint for regular communication and the second
endpoint for SSL -->
    <endpoint contract="IMetadataExchange" binding="mexHttpBinding"
name="mex" />
    <!--<endpoint contract="IMetadataExchange" binding="mexHttpsBinding"
name="mex" />-->

    <host>
    <baseAddresses>
    <!-- Use the first address for regular communication and the second
address for SSL -->
    <add baseAddress="http://localhost:8731/LTOP/LoadTestingService"/>
    <!--<add
baseAddress="https://localhost:8731/LTOP/LoadTestingService"/>-->
    </baseAddresses>
    </host>
</service>
```

After:

```
<service name="HP.PC.LTOP.Services.LoadTestingService"
behaviorConfiguration="CommonBasicHTTPBehavior">
  <endpoint contract="HP.PC.LTOP.Services.ILoadTestingService"
address="LoadTestingService" name="basicHttp" binding="basicHttpBinding"
bindingConfiguration="BasicHttpBinding_ILoadTestingService"/>

  <!-- Use the first endpoint for regular communication and the second
endpoint for SSL -->
  <!-- <endpoint contract="IMetadataExchange" binding="mexHttpBinding"
name="mex" />-->
  <endpoint contract="IMetadataExchange" binding="mexHttpsBinding"
name="mex" />

  <host>
    <baseAddresses>
      <!-- Use the first address for regular communication and the second
address for SSL -->
      <!--<add
baseAddress="http://localhost:8731/LTOP/LoadTestingService"/>-->
      <add baseAddress="https://localhost:8731/LTOP/LoadTestingService"/>
    </baseAddresses>
  </host>
</service>
```

- c Under the `<system.servicemodel><behaviors><serviceBehaviors><behaviorname="CommonBasicHTTPBehavior">` tag, change the `httpGetEnabled` parameter to **false**, and the `httpsGetEnabled` parameter to **true**. For example:

Before:

```
<serviceMetadata httpGetEnabled="true" httpsGetEnabled="false" />
```

After:

```
<serviceMetadata httpGetEnabled="false" httpsGetEnabled="true" />
```

- 3 Restart Windows on the host.

- 4 On the Performance Center Server, edit the **PCS.config** file, located in the `<install path>\dat` path, as follows: Change the value of the **ItopIsSecured** parameter to **true**. For example:

Before:

```
<PCSSettings ItopPortNumber="8731" ItopIsSecured="false"
StartRunMaxRetry="3" DataProcessorPendingTimeoutMinutes="2880"/>
```

After:

```
<PCSSettings ItopPortNumber="8731" ItopIsSecured="true"
StartRunMaxRetry="3" DataProcessorPendingTimeoutMinutes="2880"/>
```

- 5 Restart IIS on the Performance Center Server.

## Working with Performance Center Agent

The Performance Center Agent runs on the Load Generators and enables communication between the Controller, Load Generators, and MI Listeners (in over firewall configurations). The agent receives instructions from the Controller to initialize, run, pause, and stop Vusers. At the same time, the agent also relays data on the status of the Vusers back to the Controller.

To check the agent's current configuration, move your mouse over the Agent's icon in the Task Bar area, and read the description. The description will display either **Performance Center Agent Service** or **Performance Center Agent Process**.

### Running the Performance Center Agent as a Process

In some cases, such as SAPGUI replay, running GUI Vusers on remote machines, or terminal sessions, the Performance Center Agent must run as a process.

To change the Performance Center Agent from a service to a process:

- On the host machine, select **Start > Programs > HP Software > HP Performance Center Host > Tools > Performance Center Runtime Settings Configuration**, and select **Manual log in to this machine**.

## Running the Performance Center Agent as a Service

In most cases, the Performance Center Agent runs as a service.

**To change the Performance Center Agent from a process to a service:**

- ▶ On the host machine, select **Start > Programs > HP Software > HP Performance Center Host > Tools > Performance Center Runtime Settings Configuration**, and select **Allow virtual users to run on this machine without user login**, and enter a valid user name and password.

## Configuring the Agent on Load Generator Machines

When working with protocols that use network files or Web protocol Vusers that access the Internet through a proxy server, the Load Generator agent must have network privileges. Note that the default user created by Performance Center, **IUSR\_METRO**, does not have network privileges.

By default, the agent runs as a service on the Load Generator machines. You can either run the agent as a process or you can continue running the agent as a service. To continue running it as a service, configure it to run the session using the local system account or another user account with network access privileges.

## Running SAPGUI Vusers

To run SAPGUI Vusers on a remote host, make sure of the following:

- ▶ The Performance Center agent is configured to run as a process (as described in "Running the Performance Center Agent as a Process" on page 115).
- ▶ A user with administrative privileges is logged on to the host machine during run-time.

## Mapping Network Drives when Running Agent as Service

For all Windows platforms, when the user is logged off, the service cannot resolve the mapping of network drives. For Windows XP, the service also cannot resolve the mapping of network drives when the user is logged on.

In cases when the service cannot work with mapped network drives, use the full path to the directory, for example, <\\<machine-name>\<directory>\>.

## Configuration for HP Load Generator (Linux)

You can increase the number of file descriptors, process entries, and amount of swap space by configuring the kernel, as described in this section.

This section includes recommendations for improving Load Generator performance. This section includes:

- "Increasing Process Entries" on page 117
- "Increasing File Descriptors" on page 117
- "Increasing Swap Space" on page 119

### Increasing Process Entries

Each Vuser requires several free process entries. To increase the number of process entries on your system, you must reconfigure the kernel.

This section describes how to reconfigure the kernel for Linux.

- 1** Locate the `/etc/security/limits.conf` file.
- 2** Set the maximum number of processes in the limits file. Type:

```
hard nproc 8192
```

- 3** Reboot the machine.

### Increasing File Descriptors

A Load Generator uses the following **File Descriptor** resources:

- 14 file descriptors for the launch service
- 20 file descriptors for the agent
- 30 file descriptors for each Vuser driver. By default, there is a driver for every 50 Vusers.

For example, to compute the number of file descriptors used in running 100 threaded Vusers, the Load Generator requires:

14	for the launcher
20	for the agent
60	for 2 drivers (30 x 2, each one drives 50 Vusers)
200	for 100 Vusers (each Vuser requires 2)

**Total:** 294 File Descriptors

If Vusers are run as processes instead of threads, one driver is run per Vuser. Therefore, each Vuser requires 30 file descriptors.

The procedure to increase the number of file descriptors differs between platforms and shells.

In these examples, the number of descriptors is increased to the maximum of 1024.

- For sh and ksh users, type:

```
ulimit -n 1024
```

- For csh users type:

```
limit descriptors 1024
```

This section describes some alternate procedures to increase file descriptors on Linux operating systems. In these examples, the number of descriptors is increased to the maximum of 8192.

**To increase file descriptors on Linux operating systems:**

- 1 Add the following line to the `/etc/security/limits.conf` file:

```
hard nfile 8192
```

- 2 Add the following line to the `/etc/sysctl.conf` file:

```
fs.file-max = 8192
```

- 3 Reboot the machine.

## Increasing Swap Space

Each Vuser requires swap space ranging from 200 KB to 4 MB. Before adding space to your system configuration, you should determine your paging requirements. For environments running programs with very large memory requirements, it is recommended to have paging space of four times the physical memory. If you do not have enough paging space, certain processes may be killed, and others will be unable to start.

## Establishing Connectivity with Oracle

When working with Oracle, ensure that the Oracle client is installed on the same machine as the Performance Center Server and that connectivity is established with the Oracle Server.

The `tnsnames.ora` file located on the Performance Center Server (for example: `..\oracle\product\10.2.0\client_1\NETWORK\ADMIN\tnsnames.ora`) must contain a TNS entry for the source and target database servers. This entry can be copied from the `tnsnames.ora` file on the Oracle server to the Oracle client machine.

For example, for the Oracle database instance, **ALMInst**, the **tnsnames.ora** file, should contain the following entry:

```
ALMInst =  
(DESCRIPTION =  
  (ADDRESS_LIST =  
    (ADDRESS = (PROTOCOL = TCP)(HOST = <db_host>)(PORT = 1521))  
  )  
(CONNECT_DATA =  
  (SERVICE_NAME = ALMInst)  
)  
)t
```

**To test that the TNS name entry is properly configured:**

- 1 On the Performance Center Server machine, open a command prompt.
- 2 Type:

```
sqlplus <user/password>@<instancename>
```

where <instancename> is the name of the current instance.

- 3 Verify that you are successfully connected to the Oracle server.

## Enabling Downloading Standalone Applications

This section explains the steps necessary to enable you to download standalone applications from the Download Applications window.

---

**Note:** To access the Download Applications window, in Lab Management or in the ALM project, select **Tools > Download Standalone Applications**.

---



**To enable downloading standalone applications:**

- 1** Insert the HP ALM Performance Center Additional Components installation disk (DVD 2) and navigate to the **Additional Components** directory. This directory contains the applications' execution (.exe) files.
- 

**Note:** The necessary .exe files for downloading VuGen, Analysis, Snapshot Viewer, Standalone Load Generator, Monitor over Firewall, and MI Listener, are located in the **Applications** directory, which is contained within the **Additional Components** directory.

---

- 2** On the Performance Center server, navigate to the **Downloads** directory, which is located in **C:\Program files\HP\Performance Center Server\PCWEB\Downloads**.
  - 3** To enable downloading an application, copy the relevant execution file (.exe) from the **Additional Components** directory on the DVD to the **Downloads** directory on the Performance Center server.
- 

**Note:** You may need to refresh the Download Applications window for the changes to take effect.

---

## Customizing the Download Applications Window

You can edit and customize the appearance of the Downloads Applications window. To customize the window, edit the **downloads.xml** file located in the **Downloads** directory on the Performance Center server.

The following tags in the **downloads** file control the following features on the window. Edit the tags as desired to change the appearance of the window.

- **App Name.** The name of the application.
- **Image.** Whether the application's icon appears to the left or to the right of the name.
- **File Name.** If you changed the name of the application's execution file, you must update this section so that it matches the new name of the execution file.
- **Description.** The application's description.

## Enabling MS-SQL Windows Authentication

This section describes how to configure an MS-SQL database with Windows authentication.

---

**Note:** The procedure below requires you to make changes to the MS-SQL database. It is strongly recommended that you make these changes using the SQL Server Management Studio tool.

---

### To enable Windows authentication:

- 1** Verify that the Performance Center Server, ALM Platform, and database server, all belong to the same domain, and that there is a domain user with administrator privileges common to all the machines.
- 2** Change users to domain users using the System Identity Utility. For more information, see the “Performance Center System Administration” chapter in the *HP ALM Performance Center Guide*.
- 3** Download the SQL Server Management Studio tool from the Microsoft Download Center (<http://www.microsoft.com/downloads/en/default.aspx>).
- 4** In SQL Server Management Studio, perform the following actions:
  - a** In the Object Explorer pane, expand the **Security** folder.
  - b** Right-click **Logins** and select **New Login**.
  - c** Enter the domain user in the **Login name** box, and make sure that **Windows Authentication** is selected.

---

**Note:** Verify that the domain user is assigned the same **Server Roles** as the database administrative user (**td\_db\_admin**).

---

- 5** Make sure that the relevant project is created in Site Administration with the **MS-SQL (Win Auth)** database type. For more information, see the “Configuring Servers and Parameters” chapter in the *HP Application Lifecycle Management Administrator Guide*.



# Part III

---

## Upgrade and Migration



# 5

---

## Working with Previously Created Performance Center Projects

This chapter provides instructions for working with previously created projects.

**This chapter includes:**

- ▶ Working with Previously Created Projects on page 128
- ▶ The Migration Process: Basic Steps on page 129
- ▶ Pre-Migration Preparation and Considerations on page 130
- ▶ Backing Up Performance Center Data on page 132
- ▶ Uninstalling Earlier Versions of Performance Center on page 133
- ▶ Installing and Configuring ALM Performance Center 11.50 on page 136
- ▶ Verifying Successful Installation on page 136
- ▶ Migrating Performance Center Data on page 136
- ▶ Post-Migration Verification on page 163
- ▶ Post Migration Considerations on page 165

## Working with Previously Created Projects

To work with a project from a previous version, you may need to upgrade or migrate your project to HP ALM Performance Center 11.50. The following table describes the process required for working with a previously created project.

From Version	To ALM Performance Center 11.50
<b>Performance Center 11.00</b>	Upgrade to Performance Center 11.50. For details, see the <i>HP Application Lifecycle Management Installation Guide</i> and the <i>HP Application Lifecycle Management Administrator Guide</i> .
<b>Performance Center 9.51</b>	Migrate to Performance Center 11.50. For details, see "The Migration Process: Basic Steps" on page 129.
<b>Performance Center 9.5 and earlier</b>	<ol style="list-style-type: none"> <li><b>1</b> Migrate to Performance Center 9.51.</li> <li><b>2</b> Migrate to Performance Center 11.50.</li> </ol> For details, see "The Migration Process: Basic Steps" on page 129.



## The Migration Process: Basic Steps

This section provides a general outline of the steps that you need to carry out to migrate your current version of Performance Center (versions 8.1 to 9.51) to HP ALM Performance Center 11.50.

---

**Note:** If you are currently working with Performance Center 11.00, you will need to upgrade to Performance Center 11.50. For details, see the *HP Application Lifecycle Management Installation Guide* and the *HP Application Lifecycle Management Administrator Guide*.

---

### To migrate to Performance Center 11.50:

**1 Review the process required for working with a previously created project.**

For details, see "Working with Previously Created Projects" on page 128.

**2 Prepare your system for the migration process.**

For details, see "Pre-Migration Preparation and Considerations" on page 130.

**3 Back up Performance Center data.**

For details, see "Backing Up Performance Center Data" on page 132.

**4 Uninstall the current version of Performance Center.**

This step is relevant only when migrating on a production environment. When migrating on a staging environment do not uninstall or clean any of the machines in your current environment.

For details, see "Uninstalling Earlier Versions of Performance Center" on page 133.

**5 Install and Configure HP ALM Performance Center 11.50.**

For details, see "Installing and Configuring ALM Performance Center 11.50" on page 136.

**6 Verify that the ALM Performance Center environment was installed correctly.**

For details, see "Verifying Successful Installation" on page 136.

**7 Migrate the data.**

Use the Performance Center Migration tool to migrate your Performance Center data to HP Performance Center 11.50.

---

**Performance Center 9.5 and earlier:** If you are migrating from Performance Center version 8.1 through Performance Center version 9.50, you must first run the Performance Center 9.51 Migration Tool. This tool is located in a subdirectory of the ALM Performance Center 11.50 Migration Tool installation directory (`..\ALM Migration\DBMigrationTool95\DBMigration95_SP1.exe`).

---

For details, see "Migrating Performance Center Data" on page 136.

**8 Verify that the data was migrated successfully.**

For details, see "Post-Migration Verification" on page 163 and "Post Migration Considerations" on page 165.

## Pre-Migration Preparation and Considerations

Before you start migrating to HP ALM Performance Center 11.50:

- ▶ Estimate how long the installation, configuration, and the migration process will take and ensure that no timeslots are reserved from the time you start the migration process until you expect it to be complete.

For example, if you start the migration process today, and expect it to take 2 days, ensure that there are no timeslots reserved for the next 2 days.

- Ensure that there are no tests with any of the following run states:

<b>Ready</b>
<b>Collating Results</b>
<b>Running</b>
<b>Stopping</b>
<b>Creating Analysis Data</b>
<b>Deleting Temporary Results</b>

If there are runs in any of these states, make sure that the current operation finishes before you start the migration process.

To check the run state of the test, do one of the following:

- Check in the Performance Center Administration Site, on the Test Runs page (**Site Management > Test Runs**)
- Run the following query on the Performance Center source database:

```
SELECT * FROM SessionRuns WHERE State in (1,2,3,7,8,13)
```

- Some tests may have finished running but may still be in the **Before Collating** or **Before Analyzing** state. To avoid losing data from these runs, you must collate and analyze the run results before performing the migration.
- Ensure that all host machines configured in the Administration Site actually exist. If a host does not exist, is turned off, or does not have a network connection, you must delete it from the Administration Site resources to prevent configuration problems later on.
- To avoid file server and database conflicts, stop IIS on all Performance Center Web server machines before backing up the data.

## Backing Up Performance Center Data

Before performing database migration you must back up your current Performance Center data.

---

**Note:** Make sure that the file system backup is synchronized with the database backup. To avoid file server and database conflicts, we recommend stopping IIS on all Performance Center Web server machines before backing up the data.

---

This section includes:

- "Backing Up Host Data" on page 132
- "Backing Up the File System" on page 132
- "Backing Up the MI\_LRDB Database" on page 133

### Backing Up Host Data

To avoid data loss from test runs that have not yet been collated or analyzed, perform the following steps before you start migrating the system and data:

- Collate and analyze results from the load test runs on the User Site.
- Delete all unnecessary runs.
- Back up the **Temp** and **orchidtmp** directories on each host machine. To locate a machine's **Temp** directory, open Windows Explorer, type %temp% in the address bar, and press **Enter**. To locate the **orchidtmp** directory, navigate to <Performance Center directory>\orchidtmp.

### Backing Up the File System

Before migrating the Performance Center file system, you must back up the user data folders to protect your data in case of migration error.

- 1** On the File Server machine, open the <Performance Center directory>\LRFS directory.
- 2** Create a backup copy of the entire **LRFS** directory on a separate machine.

**Note:** After the file system data is backed up, this data becomes the source data for migration, and you should not continue working on your current version of Performance Center.

In addition, we strongly recommend that you copy the backed up LRFS directory to a location on the ALM server repository machine. This backed up copy is later used for migration.

---

### **Backing Up the MI\_LRDB Database**

Before performing database migration, you must create a database backup to protect your data in case of migration error.

For details about backing up and restoring your database, refer to the *HP ALM Database Best Practices Guide*.

## **Uninstalling Earlier Versions of Performance Center**

After backing up relevant data, you need to uninstall earlier versions of Performance Center and clean the machines.

---

**Note:** We support uninstallation of host machines only. We strongly recommend installing the Performance Center Server and other Performance Center components on clean machines with a new image.

---

#### **To uninstall Performance Center:**

- 1** From the Windows Control Panel, open the Add/Remove Programs dialog box.
- 2** Select **HP Performance Center** from the list of currently installed programs and click **Remove**.

- 3 Follow the instructions in the wizard to complete the uninstall process.
- 4 Reboot the machine.

**To clean Performance Center machines:**

- 1 Ensure that you have backed up the relevant Performance Center subdirectories. For details, see "Backing Up Performance Center Data" on page 132.
- 2 Delete the Performance Center directory.
- 3 Ensure that the virtual directories were deleted. If they were not removed automatically, delete them manually as follows:
  - On the User Site machine, in IIS:
    - Under **Default Web Site**, delete the **Loadtest** virtual directory.
    - Open the Default Web Site Properties window. In the **ISAPI Filters** tab, ensure that there are no filters. If there are filters, remove them.
  - On the Administration Site machine, in IIS, delete the **Admin** virtual directory, located under **Default Web Site**.
  - **If you are uninstalling Performance Center 9.0:** On all Performance Center machines, in IIS, delete the **PCWSApplicationPool** virtual directory, located under **Application Pools**.
- 4 Delete the **IUSR\_METRO** user and the crypto key from the **Crypto** directory: Delete the files starting with **f9416f003254e6f10da1fbad8e4c383\_** from **C:\Documents and Settings\All Users\Application Data\Microsoft\Crypto\RSA\MachineKeys**
- 5 Delete cookies and temporary internet files from your browser to avoid user interface problems (**Tools > Internet Options > General tab**).
- 6 **If you are uninstalling Performance Center 8.1:** Remove the Performance Center folder from the Start menu. To do this, right-click **Start** and select **Explore All Users**. The Start Menu folder opens. Double-click the **Programs** folder, and delete the Performance Center folder.

**7 If you are uninstalling Performance Center 8.1:** Clean the environment variables.

- ▶ **On all Performance Center machines:** From the **path** system variable, delete the following paths: (These are paths that include the old Performance Center installation folder.)
  - ▶ <Old PC Installation folder>\java\J-INTE~1\com\bin
  - ▶ <Old PC Installation folder>\DbSetup
  - ▶ <Old PC Installation folder>\bin

---

**Note:** Some of the above paths may not exist on all of the Performance Center machines.

---

To edit the path system variable, right-click **My Computer** and select **Properties**. In the **Advanced** tab, click **Environment Variables** to open the Environment Variables dialog box. In the **System Variables** area, select the **Path** variable and click **Edit**.

- ▶ **On the User Site server only:** Delete the following Environment variables:
  - ▶ CATALINA\_HOME
  - ▶ CLASSPATH
  - ▶ JAVA\_HOME
  - ▶ JINTEGRA\_HOME

**8** Reboot the machine.

## Installing and Configuring ALM Performance Center 11.50

After you have backed up your Performance Center data, and cleaned your machines, install and configure ALM Performance Center 11.50.

For details on installing ALM Performance Center 11.50, see Chapter 2, "Installing HP ALM Performance Center."

## Verifying Successful Installation

After you have installed and configured ALM Performance Center 11.50, and before you start migrating data from your previous version of Performance Center to the new production environment, create a staging environment and verify that the components were installed successfully. For details, see Chapter 3, "Post Installation Verification."

## Migrating Performance Center Data

This section explains how to migrate the Performance Center file system and database (versions 8.1, 9.0, 9.5, and 9.51) to ALM Performance Center 11.50.

This section includes:

- "Pre-Migration Considerations" on page 137
- "Copying and Restoring Backed Up Data" on page 137
- "Configuring the ALM Repository on a Linux system" on page 137
- "Performing the Migration" on page 143



## Pre-Migration Considerations

During the migration of the Performance Center source database, a data migration report and other tables are created and added to the source database. Check the disk space on the source database server to ensure that it can accommodate these extra tables.

---

**Note:** No users should be logged in to the system while the migration process is running.

---

## Copying and Restoring Backed Up Data

- ▶ If you backed up the host data (see "Backing Up Host Data" on page 132), you need to restore the **orchidtmp** and **temp** directories. To restore these directories, copy **orchidtmp** to the new installation directory (for example, C:\Program Files\HP\Performance Center Host\orchidtmp), and copy the **temp** directory to its original location on the host machines.
- ▶ To maximize performance during the migration process, copy the file system directory (**LRFS**) that you saved on a separate machine (see "Backing Up the File System" on page 132) to a directory on the same machine as the ALM server repository.
- ▶ Copy the backed up database (MI\_LRDB) on the database server that is to act as your source database server, and restore the database. For details about restoring your database, refer the *HP ALM Database Best Practices Guide*.

## Configuring the ALM Repository on a Linux system

If ALM is installed on a Linux system, you must configure the ALM server repository before migrating your Performance Center database and file system.

**To configure the ALM server repository:**

- 1** Log in to your ALM server repository machine.
- 2** Make sure Samba is installed on the machine.

3 Configure the following Samba files:

**Note:** Separate the domain and user names with a slash '/', for example: DOMAIN/username.

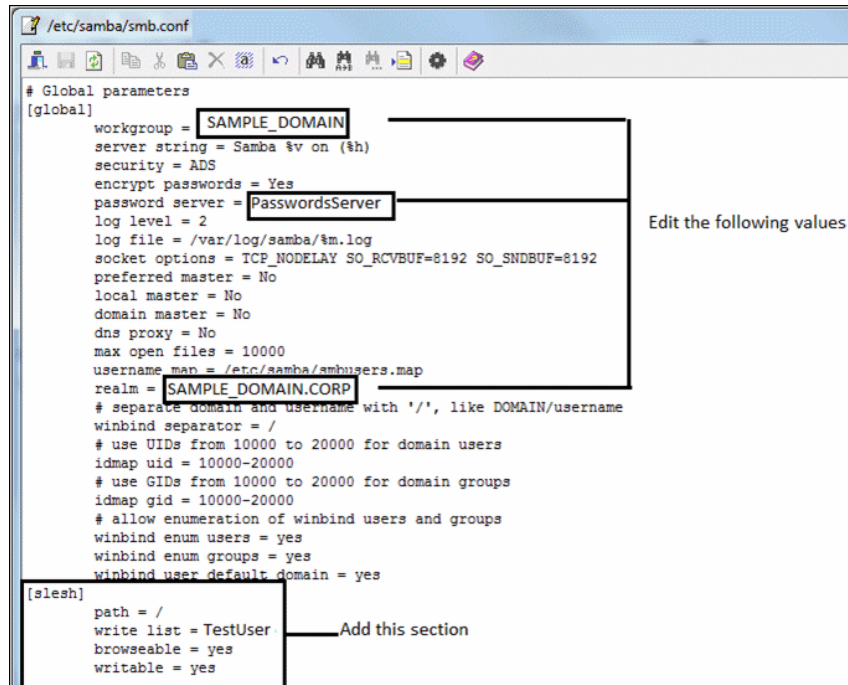
a Edit the following file: `/etc/samba/smb.conf`

- Under the `[global]` section, set the following attributes:

```
workgroup = <domain name>
password server = <domain controller>
realm = <domain name>
```

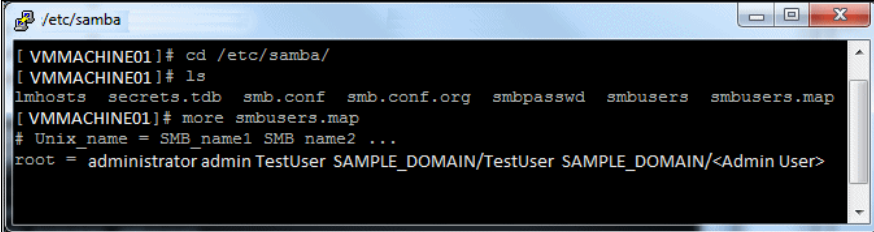
- Add the following section at the end of the file:

```
[slesh]
path = /
write list = user (For example: qcuser)
browseable = yes
writable = yes
```



- b** Create the file `/etc/samba/smbusers.map` with the following data:

```
root = administrator admin <username> <domain name>/<user name>
<domain>/<admin user on this domain>
```



```

/etc/samba
[VMMACHINE01]# cd /etc/samba/
[VMMACHINE01]# ls
lmhosts  secrets.tdb  smb.conf  smb.conf.org  smbpasswd  smbusers  smbusers.map
[VMMACHINE01]# more smbusers.map
# Unix_name = SMB_name1 SMB_name2 ...
root = administrator admin TestUser SAMPLE_DOMAIN/TestUser SAMPLE_DOMAIN/<Admin User>

```

- c** Edit the following file: `/etc/krb5.conf`

- Under the `[libdefaults]` section, set the following attribute:

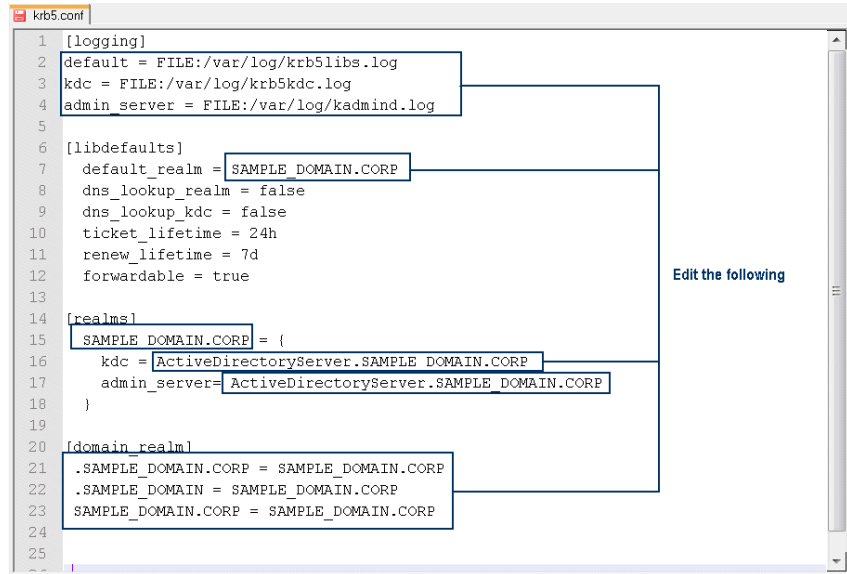
```
default_realm = <domain name>
```

- Under the `[realms]` section, set the following:

```
<domain name> = {
  kdc = <server name>
  admin_server = <server name>
}
```

- Under the **[domain\_realm]** section, set the following attributes:

```
.<full domain name> = <domain name>  
.<domain name> = <domain name>  
<full domain name> = <domain name>
```



```
krb5.conf  
1  [logging]  
2  default = FILE:/var/log/krb5libs.log  
3  kdc = FILE:/var/log/krb5kdc.log  
4  admin_server = FILE:/var/log/kadmind.log  
5  
6  [libdefaults]  
7  default_realm = SAMPLE_DOMAIN.CORP  
8  dns_lookup_realm = false  
9  dns_lookup_kdc = false  
10 ticket_lifetime = 24h  
11 renew_lifetime = 7d  
12 forwardable = true  
13  
14 [realms]  
15 SAMPLE_DOMAIN.CORP = {  
16   kdc = ActiveDirectoryServer.SAMPLE_DOMAIN.CORP  
17   admin_server= ActiveDirectoryServer.SAMPLE_DOMAIN.CORP  
18 }  
19  
20 [domain_realm]  
21 .SAMPLE_DOMAIN.CORP = SAMPLE_DOMAIN.CORP  
22 .SAMPLE_DOMAIN = SAMPLE_DOMAIN.CORP  
23 SAMPLE_DOMAIN.CORP = SAMPLE_DOMAIN.CORP  
24  
25  
--
```

Edit the following

- d Run the following command:

```
net ads join -U <administrator username on the domain>
```

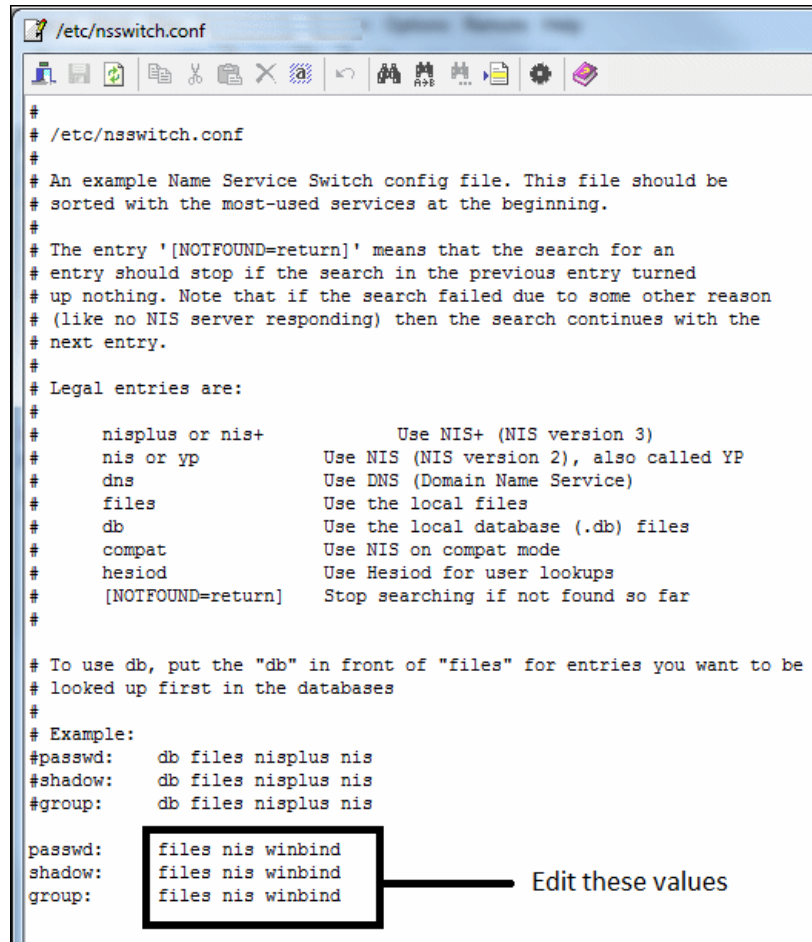


```
[VMMACHINE01 ~]# net ads join SAMPLE_DOMAIN.CORP -U <Admin user on this domain>
```

e Edit the following file: `/etc/nsswitch.conf`

Add the winbind option:

```
passwd: files nis winbind
shadow: files nis winbind
group: files nis winbind
```



```

# /etc/nsswitch.conf
#
# An example Name Service Switch config file. This file should be
# sorted with the most-used services at the beginning.
#
# The entry '[NOTFOUND=return]' means that the search for an
# entry should stop if the search in the previous entry turned
# up nothing. Note that if the search failed due to some other reason
# (like no NIS server responding) then the search continues with the
# next entry.
#
# Legal entries are:
#
#   nisplus or nis+      Use NIS+ (NIS version 3)
#   nis or yp           Use NIS (NIS version 2), also called YP
#   dns                 Use DNS (Domain Name Service)
#   files               Use the local files
#   db                 Use the local database (.db) files
#   compat             Use NIS on compat mode
#   hesiod              Use Hesiod for user lookups
#   [NOTFOUND=return]  Stop searching if not found so far
#
# To use db, put the "db" in front of "files" for entries you want to be
# looked up first in the databases
#
# Example:
#passwd:   db files nisplus nis
#shadow:  db files nisplus nis
#group:   db files nisplus nis
passwd:   files nis winbind
shadow:   files nis winbind
group:    files nis winbind

```

Edit these values

**f** Run the following commands:

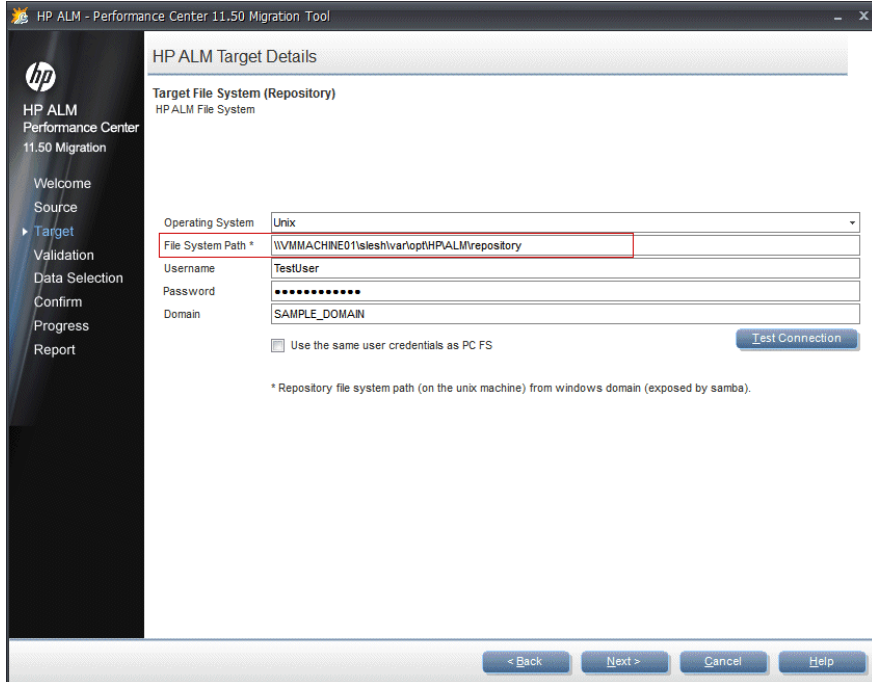
```
/etc/init.d/winbind start  
/etc/init.d/smb start
```

**g** Verify successful configuration.

From a Windows machine, check that you can navigate to the ALM server repository using the UNC path and the domain user you defined. For example,

\\<ALM server name>\sles\var\opt\HP\ALM\repository.

You can now migrate your Performance Center data using the HP ALM Performance Center Migration tool. When prompted enter the same repository path as above.



## Performing the Migration

This section describes how to install and run the HP ALM Performance Center Migration tool to migrate your Performance Center database and file system to the ALM database and repository.

---

**Note:** We recommend that you install and run the migration tool on the machine where the Performance Center Server is installed because the prerequisite software needed to run this tool is already installed on this machine.

---

**To migrate the data:**

### 1 Install the prerequisite software.

---

**Tip:** If you are performing the migration from the Performance Center Server machine, skip this step as the prerequisite software is already installed on this machine.

---

Ensure that the following prerequisite software has been installed on the machine on which you are going to install the migration tool:

- .NET Framework 4.0.
- Oracle client: If you are working with an Oracle database, ensure that the Oracle client is installed, and that connectivity has been established with the Oracle Server. Ensure that the **tnsnames.ora** file contains a TNS entry for the source and target database servers.

**Note:** You must install the 32-bit Oracle client installation, regardless of whether you are running the Performance Center Server on a 32-bit or 64-bit operating system.

## 2 Install the migration tool from the HP ALM Performance Center installation DVD.

- a Insert the HP ALM Performance Center installation DVD and run **setup.exe** (<installation disk root directory>\setup.exe). The HP ALM Performance Center installer menu page opens. Select **Performance Center Migration**.

Alternatively, you can launch **MigrationToolSetup.exe** from **..\Setup\Install\ALM Migration\Setup**.

- b The HP ALM Performance Center 11.50 Migration Installation wizard opens. Click **Next**.
- c Select an installation location. If ALM is installed on an Oracle database, in the **Destination Folder** box, change the default installation location to a valid path. The path cannot contain special characters.

For example, the following path is invalid because it contains parentheses: C:\Program Files (x86)\HP\ALM Migration.

- d Click **Next**. The Confirm Installation page opens.
- e Click **Next** to start the installation process.
- f When the installation completes, click the **View Summary** button to check for errors.
- g Click **Finish** to close the wizard. The MigrationToolStart.exe shortcut is added to your desktop.

## 3 Launch the ALM Performance Center 11.50 Migration Tool wizard.

---

**Performance Center 9.5 and earlier:** If you are migrating from Performance Center version 8.1 through Performance Center version 9.50, you must first run the Performance Center 9.51 Migration Tool. This tool is located in a subdirectory of the ALM Performance Center 11.50 Migration Tool installation directory (**..\ALM Migration\DBMigrationTool95\DBMigration95\_SP1.exe**).

---



Double-click the **MigrationToolStart.exe** shortcut on the desktop. Alternatively, navigate to the location where you installed the Migration tool, and run **MigrationToolStart.exe**. The ALM Performance Center 11.50 Migration Tool wizard opens on the Welcome page. Click **Next**.

#### 4 Provide the details of the source database.

On the HP Performance Center Source Details - Source Database page, enter the details of the HP Performance Center Database Server that contains the source database.

The screenshot shows the 'Performance Center Source Details' window. On the left is a navigation pane with the HP logo and menu items: Welcome, Source (selected), Target, Validation, Data Selection, Confirm, Progress, and Report. The main area is titled 'Performance Center Source Details' and contains the following fields:

- Source Database: Provide the details of the source database.
- Database Type: MS-SQL
- Database Server: vm14
- Authentication Type: SQL Server Authentication
- Username: sa
- Password: masked with dots
- Database Name: MI\_LRD

Buttons at the bottom include '< Back', 'Next >', 'Cancel', and 'Help'. A 'Test Connection' button is located at the bottom right of the form area.

- **Database Type.** Select the type of source database: **Oracle** or **MS-SQL**.

---

**Note:** You can migrate one type of database to another. That is, if the source Performance Center database is MS-SQL, you can migrate it to a target Oracle database in ALM; if the source Performance Center database is Oracle, you can migrate it to a target MS-SQL database in ALM. It is recommended to migrate all projects to the same database or server on which the Lab project is located.

---

- ▶ **Database Server. (MS-SQL only)** Enter the path and name of the source database server.

---

**Tip:** Click the **Browse** button to browse to a server instance where the database is installed.

---

- ▶ **Authentication type. (MS-SQL only)** Enter the method used to connect to the database: **SQL Server Authentication** or **Windows Authentication**.
- ▶ **SID. (Oracle only)** Enter the Service ID of the source database server as defined in the **tnsnames.ora** file.
- ▶ **Username and Password.** Enter the user name and password:
  - ▶ **For Oracle:** Enter the Performance Center database user (DB Name), for example, **MI\_LRDB**, and its password.
  - ▶ **For MS-SQL:** Enter the user name and password of the Performance Center database administrator user. When running the migration tool, always use the same database administrator user.
- ▶ **Database Name. (MS-SQL only)** Enter the name of the source database schema. By default, the schema name is **MI\_LRDB**.

Click **Test Connection** to verify that you can connect to the source database. If the connection fails, a message displays the possible reasons. In this case, verify that the details you provided are correct and that the database server is up and running.

Click **Next**.

## 5 Provide the details of the source file system.

On the HP Performance Center Source Details - Source File System (LRFS) page, enter the details of the directory containing the backed up Performance Center source file system (LRFS).

---

**Tip:** To avoid network traffic delays and for a more reliable migration, it is strongly recommended to save a copy of this directory in a location on the same machine and parallel to the ALM server repository.

---

HP ALM - Performance Center 11.50 Migration Tool

HP ALM  
Performance Center  
11.50 Migration

Welcome  
▶ Source  
Target  
Validation  
Data Selection  
Confirm  
Progress  
Report

Performance Center Source Details

**Source File System (LRFS)**  
The Performance Center file system directory (LRFS) contains scripts and results from previously run load tests. Provide the source file system location. We recommend to use a local copy of the source file system.

File System Path: \\wm14\LRFS  
Username: user1  
Password: \*\*\*\*\*  
Domain: domain1

Test Connection

< Back   Next >   Cancel   Help

- **File System Path.** Enter the path and name of the backed up copy of the source file system (LRFS) that you saved on the same machine as the ALM server repository.
- **Username and Password.** Enter the user name and password of a user with file system administration privileges on the backed up copy of the source file system (LRFS).
- **Domain.** Enter the domain in which the backed up copy of the source file system is located.

Click **Test Connection** to verify that you can connect to the backed up copy of the source file system. If the connection fails, a message displays possible reasons for the failure. In this case, verify that the details you provided are correct.

Click **Next**.

## 6 Provide ALM credentials.

On the HP ALM Target Details - Site Administration Details page, enter ALM Server details, and the credentials of the user with ALM administrative privileges.

- **ALM Platform URL.** Enter the URL of the ALM server in the following format:

```
http://<ALM server name>:<port number>/qcbin
```

For example, `http://alm_server139:8080/qcbin`.

- **Username and Password.** Enter the Site Administrator user name and password, as defined when installing ALM.

- ▶ **Communication Security Passphrase.** Enter the passphrase used for secure communication with ALM, as defined when installing ALM. To get this value, open Site Administration and click the **Site Configuration** tab. See the **COMMUNICATION\_SECURITY\_PASSPHRASE** parameter.

Click **Test Connection** to verify connectivity with ALM. If connectivity fails, a message displays possible reasons for the failure. In this case, verify that the details you provided are correct.

Click **Next**.

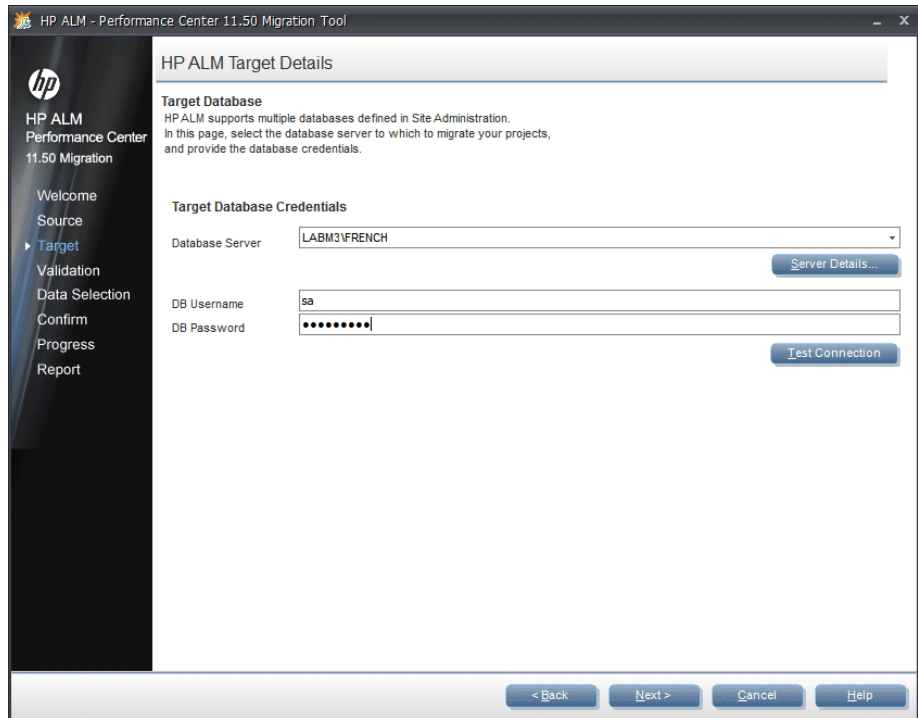
## 7 Provide the details of the target database.

On the HP ALM Target Details - Target Database page, enter the details of the ALM database server to which the source database is to be migrated.

---

**Note:** If you are performing the migration from a remote location:

- ▶ If you are migrating to an MS-SQL database, ensure that the MS-SQL Server name defined when configuring ALM is not **localhost** or **localhost\SQLSERVER**, and that its name is a full host machine name, for example, **DbServerMachine23.domain.it**.
  - ▶ If you are migrating to an Oracle database, the client configuration file (tnsnames.ora) must include a **servicename** section that is exactly the same as the **servicename** section located on the ALM client configuration. Click the **Server Details** button on the HP ALM Target Details - Target Database page to view the SID that must be used.
-



- **Database Server.** From the dropdown list, select a target ALM database server, as defined in ALM. Make sure to select the same database server on which the SA schema and Lab project are located.

Click the **Server Details** button to view the full details of the server.

---

**Note:** You can migrate one type of database to another. That is, if the source Performance Center database is MS-SQL, you can migrate it to a target Oracle database in ALM; if the source Performance Center database is Oracle, you can migrate it to a target MS-SQL database in ALM.

---

- **DB Username and DB Password.** Enter the password of the database administrator user.
- **Server Name (Oracle only).** The SID defined in the Server Details.

- ▶ **Tablespace and Temp Tablespace (Oracle only).** The tablespaces to which the projects are migrated. Verify that the tables have enough space to accommodate your migration content. The minimum free space required is 2 GB, for an empty project you need ~ 150 MB.

Click **Test Connection** to verify that you can connect to the database server. If the connection fails, a message displays possible reasons for the failure. In this case, verify that the details you provided are correct and that the database server is up and running.

Click **Next**.

### 8 Provide the details of the target file system directory.

On the HP ALM Target Details - Target File System (Repository) page, enter the details of the ALM server repository. The data in the Performance Center source file system directory (**LRFS**) is migrated to this repository.

The screenshot shows the 'HP ALM Target Details' window for 'Target File System (Repository)'. The left sidebar contains a navigation menu with options: Welcome, Source, Target (selected), Validation, Data Selection, Confirm, Progress, and Report. The main content area is titled 'HP ALM Target Details' and 'HP ALM File System'. It contains the following fields:

- Operating System: Windows (dropdown menu)
- File System Path: \\mydvm0550\Share
- Username: user2
- Password: masked with dots
- Domain: domain2

There is a checkbox labeled 'Use the same user credentials as PC FS' which is currently unchecked. A 'Test Connection' button is located to the right of the domain field. At the bottom of the window, there are four buttons: '< Back', 'Next >', 'Cancel', and 'Help'.



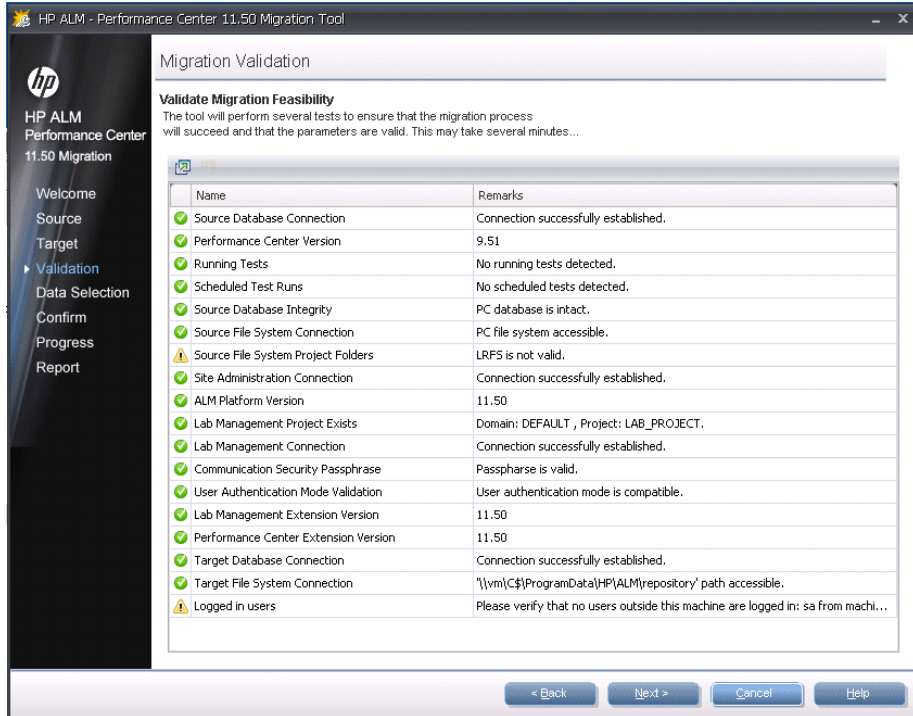
- **Operating System.** Select **Windows** or **UNIX**.
- **File System Path.** The path to the ALM server repository. The source file system (LRFS) will be migrated to this repository. This value is read-only and is taken directly from the ALM.
- **Username and Password.** Enter the user name and password of the user with file system administration privileges on the ALM server repository. To use the same user as the source file system directory (LRFS) user, select **Use the same user credentials as the PC FS**.
- **Domain.** Enter the user domain.

Click **Test Connection** to verify that you can connect to the ALM server repository. If the connection fails, a message displays possible reasons for the failure. In this case, verify that the details you provided are correct.

Click **Next**.

## 9 View the migration validation.

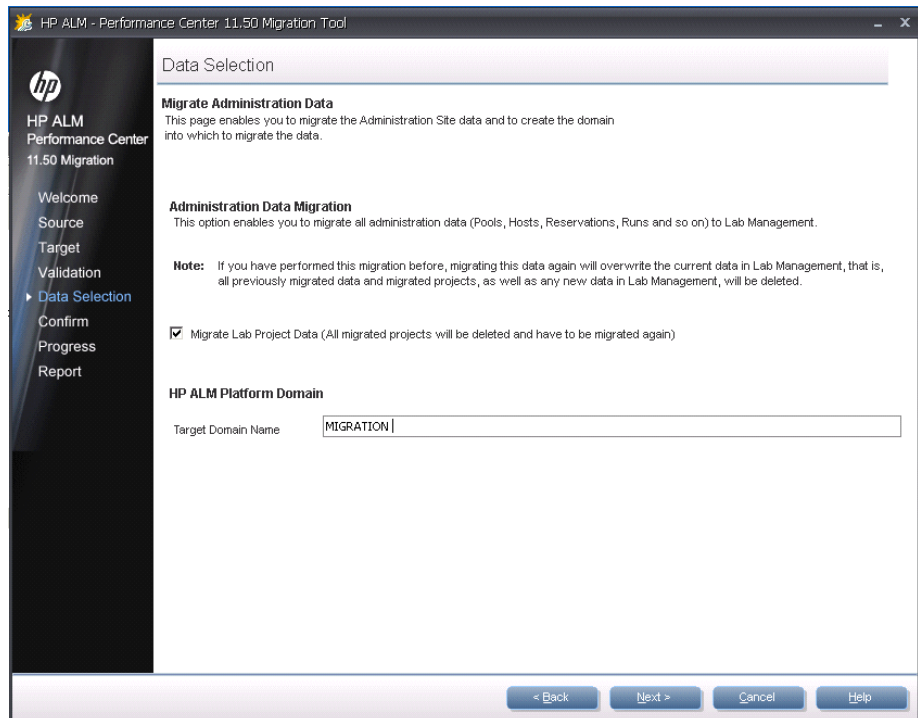
With all the relevant source and target details, the tool validates the feasibility of the migration. Review the list of warnings and errors. If you need to make any changes before you migrate the data, close the migration tool, and start the tool again when you are ready.



To continue, click **Next**.

**10 Specify whether to migrate administration data.**

The Data Selection - Migrate Administration Data page opens.



- To migrate all of the data from the Performance Center Administration site, such as Performance Center resources (hosts, host pools, locations, MI Listeners), user-project assignments, and server data, select **Migrate Lab Project Data**.

If you are running the migration tool to **migrate additional projects only**, but you do not want to migrate the administration data again, ensure that **Migrate Lab Project Data** is **NOT** selected.

---

**Note:** The first time you run the Migration Tool, the **Migrate Lab Project Data** option is selected by default, and the Performance Center administration data is migrated the first time by default. In subsequent migrations, you can select whether to migrate the administration data. It is important to note that when you migrate the administration data again, all Performance Center administration data and other Performance Center projects that have already been migrated are deleted. For this reason, it is strongly recommended to ensure that the migration process is fully complete before working with new data and projects in ALM Performance Center 11.50.

---

- **HP ALM Platform Domain.** Enter the name of the ALM domain to which to migrate the projects that you select in the next wizard page. You can enter the name of an existing domain, or enter a new domain name. If you enter a new domain name, the domain is created on the ALM server.

---

**Note:** When entering the name of an existing domain, if the domain contains projects with the same name as the ones you are about to migrate, they will be deleted. New projects with migrated data will be created instead.

---

---

**Note:** Administration data is always migrated to the LAB\_PROJECT, which is located on the default domain.

---

Click **Next**.

## 11 Select Performance Center projects to migrate.

On the Data Selection - Select Projects to Migrate page, select the Performance Center projects to migrate. You must select at least one project.

**Data Selection**

**Select Projects to Migrate**  
In this page you select the projects to migrate.  
You must select at least one project.

Project Name	Project Migration Status	Project ID
<input type="checkbox"/> L_WAN_for_Migration	Not migrated	45
<input type="checkbox"/> LT_PROJECT	Migrated	13
<input type="checkbox"/> m_for_delete	Not migrated	44
<input type="checkbox"/> M_project	Not migrated	10
<input type="checkbox"/> MIGRATION_1	Not migrated	38
<input type="checkbox"/> MIGRATION_2	Migrated	39
<input type="checkbox"/> Mon_Sla_Trend	Not migrated	51
<input type="checkbox"/> MONITORS_PROJECT	Not migrated	17
<input type="checkbox"/> New_project_deleted	Not migrated	41
<input type="checkbox"/> ONE - TWO - THREE	Not migrated	47
<input type="checkbox"/> ONLINE_PROJECT	Not migrated	14
<input type="checkbox"/> PrMgmt_ScrMgmt_RTS_Reports_Max	Not migrated	49
<input type="checkbox"/> SCRIPTS_PROJECT	Not migrated	18
<input type="checkbox"/> SELECT AND OR GROUP BY ORDER COUNT UPDATE SET FROM	Not migrated	42
<input type="checkbox"/> SIPP_Colector_Traçabilit&POEs	Not migrated	43
<input type="checkbox"/> SIS_PROJECT	Not migrated	23
<input type="checkbox"/> TEST123	Not migrated	32
<input type="checkbox"/> test-me_4_!legal-,chars.!	Not migrated	36
<input type="checkbox"/> TESTRUNS_PROJECT	Not migrated	15

< Back   Next >   Cancel   Help



To select all of the projects, click the **Select All** button.

Projects that have already been migrated are marked **Migrated** in the **Project Migration Status** column. If you select a project that has already been migrated, the project is deleted from ALM before it is migrated again.

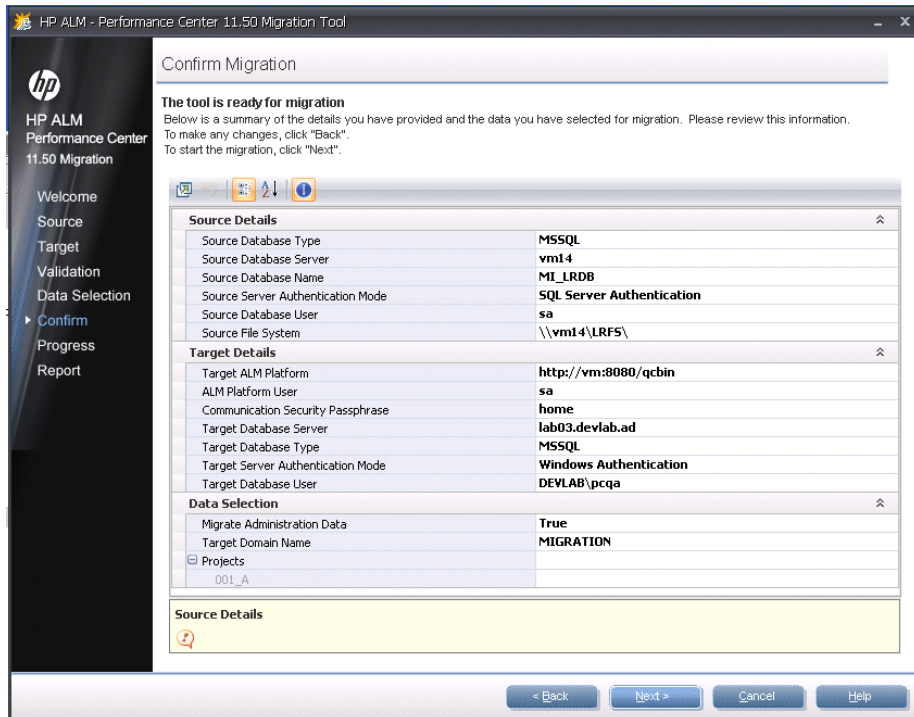
**Tip:** You can sort by double-clicking on any column header.

**Note:** If you are running the migration tool **only to migrate additional projects**, but you do not want to migrate the administration data again, ensure that the **Migrate Lab Project Data** option on the previous wizard page is **NOT** selected.

Click **Next**.

## 12 Confirm the migration.

The Confirm Migration page opens, displaying a summary of the options you selected in the preceding steps.

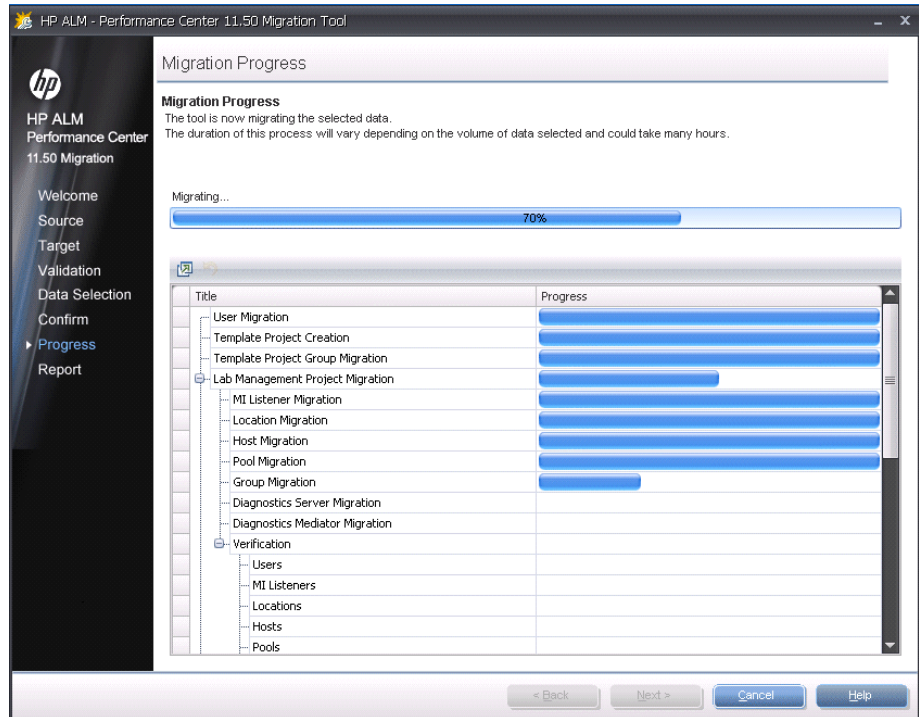


Click **Next**.

### 13 Track the migration progress.

On the Migration Progress page, you can track the migration progress.

In addition, for each project, you can view the migration progress of project entities such as scripts, load tests, monitors, timeslots, and so on.



## 14 View the migration report.

---

**Note:** After the migration, you are prompted to restart ALM before starting to work in ALM Performance Center.

To restart the machine do one of the following:

- Reboot the machine
  - Go to services (services.msc), restart the **HP Application Lifecycle Management** service.
  - From the Windows icon tray, stop and start ALM.
- 

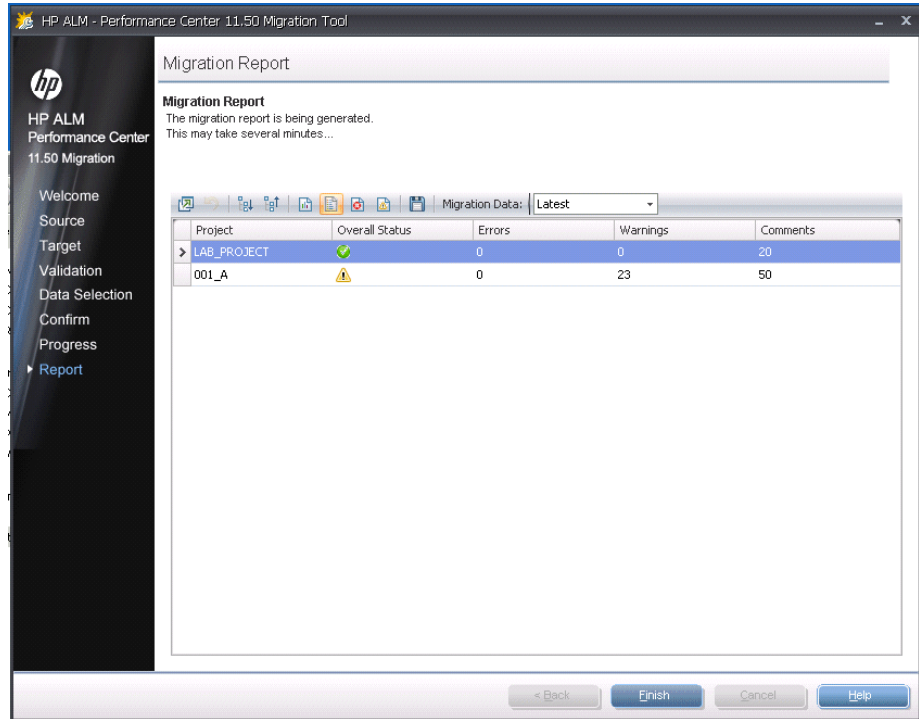
When the migration is complete, the Migrate Report page opens. The report displays the migration results for each project, including warnings and errors.

---

**Note:** The report may take several minutes to generate.

---





You can generate the following filtered reports:

- A summary for each migrated project
- Errors only (per project)
- Warnings only (per project)

You can also select to view data from all migration procedures performed on the machine, or only from the latest migration.



To save the report, click the **Save** button, and select a location to save the report.

If necessary, the report data can also be accessed from the source Performance Center database, from the **EntityMappings** table that is created and updated during migration.

To access the report, run the following SQL query:

```
select * from EntityMappings
order by CompanyID, EntityType,PCID
```

Click **Finish** to exit the HP ALM Performance Center Migration tool.

If you did not save the migration report, you are prompted to save it before closing the wizard.

## 15 Reconfigure the Performance Center hosts.

---

**Note:** If you did not yet restart ALM after the migration, it is recommended to do so before continuing with this step. See step 14 on page 160.

---

After migration, the status of all migrated hosts is **Unavailable**.

**For staging environment:** Keep the migrated hosts in the **Unavailable** status, and add several new hosts to validate your environment.

**For production environment:** To change the status of the hosts after migration to **Operational** and set up the host license, you must reconfigure the hosts.

- a** Log in to Lab Management.
- b** Select **Lab Resources > Hosts**, select the migrated host, and click the **Reconfigure Hosts** button.

## 16 Verify the migration.

After migrating the file system and database, verify that the data was migrated successfully. For details, see "Post-Migration Verification" on page 163.

## Post-Migration Verification

After migrating the files and database, verify that the data was migrated successfully.

---

**Note:** Ensure that the hosts were reconfigured as described at the end of the migration process. For details, see step 15 on page 162.

---

### Site Administration

- 1 Log in to Site Administration as Site Administrator.
- 2 Check that the domain you created during migration exists and that the projects you selected are listed in the domain and are active.
- 3 Choose two projects and check that the correct users are assigned to the projects.
- 4 In the **Lab Management** tab, check that assigned users are the same as source Performance Center administrators.

### Lab Management

- 1 Log in to Lab Management with your Performance Center administrator credentials.
- 2 Verify the following:
  - On the Lab Management sidebar, under **Lab Settings**, select **Project Settings**, and verify that the migrated projects are listed and that the **Pool** and **Vuser Limit**, **Concurrent Run Limit**, and **Host Limit** details are correct.
  - On the Lab Management sidebar, under **Lab Resources**, verify that the correct data exists in **Hosts**, **Pools**, **Locations**, and **Timeslots** (a month's worth of past timeslots and, if relevant, existing future timeslots).
  - On the Lab Management sidebar, under **Performance Center**, verify that the correct data exists in **PC Test Runs** (runs from the last month), **Usage Reports** (reports for the last month), **MI Listeners**, and **Diagnostics**.

## HP Application Lifecycle Management

- 1 Log in to a migrated project in ALM, using your Performance Center administrator credentials.
- 2 Verify the following:
  - ▶ On the ALM sidebar, under **Lab Resources**, verify that the **Testing Hosts** module contains the hosts that belong to the project you are logged in to.
  - ▶ On the ALM sidebar, under **Testing**, select **Test Resources**, and review the monitor profiles listed in the tree. Verify the details and monitor configuration for a familiar monitor profile.
  - ▶ On the ALM sidebar, under **Testing**, select **Test Plan**.
    - ▶ Review the full tree for scripts and performance tests. Check also for failed performance tests, if you know of any that exist.
    - ▶ Review one familiar VuGen script - Details and Test Script tabs.
    - ▶ Review one test in the project that you are familiar with. Click the **Test Design** tab and check the details in the General Details section. Verify that there are no errors.

Click **Edit Test**. In the **Workload** tab, verify that the Controller, load generator distribution method, Vuser groups, runtime settings, and test schedule details are all correct. Check also that the monitor profiles selected in the **Monitors** tab are correct.
  - ▶ On the ALM sidebar, under **Testing**, select **Test Lab**. Review the data in the **Test Runs** tab. If you do not see any data, ensure that the filter is clear.
- 3 Try to run a familiar test with its original hosts. Ensure that the hosts have been migrated to Performance Center 11.50 hosts.

## Post Migration Considerations

This section points out issues to consider after migration.

This section includes:

- "User Migration" on page 165
- "Roles (Groups) Migration" on page 166
- "Project Migration" on page 169
- "Host and Pool Migration" on page 170
- "Load Test Migration" on page 170
- "Timeslot Migration" on page 171
- "Script Migration" on page 172
- "General Notes" on page 172

### User Migration

- Deleted / Non-Active / Expired users in Performance Center
  - Shown in entities - Timeslots (Reserved By), Test Runs (User Name), Event Log (not relevant, not migrated), Trend Reports - Run By
  - Shown in Lab Usage reports - Site Users Report, Resource by Duration Report, Resource by Runs Report in the Resource Usage by User tab
- Migrating deleted users (may have the same name as existing users):
  - This type of user does not exist in ALM
  - Deleted users are not migrated
- Migrating Non-Active / Expired users:
  - Non-Active or Expired Users -
    - Migrates the user and assigns it the groups and project
    - Non-active users are migrated as **Expired**
  - Users with future expiration date are migrated as explained above and assigned the appropriate expiration date.

- ▶ User name issues:
  - ▶ If a user name contains invalid characters, all invalid characters are replaced with an underscore (\_). For details on invalid characters, see "General Notes" on page 172.
  - ▶ If ALM contains the same user name as in the migrated Performance Center project:
    - ▶ If both user definitions contain an email address, and the email address is identical, this indicates that this is the same user, and the user is not migrated.
    - ▶ If both user definitions contain a full name and they are identical, this indicates that this is the same user, and the user is not migrated.
    - ▶ If there is a user in the ALM target system with the same user name, and it has been established that the two users are not the same user, then the new (migrated) user is created with a **01 (02, 03, ...)** suffix appended.

## Roles (Groups) Migration

- ▶ Canned group migration

PC 9.5		PC 11.50	
Admin Site	Administrator	Lab Management	TDAdmin (existing ALM group)
User Site	Guest	Project	Viewer (existing ALM group)
User Site	LT Adviser	Project	Performance Adviser (new ALM group, customized when Performance Center extension is deployed)
User Site	Tester	Project	Performance Tester (new ALM group, customized when Performance Center extension is deployed)

PC 9.5		PC 11.50	
User Site	Power Tester	Project	Performance Test Specialist (new ALM group, customized when Performance Center extension is deployed)
User Site	Project Manager	Project	Project Manager (existing ALM group)

- Roles marked as **Administration from User site only** are not migrated, and users who belongs only to such roles in the scope of Performance Center are not added to Lab Management.
- Customized Groups migration
  - A Performance Center Template project is created which includes all the customized groups from the source Performance Center system.
  - Enabling the Performance Center extension on a project adds the canned Performance Center groups to the project.
  - Migrated projects will be attached to a Performance Center Template project that will include all the customized groups defined in Performance Center 9.x.
- ALM Consolidated installation:

Performance Center	Consolidated Installation	Flow
Internal	Internal	<ul style="list-style-type: none"> <li>➤ Define match - Username, Full Name (optional)</li> <li>➤ Create unmatched users in ALM (with password)</li> </ul>
Internal	LDAP	<ul style="list-style-type: none"> <li>➤ Define match – Username</li> <li>➤ Create unmatched users in ALM (no password)</li> <li>➤ New users in ALM require LDAP lookup on the first login (no DN in ALM)</li> </ul>

Performance Center	Consolidated Installation	Flow
LDAP	Internal	<ul style="list-style-type: none"> <li>▶ Define match – Username</li> <li>▶ Create unmatched users in ALM (default password – Welcome)</li> </ul>
LDAP	LDAP	<ul style="list-style-type: none"> <li>▶ Define match – Username</li> <li>▶ Create unmatched users in ALM (no password)</li> <li>▶ New user in ALM will require LDAP lookup on the first login (no DN in ALM)</li> </ul>
SSO	Internal	<ul style="list-style-type: none"> <li>▶ Define match – Username</li> <li>▶ Create unmatched users in ALM (default password – Welcome)</li> </ul>
SSO	LDAP	<ul style="list-style-type: none"> <li>▶ Define match – Username</li> <li>▶ Create unmatched users in ALM (no password)</li> <li>▶ New users in ALM require LDAP lookup on the first login (no DN in ALM)</li> </ul>

- ▶ Validation stage messages regarding authentication:
  - ▶ If Performance Center 9.5x uses SSO, then warns that ALM does not support SSO.
  - ▶ If Performance Center 9.5x uses LDAP or SSO and ALM is not LDAP, then warns that the user should configure LDAP in ALM before migration. If LDAP is not configured, all user passwords are reset to **Welcome1**.



## Project Migration

- ▶ Performance Center project expiration date:
  - ▶ If the Performance Center source project has expired, the project is migrated as Deactivated.
  - ▶ If the Performance Center source project has not expired, it is migrated as Active. If the project had an expiration date, a warning is included in the migration report with the expiration date.
- ▶ Project names:
  - ▶ Invalid characters are replaced with underscores (\_). For details on invalid characters, see "General Notes" on page 172.
  - ▶ The user enters a domain name to which to migrate the projects. If this domain already exists in ALM, projects are migrated to this domain. If it does not exist, then the new domain is created.
  - ▶ When migrating a project with the same name as a project that was previously migrated, the migrated project is deleted and is migrated again.
  - ▶ When migrating a project, and a project with the same name already exists, then the migration of the project fails.
- ▶ Migrating deleted projects:
  - ▶ Deleted projects can be viewed in the Resource by Duration Report and Resource by Runs Report in the Resource Usage by Project tab.
  - ▶ Deleted projects are named **<project>\_deleted**.
  - ▶ Data from deleted projects is migrated only if it is requested by the user.
  - ▶ Data is relevant to Test Runs in Lab.

## Host and Pool Migration

- Merged pools are not supported in Performance Center 11.50. Hosts are migrated with direct connection to their pools.
- Host priority changes:
  - In Performance Center 9.5x the priority was a number between 1 and 32000, where the lower the number the higher the priority.
  - In Performance Center 11.50 the priority has a value between 1 and 9, where 1 is the lowest priority and 9 is the highest priority.
  - During migration, the values are changed based on their priority relative to each other. For example: Priorities 1, 2, 3 in Performance Center 9.5x change to 9, 5, 1 respectively.

## Load Test Migration

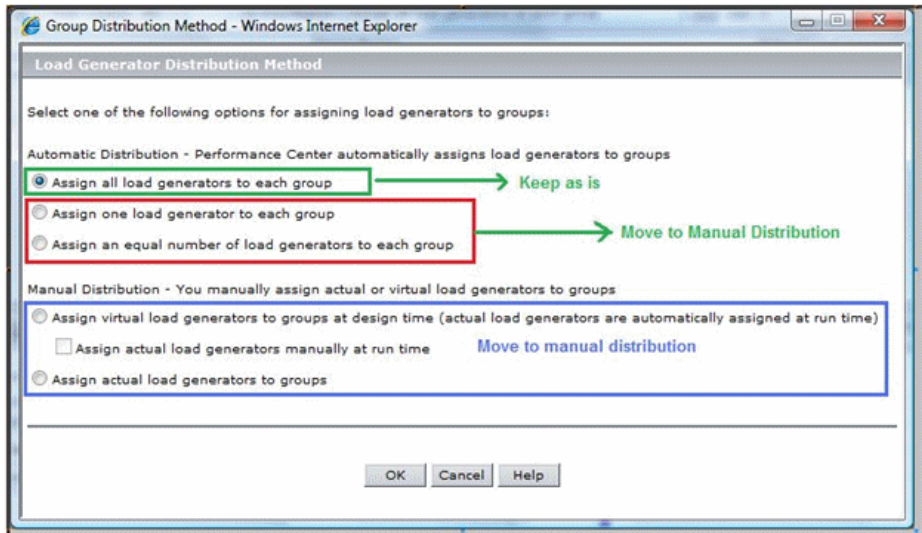
- Performance Center 11.50 does not support the **Real-World > By test > By Number** scheduler mode. This needs to be changed to Real-World > test > By percent. This change should be logged in the migration log.
- Migrating Load Generator distribution methods in Performance Test Designer:

Performance Center 9.5x had 5 distribution methods (see image below) and Performance Center 11.50 only has 2.

Migration changes the distribution method in the following way:

PC 9.5 Distribution Method	PC 11.50 Distribution Method
Assign all load generators to each group	Assign all load generators to each group
Assign one load generator to each group	Manual distribution
Assign an equal number of load generators to each group	Manual distribution
Assign virtual load generators to groups at design time	Manual distribution
Assign actual load generators to groups	Manual distribution

The following image illustrates the mapping of Performance Center 9.5x to Performance Center 11.50 load generator distribution methods:



- Controller selection was not available in Performance Center 9.5x. During migration this option is set to **Dedicated Controller** for all tests.
- Local Monitor Profile:
  - Does not exist in Performance Center 11.50. A local monitor profile is migrated to Performance Center 11.50 as a monitor profile in the Test Resources module, under the name **Local\_Profile\_<LT\_Name>**.
  - The test is connected to the migrated monitor profile if the test used a local monitor profile.
- Topology: Not migrated. If a test is associated with a topology, the association is removed.

## Timeslot Migration

- If the timeslot is connected to a test, then the Controller option in the new timeslot is set to **Automatic**. If the timeslot is not connected to a test then it is set to **Allocate only Controller that is also LG or Automatic** based on whether the timeslot in Performance Center 9.5x was set to allow Users on Controller.

## Script Migration

- URL-based scripts are migrated to regular Web (HTTP/HTML) scripts.
- When migrating script files, MDRV logs are not migrated.

## General Notes

- Event logs and topologies are not migrated.
- Run states are migrated as follows:

ID	Pre-Migration State	Migrated State	Migrated Status	Comments
1	Ready	Run Failure	Not Completed	Run Failure with a comment
2	Collating Results	Run Failure	Not Completed	Run Failure with a comment
3	Running	Run Failure	Not Completed	Run Failure with a comment
4	Finished	Finished	Not Completed	Same
5	Run Failure	Run Failure	N/A	Same
7	Stopping	Run Failure	Not Completed	Run Failure with a comment
8	Creating Analysis Data	Run Failure	Not Completed	Run Failure with a comment
9	Before Collating Results	Before Collating Results	Not Completed	Same
10	Before Creating Analysis Data	Before Creating Analysis Data	Not Completed	Same
11	Failed Collating Results	Failed Collating Results	Not Completed	Same
12	Failed Creating Analysis Data	Failed Creating Analysis Data	Not Completed	Same

ID	Pre-Migration State	Migrated State	Migrated Status	Comments
13	Deleting Temporary Results	Finished	Not Completed	With a comment
14	Temporary Results Deleted	Finished	Not Completed	
15	Failed Delete Results	Finished	Not Completed	
16	Deleted		Deleted	Migrate only to lab as deleted
17	Results Deleted	Finished	Not Completed	

- Source File System (LRFS) <=> Target File System (Smart repository) changes:

In the source file system (LRFS) all project files were located in the same folder with meaningful file names. In the new Smart Repository all project files are still located in the same folder but file names have no meaning—they are numbers.

- ▶ Special characters change as a result of migration:
  - ▶ In Performance Center the following characters are invalid:

Entity	Invalid Characters
Script name	Only "!" can be used. User cannot write any other special characters.
LT name	/\<>.;!&*#
MP name	;"&!@#\$\$%*\
Group name	Only "!" can be used. User cannot write any other special characters.
User name	;&*\'/#~.,?}\$% <>+.=`@^()[]!
Project name	;&*\'/#~.,?}\$% <>+.=@()[]^
Roles name	</>
Location name	No special character can be used.
Host pools name	;"<>%\$&+`"

- ▶ In ALM the following characters are invalid (depends on the entity):

Entity	Invalid Characters
Test	\/:\"?'<> *%&
Resource	\/:\"?'<> *%!{}&
Library	\/:*?\"<> &
Project	=~`!@#\$\$%^&*()+{ }()[]:"<>?.,./\-&
Domain	=~`!@#\$\$%^&*()+{ }()[]:"<>?.,./\-&
Group	~`!@#\$\$%^&*()+{ }[]:"<>?./&
User	()@\[]:"<>+.=;"?*"%.&

- ▶ If you experience problems with the migration process, check the database migration log files for any errors or relevant messages. The log files (**log.txt**) are located in the following paths:

- **..\<Migration tool  
Installation>bin\orchidtmp\LTLogger\MigrationTool**
- **..\<Migration tool  
Installation>bin\orchidtmp\LTLogger\ProjectMigrationWrapper**

For example, if you installed the migration tool on the Performance Center Server machine, the log files are located at \<PC Server installation>\orchidtmp\LTLogger\MigrationTool\log.txt and \<PC Server installation>\orchidtmp\LTLogger\ProjectMigrationWrapper\log.txt.





# Part IV

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## Working with Firewalls



# 6

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## Working with Firewalls

You can set up your Performance Center system to run Vusers and monitor servers over a firewall.

**This chapter includes:**

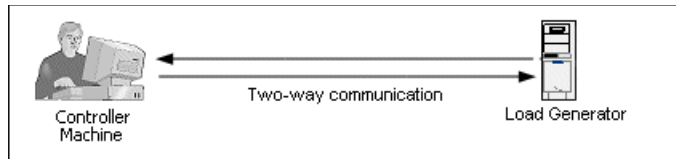
- About Using Firewalls in Performance Center on page 180
- Example: Over Firewall Deployment on page 182
- Setting Up the System to Use Firewalls: Basic Steps on page 183
- Installing Over Firewall Components on page 185
- Initial Configuration of the Over Firewall System on page 185
- Specifying MI Listeners in ALM on page 190

## About Using Firewalls in Performance Center

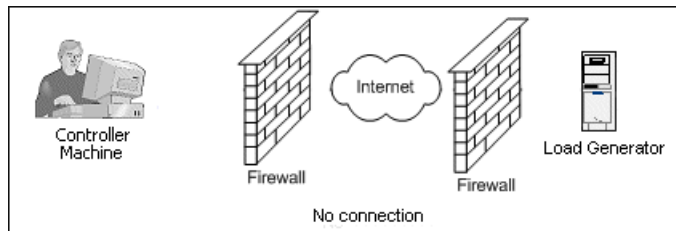
Working with a firewall means that you can prevent unauthorized access to or from a private network, on specific port numbers.

For example, you can specify that no access is allowed to any port from the outside world, with the exception of the mail port (25), or you can specify that no outside connection is allowed from any ports to the outside except from the mail port and WEB port (80). The port settings are configured by the system administrator.

In a regular performance test (not over a firewall), the Controller has direct access to the Performance Center agents running on remote machines. This enables the Controller to connect directly to those machines.



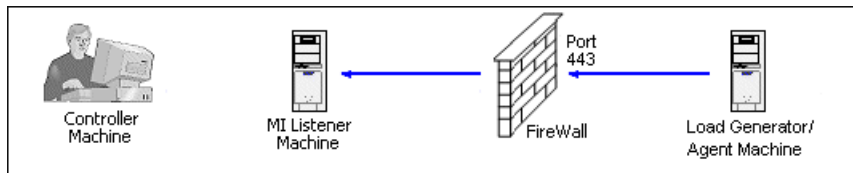
When running Vusers or monitoring applications over a firewall, this direct connection is blocked by the firewall. The connection cannot be established by the Controller, because it does not have permissions to open the firewall.



Performance Center solves this problem by using a communication configuration based on HTTPS or secured TCP/IP. This configuration uses the standard SSL port on the firewall (port 443). For more information on HTTPS and TCP/IP system configuration, see "Setting Up Your Deployment (TCP or HTTPS)" on page 186.

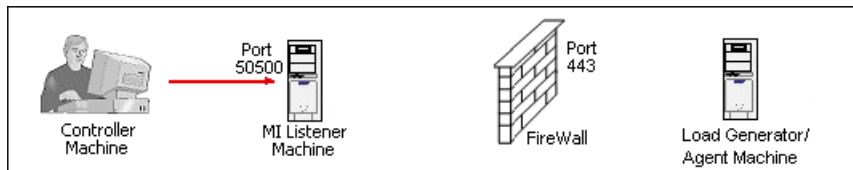
A Performance Center agent is installed on Load Generators running Vusers over a firewall, and on Monitor Over Firewall machines that monitor the servers that are located over a firewall. The agent communicates with the MI Listener machine through port 443 in the firewall.

The MI Listener is a component that serves as router between the Controller and the Performance Center agent.

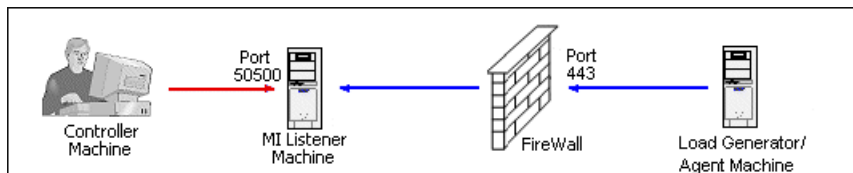


When the Performance Center agent connects to the MI Listener, the MI Listener keeps a listing of the connection to the agent using a symbolic name that the agent passed to it.

When the Controller connects to the MI Listener, it communicates to the MI Listener through port 50500.

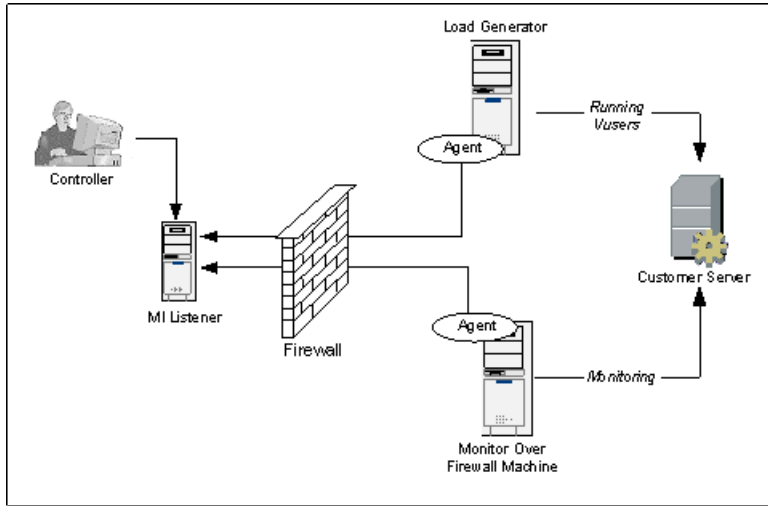


The Controller uses a symbolic name for the agent, and provides the MI Listener machine's name. If there has been a connection from the agent with the same symbolic name to this MI Listener, the connection is made between the Controller and the agent. Once you have a connection with the agent, you can run or monitor Vusers over a firewall.



## Example: Over Firewall Deployment

The following diagram is a basic example of a Performance Center deployment over a firewall.



As explained in the previous section, the Performance Center agent is installed on both the Load Generator machine and the Monitor Over Firewall machine. During installation, the Performance Center agent is added as a Windows service.

The MI Listener serves as a router between:

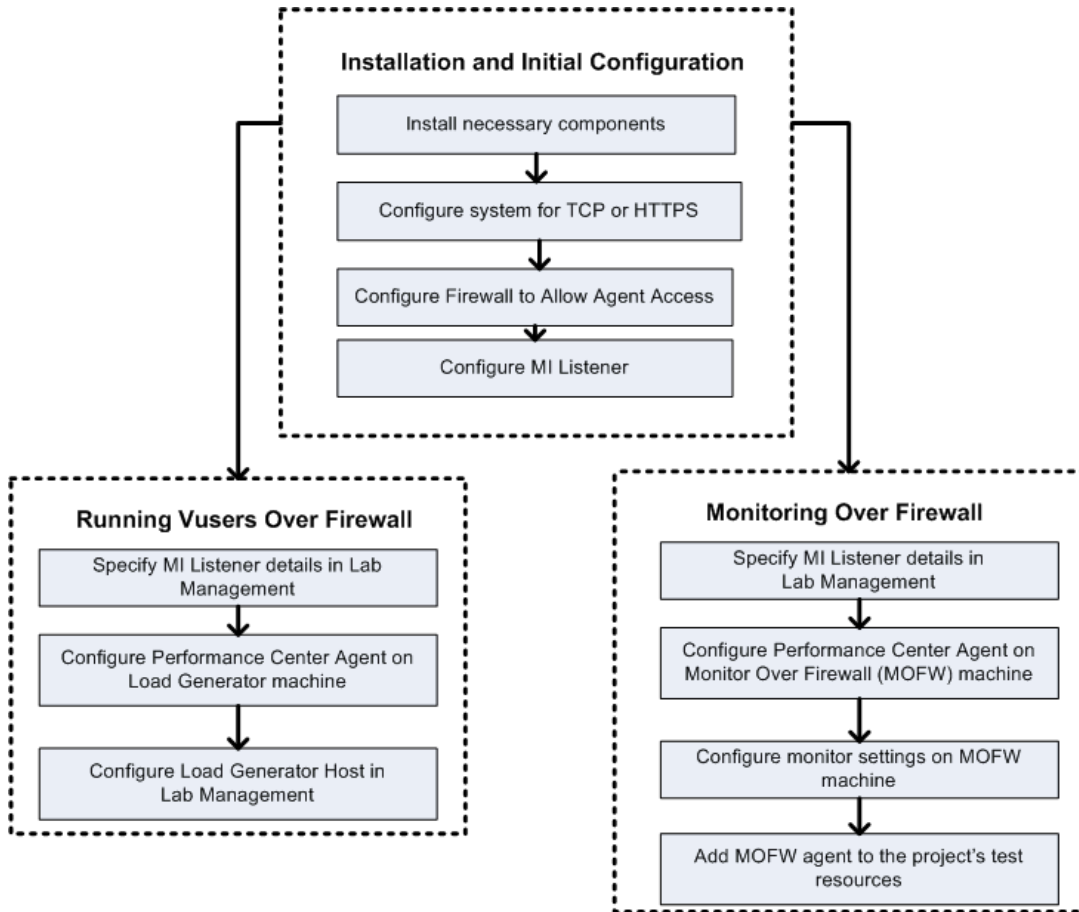
- ▶ The agent on the Load Generator machine and the Controller, enabling the Controller to run Vusers over a firewall.
- ▶ The agent on the Monitor Over Firewall machine and the Controller, enabling the Controller to monitor the servers that are located over a firewall.

## Setting Up the System to Use Firewalls: Basic Steps

Setting up the system to use firewalls involves the following stages of configuration:

- **Installation and initial configuration.** Install the necessary components and perform initial configuration settings. For details, see "Installing Over Firewall Components" on page 185, and "Initial Configuration of the Over Firewall System" on page 185.
- **Enabling running Vusers over a firewall.** When there is a firewall between the Controller and Load Generator host machines, set up the system to run Vusers over the firewall. For details, see "Running Vusers Over a Firewall" on page 193.
- **Enabling monitoring over a firewall.** Set up your system to monitor the application under test (AUT) when there is a firewall between the Controller and the AUT. For details, see "Monitoring Over a Firewall" on page 199.
- **Checking Connectivity.** After installing and configuring all the necessary components, check that you are able to establish a connection between the Performance Center agent, the MI Listener, and the Controller machine. For details, see "Checking Connectivity" on page 220.

The following flow chart provides a general outline of the steps that you need to perform to set up your system to work with firewalls.





## Installing Over Firewall Components

To enable over firewall communication, ensure that you have installed the following Performance Center components:

- **MI Listener.** Serves as a router between the Controller and the Performance Center agent. You install the MI Listener component on a dedicated machine. For installation instructions, see "Installing Standalone Components (Windows)" on page 75.

For instructions on configuring the MI Listener machine, see "Configuring the MI Listener" on page 188.

- **Monitor Over Firewall component.** Used to monitor the servers that are located over a firewall. You install the Monitors over Firewall component on a dedicated machine. For installation instructions, see "Installing Standalone Components (Windows)" on page 75.

For information about configuring the Monitor Over Firewall machine, see "Monitoring Over a Firewall" on page 199.

## Initial Configuration of the Over Firewall System

After you have installed the necessary components, you are ready to configure your over firewall system.

**To perform initial configuration of your over firewall system:**

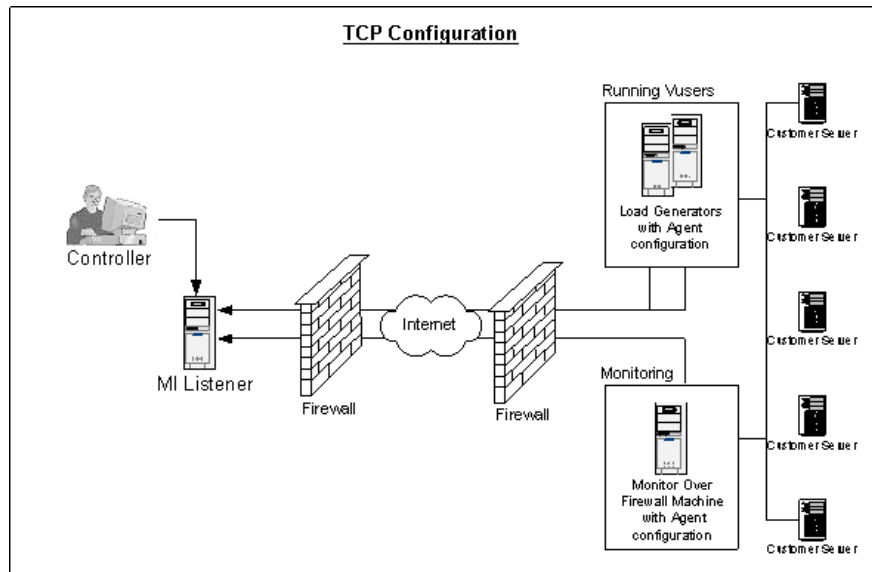
- 1** Configure the system according to TCP or HTTPS.  
See "Setting Up Your Deployment (TCP or HTTPS)" on page 186.
- 2** Modify the firewall settings to enable communication between the machines on either side of the firewall.  
See "Configuring the Firewall to Allow Agent Access" on page 187.
- 3** Configure the MI Listener.  
See "Configuring the MI Listener" on page 188.

## Setting Up Your Deployment (TCP or HTTPS)

To run Vusers or monitor servers over the firewall, configure your system according to one of the following configurations. Note that these configurations contain a firewall on each LAN. There may also be configurations where there is a firewall for the Over Firewall LAN only.

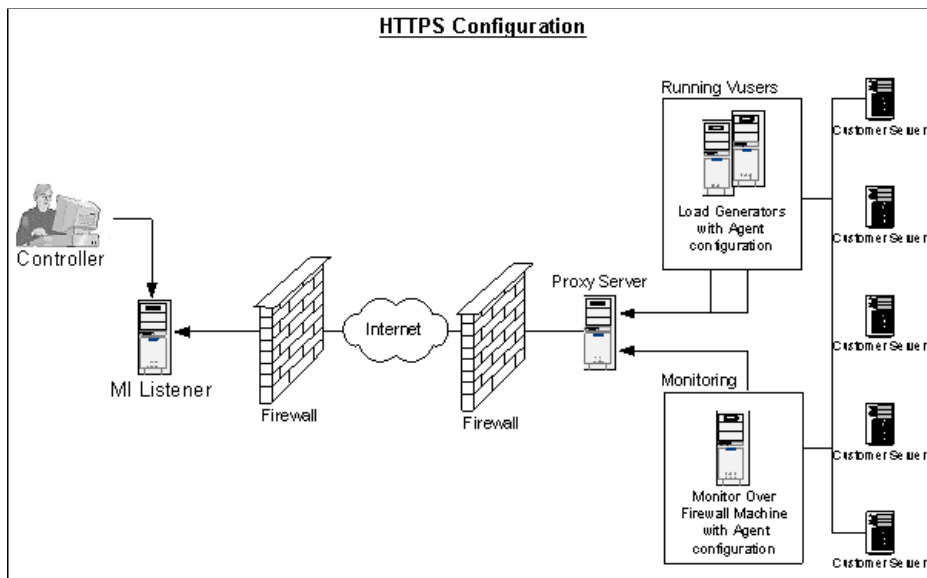
### ► TCP Configuration

The TCP configuration requires every Performance Center agent machine behind the customer's firewall to be allowed to open a port in the firewall for outgoing communication.



## ► HTTPS Configuration

In the HTTPS configuration, only one machine (the proxy server) is allowed to open a port in the firewall. Therefore it is necessary to tunnel all outgoing communications through the proxy server.



## Configuring the Firewall to Allow Agent Access

You modify your firewall settings to enable communication between the machines inside the firewall and machines outside the firewall.

## TCP Configuration

The Performance Center agent attempts to establish a connection with the MI Listener using port 443, at intervals specified in the Connection Timeout field in the Agent Configuration dialog box. To enable this connection, allow an outgoing connection for HTTPS service on the firewall for port 443. The agent can then connect to the MI Listener, and the MI Listener can connect back to the agent. From this point on, the agent listens to commands from the MI Listener.

## HTTPS Configuration

The Performance Center agent attempts to establish a connection with the MI Listener, using the proxy port specified in the Proxy Port field, and at intervals specified in the Connection Timeout field in the Agent Configuration dialog box. When the connection is established, the proxy server connects to the MI Listener. To enable this connection, allow an outgoing connection for HTTPS service on the firewall for port 443. The proxy server can then connect to the MI Listener, and the MI Listener can connect back to the agent through the proxy server. From this point on, the agent listens to commands from the MI Listener.

## Configuring the MI Listener

To enable running Vusers or monitoring over a firewall, you need to install the MI Listener on one or more machines in the same LAN as the Controller outside the firewall. For installation instructions, see, Chapter 2, "Installing Standalone Components (Windows)."

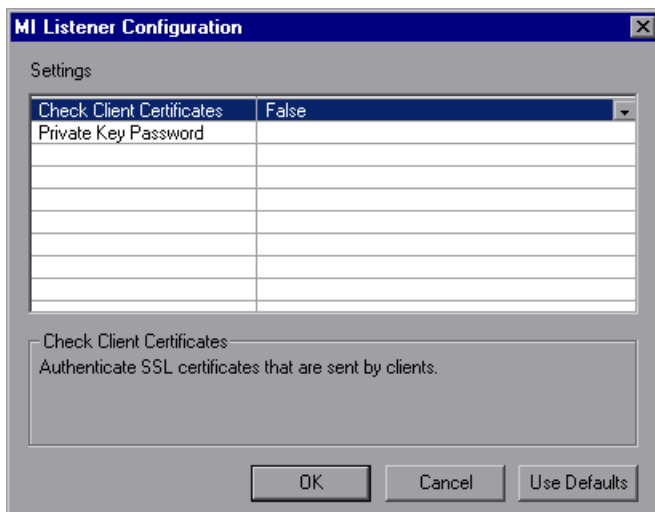
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**Note:** When installing the MI Listener:

- The MI Listener must be installed on a dedicated machine.
  - Make sure that IIS is not running on the MI Listener or Monitor Over Firewall machine. IIS uses port 443 and does not allow the access required by the listening and monitoring processes.
-

**To configure the MI Listener:**

- 1 Open incoming HTTPS service for port 443. The port settings are set by your system administrator.
- 2 Stop the Performance Center agent by right-clicking its icon in the system tray and selecting **Close**.
- 3 Select **Start > Programs > Performance Center > Advanced Settings > MI Listener Configuration**, or open `<Performance Center Host root>\launch_service\bin\MILsnConfig.exe`.



4 Set each option as described in the following table:

Option	Default Value	Description
Check Client Certificates	False	Select <b>True</b> to request that the client send an SSL certificate when connecting, and to authenticate the certificate.
Private Key Password	None	The password that may be required during the SSL certificate authentication process.

Click **OK** to save your changes or **Use Defaults** to use the default values.

5 Restart the Performance Center agent from **Start > Programs > HP Performance Center Host**.

## Specifying MI Listeners in ALM

In Lab Management, you specify one or more MI Listeners to enable running Vusers or monitoring data over a firewall.

**To add an MI Listener:**

1 On the Lab Management sidebar, under **Performance Center**, select **MI Listeners**.



2 In the MI Listeners module, click the **New MI Listener** button. The New MI Listener dialog box opens.

**3** Enter the following details:

Field	Description
<b>Description</b>	A description of the MI Listener.
<b>Public IP</b>	The public IP address of the MI Listener. <b>Note:</b> If you have two different IP addresses for the same MI Listener, one for public communication with a Load Generator located over a firewall and a second for internal communication with the Controller, enter the public IP address here. Enter the <b>internal IP address</b> in the <b>MI Listener Name</b> field (see below).
<b>MI Listener ID</b>	The MI Listener ID.
<b>MI Listener Name</b>	The name of the MI Listener. <b>Note:</b> If you have two different IP addresses for the same MI Listener—one for internal communication with the Controller and a second for public communication with a Load Generator located over a firewall—enter the <b>internal IP address</b> here. Enter the public IP address in the <b>Public IP</b> field (see above).
<b>Purpose</b>	The role designated to the MI Listener: <ul style="list-style-type: none"> <li>➤ Diagnostics data collection over a firewall</li> <li>➤ Monitoring over a firewall</li> <li>➤ Running Vusers over a firewall</li> </ul>

**4** Click **OK**. The MI Listener is added to the table.





# 7

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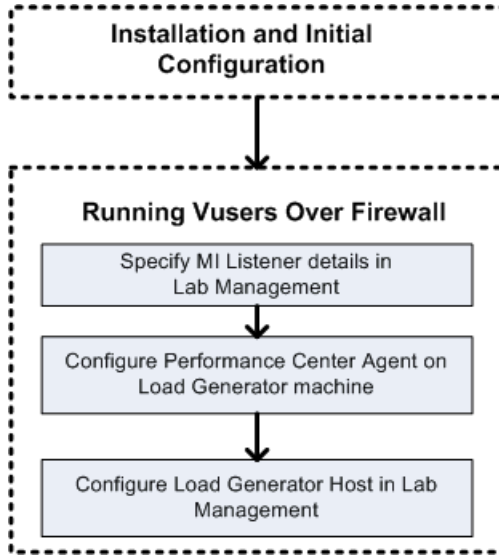
## Running Vusers Over a Firewall

You can set up Performance Center to run Vusers over a firewall.

**This chapter includes:**

- ▶ Running Vusers Over a Firewall: Basic Steps on page 194
- ▶ Configuring Hosts to Run Vusers Over a Firewall on page 196

## Running Vusers Over a Firewall: Basic Steps



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**Note:** Before you configure your system to run Vusers over the firewall, ensure that you have completed the configuration steps described in "Initial Configuration of the Over Firewall System" on page 185.

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**To run Vusers over a firewall:**

- 1** In Lab Management, specify the details of the MI Listener that will be used to run Vusers over the firewall. For details, see "Specifying MI Listeners in ALM" on page 190.
- 2** Configure the Performance Center agent on each Load Generator machine that will run over a firewall to communicate with the MI Listener.

For information on how to configure the Performance Center agent, see "Configuring the Performance Center Agent" on page 211.

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**Note:** After you configure the Performance Center agent on the Load Generator machine, you can edit the configuration settings from Lab Management. For more information, see the *HP ALM Lab Management Guide*.

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- 3** In Lab Management, configure the relevant Load Generator hosts to run over a firewall. For details, see "Configuring Hosts to Run Vusers Over a Firewall" on page 196.

## Configuring Hosts to Run Vusers Over a Firewall

To use a Performance Center host to run Vusers over a firewall, you need to configure the relevant hosts as Load Generators in Lab Management.


Part of the process of configuring a Performance Center host involves selecting a location for your host. For example, locations can be defined according to physical areas. The location also determines whether the host is located over a firewall.

Before you configure the host, you need to ensure that you have added a location over a firewall. When you are configuring a host to operate over a firewall, you select a location that is located over a firewall.

This section describes the basic steps of how to add a host as a Load Generator for running Vusers over a firewall. For detailed information about adding hosts in Performance Center, refer to the *HP ALM Lab Management Guide*.

**To configure a host to run Vusers over a firewall:**

### 1 Add the location that is over a firewall.

- a On the Lab Management sidebar, under **Lab Resources**, select **Locations**.
- b  In the Host Locations module, click the **New Host Location** button. The New Host Location dialog box opens.
- c Enter the following details:

Field	Description
<b>Description</b>	A description of the host location.
<b>Location Name</b>	The name of the host location. The name should have a logical connection to the host location.
<b>Over Firewall</b>	Indicates whether the host location is over a firewall.

**2 Add the over firewall host.**

- a** On the Lab Management sidebar, under **Lab Resources**, select **Hosts**.
- b** In the Host module, click the **New Host** button. The New Host dialog box opens.
- c** Enter the following details:

Field	Description
<b>Belongs to Pools</b>	The host pools to which the host is assigned. Host pools enable you to control which hosts are allocated to which projects.
<b>Description</b>	A description of the host.
<b>Host Attributes</b>	Attributes of the host. <b>Example:</b> Memory, strength, installed components
<b>Installation</b>	Indicates the type of host installation. For a standalone installation of the Load Generator, select <b>Windows Standalone LG</b> .
<b>Location</b>	The location of the host that is over the firewall.
<b>MI Listener</b>	The IP address or name of the MI Listener that enables data collection.  If no MI Listener is found, it means that the Load Generator Performance Center Agent was not correctly configured to operate over a firewall. In this case, you need to manually select an MI Listener from the MI Listener list and then configure the Performance Center Agent on the Load Generator machine to operate over a firewall.  For more information about configuring the Performance Center Agent to operate over a firewall, see "Configuring the Performance Center Agent" on page 211
<b>Name</b>	The fully qualified domain name or IP address of the host that was assigned when creating the host.

Field	Description
<b>Password</b>	The password of the Performance Center system user on the host machine.
<b>Priority</b>	A rank assigned to the host. The higher the priority you give the host, the more likely the host will be allocated to a test. There are a number of criteria to consider when assigning priority. The main considerations are whether the host is a dedicated machine or a shared resource, and the type of hardware installed on the machine.
<b>Purpose</b>	A host over a firewall can only have a Load Generator purpose.
<b>Enable SSL</b>	Indicates whether the Load Generator is to communicate with the Controller via SSL (Secure Socket Layer) or not. This option is available when the Load Generator is located over a firewall.  <b>Note:</b> The Load Generator uses SSL to communicate with the Controller during run time only. For non runtime functionality (including collating results), the Load Generator does not use SSL as the communication protocol.
<b>Status</b>	The status of the host. An indicator is displayed next to the host name, representing its current status.  The possible statuses are: <ul style="list-style-type: none"> <li>▶ <b>Operational.</b> The host machine is up and running.</li> <li>▶ <b>Non-operational.</b> The host machine is down.</li> <li>▶ <b>Unavailable.</b> There is no information available about the status of the host.</li> </ul>
<b>User Name</b>	The user name of the Linux Load Generator machine.

# 8

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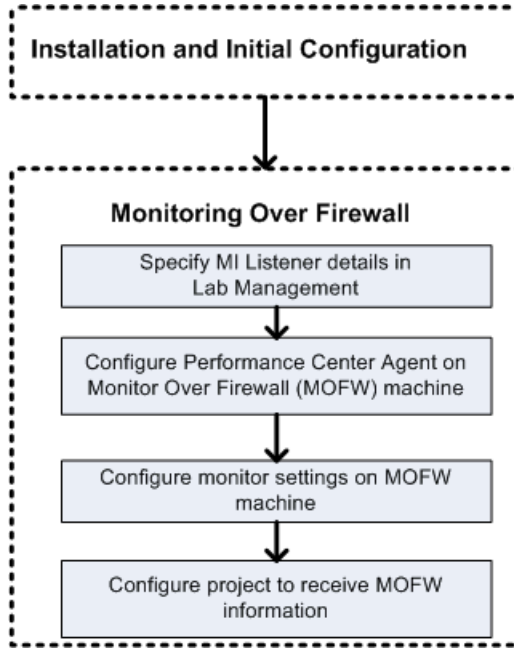
## Monitoring Over a Firewall

You can set up Performance Center to monitor servers over a firewall.

**This chapter includes:**

- Monitoring Over a Firewall: Basic Steps on page 200
- Configuring Monitor Settings on page 202
- Configuring the Project to Receive Monitor Over Firewall Information on page 208
- Editing Monitor Over Firewall Machines During a Test Run on page 209

## Monitoring Over a Firewall: Basic Steps



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**Note:** Before you configure your system to monitor servers over a firewall, ensure that you have completed the configuration steps described in "Initial Configuration of the Over Firewall System" on page 185.

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**To set up your system to monitor servers over a firewall:**

**1** In Lab Management, specify the details of the MI Listener that will be used to monitor servers over the firewall. For details, see "Specifying MI Listeners in ALM" on page 190.

**2** Configure the Performance Center agent on each Monitor Over Firewall machine to communicate with the MI Listener.

For details, see "Configuring the Performance Center Agent" on page 211.

**3** Use the Monitor Configuration tool to configure the servers to monitor and define specific measurements that Performance Center collects for each monitored server.

For details, see "Configuring Monitor Settings" on page 202.

**4** In the relevant project, establish a connection between the tests you are running and the Monitor Over Firewall machines.

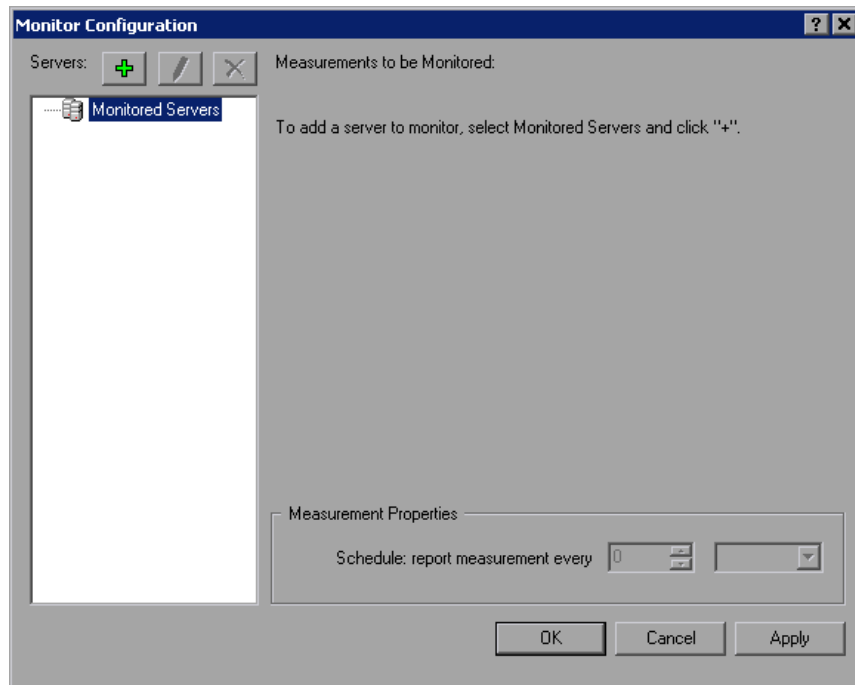
For details, see "Configuring the Project to Receive Monitor Over Firewall Information" on page 208.

## Configuring Monitor Settings

You configure the monitor settings from the Monitor Over Firewall machine, using the Monitor Configuration tool. You select the type of monitors to run and the server whose resources you want to monitor, add the measurements to monitor for each server, and specify the frequency at which the monitored measurements are to be reported.

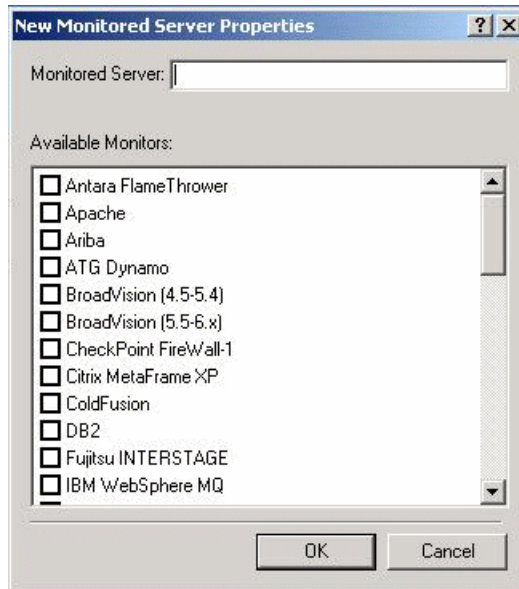
**To configure monitor settings:**

- 1 On the Monitor Over Firewall machine, choose **Start > Programs > HP LoadRunner > Advanced Settings > Monitor Configuration**. For machines without the complete Performance Center installation, choose **Start > Programs > Server Monitor > Monitor Configuration**. The Monitor Configuration dialog box opens.





- Click the **Add Server** button. The New Monitored Server Properties dialog box opens.



- In the **Monitored Server** box, type the name or IP address of the server whose resources you want to monitor.

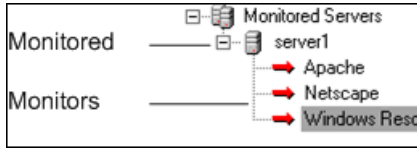
---

**Note:** To add several servers simultaneously, you can specify IP ranges, or separate the server names or IP ranges with commas. For example, 255.255.255.0-255.255.255.5, or server1, server2.

---

- From the **Available Monitors** list, select the monitors suitable for the server being monitored.

- 5 Click **OK** to close the New Monitored Server Properties dialog box. The Monitored Servers list is displayed in the Monitor Configuration dialog box.



Default measurements are displayed for some of the monitors in the Measurements to be Monitored section. You can specify the frequency at which to report the measurements in the Measurement Properties section.

- 6 To add additional monitored servers to the list, repeat steps 2 through 5.
- 7 To edit the monitor configuration properties for a server, click the **Edit** button. The Monitored Server Properties dialog box opens enabling you to edit the monitors for the server whose resources you are monitoring.
- 8 Click **Apply** to save your settings.

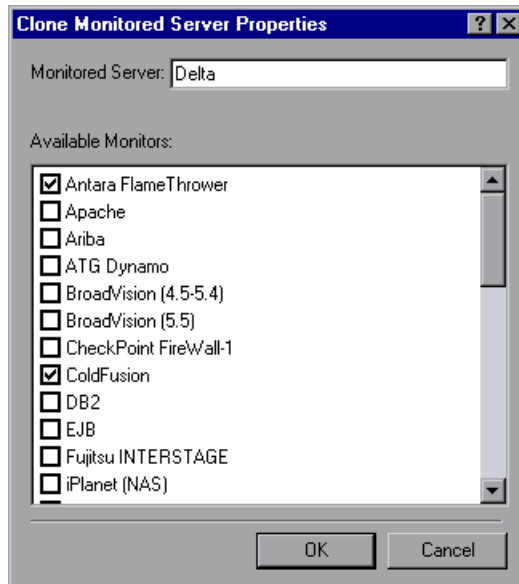


## Cloning a Monitored Server's Properties

To monitor the same properties on different server machines, you can clone a selected server's properties using the Clone Monitored Server Properties dialog box.

To clone a monitored server's properties:

- 1 Open the Monitor Configuration dialog box.
- 2 Right-click the server you want to clone, and select **Clone**. The Clone Monitored Server Properties dialog box opens.



- 3 In the **Monitored Server** box, type the name or IP address of the cloned server you want to create.

---

**Tip:** To create several cloned servers simultaneously, you can specify IP ranges, or separate the server names or IP ranges with commas. For example, 255.255.255.0-255.255.255.5, or server1, server2.


---

- 4** The **Available Monitors** list displays the monitors that were selected for the server being cloned. Select additional suitable monitors for the cloned server.
- 5** Click **OK** to close the Clone Monitored Server Properties dialog box. The cloned server is displayed in the Monitored Servers list.
- 6** Click **Apply** to save your settings.


## Adding and Removing Measurements

After you configure one or more server machines to monitor, you add measurements to monitor for each server. If Performance Center added default measurements, you can edit them as required.

### To add a measurement to monitor:

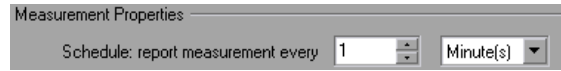
- 1** Open the Monitor Configuration dialog box.
- 2** Select a server from the Monitored Servers list.
-  **3** Click the **Add Measurement** button. Select the appropriate monitor. A dialog box opens, enabling you to choose measurements for the monitor you selected.
- 4** Select the measurements that you want to monitor, and click **OK**.
- 5** Click **Apply** to save your settings.

### To remove a measurement from the measurements list:

-  **1** Select the measurement, and click the **Delete** button.
- 2** Click **Apply** to save your settings.

## Configuring Measurement Frequency

After you have configured monitor measurements, you set a schedule for reporting each measurement.



### To configure measurement frequency:

- 1** In the Monitor Configuration dialog box, under the **Measurement Properties** section, select the configured server measurement you want to schedule.
- 2** Specify the frequency at which you want Performance Center to report the measurement.
- 3** Click **Apply** to save your settings.

## Configuring the Project to Receive Monitor Over Firewall Information

After you configure the monitors, you configure the project to receive Monitor Over Firewall information during performance test runs.

---

**Note:** The steps in the section are described in more detail in the section about monitor profiles in the *HP ALM Performance Center Guide*.

---

### To configure the project to receive Monitor Over Firewall information:

- 1** Add a monitor over firewall which can be accessed by performance tests in this project.
  - a** On the ALM sidebar, select **Test Resources**.
  - b** In the Test Resources module, right-click and select **New Resource**.
  - c** In the **Type** box, select **Monitor Over Firewall**.
  - d** Enter a name, the machine key, and select the MI Listener with which the monitor is to connect.
- 2** Select the Monitor Over Firewall agent to use in a specific performance test.
  - a** In the Test Plan module, right-click a performance test, and click **Edit Test** to open the test in the Performance Test Designer window.
  - b** In the Monitors tab, select the Monitor Over Firewall agent.



## Editing Monitor Over Firewall Machines During a Test Run

While a performance test is running, you can change the status of a Monitor Over Firewall agent or add another monitor to the test.

**To modify the Monitor Over Firewall machines:**

- 1** On the Test Run page, click the **Design** button. The Performance Test Designer window opens.
- 2** Click **Settings**. The Settings dialog box opens.
- 3** In the **Server Monitors** tab, you can view the Monitor Over Firewall agents that are monitoring the test, as well as their connection status.
  - ▶ To connect or disconnect a Monitor Over Firewall agent, click the **Connect/Disconnect** button.
  - ▶ To add a Monitor Over Firewall agent to the test, select it from the **Add Monitor Over Firewall** list.
- 4** Click **OK**.
- 5** Click **Close** to close the Settings dialog box.



# 9

---

## Configuring the Performance Center Agent

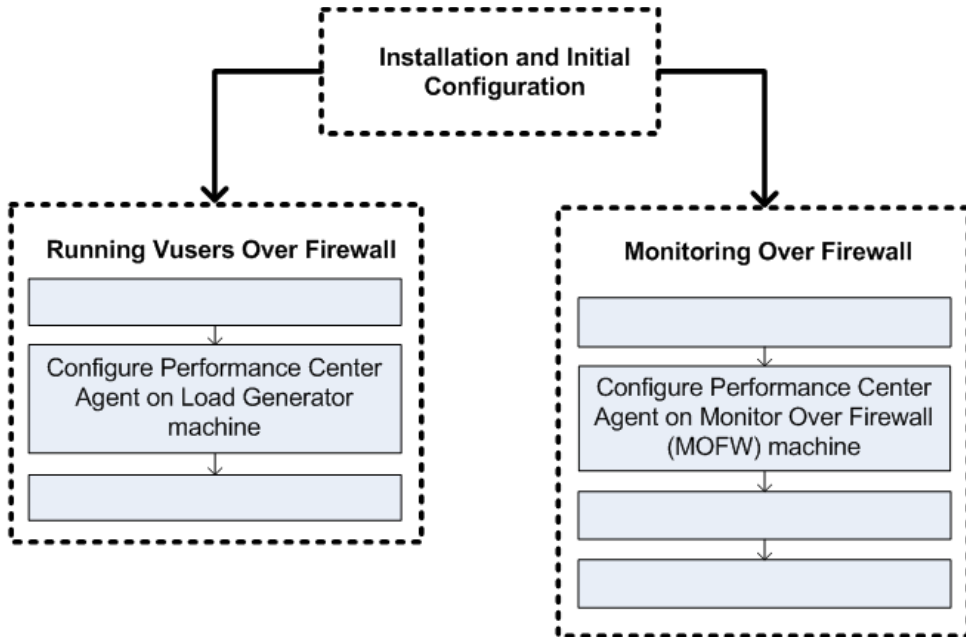
You can set up your Performance Center system to run Vusers and monitor servers over a firewall. As part of the process of setting up your Performance Center system to work over firewalls, you configure the Performance Center agent.

**This chapter includes:**

- ▶ About Configuring Performance Center Agents Over the Firewall on page 212
- ▶ Configuring the Windows Performance Center Agent on page 213
- ▶ Configuring and Running the UNIX Performance Center Agent on page 215
- ▶ Agent Configuration Settings on page 217
- ▶ Checking Connectivity on page 220

## About Configuring Performance Center Agents Over the Firewall

As part of the process of setting up your Performance Center system to work over firewalls, you configure the Performance Center agent on each Load Generator machine that will be running over a firewall and on each Monitor Over Firewall machine.



You configure the Performance Center agent to communicate with the MI Listener. The MI Listener serves as a router between the Performance Center agent and the Controller.

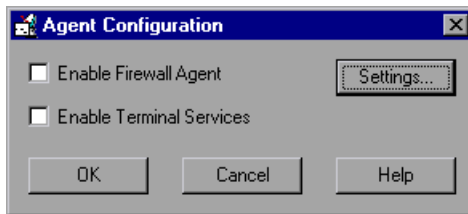
## Configuring the Windows Performance Center Agent

This section describes how to configure the Performance Center Agent on Windows machines to communicate with the MI Listener.

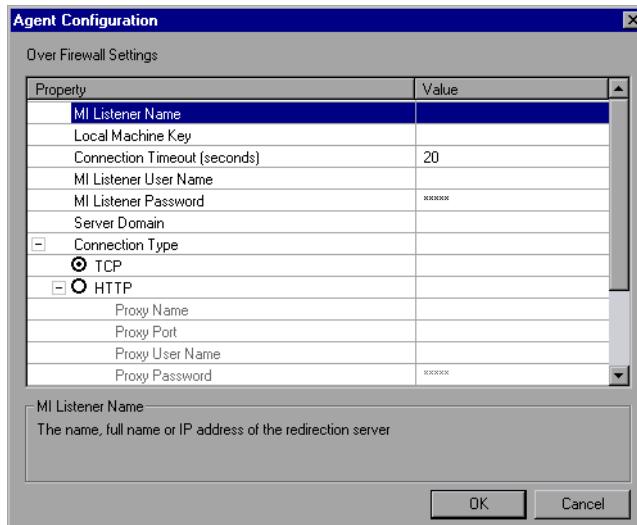
To configure the Performance Center agent on Windows machines:

- 1 Select **Start > Programs > HP Performance Center Host> Advanced Settings > Performance Center Agent Configuration**, or run `<Performance Center root>\launch_service\bin\AgentConfig.exe`.

The Agent Configuration dialog box opens.



- 2 Select **Enable Firewall Agent**.
- 3 Click **Settings**. The Agent Configuration dialog box displays a list of settings.



- 4 Set each option as described in "Agent Configuration Settings" on page 217. Pay careful attention to the first three settings.

---

**Note:** When specifying the **Local Machine Key**, you must use the format `hostname_locationname` where `hostname` is the name of the host, as defined in the Hosts module in Lab Management, and `locationname` is the name of the host location, as defined in the Host Location module.

---

- 5 Click **OK** to save your changes.
- 6 When prompted, click **OK** to restart the Performance Center agent.
- 7 Check the connection status between the Performance Center agent and the MI Listener.



An illuminated green light next to the Performance Center Agent icon in the system tray indicates a successful connection between the agent and the MI Listener. A red light indicates that there is no connection between the agent and the MI Listener.

---

**Notes:**

- ▶ When you configure the Performance Center agent on Windows machines, the Remote Management agent is automatically configured with the same settings. The Remote Management agent enables you to manage remote machines from Lab Management or from ALM.
  - ▶ After you have configured the Performance Center agent on the Load Generator machine, you can edit the configuration settings from Lab Management. For more information, see the *HP ALM Performance Center Guide*.
-

## Configuring and Running the UNIX Performance Center Agent

Load Generator hosts can be installed on Linux machines. This section describes how to configure and run Performance Center agents on UNIX machines.

---

**Note:** As part of the process of configuring the Performance Center Agent on UNIX machines, you also need to configure the Remote Management agent. The Remote Management agent enables you to manage remote machines from Lab Management or from ALM.

---

### To configure the Performance Center Agent on UNIX machines:

- 1** Activate the firewall service for the Performance Center agent:
  - a** Open <Performance Center root folder>/dat/br\_Inch\_server.cfg in a text editor.
  - b** In the **Firewall** section, set **FireWallServiceActive** to **1** and save your changes.
- 2** Activate the firewall service for the Remote Management agent:
  - a** Open <Performance Center root folder>/al\_agent/dat/br\_Inch\_server.cfg in a text editor.
  - b** In the **Firewall** section, set **FireWallServiceActive** to **1** and save your changes.
- 3** Run **agent\_config** from the <Performance Center root folder>/bin directory and enter the agent configuration settings (see "Agent Configuration Settings" on page 217).

---

**Note:** When you set the agent configuration settings, they are applied to both the Performance Center and Remote Management agents.

---

- 4 Restart the Performance Center agent for the configuration changes to take effect.

- a To stop the Performance Center agent, run the following command from the <Performance Center root folder>/bin directory:

```
m_daemon_setup -remove
```

- b To start the Performance Center agent, run the following command from the <Performance Center root folder>/bin directory:

```
m_daemon_setup -install
```

---

**Note:** When the Performance Center agent is configured to run over a firewall, and the agent is connected to the MI Listener, a file called <local\_machine\_key>\_connected\_to\_MI\_Listener is created in the temporary directory of the Performance Center agent machine. This file is deleted when the Performance Center agent disconnects from the MI Listener.

---

- 5 Restart the Remote Management agent for the configuration changes to take effect.

- a To stop the Remote Management agent, run the following command from the <Performance Center root folder>/al\_agent/bin directory:

```
al_daemon_setup -remove
```

- b To start the Remote Management agent, run the following command from the <Performance Center root folder>/al\_agent/bin directory:

```
al_daemon_setup -install
```



## Agent Configuration Settings

The following table provides an explanation of the agent configuration settings:

Setting	Default Value	Description
<b>MI Listener name</b>	none	The name, full name, or IP address of the MI Listener.
<b>Local Machine Key</b>	none	<p>A symbolic string identifier used to establish a unique connection between the Controller host and the agent machine, via the MI Listener machine.</p> <p>When configuring to monitor over a firewall, you can enter any logical name, using lowercase letters only.</p> <p>When configuring to run Vusers over a firewall, you must use the format <code>hostname_locationname</code> where:</p> <ul style="list-style-type: none"> <li>▶ <code>hostname</code> is the name of the host as found in Lab Management's Hosts module.</li> <li>▶ <code>locationname</code> is the name of the host location as found in Lab Management's Host Locations module.</li> </ul>
<b>Connection Timeout (seconds)</b>	20 seconds	The length of time you want the agent to wait before retrying to connect to the MI Listener machine. If zero, the connection is kept open from the time the agent is run.
<b>MI Listener User Name</b>	none	The user name needed to connect to the MI Listener machine.

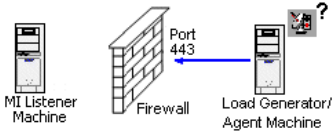
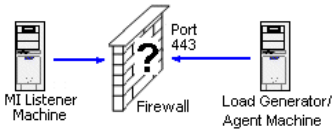
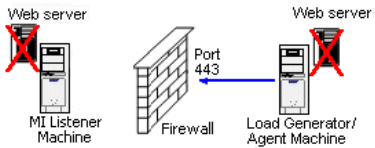
Setting	Default Value	Description
<b>MI Listener Password</b>	none	The password needed to connect to the MI Listener machine.
<b>Server Domain</b>	none	The domain name needed to connect to the MI Listener machine. This field is required only if NTLM is used.
<b>Connection Type - TCP/HTTP</b>	TCP	Select either <b>TCP</b> or <b>HTTP</b> , depending on the configuration you are using.
<b>Connection Type - HTTP Proxy Name</b>	none	The name of the proxy server. This field is mandatory if the <b>Connection Type</b> setting is <b>HTTP</b> .
<b>Connection Type - HTTP Proxy Port</b>	none	The proxy server connection port. This field is mandatory if the <b>Connection Type</b> setting is <b>HTTP</b> .
<b>Connection Type - HTTP Proxy User Name</b>	none	The user name of a user with connection rights to the proxy server.
<b>Connection Type - HTTP Proxy Password</b>	none	The password of the user with connection rights to the proxy server.
<b>Connection Type - HTTP Proxy Domain</b>	none	The user's domain if defined in the proxy server configuration. This option is required only if NTLM is used.
<b>Use Secure Connection (SSL)</b>	disabled	Enable to connect using the Secure Sockets Layer protocol.

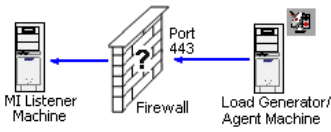

Setting	Default Value	Description
<b>Use Secure Connection (SSL) - Check Server Certificates</b>	none	Authenticates the SSL certificates that are sent by the server. Select <b>Medium</b> to verify that the server certificate is signed by a trusted Certification Authority. Select <b>High</b> to verify that the sender IP matches the certificate information. This setting is available only if <b>Use Secure Connection</b> is set to <b>True</b> .
<b>Use Secure Connection (SSL) - Private Key Password</b>	none	The password that might be required during the SSL certificate authentication process. This option is relevant only if the <b>Client Certificate Owner</b> option is enabled.
<b>Use Secure Connection (SSL) - Use Client Certificate</b>	disabled	Enables you to upload the SSL certificate (if required by the server to allow the connection to be made). This option is relevant only if the <b>Use Secure Connection</b> option is enabled.

## Checking Connectivity

To run Vusers or monitor servers over a firewall, you must be able to establish a connection between the Performance Center agent, MI Listener, and the Controller machine.

If you encounter connectivity problems after installing and configuring all the necessary components, check the table below for troubleshooting tips.

Check	Solution
<p><b>To check that the Firewall service was activated on the agent machine:</b></p> 	<p>There should be a traffic light to the right side of the Performance Center Agent icon on the machine running/monitoring Vusers over a firewall. If there is no traffic light, this indicates that the <b>FirewallServiceActive=1</b> is not set in the [FireWall] section of the Agent Settings. For details, see "About Configuring Performance Center Agents Over the Firewall" on page 212.</p>
<p><b>To check that port 443 is open:</b></p> 	<p>On the agent machine, open a command prompt window, and type the following:  <code>telnet &lt;MI_Listener_IP&gt; 443.</code>          For example: <code>telnet 111.111.111.1111 443.</code>          If port 443 is open, a new Telnet window opens. If port 443 is not open, contact your network administrator.</p>
<p><b>To check that port 443 is available:</b></p> 	<p>If a Web server is running on the MI Listener or Monitor Over Firewall machine, port 443 does not allow the access required by the listening and monitoring processes. Contact your network administrator to change the Web server port.</p>

Check	Solution
<p><b>To check connectivity between the agent and the MI Listener, when running the Performance Center agent as a service:</b></p>  <p>The diagram illustrates a network setup. On the left is a server icon labeled 'MI Listener Machine'. In the center is a brick wall icon labeled 'Firewall' with a question mark on it. On the right is another server icon labeled 'Load Generator/ Agent Machine'. A blue double-headed arrow connects the 'MI Listener Machine' and the 'Load Generator/ Agent Machine', passing through the 'Firewall'. The arrow is labeled 'Port 443'.</p>	<p>If there is a red light to the right of the Performance Center agent icon  when running the Performance Center agent as a service, do the following:</p> <ul style="list-style-type: none"> <li>▶ Check that port 443 is open. See above.</li> <li>▶ Check that the Agent Settings and Agent Configuration are correctly set. For details, see "About Configuring Performance Center Agents Over the Firewall" on page 212.</li> <li>▶ Run the agent as a process by launching <b>Installation&gt;\Launch_service\bin\magent proc.exe</b>. If you are successful, this indicates an authentication issue with the Performance Center Agent Service. Browse to the <b>Service &gt; Performance Center Agent Service</b> and change the properties of this service to System User Account, or provide the username and password of a user who has administrative privileges on this machine.</li> </ul>



# **Part V**

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## **Troubleshooting**





# 10

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## Troubleshooting Installation

This chapter provides troubleshooting for issues that arise when installing ALM Performance Center 11.50 components, when migrating data from earlier versions of Performance Center, and during initial configuration.

**This chapter includes:**

- ▶ During Performance Center Server Setup Installation of a Prerequisite Fails on page 227
- ▶ Performance Center Server Installation Cannot be Completed: IIS is not Installed on page 228
- ▶ Fails to Install .NET Framework 3.5 SP1 on Windows 2008 R2 on page 229
- ▶ Cannot Connect to Performance Center Server or Host on page 229
- ▶ Performance Center Host Installation Hangs at Registering Modules on page 230
- ▶ Performance Center Server Cannot be Added to ALM Due to Mismatch in Communication Security Passphrase on page 231
- ▶ Performance Center Host Cannot be Added to Lab Management, or is Non-Operational, Due to Mismatch in Communication Security Passphrase on page 232
- ▶ Performance Center Server Cannot be Added to Lab Management: HostNotFound Error on page 233
- ▶ Connection to Controller Failed when Starting a Run and the Online Run Screen Did Not Load on page 233
- ▶ Working with Performance Center when Windows Firewall is Enabled on page 234

- ▶ Cannot Start Remote Management Agent Service Automatically on page 237
- ▶ Uninstall of Host Failed or Has Frozen on page 237
- ▶ Cannot Launch ALM: Message That Software Not Installed on page 238
- ▶ Cannot Log in to Performance Center via the Client Machine: Error Regarding JavaScript on page 239
- ▶ When Starting a Test Run, the Host is Added, but the Initializing Run Page Does Not Load on page 240
- ▶ Cannot Run Performance Center Component Installation from a Network Drive on page 240
- ▶ Installing Performance Center Components Does Not Start when Selecting Them from the DVD Menu on page 241
- ▶ Installing One of the Performance Center Components Cannot Use Default Port: Port Already in Use on page 242
- ▶ Unable to Use Non-Default Ports in Microsoft SQL on page 245
- ▶ Cannot Connect to the Hosts Using IUSR\_METRO User with the MIOrchid#1 Password on page 245
- ▶ Errors in the Migration Tool Report on page 245
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- ▶ The Migrated Project is Not Linked to the PC\_PROJECT\_TEMPLATE Project After the Migration on page 249
- ▶ Migration Tool Logs on page 251
- ▶ Migration Tables Not Found on page 253
- ▶ Migration Tool Report Data Not Found on page 254
- ▶ Load Test Fails to Start and Issues no Error Message on page 255
- ▶ Unable to View Topology Monitors Online on page 256

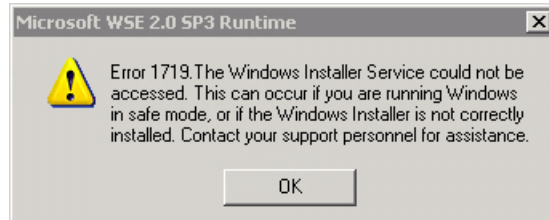
## During Performance Center Server Setup Installation of a Prerequisite Fails

### Problem Description

Some of the system components require installation of various software as a prerequisite to successful setup of the component.

For example, the setup of the Performance Center Server requires an installation of WSE 2.0. This installation may fail during installation of Performance Center components.

Example of the error:



### Troubleshooting

Component setup uses MSI. This error is often related to problems with the MSI engine.

Restart the machine and try again. If the problem persists, contact Microsoft.

## **Performance Center Server Installation Cannot be Completed: IIS is not Installed**

### **Problem Description**

The Performance Center Server installation did not complete successfully. The virtual directories are not created on the Performance Center Server.

### **Troubleshooting**

This error occurs when IIS is not installed prior to installation of the Performance Center Server.

- 1** Complete the Performance Center Server installation by skipping the ALM and Performance Center Server configuration steps.
- 2** Install IIS.
- 3** Run Performance Center Server Configuration Tool from:  
**Start > Program Files > HP Performance Center Server > Tools > HP Performance Center Server Configuration Wizard**
- 4** (Optional) Set Performance Center and Performance Center Host license keys.

## **Fails to Install .NET Framework 3.5 SP1 on Windows 2008 R2**

### **Problem Description**

While installing .NET 3.5 SP1 on Windows 2008 R2, the installation fails and the following error is displayed:

**The installation and configuration of Microsoft. NET Framework 3.5 SP1 must be made using the role management tools.**

### **Troubleshooting**

Enable the .Net feature from the server configuration.

## **Cannot Connect to Performance Center Server or Host**

### **Problem Description**

Connection issues may cause different errors.

These include:

- ▶ Inability to add Performance Center Server to the system
- ▶ Inability to add Performance Center Host to the system
- ▶ Cannot view Performance Center web pages (for example: License page, Performance Test Designer, and so on)

### **Troubleshooting**

Make sure a network connection is available from one machine to the other. To check connectivity, make sure you can ping from one machine to another, or alternatively use telnet <port number>.

## Performance Center Host Installation Hangs at Registering Modules

### Problem Description

Both the installation and the MSI user interface hang at registering modules. This problem occurs because MSI creates a separate process for each registration action and then waits for each process to end.

### Troubleshooting

To solve this problem, do one of the following:

- ▶ Stop and restart the installation.
- ▶ Open task manager and sort the processes by name. Locate the msixec processes that are running with the user name system. Terminate the msixec process that is consuming the highest CPU.

# Performance Center Server Cannot be Added to ALM Due to Mismatch in Communication Security Passphrase

## Problem Description

The Communication Security passphrase on the Performance Center Server and the ALM server do not match and the servers cannot communicate.

## Troubleshooting

This can occur if an incorrect Communication Security passphrase was provided during the initial configuration of the Performance Center Server, or if the passphrase on the ALM server was changed.

To solve the mismatch, update the Communication Security passphrase on the ALM server and on the Performance Center Server.

### To update the Communication Security passphrase on the ALM server:

- 1 Log in to Site Administration.
- 2 In the **Site Configuration** tab, update the **COMMUNICATION\_SECURITY\_PASSPHRASE** parameter.
- 3 Restart the **HP Application Lifecycle Management** service on the ALM server.

### To update the Communication Security passphrase on the Performance Center Server:

- 1 On the machine where the Performance Center Server is installed, run the Performance Center Server Configuration Wizard:  
**Start > Program Files > HP Performance Center Server > Tools > HP Performance Center Server Configuration Wizard**
- 2 On the Communication Security page, enter the new Communication Security passphrase.
- 3 Click **Next** on all of the subsequent wizard pages and **Finish** to close the wizard.

## Performance Center Host Cannot be Added to Lab Management, or is Non-Operational, Due to Mismatch in Communication Security Passphrase

### Problem Description

The Communication Security Passphrase should be the same on both the host and the Performance Center Server. The mismatch may occur if you run the Host Configuration wizard, since this wizard resets the Communication Security Passphrase value.

### Troubleshooting

Check that both the host and the Performance Center Server have the same Communication Security Passphrase value. If the values are not the same, you can change them directly on the Performance Center Server or host, or by reconfiguring the Performance Center Server or host from Lab Management:

► **From Lab Management.** For information about reconfiguring Performance Center Servers and hosts, see the *HP ALM Performance Center Guide*.

► **Directly on the Performance Center Server.** On the Performance Center Server, navigate to the **PCS.config** file as follows: <Performance Center Server path>\dat\PCS.config. Under the <appSettings> tag, the value appears by the **LW\_CRYPTO\_INIT\_STRING** key.

For information about how to configure the Communication Security Passphrase via the Performance Center Server Configuration Wizard, see "Performance Center Server Cannot be Added to ALM Due to Mismatch in Communication Security Passphrase" on page 231.

► **Directly on the host.** On the host, navigate to the **LTS.config** file as follows: <Performance Center Host path>\dat\LTS.config. Under the <appSettings> tag, the value appears by the **LW\_CRYPTO\_INIT\_STRING** key.



## Performance Center Server Cannot be Added to Lab Management: HostNotFound Error

### Problem Description

When adding a Performance Center server, the ALM system performs a name lookup operation. At times, the system changes the IP address or the short DNS name into a full DNS name. When this situation occurs, the system fails to add the server because the name is incorrect.

### Troubleshooting

Validate that the Performance Center server URL is correct. Make sure that the server is up and that it can be reached from the ALM server.

If the problem persists, add the fully qualified name of the Performance Center server to the Host file (typically under `c:\Windows\System32\drivers\etc`) in the ALM machine.

## Connection to Controller Failed when Starting a Run and the Online Run Screen Did Not Load

### Problem Description

A connection to a Controller must be made during run initialization in order to start the test. The initialization screen shows that the connection failed and as a result the online run screen did not open.

### Troubleshooting

- Check the Performance Center Server names and make sure they are recognized by the host.
- If the Performance Center Server and host are in separate domains, use fully qualified names.
- When using machine names, make sure the Performance Center Server and host belong to the same domain.

To verify that the Performance Center server is recognized by the host, perform the following steps on each host:

- 1 Open the Host machine.
- 2 Open the Hosts file from C:\windows\system32\drivers\etc\hosts.
- 3 Add the Performance Center Server machine name and IP to this file.

## **Working with Performance Center when Windows Firewall is Enabled**

### **Problem Description**

To work with Performance Center, we recommend that you disable the Windows Firewall on all host machines (see "Configuration for Windows XP Professional" on page 107). To enable Performance Center to work with the Windows Firewall enabled, the Windows Firewall must be reconfigured.

## Troubleshooting

The Windows Firewall must be configured to allow inbound and outbound communication on specific ports used by Performance Center.

The following configurations are required for all Performance Center machines in the system (servers and hosts), except for Site Scope and Diagnostics.

### Performance Center server:

Process / Service	Direction	Protocol	Local Port	Remote Port	Path
Datacollectionagent.exe	Inbound	TCP	3333	Any	<PCS install dir>\bin\datacollectionagent.exe
World Wide Web Services (HTTP Traffic-In)	Inbound	TCP	80	Any	Service
RemoteManagement Agent Service	Inbound	TCP	54245	Any	<PCS install dir>\al_agent\bin\alagentservice.exe
HP.PC.LTOP.QCOTA OperationService Wrapper.exe	Outbound	TCP	Any	8080	< PCS install dir>\bin\HP.PC.LTOP.QCOTA OperationServiceWrapper.exe
ALWrapperServer.exe	Outbound	TCP	Any	54245	<PCS install dir>\bin\ALWrapperServer.exe
w3wp.exe	Outbound	TCP	Any	8080, 8731, 1433, 3333 (Use port 1433 for MS SQL Server. For Oracle, use port 1521.)	

**Hosts:**

Process / Service	Direction	Protocol	Local Port	Remote Port	Path
Datacollectionagent.exe	Inbound	TCP	3333	Any	<Host install dir>\bin\datacollectionagent.exe
RemoteManagement Agent Service	Inbound	TCP	54245	Any	<Host install dir>\al_agent\bin\alagentservice.exe
Performance Center Agent Service	Inbound	TCP	54345, 50500	Any	<Host install dir>\launch_service\bin\magentservice.exe
System	Inbound	TCP	8731	Any	
HP.PC.LTOP.QCOTA OperationService Wrapper.exe	Outbound	TCP	Any	8080	<Host install dir>\bin\HP.PC.LTOP.QCOTAOperationServiceWrapper.exe
LTOPSvc.exe	Outbound	TCP	Any	80, 8080	<Host install dir>\bin\LTOPSvc.exe

## Cannot Start Remote Management Agent Service Automatically

### Problem Description

After installing PCS on Windows 2008 with UAC enabled, the Remote Management Agent Service is not enabled.

### Troubleshooting

Disable UAC and reboot the PCS machine. The service status should be set to **Started**.

## Uninstall of Host Failed or Has Frozen

### Problem Description

This error may present itself in various ways:

- Uninstall of the Performance Center host did not complete successfully.
- Uninstall of the Performance Center host is taking a long time and seems to have frozen.
- When trying to uninstall the Performance Center host again, the Performance Center host is not found in Add/Remove Programs.

### Troubleshooting

- 1** Try to reboot the machine and uninstall again (unless the Performance Center host no longer appears in Add/Remove Programs).
- 2** Open a command prompt and run:
 

```
<Host installation path>\bin\HP.PC.PCS.Configurator.exe
/CFG:..\dat\setup\Its\xml\Configurator.xml /G:Uninstall
```
- 3** Delete the host installation folder. The default path for the host installation folder on a Windows 2008 64-bit machine is:
 

```
C:\Program Files (x86)\HP\Performance Center Host
```
- 4** Delete **HP Performance Center Host** from **Start menu > Programs**.

- 5 Delete the product from the MSI manager using the Windows Installer CleanUp Utility (<http://www.windows-installer-cleanup-utility.com/>).

## Cannot Launch ALM: Message That Software Not Installed

### Problem Description

When launching ALM, a message such as the following is displayed:

**“Microsoft Visual C++ 2005 SP1 ATL Security Update Redistributable is not installed. Application will not be able to run. Contact your system administrator.”**

### Troubleshooting

This problem occurs if one of the client prerequisites, .NET Framework 4.0 or Microsoft Visual C++ 2005 SP1 ATL Security Update Redistributable, is not installed.

To solve this problem, install the software manually from the following locations:

.NET Framework 4.0	<Installation_Disk_Root_Directory>\Setup\Common\dotnet4.0
Microsoft Visual C++ 2005 SP1 Redistributable Package (x86)	<Installation_Disk_Root_Directory>\Setup\<environment>\prerequisites\vc2005_sp1_redist\vc redistrib_x86.exe

## Cannot Log in to Performance Center via the Client Machine: Error Regarding JavaScript

### Problem Description

Login to Performance Center fails, and the following error is displayed:

**JavaScript is not installed or is disabled in your browser.....**

### Troubleshooting

This problem is related to running JavaScript in your browser.

To resolve this issue:

- 1** In Internet Explorer, select **Tools > Internet options > Security**.
- 2** Select **Internet zone**.
- 3** Click **Custom Level**.
- 4** Make sure that **Active Scripting** is enabled.
- 5** Enable the following items under **ActiveX controls and Plug-ins**:
  - **Automatic prompting for ActiveX controls**
  - **Binary and script behaviors**
  - **Run ActiveX controls and plugins**
  - **Script ActiveX controls marked safe for scripting**

## **When Starting a Test Run, the Host is Added, but the Initializing Run Page Does Not Load**

### **Problem Description**

When starting a test run, the host is added, but the Initializing Run page does not load.

### **Troubleshooting**

The client needs to have access to the machine. For example, if the Administrator inserted the machine name without the domain, you might need to add the IP address and machine name to the host file (C:\WINDOWS\system32\drivers\etc\hosts) on the client machine.

## **Cannot Run Performance Center Component Installation from a Network Drive**

### **Problem Description**

Cannot run the setup (Performance Center Server or host) when attempting to run it from a network drive.

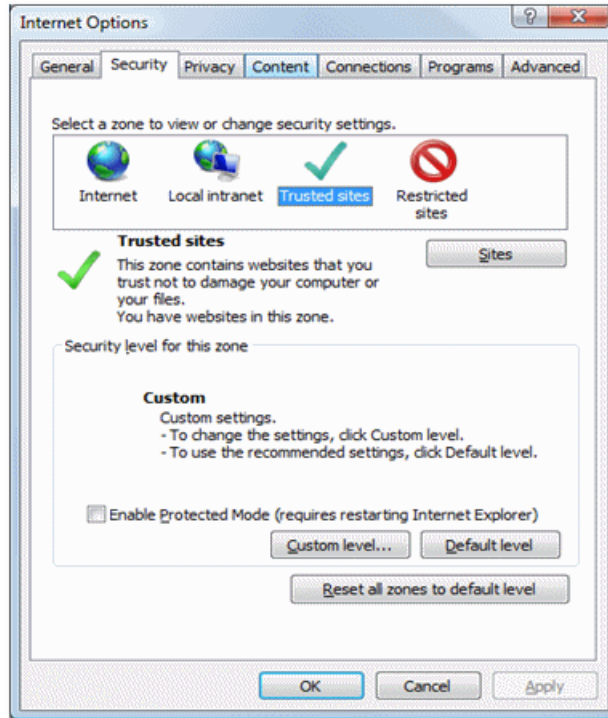
### **Troubleshooting**

In order to run **setup.exe** from a network location, you need to add the network server location to your Trusted Sites, and then run setup.exe again.



To add the network server to your Trusted Sites in Internet Explorer:

- 1 Open **Tools > Internet Options**.
- 2 Select the **Security** tab and click **Trusted Sites**:



- 3 Click **Sites**.
- 4 In the Trusted Sites dialog box, add the location of the network server where the Performance Center component setup file is located, to the list of trusted sites.

## Installing Performance Center Components Does Not Start when Selecting Them from the DVD Menu

### Problem Description

When clicking the installation option on the DVD menu nothing happens.

### Troubleshooting

- 1 Make sure the user running the installation has sufficient permissions to launch executable files.
- 2 Restart the machine and try again.

## Installing One of the Performance Center Components Cannot Use Default Port: Port Already in Use

### Problem Description

The installation cannot use a default port because it is already in use.

### Troubleshooting

If the installation cannot use a default port because it is already in use, change the port as per the instructions in the following table:

Component	How to change the port
Performance Center Server IIS	To change this port, see <a href="http://support.microsoft.com/kb/149605">http://support.microsoft.com/kb/149605</a> .
Performance Center host	<p><b>To change port 8731 to a different port:</b></p> <ol style="list-style-type: none"> <li>1 On each Performance Center host, open <b>LTOPSvc.exe.config</b> (located in &lt;Host Installation directory&gt;\bin\) and change all four occurrences of <b>8731</b> to a new port number. Restart the <b>Performance Center Load Testing Service</b>.</li> <li>2 On the Performance Center Server, open <b>pcs.config</b> (located in &lt;Performance Center Server Installation directory&gt;\dat\). Under <b>PCSettings</b>, change <b>ltopPortNumber</b> to the new port number.</li> </ol>

Component	How to change the port
<b>MI Listener</b>	<p>To change port 443 to a different port, perform the following steps on the following machines:</p> <ul style="list-style-type: none"> <li>➤ Controller machine (if used as MI Listener)</li> <li>➤ Load Generator machine</li> <li>➤ MI Listener</li> </ul> <p><b>To change port 443:</b></p> <ol style="list-style-type: none"> <li><b>1</b> Open &lt;Component installation directory&gt;\launch_service\dat\mdrv.dat. and locate the [launcher] section.</li> <li><b>2</b> Add <b>OFWPort=&lt;port&gt;</b>, where &lt;port&gt; is the new port number.</li> <li><b>3</b> Go to &lt;Component installation directory&gt;\launch_service\dat\channel_configure.dat and locate the [General] section.</li> <li><b>4</b> Add <b>OFWPort=&lt;port&gt;</b>, where &lt;port&gt; is the new port number.</li> <li><b>5</b> Restart the agent.</li> </ol> <p><b>Note:</b> There is no support for changing port 50500.</p>
<b>LoadRunner/ Performance Center Agent Autolab Agent</b>	<p><b>To change HTTP tunneling ports 5001 and 5002:</b></p> <ol style="list-style-type: none"> <li><b>1</b> Open &lt;LR&gt;\launch_service\dat\mdrv.dat, and locate the [launcher] section.</li> <li><b>2</b> Add the following to the <b>ExtCmdLine=</b> key: <ul style="list-style-type: none"> <li>➤ For port 5001 add: <ul style="list-style-type: none"> <li>-lnch_http_nd_port=&lt;port&gt;</li> </ul> </li> <li>➤ For port 5002 add: <ul style="list-style-type: none"> <li>-lnch_http_dummy_port=&lt;port&gt;</li> </ul> </li> </ul> <p>where &lt;port&gt; is the new port number.</p> </li> </ol> <p><b>To change HTTP tunneling port 5003:</b></p> <ol style="list-style-type: none"> <li><b>1</b> Create or open &lt;LR&gt;\launch_service\dat\merc_agent.cfg</li> <li><b>2</b> Locate the [Attributes] section, and add the following: <b>NMMRouterPort=&lt;port&gt;</b>, where &lt;port&gt; is the new port number.</li> </ol> <p><b>Note:</b> There is no support for changing ports 54345 and 54245.</p>

Component	How to change the port
<b>SiteScope (Topology)</b>	In Performance Center, change the port of the Topology entity to the same port as that defined during the SiteScope configuration.
<b>SiteScope (Topology) - SSL</b>	In Performance Center, change the port of the Topology entity to the same port as that defined during the SiteScope configuration.
<b>SiteScope (Monitor Profiles)</b>	In Performance Center, change the port of the Monitor Profile entity to the same port as that defined during the SiteScope configuration.
<b>Diagnostics Server</b>	In Lab Management, change the port of the Diagnostics Server entity to the same port as that defined during the Diagnostics Server configuration.
<b>Diagnostics Server - SSL</b>	In Lab Management, change the port of the Diagnostics Server entity to the same port as that defined during the Diagnostics Server configuration.

## Unable to Use Non-Default Ports in Microsoft SQL

### Problem Description

Performance Center does not work on non-default ports in Microsoft SQL.

### Troubleshooting

The Microsoft SQL instance must use a static port. The correct port must be defined in the connection string.

## Cannot Connect to the Hosts Using IUSR\_METRO User with the MIOrchid#1 Password

### Problem Description

Cannot log in to any of the hosts using the IUSR\_METRO account, with the default MIOrchid#1 password.

### Troubleshooting

Starting in version 11.00, the default password for IUSR\_METRO has changed. The new password is (case sensitive): **P3rfoRm@1nce**

## Errors in the Migration Tool Report

### Problem Description

The migration tool report may contain errors about specific entities or projects.

The errors in the migration tool report indicate two types of problems:

- ▶ The entity is corrupted in the PC 9.51 database and thus could not be migrated properly to ALM Platform.
- ▶ There was a temporary error in the environment while the migration tool was running.

## Troubleshooting

The troubleshooting instructions depend on the nature of the problems.

### Troubleshooting the migrated database

If the migrated database exists and it's possible to locate the problematic entity, open the ALM platform, find the problematic project and entity, and manually fix the problem.

### Troubleshooting an entity problem that existed in the database before migration

- 1** Open the PC 9.51 environment.
- 2** Open the project with the problematic entity.
- 3** Check if the entity has errors in the PC 9.51 environment.
  - a** Fix the errors in the PC 9.51 environment or delete the entity if it is not needed.
  - b** Check the log files of the migration tool (MigrationTool, ProjectMigrationWrapper). The log files may contain additional data about the error. For more information about locating the log files, see the Migration Tool Logs section of this document.
  - c** In the log files find the section containing the project with the problematic entity, based on the PC 9.51 database project ID (located in the Companies table).
  - d** Find the problematic entity error.
- 4** Migrate the project again.

### Troubleshooting an environment problem that existed before migration

The following environment problems can cause migration errors:

- **Network problems that caused errors while copying the script files** - migrate the project again, or manually upload the problematic scripts.
- **Database problem (insufficient resources, connection problems)** - migrate the project again.

**► ALM Platform errors**

- not enough memory - restart the ALM Platform and migrate the project again.
- somebody was working on the environment during the migration and caused some operations to fail - migrate the project again.
- **Insufficient resources on the machine running the migration tool** - migrate the project again.
- **Not enough disk space on the ALM Platform repository** - free enough storage on the ALM Platform repository and migrate the failed projects again.

If there is a problem migrating the project again, see "Cannot Migrate a Project Again Because it Cannot be Deleted" on page 248.

## **Cannot Connect to Oracle Database on 64-bit Windows OS**

### **Problem Description**

When you began running the migration, an error appeared when trying to define an Oracle database.

The following error message appears when you define an Oracle source or target database: "Failed to connect to the database. Reason: ORA-12154: TNS: could not resolve the connect identifier specified."

### **Troubleshooting**

This is caused by a bug in the Oracle client. The Oracle client cannot resolve third party software applications which have "special" characters in their installation paths (including parentheses).

For example, the following path is invalid because it contains parentheses:

**C:\Program Files (x86)\HP\ALM Migration**

Check that the migration tool installation path does not contain invalid characters. If the path contains invalid characters, reinstall the migration tool to a directory without any invalid characters.

## Cannot Migrate a Project Again Because it Cannot be Deleted

### Problem Description

You may want to migrate a project again after modifying something in the project or environment.

Before migrating a project again, the migration tool deletes the first project (migrated for the first time) from the ALM Platform, including its database.

If the database has open sessions it may not be successfully deleted.

### Troubleshooting

- 1** Close all open sessions to the project's database schema and migrate the project again.
- 2** If the project still cannot be deleted, delete it from the ALM Site Administration and migrate the project again.



## Errors in the Migration Log

### Problem Description

The following error is received:

*MigrationLogic.Tasks.Transformers.MonitorProfileTransformer* - Error re-encoding Password field for {MONITOR\_TYPE} Monitor on {SERVER\_NAME}, Monitor Profile {MONITOR\_PROFILE\_NAME}. Probably incompatible decryption key.

### Troubleshooting

The source monitor has a password which cannot be decrypted. The encryption key originally used is different from the default key used in the Migration application. First recreate the monitor in the same Monitor Profile using a correct password and then run the migration again.

### Problem Description

The following error is received: *Failed to dispose ProjectMigrationProxy*

### Troubleshooting

This error can be ignored.

## The Migrated Project is Not Linked to the PC\_PROJECT\_TEMPLATE Project After the Migration

### Problem Description

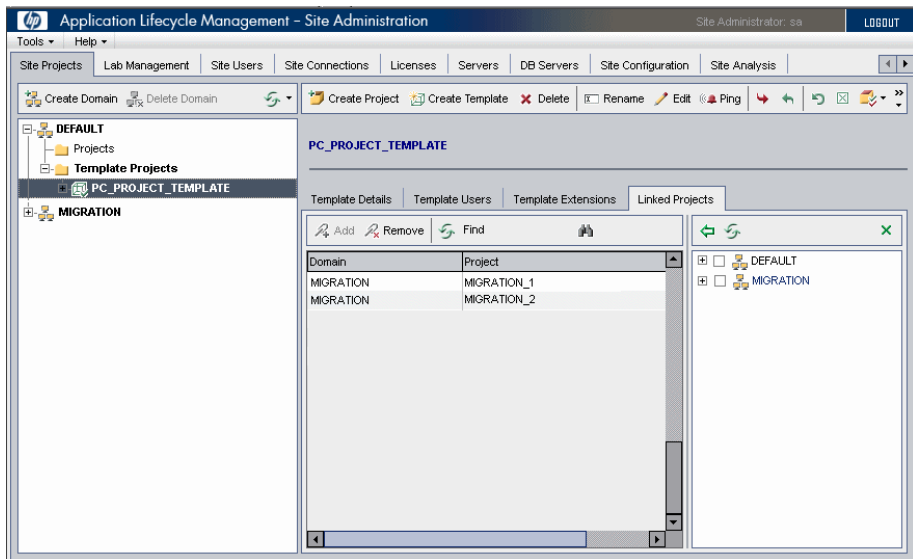
The following error message, *"Maximum retries exceeded 2. Manual apply customization required,"* indicates that the project needs to be manually linked to the PC\_PROJECT\_TEMPLATE project.

The project may not be linked to the template if it was migrated to a different domain.

**Note:** This troubleshooting procedure can also be used for new projects that need to be linked to a PC\_PROJECT\_TEMPLATE project.

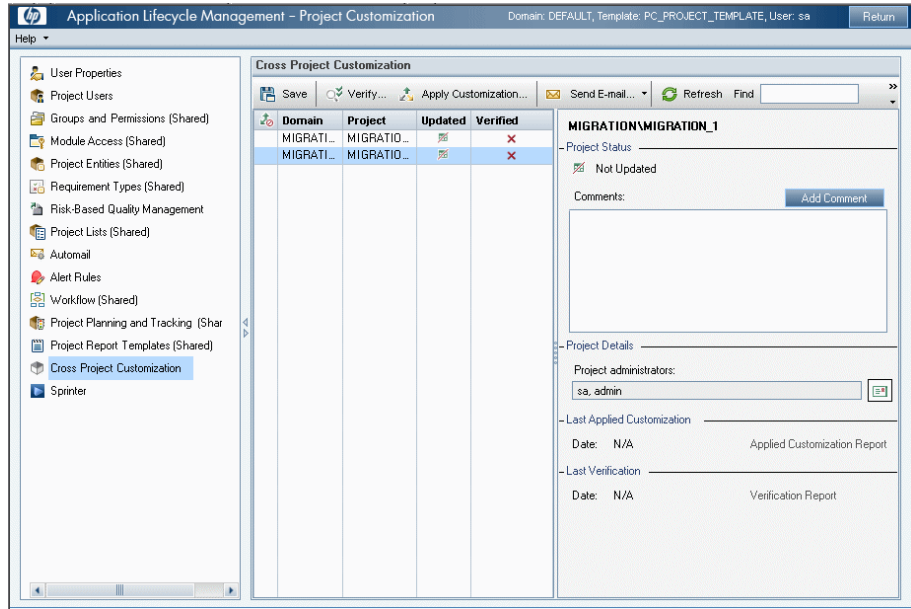
## Troubleshooting

- 1 In **Site Administration > Site Projects** tab, verify that the project appears in the Linked Projects list of the PC\_PROJECT\_TEMPLATE. If necessary, add it to the Linked Projects list.



- 2 Log in to the PC\_PROJECT\_TEMPLATE project in ALM.
- 3 Select **Tools > Customize**.
- 4 From the left menu pane, select **Cross Project Customization**.
- 5 In the Cross Project Customization table, select your project and click the **Verify** toolbar button.

## 6 Click the **Apply Customization** toolbar button.



## Migration Tool Logs

### Problem Description

Cannot find the Migration Tool log files.

### Troubleshooting

The migration tool creates log files in two directories:

- **MigrationTool** directory - general migration tool logs.
- **ProjectMigrationWrapper** directory - log related to project and entity migration.

These directories are located in the following location:

<InstallationDir>\orchidtmp\LTLogger.

- ▶ If there are other Performance Center components installed in the machine, like the Performance Center Server or Performance Center Host, the <InstallationDir> directory is the installation folder of the performance center component.
- ▶ If there are no other Performance Center components installed on the machine, the directories are located in <MigrationToolInstallation>\bin\orchidtmp\LTLogger.

To check the value of <InstallationDir> in the registry, find the following key:

```
[HKEY_LOCAL_MACHINE\SOFTWARE\Mercury  
Interactive\LoadRunner\CurrentVersion]
```

If you still cannot find the log files, check that the

<InstallationDir>\dat\ltlogconf.xml file exists. **If this file is missing, no logs will be written.**

### **Problem Description**

The migration tool writes error messages to the log file by default. You can change the migration tool log level to view additional messages.

### **Troubleshooting**

- 1** Open the <InstallationDir>\dat\ltlogconf.xml file with a text editor.
- 2** Scroll to the bottom of the file and find the <root> section:

```
<root>  
  
  <level value="Error" />  
  
  <appender-ref ref="ROLLING_4CHAINSAW"/>  
  
  <appender-ref ref="ROLLING" />  
  
</root>
```

- 3** Replace the word Error with one of the following: Debug, Warn, Info.

#### 4 Save the file.

---

**Note:**

- ▶ Switching the log level to Debug may significantly affect the performance of the migration tool.
  - ▶ When you modify the log level, it takes effect immediately. You can repeatedly modify the log level while the migration tool runs.
  - ▶ Changing the log level may affect other Performance Center components installed on the machine.
- 

## Migration Tables Not Found

**Problem Description**

Tables not found: **ProjectMigrationState**, **EntityMappings**, **MigrationConfiguration**. These three tables are created in the source (PC 9.51) database to save the migration processing state.

If they do not exist the first time the migration runs, the log indicates that the tables are not found.

## Troubleshooting

These errors can be ignored. These tables are created by the migration process, so they will not exist the first time that migration runs.

## Migration Tool Report Data Not Found

### Problem Description

**Report Data Not Found:** Cannot find the report data because the migration report wasn't saved at the end of the migration.

### Troubleshooting

The status of the migration of all projects can be found in the **ProjectMigrationState** table.

The report data is saved on the source (PC 9.51) database, in the **EntityMappings** table. This table contains all of the mappings between PC 9.51 entities and the migrated ALM Platform entities.

Here are some details about entity mappings:

- ▶ **CompanyID = 0** means that this is either a LAB\_PROJECT project entity (like host, pool, or location), or a Site Administration entity (like user or group).
- ▶ The **EntityType** field values are defined as:
  - ▶ LoadTest - 1
  - ▶ Reservation - 2
  - ▶ Script - 3
  - ▶ Run - 4
  - ▶ Location - 5
  - ▶ Pool - 6
  - ▶ Host - 7
  - ▶ MonitorProfile - 8
  - ▶ DiagnosticsServer - 9

- DiagnosticsMediator - 10
- User - 11
- Role - 12
- Trending - 13
- MListener - 14
- MonitorOfw - 15
- Project - 16
- TargetIP - 17

## Load Test Fails to Start and Issues no Error Message

### Problem Description

An error message is not issued when a load test fails to start.

### Troubleshooting

This problem is possibly caused by the configuration process. Validate the following:

- The **Performance Center LoadTesting Service** is running on the host machine under the system account.
- The PC user (**IUSR\_METRO**) exists.
- In the **wlrun7.ini**, under the **%systemroot%** folder, make sure that **IsOrchid** and **IsOrchid10** are both set to 1. For more information, see HP Software Self-solve knowledge base article KM1098097 (<http://h20230.www2.hp.com/selfsolve/document/KM1098097>).

## Unable to View Topology Monitors Online

### Problem Description

When running a load test that contains topology, the topology monitors data is not shown. You may get the following error when clicking the topology tab view: This node does not have a monitor.

### Troubleshooting

- 1** On the Host machine, validate that **EnableInUi** is set to **1** in `<install folder> dat\online_graphs\online_resource_graphs.rmd`
- 2** In Sitescope, set the monitor frequency to a higher value (by default it is set to 10 minutes). Make sure it is set for less than 10 seconds. For more information, see HP Software Self-solve knowledge base article KM1357671  
<http://support.openview.hp.com/selfsolve/document/KM1357671>



