

# HP Performance Center

for the Windows® and UNIX® operating systems

Software Version: 9.50

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## System Configuration and Installation Guide

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# Welcome to This Guide

Welcome to the *HP Performance Center System Configuration and Installation Guide*. This guide describes how to install and configure the HP Performance Center components.

Performance Center is HP's Web-enabled global load testing tool, which is specially designed to streamline the testing process and increase the test efficiency for multiple concurrent load tests across multiple geographic locations.

**This chapter includes:**

- ▶ How This Guide Is Organized on page 10
- ▶ Who Should Read This Guide on page 11
- ▶ Performance Center Online Documentation on page 11
- ▶ Additional Online Resources on page 13

## How This Guide Is Organized

This guide contains the following parts:

### **Part I Getting Started**

Provides you with the information that will help you prepare for the Performance Center installation process, including system requirements.

### **Part II Windows Installation**

Describes how to install and configure the Performance Center components on a Windows machine.

### **Part III UNIX Installation**

Describes how to install a load generator on a UNIX platform.

### **Part IV Upgrade**

Describes the steps that you need to carry out when upgrading to HP Performance Center 9.50.

### **Part V Configuration**

Describes the required configuration steps that you need to carry out after you install Performance Center and also includes recommended configuration settings for your system.

### **Part VI Using Firewalls in Performance Center**

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

### **Part VII Troubleshooting**

Provides troubleshooting tips and information for Performance Center problems.

## Who Should Read This Guide

This guide is intended for users who need to install and configure HP Performance Center.

Readers of this guide should have some knowledge of system administration.

## Performance Center Online Documentation

Performance Center includes a complete set of documentation describing how to use the product. A comprehensive Documentation Library is available from the **Help** menu in the User and Administration Sites. PDFs can be read and printed using Adobe Reader, which can be downloaded from the Adobe Web site (<http://www.adobe.com>). Printed documentation is also available on demand.

### Accessing the Documentation

You can access Performance Center documentation as follows:

- In the User and Administration Sites, click the **Help** link in the top right corner of the window. In the bookmarks on the left, click **Home** to open the Performance Center Documentation Library front page which provides quick links to the online Performance Center Documentation Library.
- Printable guides can be accessed from **Start > Program Files > Performance Center > Documentation**.

### Getting Started Documentation

- **Readme**. Provides last-minute news and information about Performance Center.
- **HP Performance Center System Configuration and Installation Guide**. Explains how to install and configure the Performance Center components. Available in PDF format only. Accessible from the HP Installation DVD.





- **HP Performance Center Quick Start.** A self-paced guide showing you how to use Performance Center to create, run, and monitor load tests. Available in PDF format only.

Accessible from the General tab that is displayed when you open the User Site.

## **Performance Center User Guides**

- **HP Performance Center User Guide.** Describes how to use Performance Center to create, schedule, run, and monitor load tests.
- **HP Performance Center Monitor Reference.** Describes how to set up the server monitor environment and configure Performance Center monitors for monitoring data generated during a load test run.

## **Performance Center Administration**

- **HP Performance Center Administrator Guide.** Describes how to use Performance Center Administration Site for overall resource management, site management, system configuration, technical supervision, and user privileges in Performance Center projects.

## **Troubleshooting**



- **HP Performance Center Troubleshooting Guide.** Provides information for troubleshooting problems while working with Performance Center. Available in PDF format only.

## **Standalone Applications**

The following documentation is available only on host machines, and if standalone components are installed:

- **HP Analysis User Guide.** Describes how to generate graphs and reports to analyze your load tests after they have run.
- **HP Virtual User Generator User Guide.** Describes how to create Vuser scripts through recording and programming.

## Additional Online Resources

**Troubleshooting and Knowledge Base** accesses the Troubleshooting page on the HP Software Support Web site where you can search the Self-solve knowledge base. The URL for this Web site is <http://h20230.www2.hp.com/troubleshooting.jsp>.

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Most of the support areas require that you register as an HP Passport user and sign in. Many also require a support contract.

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Welcome to This Guide

# Part I

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## Getting Started





# 1

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## Before You Install

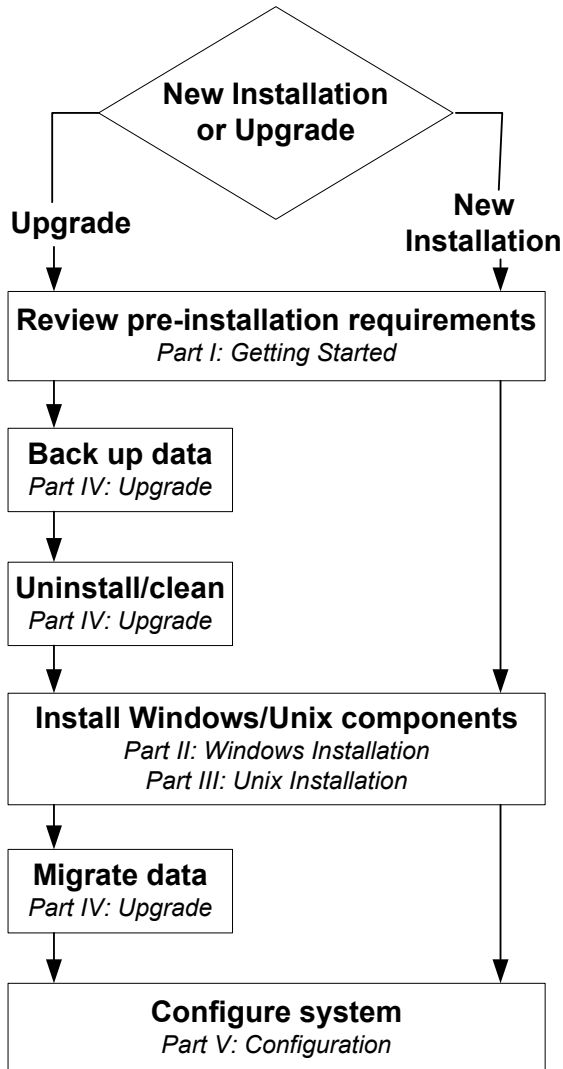
This chapter provides you with the information that will help you prepare for the Performance Center installation process. Before you install Performance Center, you must review the system requirements.

**This chapter includes:**

- Installation Flow on page 18
- Performance Center Components and Data Flow on page 19
- System Component Requirements and Considerations on page 24
- Pre-installation Considerations: All Components on page 35
- Required Services on page 37
- Browser Configuration on page 38

## Installation Flow

The diagram below provides an outline of the steps involved in installing or upgrading to HP Performance Center 9.50 and includes references to the relevant parts in the book.



## Performance Center Components and Data Flow

This section describes the HP Performance Center components.

- ▶ **Administration Site.** The Administration Site is used for administering the Performance Center system. From the Administration Site, you can perform tasks such as assigning user roles and privileges, creating and administering projects, and managing resource usage.
- ▶ **User Site.** The User Site is used for creating, managing, and running load tests. From the User Site, you can perform tasks such as designing and configuring load tests, configuring monitors, reserving resources, running and monitoring test runs, and analyzing test results.
- ▶ **Utility Server.** The Utility Server is the Performance Center License Manager and is also used for configuring monitor profiles and other maintenance services.
- ▶ **Database and File Servers.** The Database and File Servers form the infrastructure for persistent data within Performance Center. The Database Server stores information on users, projects, host information, and load tests. The file server stores the test scripts and test results.
- ▶ **Performance Center Host.** Performance Center hosts are used to control load tests, generate load, and analyze data. Performance Center hosts can be configured as Controllers, Load Generators, or Data Processors:
  - ▶ **Controller.** The Controller is the manager of a load test. The Controller receives the scripts, their run-time settings, and a list of the 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 load test.
  - ▶ **Load Generator.** Load generators generate load by running Vusers. The Controller dictates the manner in which they start and stop running. There can be any number of load generators for a given load test.
  - ▶ **Data Processor.** The Data Processor host is used for publishing information to the Performance Center Dashboard.

- ▶ **MI Listener.** The MI Listener is one of the components needed to run Vusers and monitor applications over a firewall. For more information about firewalls in Performance Center, see Part VI, “Using Firewalls in Performance Center.”
- ▶ **Monitors Over Firewall.** Used to monitor servers that are located over a firewall. For more information about firewalls in Performance Center, see Part VI, “Using Firewalls in Performance Center.”

The following standalone applications, which are included on the Performance Center installation disk, integrate with your Performance Center System:

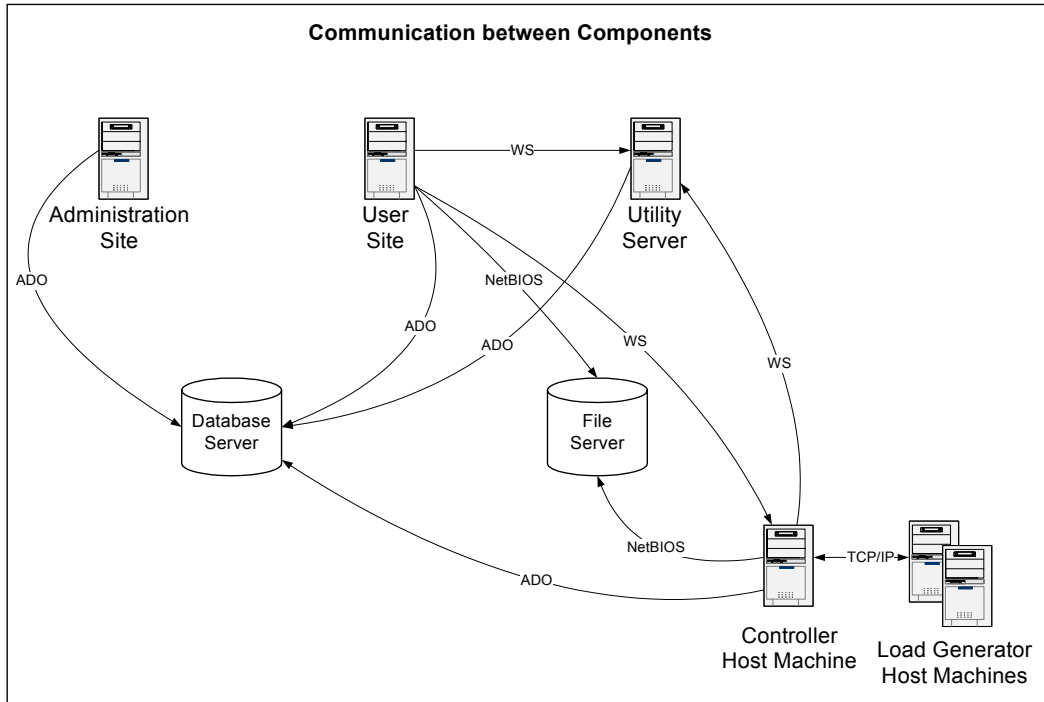
- ▶ **HP Virtual User Generator.** Virtual User Generator (VuGen) generates virtual users, or Vusers, by recording actions that typical end-users would perform on your application. VuGen records your actions into automated Vuser scripts which form the foundation of your load tests.
- ▶ **HP Analysis.** 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.
- ▶ **SiteScope.** SiteScope is a data collector used for collecting performance data from network, application, database, and Web servers.
- ▶ **ERP and CRM Mediator.** The ERP and CRM Mediator gathers and correlates offline transaction data for the ERP/CRM diagnostics modules.

## Communication Paths

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

When running a load test, the Performance Center system components share information 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 Performance Center system:




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**Note:** Some communication protocols (ADO and NetBIOS) should not be used with a firewall. Keep this in mind when configuring a system with a firewall. For more information on firewalls, see Part VI, “Using Firewalls in Performance Center.”

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For more detailed information about the communication paths and protocols and a list of Performance Center processes and services, refer to the *HP Performance Center Troubleshooting Guide*.

## Load Considerations

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

Machine	Quantity within the system	Load Considerations
Administration Site	One	Light load. Can be installed on the same machine as the User Site
User Site	At least one	Heavy load Can be installed on the same machine as the Administration Site. To balance the load on your Performance Center system you can install multiple User Sites and use load balancers that route traffic based on ASP Session IDs.
Database Server	One	Light load Can be installed on the same machine as the File Server. Standalone installation is recommended.
File Server	One	Light load It is recommended to install the File server on a machine with a reliable hard drive and a fast network connection. Can be installed on the same machine as the database server.
Utility Server	One	Generally light load with heavy spikes during Monitor configuration Standalone installation is recommended

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

Use the diagram and table to determine which machines to allocate for which load testing tasks.

For example, you can combine a number of components that have a light load on a single machine. Conversely, consider installing components with a heavy load on standalone machines.

## System Component Requirements and Considerations

The Performance Center system includes several components. This section provides hardware and software requirements and pre-installation considerations for each of the following Performance Center components:

- “User Site Server” on page 25
- “Administration Site Server” on page 26
- “Utility Server” on page 27
- “File Server” on page 28
- “Performance Center Hosts” on page 29
- “Database Servers” on page 30
- “Standalone Load Generator” on page 31
- “Standalone VuGen” on page 32
- “Standalone Analysis” on page 32
- “MI Listener” on page 33
- “Monitor Over Firewall Machine” on page 34
- “ERP and CRM Mediator” on page 34
- “SiteScope Server” on page 35



## User Site Server

The following table lists the hardware and software installation requirements for the User Site server:

Component	Requirement
Computer/Processor	<b>Type:</b> Intel Xeon (or equivalent) <b>Cores:</b> 2 (Single CPU Dual-Core or Dual CPU Single-Core) <b>Speed:</b> 2 GHz per processor/core or higher
Operating System	Windows 2003 32-Bit SE/EE (Standard Edition or Enterprise Edition) SP1, SP1+R2, SP2, or SP2+R2
Server Software	Microsoft Internet Information Server (IIS) version 6.0.x
Memory	2 GB of RAM
Swap Space	Twice the total physical memory
Free Hard Disk Space	300 MB or more recommended
Browser for Viewing User Site	Internet Explorer 6 or 7
Screen Resolution for Viewing User Site	1024*768 or 1280*1024 pixels

### Pre-installation Considerations

- ▶ Before you install the Performance Center User Site server, you must install Microsoft Internet Information Services (IIS).
- ▶ McAfee VirusScan Enterprise 8.0 includes a **buffer overflow protection module**, which is incompatible with the User Site. You can either upgrade to McAfee VirusScan Enterprise 8.5i patch 4 or perform a workaround on version 8.0. For more information, see “Working with McAfee VirusScan Enterprise 8.0” on page 175.

## Administration Site Server

The following table lists the hardware and software installation requirements for the Administration Site server:

Component	Requirement
Computer/Processor	2 GHz processor or higher
Operating System	Windows 2003 32-Bit SE/EE (Standard Edition or Enterprise Edition) SP1, SP1+R2, SP2, or SP2+R2
Server Software	Microsoft Internet Information Server (IIS) version 6.0.x
Memory	2 GB of RAM
Swap Space	Twice the total physical memory
Free Hard Disk Space	1 GB
Browser for Viewing Admin Site	Internet Explorer 6 or 7
Screen Resolution for Viewing Admin Site	1024*768 or 1280*1024 pixels

### Pre-installation Considerations

- ▶ Before you install the Performance Center Administration Site server, you need to install Microsoft Internet Information Services (IIS).
- ▶ If you are installing the Administration Site server on a Windows Server 2003 SP1 machine, download the Microsoft patch from the following location: <http://support.microsoft.com/kb/898708>. This patch addresses a known Microsoft issue, when running IIS 6.0 on a Windows Server 2003 machine.

## Utility Server

The following table lists the hardware and software installation requirements for the Utility Server:

Component	Requirement
Computer/Processor	<b>Type:</b> Intel Xeon (or equivalent) <b>Cores:</b> 2 (Single CPU Dual-Core or Dual CPU Single-Core) <b>Speed:</b> 2 GHz per processor/core or higher
Operating System	Windows 2003 32-Bit SE/EE (Standard Edition or Enterprise Edition) SP1, SP1+R2, SP2, or SP2+R2
Server Software	Microsoft Internet Information Server (IIS) version 6.0.x
Memory	2 GB of RAM
Swap Space	Twice the total physical memory
Free Hard Disk Space	1 GB

### Pre-installation Considerations

- Before you install the Performance Center Utility Server, you need to install Microsoft Internet Information Services (IIS).

## File Server

The following table lists the hardware and software installation requirements for the File Server:

Component	Requirement
Computer/Processor	2 GHz processor or higher
Operating System	Windows 2003 32-Bit SE/EE (Standard Edition or Enterprise Edition) SP1, SP1+R2, SP2, or SP2+R2
Server Software	Microsoft Internet Information Server (IIS) version 6.0.x
Memory	1 GB of RAM
Swap Space	Twice the total physical memory
Free Hard Disk Space	20 GB

### Pre-installation Considerations

- ▶ Before you install the Performance Center File Server, you need to install Microsoft Internet Information Services (IIS).
- ▶ Vuser scripts and load test results are saved on the File Server. Therefore, you should bear in mind that the more load testing you do, the more memory space you will require on the File Server.
- ▶ You can configure the Performance Center system to use a network drive as the File Server. For more information, see “Using a Network Drive as the File Server” on page 168.

## Performance Center Hosts

The following table lists the hardware and software installation requirements for the Performance Center hosts:

Component	Requirement
Computer/Processor	2 GHz or higher processor
Operating System	<ul style="list-style-type: none"> <li>▶ Windows 2003 32-Bit SE/EE (Standard Edition or Enterprise Edition)SP1, SP1+R2, SP2, or SP2+R2</li> <li>▶ Windows XP 32-Bit SP2 with Firewall disabled</li> <li>▶ <b>Load Generator only:</b> Windows Vista; Windows 2003 64-bit</li> </ul>
Server Software	Microsoft Internet Information Server (IIS) <ul style="list-style-type: none"> <li>▶ Windows XP: version 5.1.x</li> <li>▶ Windows 2003: version 6.0.x</li> </ul>
Memory	<b>For Controller:</b> 1 GB <b>For Load Generator:</b> Dependant on protocol type and system under test. For example, Web (HTTP/HTML) protocol generally requires 4 MB per non-multi-threaded Vuser and 512 KB per multi-threaded Vuser.
Swap Space	Twice the total physical memory
Free Hard Disk Space	1 GB

### Pre-installation Considerations

- ▶ Before you install the Performance Center hosts, you need to install Microsoft Internet Information Services (IIS).
- ▶ If you are running Windows XP Service Pack 2 (SP2), the Windows Firewall should be turned off on all host machines on which the upload/download features are used. See “Windows XP Professional SP2 Configuration” on page 157.
- ▶ You can install the Load Generator component on a UNIX platform to run Vusers. The UNIX Vusers interact with the Controller, installed on a Windows machine. For more information, see Part III, “UNIX Installation.”

## Database Servers

Performance Center supports the following database servers:

- ▶ Oracle 9i (32 bit) on Windows or UNIX platforms.
- ▶ Oracle 10g (32 bit and 64 bit) on Windows or UNIX platforms.
- ▶ SQL Server 2000 SP4 or 2005 SP2 on Windows only. For SQL Server 2005 SP2 the **Compatibility level** must be defined as **SQL Sever 2000 (80)**. For more information, see “Changing the Database Model Compatibility Level” on page 151.

## Pre-installation Considerations

- ▶ If the Performance Center database is configured to work in Named Instance mode, see “Working with a Non-Default MS-SQL Instance Name” on page 144 for configuration instructions.
- ▶ If you are using an Oracle database, ensure that the character set defined on the Oracle clients corresponds with the character set defined on the Oracle server. For more information, see “Verifying the Oracle Character Set” on page 137.

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### Note:

- ▶ For information and recommendations about configuring Oracle databases, see “Oracle Configuration” on page 132.
  - ▶ For information and recommendations about configuring MS-SQL databases, see “MS-SQL Configuration” on page 144.
-

## Standalone Load Generator

The following table lists the hardware and software installation requirements for the Standalone Load Generator installation:

Component	Requirement
Computer/Processor	1 GHz or higher (2.4 GHz recommended)
Operating System	<ul style="list-style-type: none"> <li>▶ Windows 2003 32-Bit/64-Bit SE/EE (Standard Edition or Enterprise Edition) SP2 and R2</li> <li>▶ Windows XP 32-Bit SP2 with Firewall disabled</li> <li>▶ Windows Vista 32-Bit</li> </ul>
Memory	<p>Dependant on protocol type and system under test.</p> <p>For example, Web protocol generally requires 4 MB per non-multi-threaded Vuser and 512 KB per multi-threaded Vuser.</p>
Free Hard Disk Space	1 GB
Browser	Internet Explorer 6 or 7

### Pre-installation Considerations

- ▶ You cannot install the Standalone Load Generator on the same machine as another Performance Center server component
- ▶ 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.

## Standalone VuGen

The following table lists the hardware and software installation requirements for the Standalone VuGen installation:

Component	Requirement
Computer/Processor	1 GHz or higher (2.4 GHz recommended)
Operating System	<ul style="list-style-type: none"> <li>▶ Windows 2003 32-Bit/64-Bit SE/EE (Standard Edition or Enterprise Edition) SP2 and R2</li> <li>▶ Windows XP 32-Bit SP2 with Firewall disabled</li> </ul>
Memory	512 MB (1 GB recommended)
Free Hard Disk Space	1 GB
Browser	Internet Explorer 6 or 7

### Pre-installation Considerations

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.

## Standalone Analysis

The following table lists the hardware and software installation requirements for the Standalone Analysis installation:

Component	Requirement
Computer/Processor	1 GHz or higher (2.4 GHz recommended)
Operating System	<ul style="list-style-type: none"> <li>▶ Windows 2003 32-Bit/64-Bit SE/EE (Standard Edition or Enterprise Edition) SP2 and R2</li> <li>▶ Windows XP 32-Bit SP2 with Firewall disabled</li> </ul>
Memory	512 MB (1 GB recommended)
Free Hard Disk Space	1 GB
Browser	Internet Explorer 6 or 7



### Pre-installation Considerations

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 following table lists the hardware and software installation requirements for the MI Listener

Component	Requirement
Computer/Processor	2 GHz processor or higher
Operating System	Windows 2003 SE/EE (Standard Edition or Enterprise Edition) SP1 or SP2
Memory	512 MB
Free Hard Disk Space	1 GB

### Pre-installation Considerations

The MI Listener cannot be installed on a machine running IIS or on a machine that is running Vusers. Therefore, the MI Listener cannot be installed on the same machine as a Performance Center host or server, because the hosts and servers all include IIS.

## Monitor Over Firewall Machine

If a Monitor over Firewall Machine is installed on a machine without any other Performance Center components, you need to configure the Performance Center agent service to run with a local user who has administrative privileges instead of a regular system user.

**To configure the Performance Center agent service:**

- 1** On the Monitor over Firewall machine, select **Start > Run**, type **services.msc** and press **ENTER**.
- 2** Right-click **Performance Center Agent Service** and select **Properties**.
- 3** In the **Log On** tab, under **Log on as**, select **This account**.
- 4** Enter a user name and password for a local user with administrative privileges.

## 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 load test. For details on installing the ERP and CRM Mediator, see “Performing the Installation” on page 44.

---

**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 indeed running as a service. If it is running as a process, you must stop it and run it as a service. For details, see “Running the Performance Center Agent as a Service” on page 164.

For information about configuring the ERP/CRM Mediator after installation, see the section about configuring ERP/CRM Diagnostics in the *HP Performance Center Administrator Guide*.

For information about using the ERP and CRM Mediator to collect diagnostics data, see the section about ERP/CRM Diagnostics in the *HP Performance Center User Guide*.

### SiteScope Server

- Refer to the *HP SiteScope Deployment Guide* for minimum requirements.
- There are two possible SiteScope installations—one for SiteScope monitoring the Performance Center servers, and another to monitor applications. When using a SiteScope monitor, you cannot use the same SiteScope instance for both of these installations.

## Pre-installation Considerations: All Components

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, so that you know which components to install on which machines.
- We recommend that the Standalone Load Generator not be installed on a machine where both Standalone VuGen and Standalone Analysis are installed. If, however, they must all be installed on the same machine, make sure to install the Standalone Load Generator last.
- **Default Web Site** must be configured on the machines that have IIS installed on them. To check, right-click **My Computer**, and select **Manage**. The Computer Management console opens. Expand the **Services and Applications** node, and check that **Default Web Site** is displayed in the **Internet Information Services** folder. If it is not, you should contact your system administrator or reinstall IIS.
- On all Performance Center hosts and servers using IIS 6.0.x, ensure that the following Web Service Extensions are allowed in IIS:
  - **Active Server Pages**
  - **ASP.NET v2.0.50727**
  - **Server Side Includes**

On the User Site server, also ensure that that the following Web Service Extension is allowed:

► **All Unknown ISAPI Extensions**

- For standalone installations, you must install the prerequisite application, **.NET Framework 3.5**, manually.
- You cannot install Performance Center components on machines with existing LoadRunner installations. Before installing Performance Center, ensure that you have removed any version of LoadRunner that exists on your system.
- Hyper-Threading must be disabled. Performance Center does not support Intel Hyper-Threading technology. Hyper-Threading can be disabled in the BIOS.
- Performance Center hosts and servers cannot be installed on machines running IBM Proventia Desktop 9.0. If it is running, end the service.
- Ensure that the operating system and the database with which you are working are both configured for the same language. If they are not configured for the same language, 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.
- During installation of Performance Center servers and hosts, a default Performance Center system user, **IUSR\_METRO**, is created in the Administrators user group of the server/host machines. Ensure that there is no security system in place that will remove the system user from the Administrators group.
- **IUSR\_<machine\_name>** must exist on all Performance Center machines.
- **IWAM\_<machine\_name>** must exist on all Performance Center Web server machines, and belong to the **Administrators** or **IIS Worker Process** groups.
- 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.
- On all Performance Center machines, the date separator in the date format must be a forward slash (“/”).

## Required Services

Before you install Performance Center, the following services must be running:

Machine	Services
<p><b>On all Performance Center servers and hosts</b></p>	<ul style="list-style-type: none"> <li>▶ IIS Admin Service (Microsoft Service) and its startup type should be defined as <b>Automatic</b> (except for MI Listener, which cannot have IIS installed on same machine)</li> <li>▶ Workstation (except on host machines designated as Load Generators only)</li> <li>▶ TCP/IP NetBIOS Helper (except on host machines designated as Load Generators only)</li> <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>
<p><b>On User Site and Administration Site servers only</b></p>	<ul style="list-style-type: none"> <li>▶ IIS Admin Service (Microsoft Service) and its startup type should be defined as <b>Automatic</b></li> <li>▶ World Wide Web Publishing Service (Microsoft Service) and its startup type should be defined as <b>Automatic</b></li> <li>▶ Distributed Transaction Coordinator (MSDTC)</li> </ul>
<p><b>On all host machines</b></p>	<ul style="list-style-type: none"> <li>▶ Remote Registry Service (Windows Service) and its startup type should be defined as <b>Automatic</b>.</li> </ul>

## Browser Configuration

Performance Center supports Internet Explorer versions 6 or 7 (IE). To view the Performance Center User Site and Administration Site correctly in IE, configure the browser on any machine that accesses the sites so that it can allow cookies and active scripting. Performance Center also requires your browser to be configured with pop-ups enabled.

---

**Note:** To view Performance Center using Windows XP or Windows 2003, you must lower your browser's security settings or add the Performance Center Sites to the trusted sites zone.

---

### To configure IE 6 and IE 7 for use with Performance Center:

- 1** In IE, select **Tools > Internet Options**. The Internet Options dialog box opens.
- 2** Select the **Privacy** tab, and move the slider to select the **Medium** privacy setting level.
- 3** In the **Security** tab click **Custom Level**. In the Security Settings dialog box, select **Scripting > Active scripting**.
- 4** In the **General** tab click **Settings**, and ensure the following (These settings are slightly different depending on whether you are using IE 6 or IE 7):
  - **If you are using IE 6:**
    - In the **Check for newer versions of stored pages** section, **Every visit to the page** is selected.
    - In the **Temporary Internet files folder** section, **Amount of disk space to use** is set to 100 MB or higher.

- **If you are using IE 7:**
  - In the **Check for newer versions of stored pages** section, **Every time I visited the web page** is selected.
  - In the **Temporary Internet Files** section, **Disk space to use** is set to 100 MB or higher.

**5** Click **OK**.

---

**Note:** Performance Center does not support tabbed browsing in IE 7.

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# Part II

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## Windows Installation



# 2

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## Installing Performance Center on Windows

This chapter describes how to install Performance Center components on a Windows machine.

**This chapter includes:**

- ▶ Performing the Installation on page 44
- ▶ Installing Additional Components on page 58
- ▶ Removing or Changing your Performance Center Installation on page 61
- ▶ Silent Installation of Performance Center on page 67

## Performing the Installation

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**Important:** If you are upgrading to Performance Center 9.50 from an earlier version of Performance Center, follow the instructions in Chapter 4, “Upgrading to Performance Center 9.50.”

---

Before you install Performance Center, review the pre-installation information, including the system requirements, described in Chapter 1, “Before You Install.”

You use the Setup program on the Performance Center installation disk to install each Performance Center component. You can install each component on a different machine or you can install more than one on the same machine. If you install more than one component on the same machine, install them all in the same folder.

---

### Notes and Limitations:

- ▶ To run the Performance Center installation, you must have full local administrative rights on the designated machine.
  - ▶ You cannot use the UNC (Universal Naming Convention) path to run the installation. Therefore, if the Performance Center installation directory is located on a network drive, the network drive needs to be mapped before you can run the installation.
  - ▶ You cannot install Performance Center using a Remote Desktop connection (RDP).
  - ▶ Performance Center cannot be installed on the same machine as LoadRunner. Before installing Performance Center, ensure that you have removed any version of LoadRunner that exists on your system.
-

**To install Performance Center or an additional component:**

**1 Launch the Performance Center installation.**

Insert the installation disk and run **setup.exe** (<installation disk root directory>\setup.exe).

**2 Select the desired installation option.**

The Performance Center Setup program begins and displays the installation menu page.



From the installation menu page, select one of the following options:

- **Performance Center Servers.** Provides the option to install the following servers:

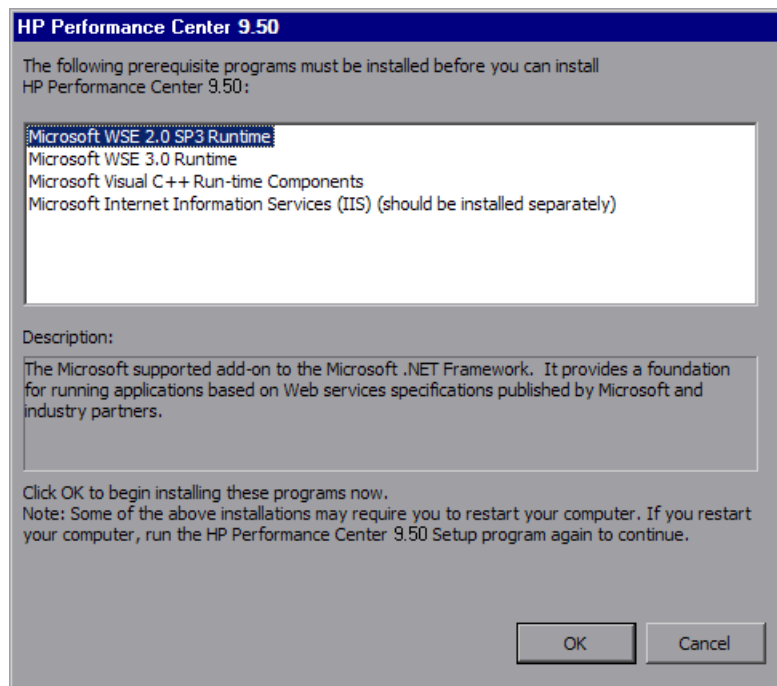
Server	Comments
<ul style="list-style-type: none"> <li>➤ <b>Utility Server</b></li> <li>➤ <b>User Site Server</b></li> <li>➤ <b>Administration Site Server</b></li> <li>➤ <b>File Server</b></li> </ul>	Required components of Performance Center that you can install separately or together
<b>ERP and CRM Mediator</b>	When you get to the Setup Type page, choose the <b>Custom</b> setup option, and select <b>ERP and CRM Mediator</b> (step 7 on page 52).

- **Performance Center Host.** Installs the components needed for controlling tests, running Vusers to generate load, or analyzing data. The same installation is used for all types of hosts. After installation, you configure each host as a Controller, Load Generator, or Data Processor machine.
- **Load Generator.** Installs a standalone version of the 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. The load generator installation is separate from the regular Performance Center installation. To install the load generator, click this option and follow the steps in the wizard.
- **Monitors Over Firewall.** Installs the components needed for monitoring over a firewall. For more information, see Part VI, “Using Firewalls in Performance Center.”
- **MI Listener.** Installs the components needed on the MI Listener machine used when running Vusers over a firewall and monitoring over a firewall. For more information about working with firewalls, see Part VI, “Using Firewalls in Performance Center.”

- **Additional Components.** Opens the **Additional Components** folder located in the root folder of the installation disk. From this folder, you can install or run any of the listed additional components. For a description of each of the additional components, see “Installing Additional Components” on page 58.

### 3 If necessary, install prerequisite software.

Specific software (for example, .NET Framework 3.5) needs to be installed before you can install Performance Center. If any of the prerequisite software is not already installed on your computer, the following dialog box opens:



Click **OK** and follow the on-screen instructions to install the prerequisite software before continuing with the Performance Center installation. If you click **Cancel**, the installer exits because Performance Center cannot be installed without the prerequisite software.

For a full list of prerequisite software, see “Performance Center Prerequisite Software” on page 237.

**Important:** Microsoft Internet Information Services (IIS) is required for Performance Center servers or hosts. The servers or hosts will not function properly if IIS has not been installed. **After you have installed Performance Center, you can no longer install IIS.** If you are installing other Performance Center components (not servers or hosts), IIS is not required.

If IIS is not installed on your computer, the above dialog box lists IIS as one of the prerequisite programs.

- ▶ **For Performance Center servers or hosts:** Click **Cancel** to exit the Performance Center installation. Install IIS on your computer and then restart the Performance Center installation.
  - ▶ **For other Performance Center components:** Click **OK**. A message opens asking you if you want to continue with the Performance Center installation. Click **Yes** to continue.
- 

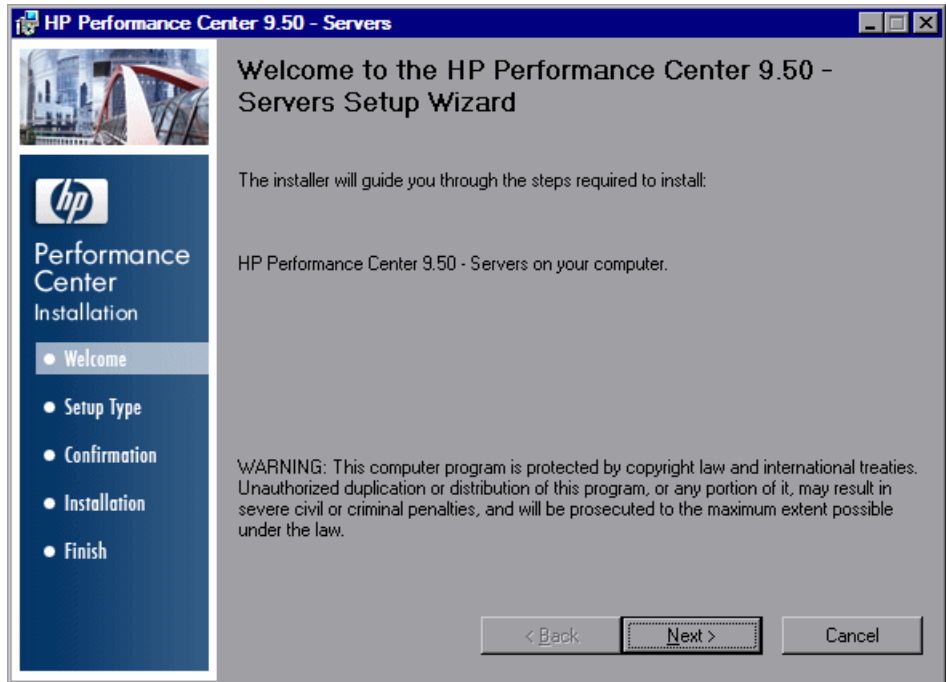
**Note:** If you are prompted to restart the computer after installing the prerequisite software, you can ignore this message and select to continue with the Performance Center installation, without restarting the computer.

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#### 4 Start the installation.

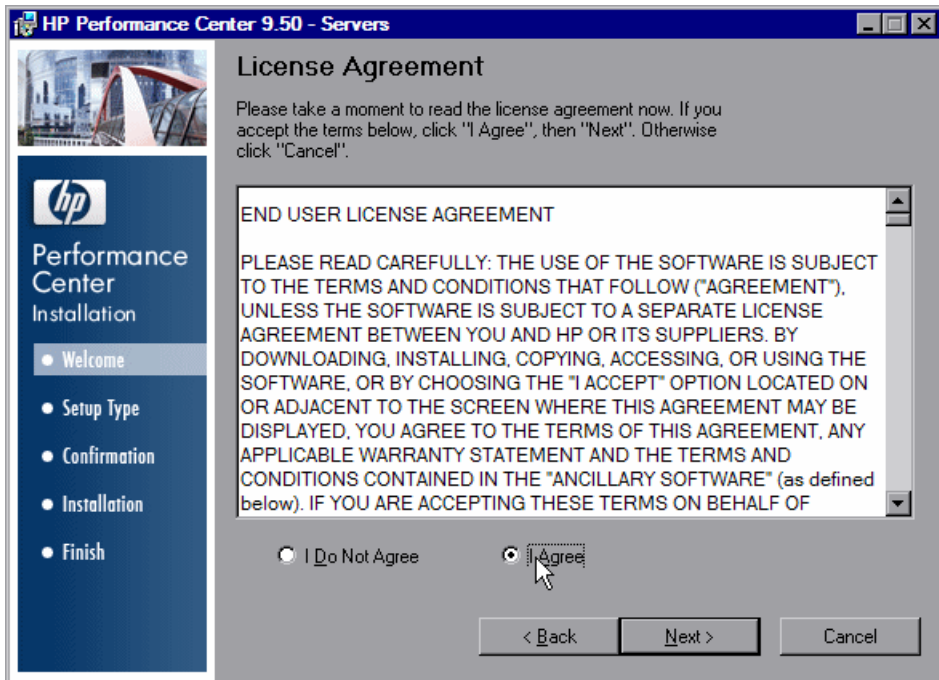
The Performance Center Setup Wizard opens, displaying the Welcome page for the relevant Performance Center component.



Click **Next** to proceed.

## 5 Review the License agreement.

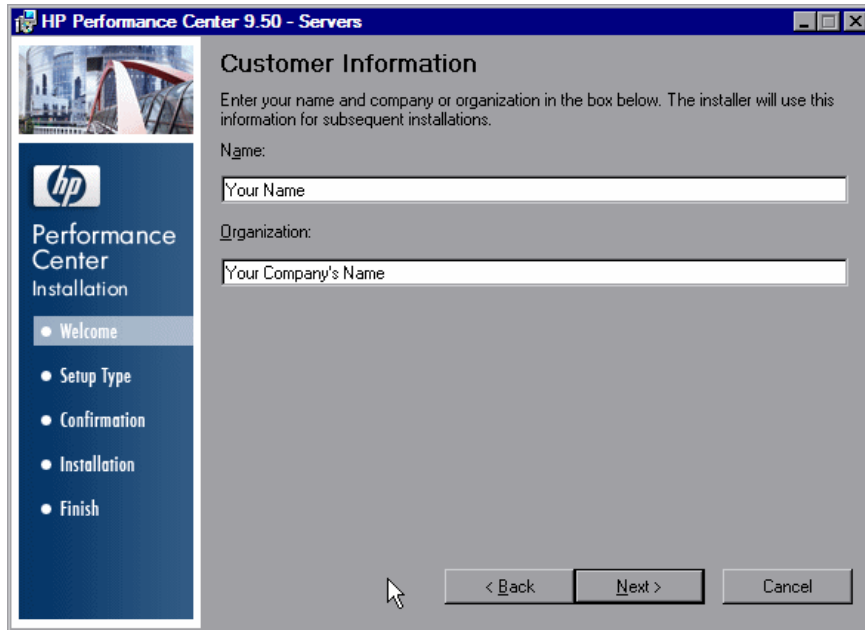
If the terms of the license agreement are acceptable to you, select **I Agree**.



Click **Next** to proceed.

## 6 Register the Performance Center Installation on your computer.

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



The screenshot shows a Windows dialog box titled "HP Performance Center 9.50 - Servers". The dialog box is divided into two main sections. On the left is a vertical navigation pane with the HP logo and the text "Performance Center Installation". Below this, there is a list of steps: "Welcome" (which is highlighted with a white background), "Setup Type", "Confirmation", "Installation", and "Finish". The main area of the dialog box is titled "Customer Information". It contains the following text: "Enter your name and company or organization in the box below. The installer will use this information for subsequent installations." Below this text are two input fields. The first is labeled "Name:" and contains the placeholder text "Your Name". The second is labeled "Organization:" and contains the placeholder text "Your Company's Name". At the bottom of the dialog box, there are three buttons: "< Back", "Next >", and "Cancel". A mouse cursor is pointing at the "Next >" button.

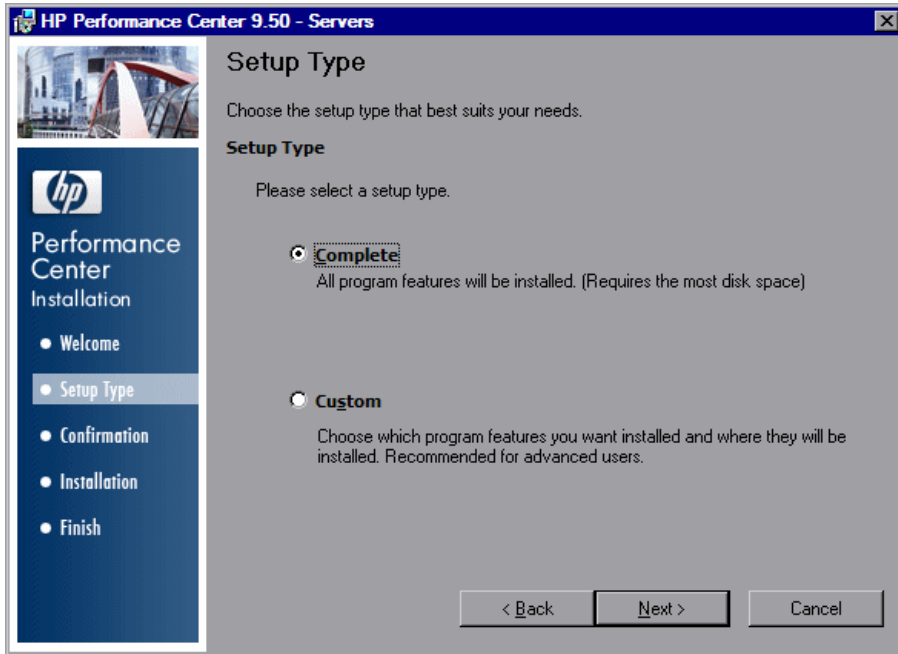
Click **Next** to proceed.

- If you selected **Performance Center Servers** on the installation menu page, continue with step 7 below.
- If you selected to install a Performance Center component other than Performance Center servers, skip to step 9 on page 54.

**7 Select a setup type. (Only if you selected Performance Center Servers on the installation menu page.)**

On the Setup Type page, select **Complete** or **Custom** as follows:

- **Complete.** Installs the Performance Center features that you selected from the installation menu page in step 2 on page 45.
- **Custom.** Install only the Performance Center features that you want to install.



Click **Next** to proceed.

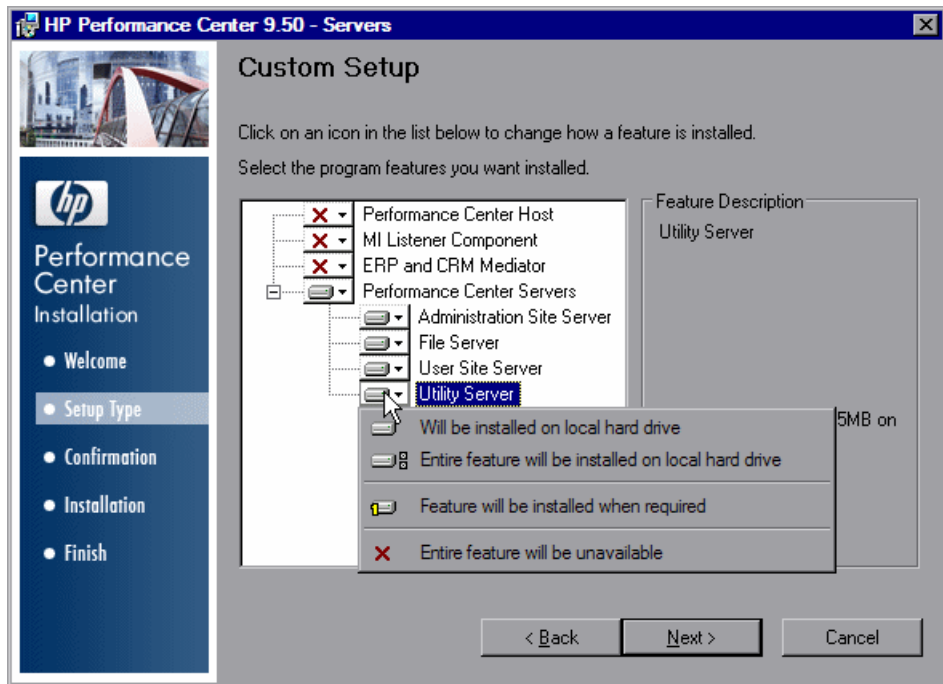
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**Next Step:**

- If you selected Complete, go to step 9 on page 54.
  - If you selected Custom, continue below with step 8 on page 53.
-

## 8 Select features to install. (Only for Custom setup)

If you chose to perform a Custom installation of Performance Center, select the Performance Center features that you want to install.



To select an installation option (for example, installing or excluding a feature), click the arrow next to the feature and select one of the following options from the menu that opens:

- ▶ **Will be installed on local hard drive.** The feature is installed on your hard drive.
- ▶ **Entire feature will be installed on local hard drive.** For features that include a number of different components, this option installs all sub-components of the feature on the local hard drive.
- ▶ **Feature will be installed when required.** The feature is not installed but there is an option to install it later. When you try access the feature later, you receive a message asking you if you want to install it.

- ▶ **Entire feature will be unavailable.** The feature is not installed and cannot be accessed later.

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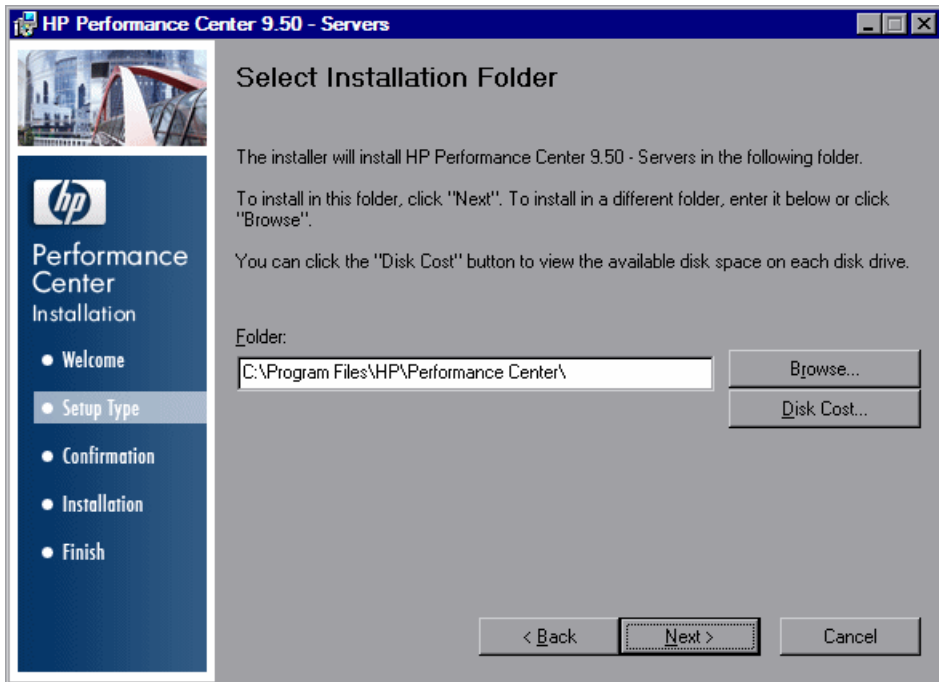
**Note:** For more information about the different Performance Center components, see “Performance Center Components and Data Flow” on page 19.

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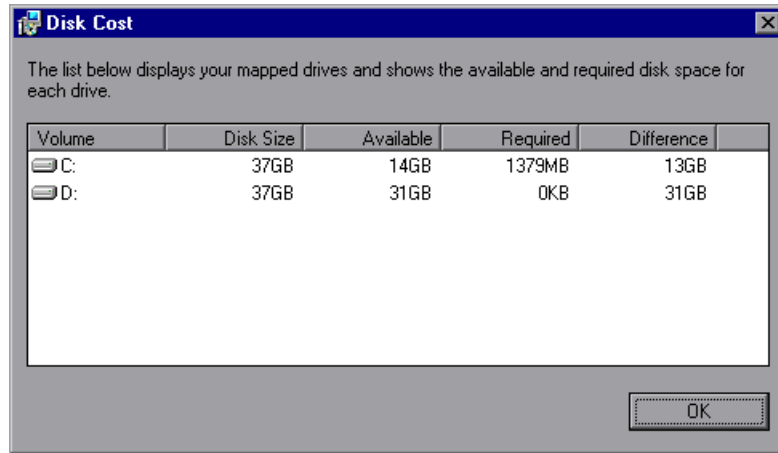
Click **Next** to proceed.

**9 Select an installation folder.**

Accept the proposed folder for the installation or browse to an alternate folder.



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

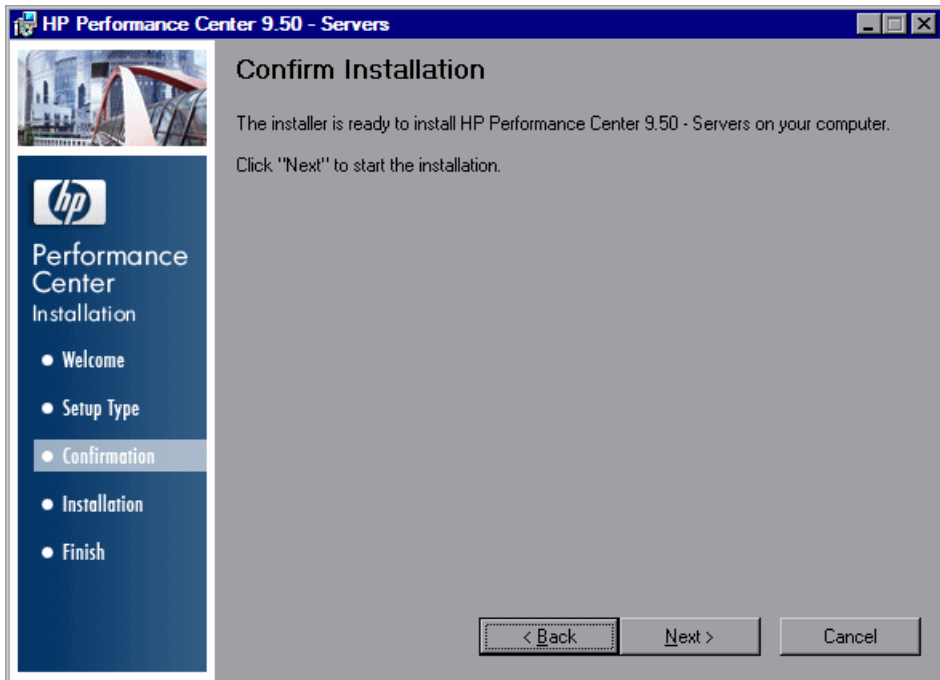


Click **OK** to close the Disk Cost dialog box.

Click **Next** to proceed.

**10 Start the installation process.**

The wizard prompts you to confirm the installation.



Click **Next** to start the installation.

---

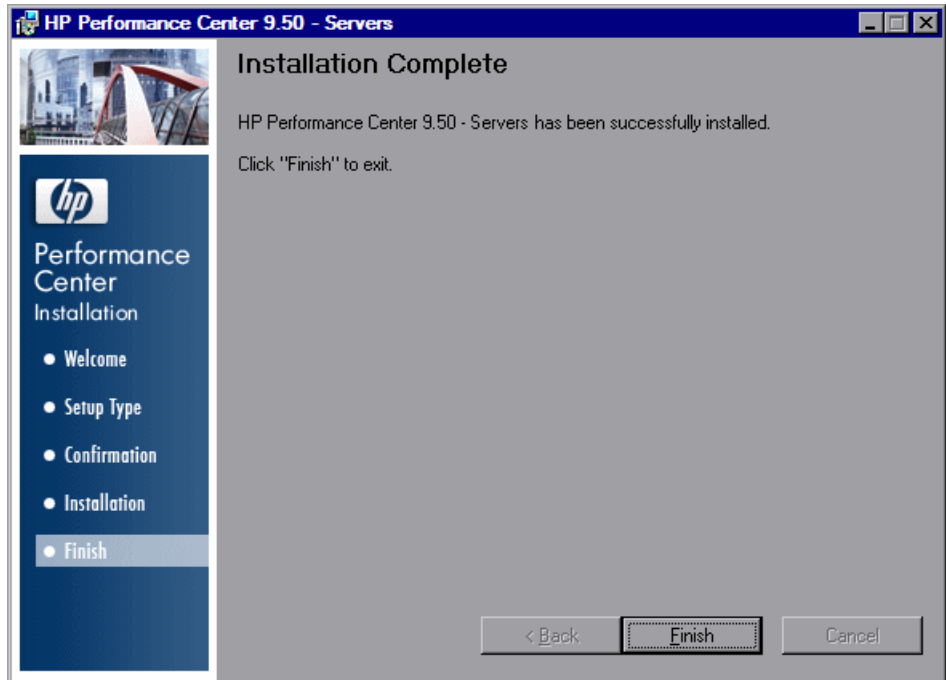
**Important:** As part of the installation process, Performance Center automatically creates a local system user with administrative privileges (**IUSR\_METRO**) on all host and server machines. This system user can be changed after installation. For information about changing the system user, see the *HP Performance Center Administrator Guide*.

---



## 11 Complete the installation process.

When the installation is complete, a wizard page opens confirming successful installation.



At the same time the Performance Center Readme file opens, displaying information about the new features in Performance Center and any last-minute limitations. You can access the Readme at any time by selecting **Start > Programs > HP Performance Center > Readme**.

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

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

The Performance Center installation is now complete. If prompted, restart the computer.

## 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** folder, located in the root folder of the installation disk. The following components are available:

- ▶ **Agent for Citrix Presentation Server.** Installs an optional component on the server machine which enhances VuGen's capabilities in identifying Citrix client objects. To install the Citrix agent, run **CitrixAgent.exe**.
- ▶ **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.** 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*.
- ▶ **Microsoft COM+ Server Monitor Probe.** Configures the server machine for COM+ monitoring. For more information on configuring the server, refer to the Application Component section in the *HP Performance Center Monitor Reference*.
- ▶ **DB Migration.** If you are upgrading your Performance Center system, use the Database Migration tool to make your databases compatible with HP Performance Center 9.50. For more information, see Chapter 4, "Upgrading to Performance Center 9.50."
- ▶ **HP Performance Validation SDK.** Provides you with the tools to create a custom protocol to run load 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.
- ▶ **License Server for Service Test.** Installs the Sentinel License Manager for use with HP Service Test. For more information, see the section about installing a Service Test license server in the *Service Test Installation Guide*, **hpst\_install.pdf**, located in the product's **help** folder.

- ▶ **MQ Tester.** Installs a component on the VuGen machine in order to generate scripts that load IBM MQ Series.
- ▶ **MSDE (Microsoft SQL Server Setup).** Installs the MSDE Database which is used for storing Analysis result data. To install MSDE, run the **Setup.exe** file.
- ▶ **Microsoft SQL 2005 Server Express Edition.** Installs the Microsoft SQL 2005 Server Express Edition for use with the Service Emulation application in HP Service Test.
- ▶ **PC\_Upgrade.** Use this utility during the upgrade process. For more information, see “Uninstalling Previous Versions of Performance Center” on page 110.
- ▶ **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 **mcomctl.ocx**, **Msfldr.ocx**, and **msvbvm60.dll** from the **SAP\_Tools\SapGuiSpy\System32VBdls** directory to your **C:\WINNT\system32** directory, then 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 have 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**.
- ▶ **Service Test Add-in.** Enables you to run VuGen with all of the HP Service Test capabilities. This integration requires an HP Service Test license. For more information, see the section about installing HP Service Test in the *Service Test Installation Guide*, **hpst\_install.pdf**, located in the product’s **help** folder.

- ▶ **SiteScope.** Installs the SiteScope server used for monitoring the Performance Center servers. In order to reduce load on the Utility Server, it is recommend to install SiteScope on the same machine as the Controller or on a dedicated server.

---

**Note:** The path to the directory in which SiteScope is installed should not contain spaces and must end with a directory called SiteScope.

---

- ▶ **Standalone Applications.** Enables you to install the full standalone versions of HP Virtual User Generator, HP LoadRunner Analysis, and the Load Generator.
- ▶ **Unlock Utility.** Use this utility to restore Performance Center authentication when you experience problems logging in to Performance Center with the LDAP or SSO server authentication configuration. For more information, see the section that discusses server authentication in the *HP Performance Center Administrator Guide*.
- ▶ **WinPcap.** Installs the WinPcap utility. WinPcap allows the user to capture network traffic into a file and analyze it afterwards. 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/>.

## Removing or Changing your Performance Center Installation

After you have installed Performance Center, you can add Performance Center components to your original installation, repair installation errors, or uninstall Performance Center from your machine.

---

**Important:** If you have more than one Performance Center component installed on your machine, you cannot remove individual components. Rather, you need to uninstall Performance Center completely and then reinstall the features that you want.

---

This section includes the following topics:

- “Adding Performance Center Components” on page 62
- “Repairing Performance Center Installation Errors” on page 65
- “Uninstalling Performance Center” on page 66

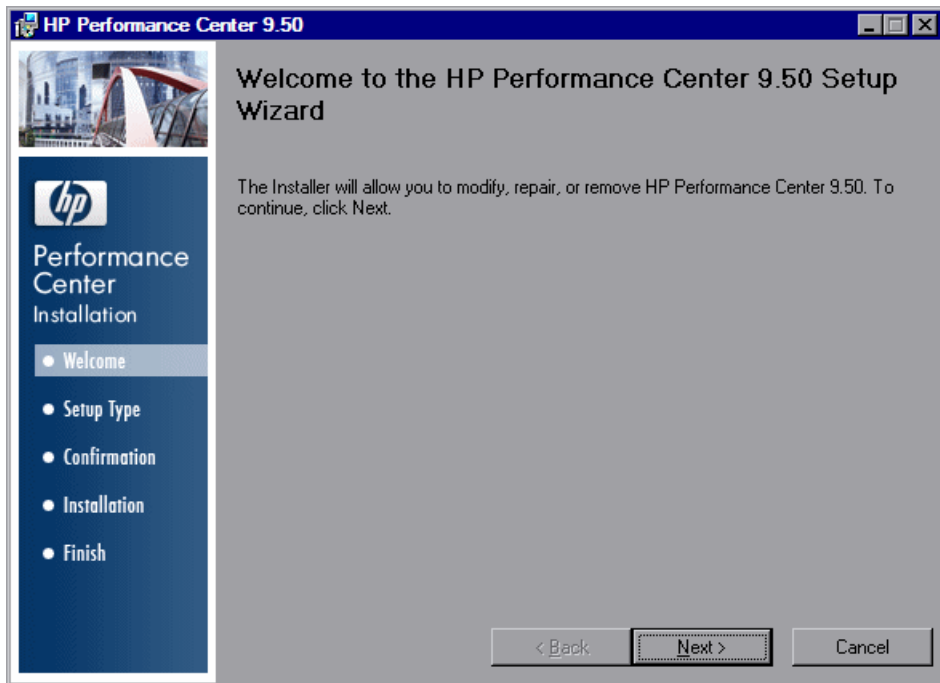
## Adding Performance Center Components

If you have one or more Performance Center components installed on your machine, you can add Performance Center components to your original installation.

**To add components to your Performance Center installation:**

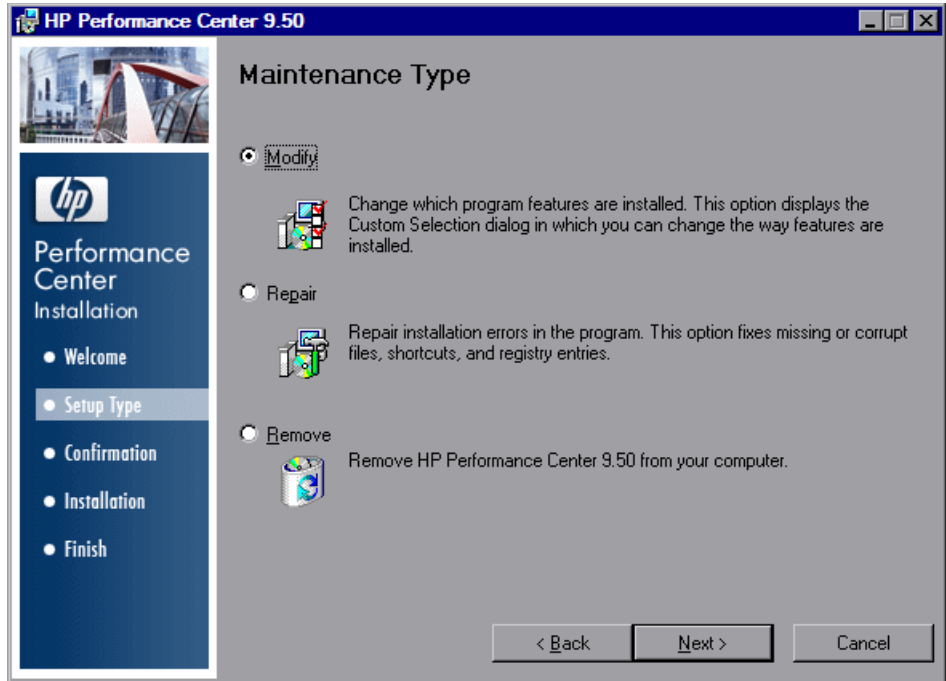
- 1** Insert the Performance Center installation disk into your disk drive.
- 2** From the Windows Control Panel, open the Add/Remove Programs dialog box.
- 3** Select **HP Performance Center** from the list of currently installed programs and click **Change**.

The Performance Center Setup Wizard opens, displaying the Welcome page.



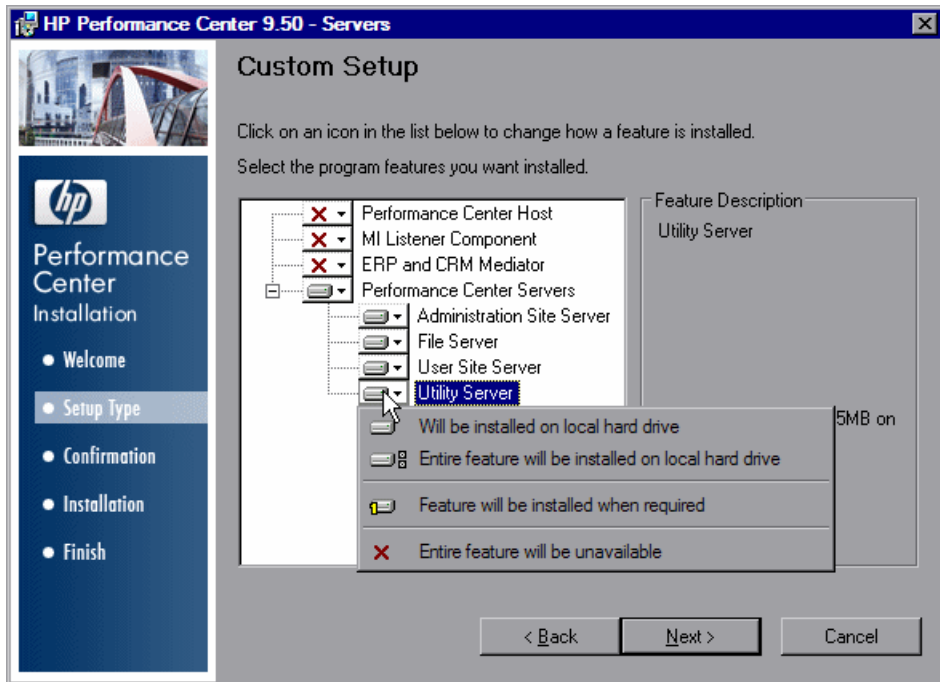
Click **Next** to proceed.

4 On the Maintenance Type page that opens, select **Modify**.



Click **Next** to proceed.

- 5 On the Custom Setup page, select the Performance Center components that you want to add to your installation as well as the components that are currently installed on your machine.



To select a component to be installed, click the arrow next to the component and select **Will be installed on local hard drive**.

---

**Important:** Ensure that all the Performance Center components that are currently installed on your machine are also selected for installation. If these components are not selected for installation, they may become corrupted.

---

For more information about the different Performance Center components that you can install, see “Performance Center Components and Data Flow” on page 19.

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

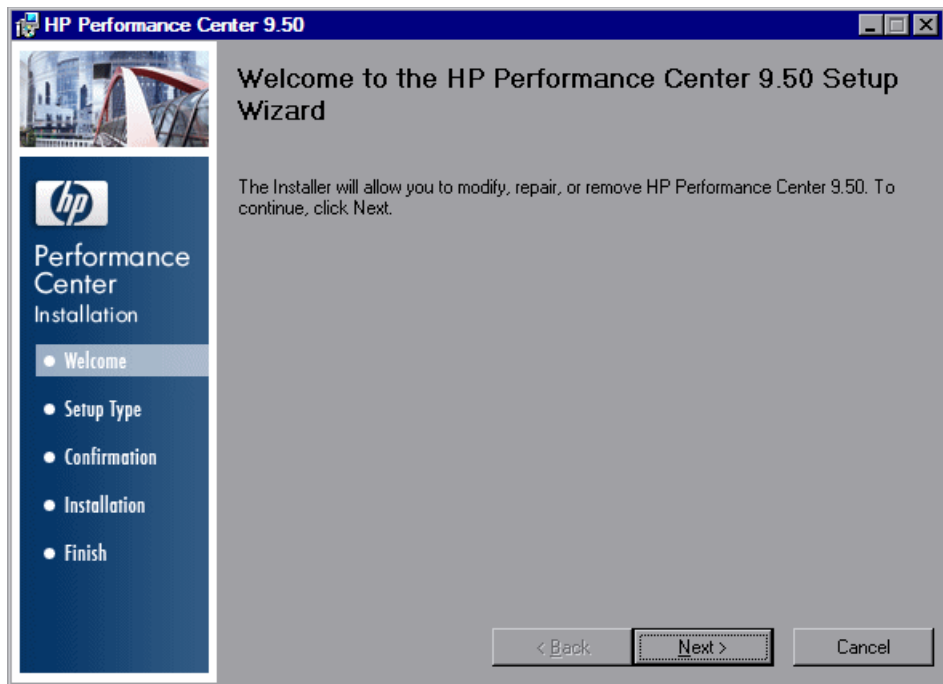


## Repairing Performance Center Installation Errors

Use this option to repair errors in your original Performance Center installation. This option is used to fix missing or corrupt files, shortcuts and registry entries. You do not use this option to add or remove Performance Center components.

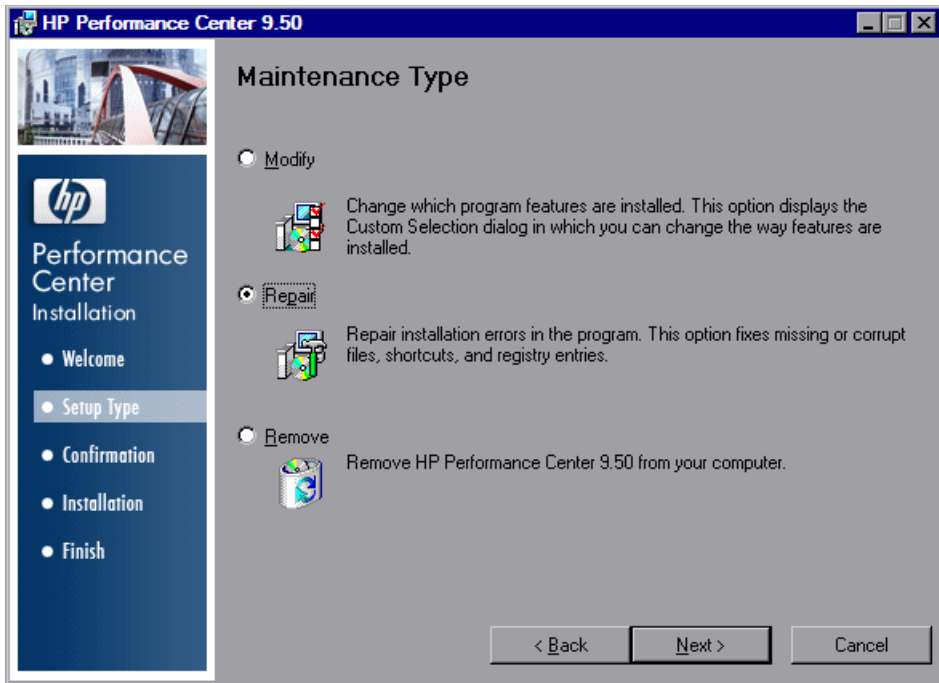
**To repair your Performance Center installation:**

- 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** from the list of currently installed programs and click **Change**. The Performance Center Setup Wizard opens, displaying the Welcome page.



Click **Next** to proceed.

- 4 On the Maintenance Type page that opens, select **Repair**.



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

## Uninstalling Performance Center

Use this option to uninstall Performance Center and all its components from your machine.

### 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.

## Silent Installation of Performance Center

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.

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

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

- 1 Install the prerequisite software. For instructions, see “Prerequisite Software” on page 69.

You cannot proceed with the Performance Center installation until all the prerequisite software has been installed.

---

**Note:** If you are prompted to restart the computer after installing the prerequisite software, you can ignore this message and select to continue with the Performance Center installation, without restarting the computer.

---

- 2 After you have installed all the prerequisite software, install the relevant Performance Center components by running the following command from the command line:

```
msiexec /i <Installation_Disk_Root_Directory>\PC\MSI\HP_Performance_Center.msi  
ADDLOCAL=UpdateService,<PC_Component>  
TARGETDIR="<Target_Installation_Directory>" /qnb
```

where:

- **<PC\_Component>** is the parameter name of the component you want to install. You can specify more than one component.
- **<Target\_Installation\_Directory>** is the directory in which you want to install Performance Center.

**Important:** Components should be separated by commas. You always need to include the **UpdateService** component.

For a list of the parameter names for each component, see “Component Parameter Names” on page 71.

---

For example, if you wanted to install the Performance Center Host to C:\Program Files\HP\Performance Center, you could run the following command:

```
msiexec /i E:\PC\MS\HP_Performance_Center.msi  
ADDLOCAL=UpdateService,Performance_Center_Host  
TARGETDIR="C:\Program Files\HP\Performance Center" /qnb
```

## Silent Installation of the Standalone Load Generator

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

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

- 1** Install all the prerequisite software except for IIS. For details, see “Prerequisite Software” on page 69.
- 2** Extract the Load Generator installation files to a local directory
  - a** From the <installation disk root directory>\Additional Components\Standalone Applications directory, run **LoadGenerator.exe** to open the Load Generator InstallShield Wizard.
  - 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_91.msi" /qb
```

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

- 4** After you 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
```

## Prerequisite Software

Install the following prerequisite software by running the relevant commands as described in the table below.

---

**Note:** Do not install IIS if you are installing the standalone load generator or the MI Listener.

---

Prerequisite Software	Command
.NET Framework 3.5	<pre>&lt;Installation_Disk_Root_Directory&gt;\PC\Commo n\Dotnet35\Dotnet35.exe /qb</pre> <p>If you do not want the machine to reboot automatically after installation, run the following command instead:</p> <pre>&lt;Installation_Disk_Root_Directory&gt;\PC\Commo n\Dotnet35\Dotnet35.exe /q /norestart</pre>
Microsoft Data Access Components (MDAC) 2.8 SP1 (or later)	<pre>&lt;Installation_Disk_Root_Directory&gt;\PC\EN\pre quisites\mdac28\mdac28.exe /q:A /C:"setup /QNT"</pre>

Prerequisite Software	Command
Microsoft Core XML Services (MSXML) 6.0	msiexec /log c:\msxml.log /quiet /I <Installation_Disk_Root_Directory>\PC\EN\prerequisites\msxml6\msxml6.msi
Microsoft Visual C++ 2005 Redistributable Package (x86)	<Installation_Disk_Root_Directory>\PC\EN\prerequisites\vc2005_sp1_redist\vc_redist_x86.exe /q:a
Microsoft Visual C++ 2008 Redistributable Package (x86)	<Installation_Disk_Root_Directory>\PC\EN\prerequisites\vc2008_redist\vc_red.msi
Microsoft Windows Installer 3.1	<Installation_Disk_Root_Directory>\PC\EN\prerequisites\msi31\WindowsInstaller-KB893803-v2-x86.exe /quiet
Web Services Enhancements (WSE) 3.0 for Microsoft .NET Redistributable Runtime MSI	msiexec /log c:\WSE3.log /quiet /I <Installation_Disk_Root_Directory>\PC\EN\prerequisites\wse30\MicrosoftWSE3.0Runtime.msi ALLUSERS=1
Web Services Enhancements (WSE) 2.0 SP3 for Microsoft .NET Redistributable Runtime MSI	msiexec /log c:\WSE2.log /qn /i <Installation_Disk_Root_Directory>\PC\EN\prerequisites\wse20sp3\MicrosoftWSE2.0SP3Runtime.msi ALLUSERS=1
Internet Information Services (IIS)  (Not for standalone load generator or MI Listener)	<b>For Windows 2003/XP:</b> Sysocmgr.exe /i:sysoc.inf /r /q  C:\WINDOWS\Microsoft.NET\Framework\v2.0.50727\aspnet_regiis

## Component Parameter Names

The following table describes which parameter to enter for each Performance Center component. For a description of each of these components, see “Performance Center Components and Data Flow” on page 19.

Component	Parameter
Performance Center Host	Performance_Center_Host
ERP and CRM Mediator	ERP_and_CRM_Mediator
All Performance Center Servers	User_Site_Server,Administration_Site_Server,Utility_Server,File_Server <b>Note:</b> This string parameter is used to install all of the following Performance Center servers: <ul style="list-style-type: none"> <li>➤ User Site Server</li> <li>➤ Administration Site Server</li> <li>➤ Utility Server</li> <li>➤ File Server</li> </ul>
User Site Server	User_Site_Server
Administration Site Server	Administration_Site_Server
Utility server	Utility_Server
File server	File_Server
MI Listener Component	MI_Listener_Component
Monitors over FireWall	Monitors_over_FireWall

## Silent Uninstall of Performance Center

You can silently uninstall Performance Center by running the following command from the command line:

```
msiexec /uninstall
"<Installation_Disk_Root_Directory>\PC\MSI\HP_Performance_Center.msi" /qnb
```





# Part III

---

## UNIX Installation



# 3

---

## Installing Performance Center on UNIX

You can install the Performance Center load generator component on a UNIX platform to run virtual users. The UNIX virtual users interact with the Controller host, installed on a Windows machine.

This chapter describes how to install the load generator on a UNIX machine.

**This chapter includes:**

- Understanding the Installation Process on page 76
- UNIX System Requirements on page 77
- Installing Using the Setup Wizard on page 79
- Using Native Package Commands on page 82
- Silent Installation on page 84
- Storing Load Generator Content in Another Directory on page 85
- After you Install Performance Center on UNIX on page 87
- Uninstalling Performance Center using the Maintenance Wizard on page 92
- Recommended Configuration on page 93

## Understanding the Installation Process

The Performance Center load generator UNIX installation involves the following steps:

### 1 Review system requirements

Before you install Performance Center, review the system requirements as described in “UNIX System Requirements” on page 77.

### 2 Install Performance Center.

The Performance Center UNIX installation disk includes a separate Performance Center native package for each UNIX platform. You install Performance Center using the **Load Generator Setup Wizard**. The wizard runs the installation of the native package. For more information, see “Installing Using the Setup Wizard” on page 79.

Advanced users can install the Performance Center native package directly using **Native package commands**. For example, if you are using a remote deployment tool to install Performance Center on multiple machines, you may need to use native package commands. For more information, see “Using Native Package Commands” on page 82.

### 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 you Install Performance Center on UNIX” on page 87.

## Notes and Limitations

- ▶ The Performance Center installation is based on native packages per operating system. This requires you to be logged in as **root user** to run the installation.
- ▶ The load generator is installed in the **/opt/HP/HP\_Performance\_Center** directory for all platforms except AIX (IBM). For AIX, it is installed in **/usr/lpp/HP/HP\_Performance\_Center**.

If you want to store the load generator content in another directory, you need to configure your system before the installation. For more information, see “Storing Load Generator Content in Another Directory” on page 85.

## UNIX System Requirements

This section describes the system requirements necessary for installing the Performance Center load generator on a UNIX machine.

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

<b>Memory (RAM)</b>	256 MB minimum <b>Note:</b> Memory depends on protocol type and system under test and can vary greatly.
<b>Available Hard Disk Space</b>	150 MB minimum

The following table describes the supported operating systems on which you can install a UNIX load generator.

OS Type	OS Version	Platform
Sun Solaris	<ul style="list-style-type: none"> <li>▶ Solaris 9 (2.9)</li> <li>▶ Solaris 10 (2.10)</li> </ul>	Sun UltraSPARC-based systems
HP-UX	<ul style="list-style-type: none"> <li>▶ HP-UX 11i (11.11)</li> <li>▶ HP-UX 11iv2 (11.23)</li> </ul>	HP PA-RISC
IBM AIX	<ul style="list-style-type: none"> <li>▶ AIX 5.2</li> <li>▶ AIX 5.3</li> </ul>	PowerPC
Red Hat Linux	<ul style="list-style-type: none"> <li>▶ Enterprise Linux 3.0</li> <li>▶ Enterprise Linux 4.0</li> <li>▶ Enterprise Linux 5.0</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>

**Notes:**

- ▶ If you are installing the load generator on an HP-UX operating system, you cannot install it from a network location. You can install it directly from the installation disk or you can copy the installer onto the local directory of the target machine.
  - ▶ Performance Center supports all X Servers.
  - ▶ For Linux platforms, you should install the updated glibc packages which provide security and bug fixes. For more information, refer to <https://rhn.redhat.com/errata/RHSA-2003-325.html#Red%20Hat%20Linux%208.0>
- 

### **HP-UX Required Patches**

To run Performance Center on HP-UX platforms, you must first install two HP patches, PHSS\_17225 and PHSS\_17872, which upgrade the C++ libraries. These patches are also available on HP's site.

- 1** Login as user root.
- 2** Copy PHSS\_17225 and PHSS\_17872 (from the patch directory of the LR installation) to the /tmp directory.
- 3** Run "sh PHSS\_17225" – this creates two files: PHSS\_17225.text and PHSS\_17225.ot.
- 4** Run "swinstall -x matchtarget=true -s PHSS\_17225.depot"  
After the patch installation, the system will be rebooted.
- 5** Run "sh PHSS\_17872" – this creates two files: PHSS\_17872.text and PHSS\_17872.depot.
- 6** Run "swinstall -x matchtarget=true -s PHSS\_17872.depot"

## Installing Using the Setup Wizard

This section describes how to install Performance Center using the setup wizard. You use the same setup wizard for all UNIX platforms.

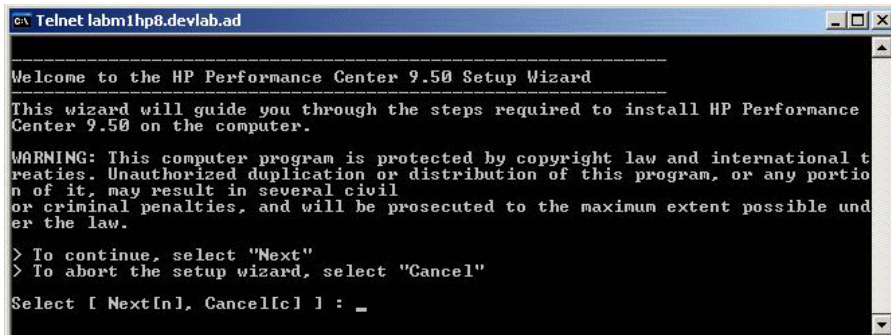
To install the load generator using the setup wizard:

- 1 Ensure that you are logged in as root user.
- 2 Launch the setup wizard.

Run the following command to launch the setup wizard:

```
<Performance Center UNIX installation disk>/<platform>/installer.sh
```

The setup wizard welcome screen opens.

A terminal window titled 'Telnet labm1hp8.devlab.ad' displays the HP Performance Center 9.50 Setup Wizard welcome screen. The text in the terminal reads: 'Welcome to the HP Performance Center 9.50 Setup Wizard', 'This wizard will guide you through the steps required to install HP Performance Center 9.50 on the computer.', a copyright warning, and instructions to press 'Next' to continue or 'Cancel' to abort. The prompt 'Select [ NextIn], Cancel[C] ] : \_' is visible at the bottom.

```
ex Telnet labm1hp8.devlab.ad
-----
Welcome to the HP Performance Center 9.50 Setup Wizard
-----
This wizard will guide you through the steps required to install HP Performance
Center 9.50 on the computer.

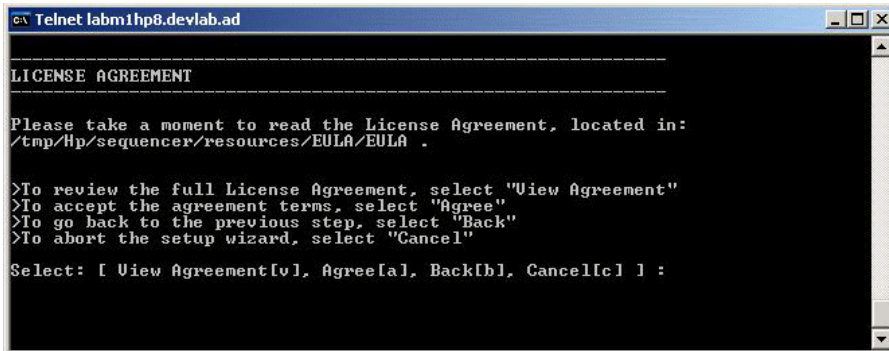
WARNING: This computer program is protected by copyright law and international t
reaties. Unauthorized duplication or distribution of this program, or any portio
n of it, may result in several civil
or criminal penalties, and will be prosecuted to the maximum extent possible und
er the law.

> To continue, select "Next"
> To abort the setup wizard, select "Cancel"

Select [ NextIn], Cancel[C] ] : _
```

Select **Next** to continue.

### 3 Review the License agreement.



```
c:\ Telnet labm1hp8.devlab.ad
-----
LICENSE AGREEMENT
-----
Please take a moment to read the License Agreement, located in:
/tmp/HP/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"

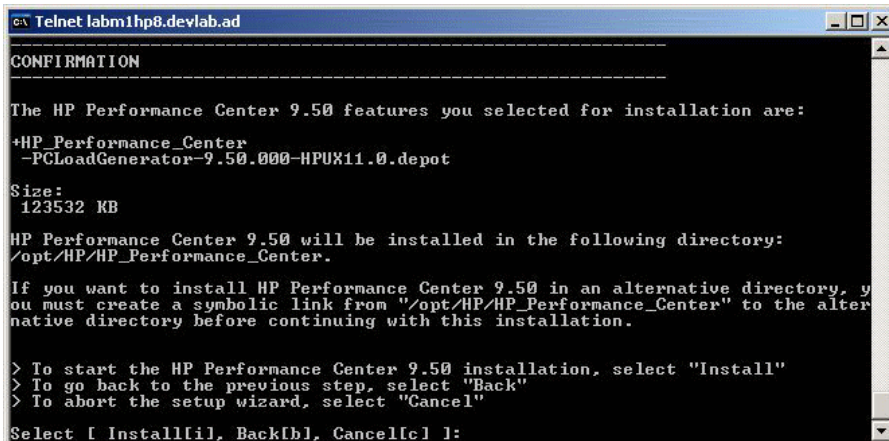
Select: [ View Agreement[v], Agree[a], Back[b], Cancel[c] ] :
```

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 Start the installation process.

The wizard prompts you to confirm the installation.



```
c:\ Telnet labm1hp8.devlab.ad
-----
CONFIRMATION
-----
The HP Performance Center 9.50 features you selected for installation are:
+HP_Performance_Center
-PCLoadGenerator-9.50.000-HPUX11.0.depot
Size:
123532 KB
HP Performance Center 9.50 will be installed in the following directory:
/opt/HP/HP_Performance_Center.
If you want to install HP Performance Center 9.50 in an alternative directory, you
must create a symbolic link from "/opt/HP/HP_Performance_Center" to the alternative
directory before continuing with this installation.

> To start the HP Performance Center 9.50 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] ]:
```

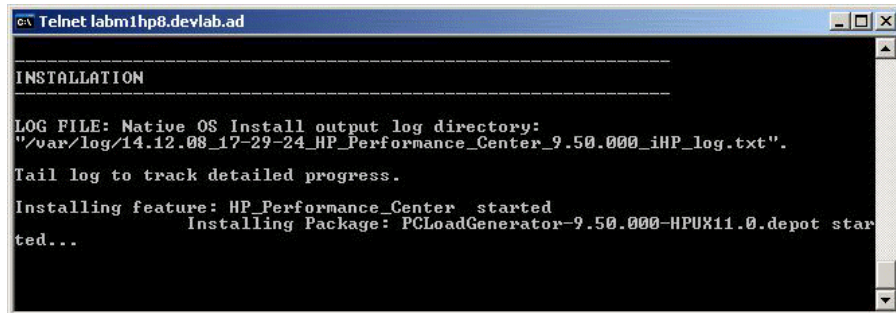
The load generator is installed in the **/opt/HP/HP\_Performance\_Center** directory for all platforms except AIX (IBM). For AIX, it is installed in **/usr/lpp/HP/HP\_Performance\_Center**.



If you want to store the load generator content in another directory, you need to configure your system before the installation. For more information, see “Storing Load Generator Content in Another Directory” on page 85.

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

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



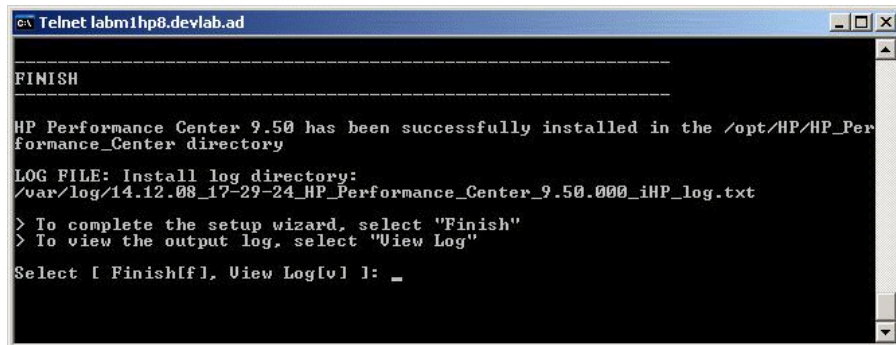
```

c:\ Telnet labm1hp8.devlab.ad
-----
INSTALLATION
-----
LOG FILE: Native OS Install output log directory:
"/var/log/14.12.08_17-29-24_HP_Performance_Center_9.50.000_iHP_log.txt".
Tail log to track detailed progress.
Installing feature: HP_Performance_Center started
                Installing Package: PCLoadGenerator-9.50.000-HPUX11.0.depot star
                ted...

```

## 5 Complete the installation.

When the installation is complete, the Finish screen opens.



```

c:\ Telnet labm1hp8.devlab.ad
-----
FINISH
-----
HP Performance Center 9.50 has been successfully installed in the /opt/HP/HP_Per
formance_Center directory
LOG FILE: Install log directory:
/var/log/14.12.08_17-29-24_HP_Performance_Center_9.50.000_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.

## 6 Configure your environment

After you install the load generator, configure your environment as described in “After you Install Performance Center on UNIX” on page 87.

## Using Native Package Commands

You can run the Performance Center installation using native package commands. The native package name for Performance Center is **PCLoadGenerator**.

There is a separate native package for each OS platform located at: `<Performance Center UNIX installation disk>/<Platform>/packages/packages_<Platform>/<package file>`.

For example: `/dev/cdrom/Solaris/packages/packages_SunOS/PCLoadGenerator-9.50.000-SunOS5.8.sparc`.

---

**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 Performance Center using native package commands:

- 1** Run the relevant installation command described in “Native Package Commands Table” on page 83.
- 2** Run the `run_after_install.sh` script located in the `/opt/HP/HP_Performance_Center` directory. For AIX, it is located in `/usr/lpp/HP/HP_Performance_Center` directory.

## Native Package Commands Table

The following table describes the relevant installation commands for each platform:

Platform	Install Command	Get Package Information Command	Uninstall Command
<b>Solaris</b>	<p>pkgadd -d &lt;path to package file&gt;</p> <p><b>For example:</b>            pkgadd -d            /dev/cdrom/Solaris/packages/packages_SunOS/PCLoadGenerator-9.50.000-SunOS5.8.sparc</p>	<p>pkginfo            PCLoadGenerator</p>	<p>pkgrm            PCLoadGenerator</p>
<b>Linux</b>	<p>rpm --nodeps -i &lt;path to rpm file&gt;</p> <p><b>For example:</b>            rpm --nodeps -i            /dev/cdrom/Linux/packages/packages_Linux/PCLoadGenerator-9.50.000-Linux2.4.rpm</p>	<p>rpm -q            PCLoadGenerator</p>	<p>rpm -e            PCLoadGenerator</p>
<b>AIX (IBM)</b>	<p>installp -ac -d &lt;path to bff file&gt;            &lt;package name&gt;</p> <p><b>For example:</b>            installp -ac -d            /dev/cdrom/Ibm/packages/packages_AIX/PCHP_Performance_Center.PCLoadGenerator</p>	<p>lspp -l            HP_Performance_Center.PCLoadGenerator</p>	<p>installp -u            HP_Performance_Center.PCLoadGenerator</p>
<b>HPUX</b>	<p>swinstall -s &lt;path to depot file&gt;            &lt;package name&gt;</p> <p><b>For example:</b>            swinstall -s            /dev/cdrom/Hp/packages/packages_HPUX/PCLoadGenerator-9.50.000-HPUX11.0.depot            HP_Performance_Center.PCLOADGENERATOR</p>	<p>swlist            HP_Performance_Center.PCLOADGENERATOR</p>	<p>swremove            HP_Performance_Center.PCLOADGENERATOR</p>

## Silent Installation

To perform a silent installation of Performance Center, you use native package commands.

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

- 1 Run the relevant installation command for your platform as described below:

Platform	Silent Installation Command	Example
<b>Solaris</b>	pkgadd -d <path to package file> -a <path to package admin file> all	pkgadd -d /dev/cdrom/Solaris/packages/pa ckages_SunOS/PCLoadGenerato r-9.50.000-SunOS5.8.sparc -a /dev/cdrom/Solaris/sequencer/r esources/package_admin_file/ad min_file all
<b>Linux</b>	rpm --nodeps -i <path to rpm file>	rpm --nodeps -i /dev/cdrom/Linux/packages/pac kages_Linux/PCLoadGenerator- 9.50.000-Linux2.4.rpm
<b>AIX (IBM)</b>	/usr/sbin/installp -ac -d <path to bff file> <product name>.<package name>	/usr/sbin/installp -ac -d /dev/cdrom/Ibm/packages/pack ages_AIX/PCLoadGenerator- 9.50.000-AIX5.X.bff HP_Performance_Center.PCLoa dGenerator
<b>HPUX</b>	/usr/sbin/swinstall -s <absolute path to depot file> <product_name>.<package_na me> <b>Note:</b> The product name and package name are case sensitive.	/usr/sbin/swinstall -s /dev/cdrom/HP/packages/packa ges_HPUX/PCLoadGenerator- 9.50.000-HPUX11.0.depot HP_Performance_Center.PCLOA DGENERATOR

- 2 Run the `run_after_install.sh` script located in the `/opt/HP/HP_Performance_Center` directory. For AIX, it is located in `/usr/lpp/HP/HP_Performance_Center` directory.

## Storing Load Generator Content in Another Directory

For all platforms except AIX (IBM), the load generator is installed in the `/opt/HP/HP_Performance_Center` directory. For AIX, it is installed in `/usr/lpp/HP/HP_Performance_Center`.

If you want to store the load generator content in another directory, you need to configure your system before the installation.

- ▶ **For all platforms except AIX:** Create a symbolic link from the installation directory to the other directory. See “Creating Symbolic Links” below.
- ▶ **For AIX platforms:** Create a mount point for the installation directory. See “Creating a Mount Point” on page 86.

### Creating Symbolic Links

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

#### To create a symbolic link:

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

- 1 Create the new directory. For example:

```
mkdir -p /usr/HP/HP_Performance_Center
```

- 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_Performance_Center` to the other directory. For example:

```
ln -s /usr/HP/HP_Performance_Center /opt/HP/HP_Performance_Center
```

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

## Creating a Mount Point

This section describes how to create a mount point for AIX platforms.

### To create a mount point:

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

- 1 Create the new directory. For example:

```
mkdir -p /usr/HP/HP_Performance_Center
```

- 2 Make sure that the default installation directory `/usr/lpp/HP/HP_Performance_Center` exists. If it does not exist, create the directory as follows:

```
mkdir -p /usr/lpp/HP/HP_Performance_Center
```

- 3 Define the default installation directory as a mount point by editing the `/etc/filesystems` file, and adding the following section:

```
<default installation directory>:  
dev          = <new installation directory>  
vfs          = namefs  
mount       = true  
options     = rw  
account     = false
```

For example:

```
/usr/lpp/HP/HP_Performance_Center:
dev      = /usr/HP/HP_Performance_Center
vfs      = namefs
mount    = true
options  = rw
account  = false
```

**4** Mount the default installation directory as follows:

```
mount /usr/lpp/HP/HP_Performance_Center
```

In the above example, the mount point directory `/usr/lpp/HP/HP_Performance_Center` points to the new directory `/usr/HP/HP_Performance_Center`.

## After you Install Performance Center on UNIX

This section describes the configuration steps you need to complete before you can begin working with the Performance Center UNIX Load Generator.

To complete the setup process after installing the Performance Center Load Generator, you must:

- ▶ **Set the appropriate environment variables.**  
See “Setting Environment Variables” on page 88.
- ▶ **Verify your UNIX installation.**  
See “Verifying Your UNIX Installation” on page 89.
- ▶ **Check that the Controller can access the load generator.**  
See “Checking Controller Connection” on page 91.

## Setting Environment Variables

To work with the load generator, your UNIX startup configuration file needs to include specific environment variables.

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 startup configuration file.

- For **C shell** users, the startup configuration file is the **.cshrc** file
- For **Bourne and Korn shell** users, the startup configuration file is the **.profile** file.

**To add the env.csh script to the startup configuration file:**

Add the following line in the startup configuration file (**.cshrc** or **.profile**):

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

For example:

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

The **env.csh** script, sets the following variables:

- **M\_LROOT**. The location of the Performance Center installation directory
- **PATH**. The location of the Performance Center *bin* directory.
- **LD\_LIBRARY\_PATH** (Solaris, Linux), **LIBPATH** (AIX), **SHLIB\_PATH** (HP-UX). The location of Performance Center'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**, **SHLIB\_PATH** or **LIBPATH**).



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

```
ldd application_name /* Sun and Linux platforms */
chatr application_name /* HP platforms */
dump -H application_name /* IBM platforms */
```

## Verifying Your UNIX Installation

Performance Center includes a setup verification utility, **verify\_generator**, that checks the load generator setup on your UNIX 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 a Vuser installation, before attempting to invoke Performance Center.

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 Performance Center 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

## Running `verify_generator`

Before you run the `verify_generator` utility, make sure that you have set the `DISPLAY` environment variable on your machine.

To run the `verify_generator` utility:

- 1 From the `<load generator installation directory>/bin`, run the following command:

```
verify_generator
```

for example:

```
/opt/HP/HP_Performance_Center/bin/verify_generator
```

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

```
verify_generator -v
```

- 2 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.

**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.

If the Controller still cannot connect to the load generator, contact your system administrator.

---

**Note:** You can configure the Controller to connect to the load generator not using **rsh**. In this case, you need to activate the agent daemon on the load generator. For more information, see the “Connecting to a UNIX Load Generator Without Using RSH” below.

---

## Connecting to a UNIX Load Generator Without Using RSH

This section describes how to connect to a UNIX load generator without using **RSH**.

**To connect to a UNIX load generator without RSH:**

- 1** On the UNIX load generator, run the agent daemon by running the following command from **<load generator installation directory>/bin**:

```
m_daemon_setup -install
```

This runs a daemon called **m\_agent\_daemon**, and if successful you will receive a message: **m\_agent\_daemon <process ID>**.

The agent will now keep running, even if the user is logged off. It will only stop running using the command explained in step 3 below, or by rebooting the machine.

---

**Note:** If you look at the log file `m_agent_daemon[xxx].log` in the temp directory, you may see communication errors, even if the installation succeeded:

These messages appear because the LoadRunner agent always tries to open port number 443 (because any agent can be a MI Listener, and the MI Listener always listens to this port), and in UNIX machines, this port cannot be opened by any user except for the root user. However, this will not interfere with using this agent for the load generator.

---

- 2** In the Controller, in the **Generators > Load Generator Information > UNIX Environment** tab, select the **Don't use RSH** option. Connect as usual.
- 3** To stop the agent daemon, run the following command from the `<LR_root>/bin` directory:

```
m_agent_setup -remove
```

This stops the `m_agent_daemon`, and if successful, you will receive a message: `m_agent_daemon` is down.

## Uninstalling Performance Center using the Maintenance Wizard

You can use the Load Generator Maintenance Wizard to uninstall Performance Center. You can also uninstall Performance Center using native package commands as described in “Using Native Package Commands” on page 82.

**To uninstall Performance Center using the maintenance wizard:**

- 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_Performance_Center/9.50.000/installer.sh
```

- 5 Follow the remaining instructions in the wizard to uninstall Performance Center.

## Recommended Configuration

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

---

**Important:** Most operating systems using Performance Center have sufficient default file descriptors, process entries, and swap space, and rarely require reconfiguration.

---

This section includes recommendations for improving load generator performance. This section includes:

- ▶ “Increasing Process Entries” on page 94
- ▶ “Increasing File Descriptors” on page 96
- ▶ “Increasing Swap Space” on page 99

## 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.

### Solaris

This section describes how to reconfigure the kernel for Solaris operating systems.

**To reconfigure the kernel for Solaris operating systems:**

- 1 Locate the `/etc/system` file.
- 2 Set the maximum number of processes in the system file. Type:

```
set max_nprocs=number (e.g.712)
```

- 3 Execute the `touch/reconfigure` command. Type:

```
touch /reconfigure
```

- 4 Reboot the machine.

### HP-UX

This section describes how to reconfigure the kernel for HP platforms.

**To reconfigure the kernel for HP platforms:**

- 1 Login as root.
- 2 Invoke the `sam` tool to reconfigure the kernel. Type:

```
sam &
```

- 3 Select **Kernel Configuration > Configurable Parameters**.

- 4 Set the following parameters to the desired values:

**nproc:** The number of simultaneous processes—(# of Vusers \* 2) + 200

**maxuser:** The number of maximum users—DB + RTE Vusers + 20

**maxprc:** The number of processes per user—# of Vusers \* 2

- 5 Reboot the machine.

## IBM

This section describes how to reconfigure the kernel for IBM platforms using the AIX operating system.

### To reconfigure the kernel for IBM platforms using the AIX operating system:

- 1 Display the current settings. Type:

```
lsattr -EHL sys0
```

- 2 Increase the maximum number of process entries per user. Type:

```
chdev -l sys0 -a maxuproc = number (e.g.500)
```

- 3 Set the *nproc*, *maxusers* parameters to the desired values.

## Linux

This section describes how to reconfigure the kernel for Linux platforms.

### To reconfigure the kernel for Linux platforms:

- 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 Performance Center launch service
- ▶ 20 file descriptors for the Performance Center 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 LR launcher
20	for LR 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.

### All Platforms

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
```



## Solaris

This section describes some alternate procedures to increase file descriptors on Solaris operating systems. In these examples, the number of descriptors is increased to the maximum of 1024.

- 1 Use the *adb* command to increase file descriptors (all shells). Note that 400 HEX is the equivalent to decimal 1024. In the following example, **kernel** is the name of the kernel file, e.g., **kernel/unix**.

```
adb -w -k /kernel/dev/mem  
rlimits+28?W 400  
rlimits+28/W 400
```

- 2 You can also increase the maximum number of file processes by reconfiguring the kernel.

Login as root and set the *rlim\_fd\_max* parameter inside the **/etc/system** file by typing:

```
set rlim_fd_max=1024
```

- 3 Save the file and reconfigure the system by typing:

```
touch /reconfigure
```

- 4 After reconfiguring the system, reboot the machine.

## HP-UX

This section describes how to increase file descriptors for HP platforms.

### To increase file descriptors for HP platforms:

- 1 Login as root.
- 2 Invoke the *sam* tool to reconfigure the kernel. Type:

```
sam &
```

- 3 Select **Kernel Configuration > Configurable Parameters**.
- 4 Set the *maxfiles* parameters to the desired values. This is the equivalent to file descriptors on Sun platforms.  
**maxfiles:** The number of files open at a given time, typically set to 60. Change it to 500 -1024.
- 5 Reboot the machine.

## Linux

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.

### Solaris

This section describes how to increase swap space for machines running Solaris.

#### To increase swap space for machines running Solaris:

- 1 List the available paging areas. Type:

```
swap -l
```

- 2 Display the available swap space. Type:

```
swap -s
```

- 3 Create a new paging file. Type:

```
mkfile size path (e.g. mkfile 50m /extra/page_1)
```

- 4 Add the page file to the existing configuration. Type:

```
/usr/etc/swapon -a /extra/page_1 0 102400
```

- 5 Enable all swap areas listed in the filesystem configuration. Type:

```
/usr/etc/swapon -a
```

## IBM

This section describes how to increase swap space for machines running the AIX Operating System.

### To increase swap space for machines running the AIX Operating System:

- 1 List the available paging areas. Type:

```
lsps -a
```

- 2 Display the available swap space. Type:

```
swap -s
```

- 3 Create a new paging file, using a value one quarter the size of the actual file size. For example, to create 200 MB of paging space in the chemvg volume group, type:

```
mkps -a -n -s 50 chemvg
```

- 4 To increase the size of an existing paging file, type:

```
chps -s number paging_file
```

(e.g. `chps -s 10 page_01` adds 40 MB to `page_01`).

- 5 Add the page file to the existing configuration. Type:

```
swapon paging_area (e.g. swapon /dev/paging_01)
```

- 6 Enable all swap areas listed in the file system configuration file `/etc/swapspaces`. Type:

```
swapon -a
```

# Part IV

---

**Upgrade**



# 4

---

## Upgrading to Performance Center 9.50

This chapter explains how to upgrade your system to HP Performance Center 9.50. Before performing the upgrade, make sure you understand all the procedures involved in the upgrade process.

---

**Note:** To enable upgrading to Performance Center 9.50 with the minimum possible interruption to your system operation, you should give HP Customer Support advance notice of your upgrade dates, and have your system/network/security/database administrators assist you during the upgrade process.

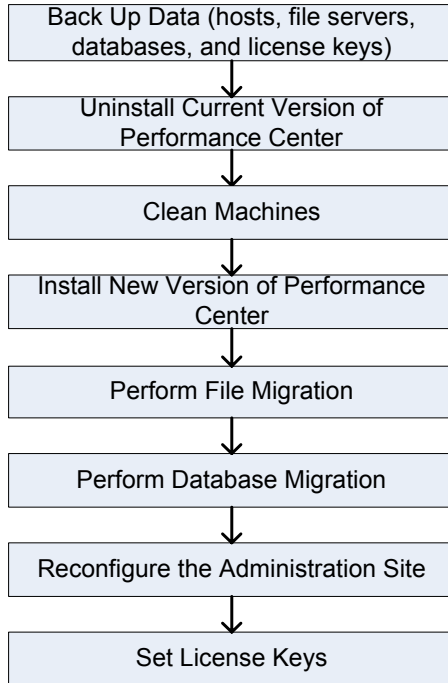
---

**This chapter includes:**

- The Upgrade Process: Basic Steps on page 104
- Backing Up Data on page 106
- Uninstalling Previous Versions of Performance Center on page 110
- Cleaning Performance Center Machines on page 111
- Installing Performance Center 9.50 on page 113
- Performing File Migration on page 113
- Performing Database Migration on page 114
- Configuring Performance Center on page 119
- Setting the License Keys on page 119

## The Upgrade Process: Basic Steps

This section provides a general outline of the steps that you need to carry out to upgrade to HP Performance Center 9.50. Review these steps before you begin the upgrade process.





**To upgrade your current version of Performance Center to version 9.50:**

**1 Back up the relevant data.**

- ▶ If you need to upgrade the host machine's operating system to a supported operating system, you should back up the **Temp** and **orchidtmp** directories on each host machine. For more information, see "Host Data Backup" on page 106.
- ▶ Back up the user data folders on the Performance Center File Server. For more information, see "File Server Backup" on page 107.
- ▶ Back up the database to protect the data in case of a migration error. For more information, see "MI\_LRDB Database Backup" on page 108.
- ▶ Save your license key details. For more information, see "License Key Backup" on page 110.

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

For details, see "Uninstalling Previous Versions of Performance Center" on page 110.

**3 Install all of the Performance Center 9.50 components, including servers and hosts.**

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

**4 If you backed up the host data (in step 1 above), restore the orchidtmp and temp directories.**

For details, see "Performing File Migration" on page 113.

**5 Perform database migration.**

Use the Performance Center DB Migration tool to make your databases compatible with HP Performance Center 9.50. For details, see "Performing Database Migration" on page 114.

**6 Reconfigure the system in the Performance Center Administration Site.**

For details, see "Configuring Performance Center" on page 119.

## Backing Up Data

Before performing database migration and uninstalling previous versions of Performance Center, you should back up the host data, File Server data, MI\_LRDB databases, and the Performance Center and host license keys.

### Host Data Backup

If you are installing a new image or upgrading the host machine's operating system to a supported operating system, you should 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.

To avoid data loss from test runs that have not yet been collated or analyzed:

- Collate and analyze results from the load test runs on the User Site
- Delete all unnecessary runs

---

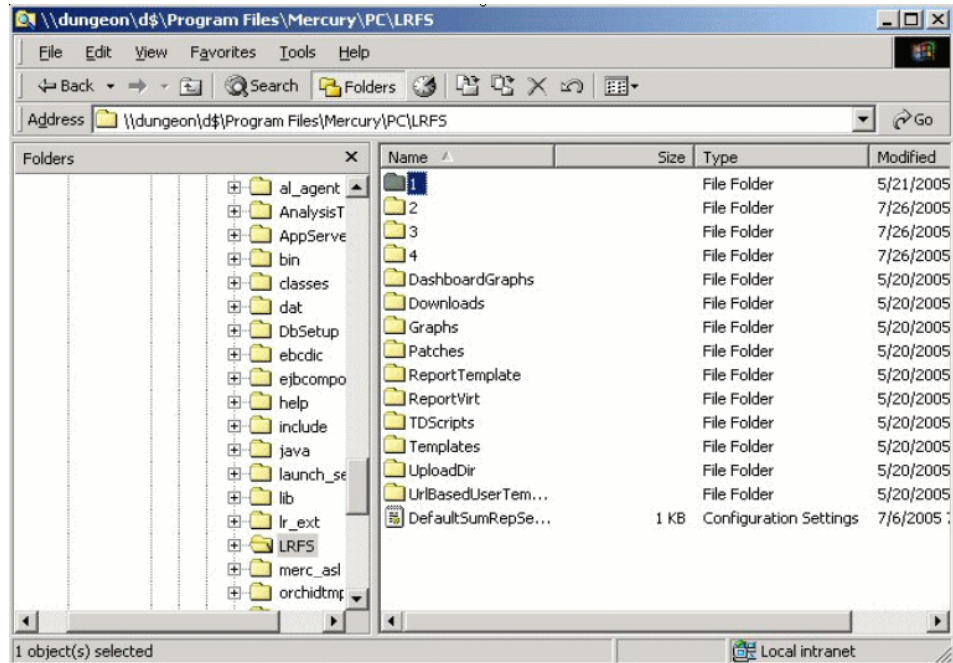
**Note:** For a list of supported operating systems, see “System Component Requirements and Considerations” on page 24.

---

## File Server Backup

You should back up the user data folders on the Performance Center File Server.

- 1 On the File Server machine, open the <Performance Center directory>\LRFS directory.
- 2 Make a backup copy of the numbered folders in the LRFS directory. For example: 1, 2, 3, 4.



- 3 If you published load tests to the Dashboard, you should also make a backup copy of the **DashboardGraphs** folder.

## MI\_LRDB Database Backup

Before performing database migration, you should create a database backup to protect your data in case of migration error. You can recover the data by restoring the backed up database.

- ▶ For details about restoring an Oracle database, see “Restoring Oracle Database Backup” on page 140.
- ▶ For details about restoring an MS-SQL database, see “Restoring MS-SQL Database Backup” on page 150.

---

**Note:** Make sure that the database backup is synchronized with your file system backup.

---

## Before Backing Up

Before backing up your database, check the following:

- ▶ Ensure that there are no load tests in the following states: **Ready, Collating Results, Running, Stopping, Creating Analysis Data, Deleting Temporary Results.**

You can check the state of load test runs in the Performance Center Administration Site from the Test Runs page (**Site Management > Test Runs**), or by running the following query:

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

In cases where there are such runs, make sure that the operation currently running finishes before executing 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.

## Backing Up Your Database

The sections describes how to back up the **MI\_LRDB** database.

**To back up the MI\_LRDB database on a Microsoft SQL server:**

- 1** Launch **Microsoft SQL Server > Enterprise Manager**.
- 2** Select the SQL Server that contains the **MI\_LRDB** database.
- 3** Click the **Databases** tab, and select **MI\_LRDB** as the database.
- 4** Right-click **MI\_LRDB > Select All Tasks > Backup Database**, and specify the destination of the backup.

**To back up the MI\_LRDB database on an Oracle database server:**

- 1** Open a command window from a computer with an Oracle client.
- 2** To connect to and back up the **MI\_LRDB** database, type:

```
exp system/<password>@<server-name>  
owner=MI_LRDB file=<file-name>.dmp
```

For example:

```
exp system/manager@amstel.HP.co.il  
owner=MI_LRDB file=D:\backups\MI_LRDB.dmp
```

## License Key Backup

After you migrate your database, all license information is deleted from the Performance Center system and you have to configure the license keys again. To use the same license keys in the migrated system, save the Performance Center and host license keys.

**To save the license keys:**

- 1** From the Performance Center Administration Site left menu, select **System Configuration > License**.
- 2** Copy the **License Key** strings displayed under **Performance Center License** and **Host License**.

You will need this information when you reconfigure the Performance Center system settings in “Configuring Performance Center” on page 119.

## Uninstalling Previous Versions of Performance Center

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

**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.

## Cleaning Performance Center Machines

After you have uninstalled earlier versions of Performance Center, you need to clean the Performance Center machines before you can install the current version.

To clean Performance Center machines:

**1** Run **PC\_Upgrade.exe**:

- a** On each machine, copy the <PC installation disk>\Additional Components\PC\_Upgrade\PC\_Upgrade.exe file to a local directory.
- b** On all host and server machines, run the following command from the command line:

```
<local path>\PC_Upgrade.exe
```

- c** On all server machines, run the following command from the command line:

```
<local path>\PC_Upgrade.exe TestCenter
```

**2** Ensure that you have backed up the relevant Performance Center sub-directories.

- On all machines, ensure that you have backed up the <Performance Center directory>\orchidtmp directory. If you back up this directory, you maintain the capability to collate results that were not collated.
- On the File Server machine, ensure that you have backed up the <Performance Center directory>\LRFS directory.

**3** Delete the Performance Center directory on all machines.

**4** Ensure that the virtual directories on the relevant Performance Center machines have been removed. If they have not been removed automatically, delete them manually:

- 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**.
- 5** Delete the **IUSR\_METRO** key from the crypto directory. Delete the files starting with **f9416f003254e6f10da1fbad8e4c383\_** from **C:\Documents and Settings\All Users\Application Data\Microsoft\Crypto\RSA\MachineKeys**
- 6** Delete cookies and temporary internet files from your browser to avoid UI problems (**Tools > Internet Options > General tab**).
- 7** **If you are uninstalling Performance Center 8.1 SP4 and earlier:** 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.
- 8** **If you are uninstalling Performance Center 8.1:** Clean 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

9 Reboot all Performance Center machines.

## Installing Performance Center 9.50

Install all of the Performance Center 9.50 components, including servers and hosts.

Before you install Performance Center, review the pre-installation information, including the system requirements, described in Chapter 1, “Before You Install.”

## Performing File Migration

If you backed up the host data (see “Host Data Backup” on page 106), 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\orchidtmp), and copy the **temp** directory to its original location on the host machines.

If you backed up project data folders on the Performance Center File Server (see “File Server Backup” on page 107), copy the project data folders to the File Server directory.

## Performing Database Migration

Use the Performance Center Database Migration tool to make your databases compatible with HP Performance Center 9.50.

---

**Note:** Performance Center 9.50 supports data upgrades from Performance Center 7.8 SP4 and later.

---

### Before Migrating an MS-SQL Database

Before performing database migration on a Microsoft SQL server, use the SQL Server Enterprise Manager to ensure the following:

- ▶ All tables in the database must have DBO set as owner. If DBO is not set as the owner, run the following query for each relevant table:

```
sp_changeObjectOwner 'table name' 'dbo'
```

- ▶ The user **OrchidUser** must exist in the **User** section of the **MI\_LRDB** database. The user should have the login name **OrchidUser** with the **db\_owner** permissions.

If there is a conflict between the **OrchidUser** identity that exists in the **MI\_LRDB** scheme and the **OrchidUser** identity that exists in the server security logins, run the following query to synchronize **OrchidUser**:

```
sp_change_users_login 'Update_One', 'OrchidUser', 'OrchidUser'
```

## Before Migrating an Oracle Database

- ▶ Performance Center 9.50 supports Oracle 9i or 10g on Windows and UNIX. If you are using an older unsupported version of Oracle, you need to upgrade your database to a supported version before performing database migration. For details, see “Upgrading Oracle to a Supported Version” on page 141.
- ▶ During database migration, some of the `varchar2`\long data types are converted to the CLOB data type. This operation consumes additional storage by the database. The additional storage required by the converted columns alone can be up to double the storage for single byte character sets and up to four times the storage when using the UTF8 character set.

You can estimate the additional storage required by determining the size of **SessionScripts.runtimeSettings**, **SessionScripts.runlogic**, and **OnlineLayouts.onlinexml** columns and the database character set. Use this estimate to calculate the maximum storage space needed.

The additional space should be allocated in the relevant tablespace.

---

**Note:** If you have the **autoextend** option set to **ON**, your tablespace grows dynamically and no proactive action is necessary.

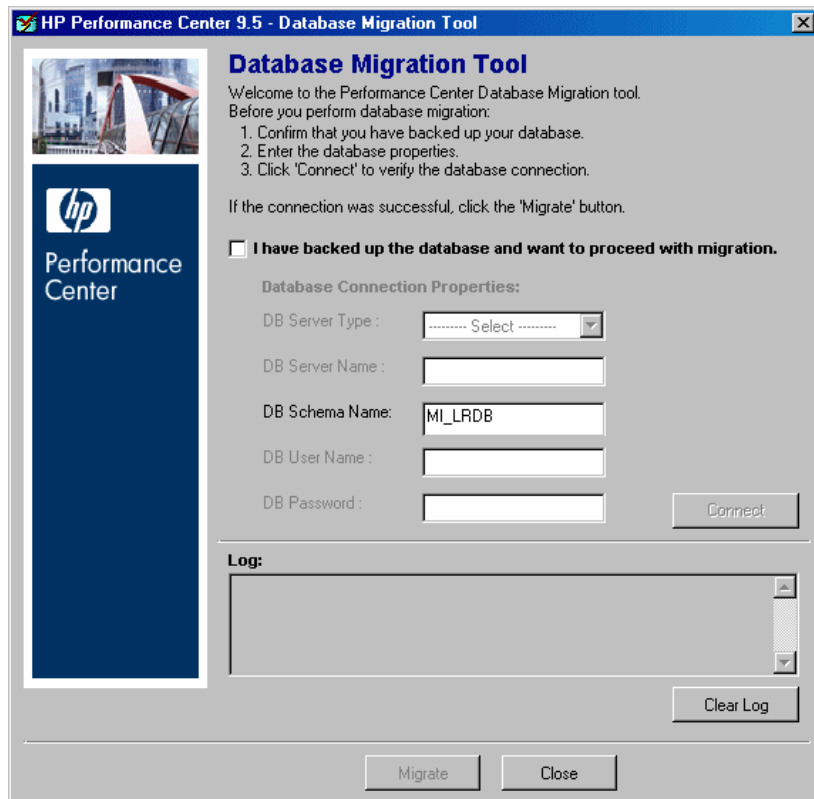
---

## Migrating Your Database

Follow the instructions in this section to migrate your database.

To migrate your database:

- 1 Copy the **DB Migration** folder from the Performance Center installation disk (<PC installation disk>/Additional Components/DB Migration) to a local directory on the Administration Site sever.
- 2 Run **DBMigration95.exe** from the local directory. The Performance Center 9.50 Database Migration tool opens.



- 3 Select the check box to confirm that you have backed up your database.
- 4 In the **DB Server Type** box, select the database type.

**5** In the **DB Server Name** box, the information you enter depends on the type of database:

- ▶ **For an Oracle database:** Enter the service name defined in your `tnsnames.ora` file.
- ▶ **For an MS-SQL database:** If you are working with the default instance name, enter the server name. If you are working with a non-default instance name, enter the DB host name in one of the following ways:

```
<server name>, <instance port>
```

or

```
<server name>\<instance name>
```

**6** In the **DB Schema Name** box, enter the name of the database schema. By default, the schema name is **MI\_LRDB**.

**7** If you are working with Oracle, Performance Center uses the default Performance Center database user name (**MI\_LRDB**) and password. If you are working with SQL, enter the user name and password of a Performance Center database user with administrative privileges.

**8** Click **Connect** to verify that you can connect to the database.

- ▶ If connection to the database is successful, you receive a message in the **Log** area confirming the database connection details.
- ▶ If connection to the database fails, you receive a message in the **Log** area providing possible reasons for the failure. In this case, verify that the username and password you provided are correct and that your database is up and running.

- 9 After you have established a database connection, click **Migrate** to start database migration. Upon completion, a message is displayed indicating whether database migration was successful.

---

**Note:** When you migrate your database, Vuser Scheduling is automatically enabled. This improves load test performance because Vusers are validated before the load test and Performance Center does not need to validate the Vusers during the run.

If Vuser Scheduling was disabled before you migrated the database, it is now enabled and as a result, the number of Vusers for all your future timeslots are set to zero. In such a case, go to the User Site's Timeslots page (**Project > Timeslots**) and update the number of Vusers for future timeslots. Scheduled Autostart tests will not run until you update the relevant timeslots.

---

If you experience problems with the Database migration process, check the DB Migration log files for any errors or relevant messages. The DB Migration log file, **DBMigration.log**, is located in the **Temp** directory for the current user (%Temp%).

If you encounter an error during the migration process, you can restore the database backup files.

- ▶ For instructions about restoring Oracle databases, see “Restoring Oracle Database Backup” on page 140.
- ▶ For instructions about restoring MS-SQL databases, see “Restoring MS-SQL Database Backup” on page 150.

## Configuring Performance Center

When you migrate your database using the Database Migration tool, all server information is deleted from the Performance Center system. After you perform database migration, you must reconfigure the system in the Administration Site (even if this is on the same machine, and all configuration settings are the same).

For details about configuring the Performance Center system, see “Initial System Configuration” on page 124.

---

**Important:** If you are using HP Diagnostics with Performance Center, after database migration you need to update the user name and password of the Diagnostics servers in the Performance Center Administration Site.

To do this, on the Performance Center Administration Site left menu, select **System Configuration > Diagnostics**. Under **Setting J2EE/.NET Environment**, select the relevant server, click **Edit**, and enter the relevant user name and password.

---

## Setting the License Keys

After you migrate your database, all license information is deleted from the Performance Center system and you need to re-enter your Performance Center license keys that you saved earlier (See “License Key Backup” on page 110).

For details about setting the license keys, see “Setting Your License Keys” on page 129.





# Part V

---

## Configuration



# 5

---

## Required Configuration

This chapter describes the initial configuration steps you need to complete before you begin working with Performance Center.

**This chapter includes:**

- ▶ Introducing the Post Installation Process on page 123
- ▶ Initial System Configuration on page 124
- ▶ Setting Your License Keys on page 129

### Introducing the Post Installation Process

To complete the setup process after installing HP Performance Center, you must:

- ▶ Supply System Configuration information
- ▶ Set your license key

You perform these tasks from the Performance Center Administration Site.

## Initial System Configuration

To configure your Performance Center system, ensure that the default Performance Center system user, **IUSR\_METRO** (created during installation), exists in the Administrators user group of the server/host machines.

**To configure the Performance Center system:**

- 1 Log on to the Performance Center Administration Site by entering the following URL in your Web browser:

```
http://<server_name>/admin
```

where **server\_name** is the name or IP address of the HP Performance Center Administration Site server.

- 2 Because this is the first time you are logging into the system, you are redirected to the System Configuration page to provide database and file server information.

**Welcome to Performance Center 9.5**

Before you begin using Performance Center, you'll need to supply a few details to set your system configuration.

**System Configuration**

**Database:**

DB host

DB name

DB type

User

Password

**File Server:**

Name

Save

**a** In the **Database** area, enter the following details about your database:

- **DB host.** The machine on which the database resides.

If the Performance Center database is an MS-SQL database with a non-default instance name, enter the DB host name in one of the following ways:

```
<server name>, <instance port>
```

or

```
<server name>\<instance name>
```

- **DB name.** The name of the database schema.
- **DB type.** The type of database installed on the server—either SQLServer or Oracle.
- **DB instance** (Oracle only). If you are using Oracle, in the **DB instance** box that opens, enter the service name defined in your **tnsnames.ora** file.
- **OS** (Oracle only). If you are using Oracle, select the operating system.
- **User.** The name of the database user that has sufficient permissions to connect to the database server and create the Performance Center database schema.
- **Password.** The password of the database user that has sufficient permissions to connect to the database server and create the Performance Center database schema.

---

**Note:** For information about sufficient permissions an Oracle user, see “Minimum Permissions Required for Oracle User” on page 134. For information about sufficient permissions for an MS SQL user, see “Minimum Permissions Required for MS-SQL User in Performance Center” on page 147.

---

- b** In the **File Server** area, in the **Name** box, enter the name of the machine that contains the File Server installation where system files such as scripts are stored.
  - c** After you supply the necessary information, click **Save**.
- 3** If Performance Center detects an existing database, a message asks you if you want to use the existing database as part of your configuration. Click **Continue** to use the existing database.

A log listing details of the system configuration process is displayed in the bottom left corner of the page.

If the configuration is successful, click the **Log to Site** button. The Performance Center Administration Site Login page opens.

If the configuration is not successful, the log provides a detailed message to help you correct the problem. After correcting the problem, repeat the save process.

- 4** If you are upgrading Performance Center to a new version, remove hosts that are not operational, do not exist, or may interfere with other environments. For example, if you are using your upgraded database in a staging environment, you may want to remove hosts that are currently being used in your production environment.

To remove hosts from the database:

- a** In the database, set the status of the system to configured by running the following database query:

```
"UPDATE GLOBALDATA SET ENTRYVALUE='1' WHERE  
ENTRYNAME='SystemWasConfigured'"
```

- b** Log on to the Administration Site with a user that has Performance Center administration privileges, go to the Hosts page (**Resources > Hosts**), and delete all hosts that are no longer relevant.
  - c** Log off the Administration Site.

- d** In the database, set the status of the system to not configured by running the following database query:

```
"UPDATE GLOBALDATA SET ENTRYVALUE='0' WHERE
ENTRYNAME='SystemWasConfigured'"
```

- 5** Log on to the Administration Site with a user that has Performance Center administration privileges.

If this is the first time you are logging on to Performance Center, use the default user name **Admin** and the default password **Admin**. After you have logged on, you will be able to modify your user name and password for the future.

Performance Center redirects you to the Server Configuration page.

**Server Configuration**

\* Database:

\* File Server:

\* Utility Server:

User site Servers

\* Name:

Name:

Name:

Name:

SiteScope Configuration

SiteScope Server:

SiteScope Port:

Use HTTPS:

Use Account:

Account:

\* required fields

The **Database** information and **File Server** name are supplied during the product installation and are displayed as read-only.

You can click **Test Connection** to test the connection to the database.

---

**Important:** For all servers that you specify in the following steps, it is recommended to provide the **name** of the machine, rather than the IP address.

---

- 6 In the **Utility Server** box, enter the name of the Utility Server machine.
- 7 In the **User Site Servers** section, in the first **Name** box, enter the name of the User Site server machine.

If you want to balance the load on your Performance Center system, you can enter the name of additional User Site servers in the remaining **Name** boxes.

- 8 If you want use SiteScope to monitor your Performance Center resources, enter the relevant values for the SiteScope server.
  - **SiteScope Server.** Enter the name of the SiteScope server.
  - **SiteScope Port.** Enter the SiteScope port (default:8888).
  - **Use HTTPs.** Select this option to use a Secure HTTP connection.
  - **Use Account.** By default, Performance Center connects to SiteScope using the default SiteScope Administrator user. If the default SiteScope Administrator password was changed, or if you want to connect using a different SiteScope user, select this option. Enter the account name, and the user name and password defined to log in to the relevant SiteScope account.

---

**Note:** The SiteScope administrator account name is **administrator**. For details about how to identify other SiteScope account names, see “Identifying the SiteScope Account Name” on page 162.

---

- 9 Click **Save** to save the server configuration settings.  
Performance Center logs you out of the system.



## Setting Your License Keys

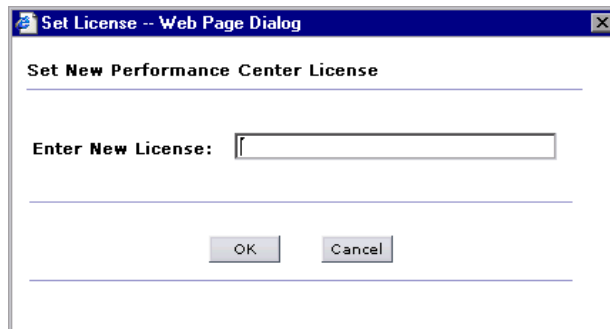
When you purchase HP Performance Center, you receive two license keys.

- ▶ The **Performance Center License** enables you to use the product and run load tests. This license determines the number of load tests that you can run concurrently and the total number of Vusers available for use in all load tests.
- ▶ The **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.

Enter the license key information as described below:

### To update the Performance Center license key:

- 1** On the Performance Center Administration Site left menu, select **System Configuration > License**. The License page opens.
- 2** Under **Performance Center License**, click **Set New License**. The Set License dialog box opens.

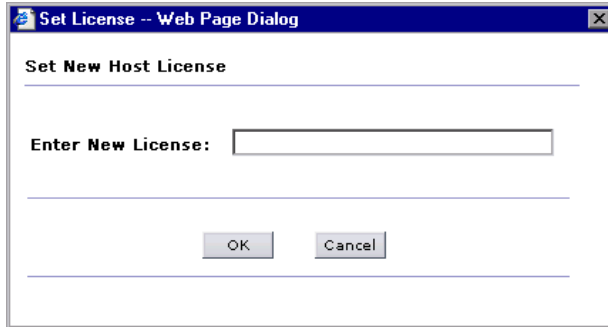


- 3** Type the new Performance Center license key.
- 4** Click **OK** to set the new license key. Performance Center checks the validity of the license key and closes the dialog box.

To verify that the set license action was successful, refer to the log at the bottom of the page.

**To update the host license key:**

- 1** On the Performance Center Administration Site left menu, select **System Configuration > License**. The License page opens.
- 2** Under **Host License**, click **Set New License**. The Set License dialog box opens.



- 3** Type the new host license key.
- 4** Click **OK** to set the new license key. Performance Center checks the validity of the license key and closes the dialog box.

Performance Center updates the host license on all the relevant host machines. To verify that the set license action was successful, refer to the log at the bottom of the page.

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

- Load generators located over a firewall
- UNIX machines
- Standalone load generators

# 6

---

## Configuring Your Databases

This chapter provides recommendations for configuring Oracle and MS-SQL databases to work with Performance Center.

**This chapter includes:**

- ▶ Oracle Configuration on page 132
- ▶ MS-SQL Configuration on page 144

## Oracle Configuration

This section provides the following recommendations for Oracle configuration:

- “Establishing Connectivity” on page 133
- “Setting Tablespaces” on page 134
- “Setting Oracle Database Instance” on page 134
- “Minimum Permissions Required for Oracle User” on page 134
- “Oracle Client with Other Client/Server on Same Machine” on page 136
- “Verifying the Oracle Character Set” on page 137
- “Configuring Oracle Memory Structures” on page 138
- “Collecting Oracle System Statistics” on page 139
- “Performing Daily Backups of Your Oracle Database” on page 140
- “Restoring Oracle Database Backup” on page 140
- “Setting IWAM\_<MachineName> Account Permissions” on page 141
- “Upgrading Oracle to a Supported Version” on page 141

---

**Note:** If Oracle is installed on the intended Web or Administration Site server, the IIS port will be in use by HTTPora service. To use the machine as a Web or Administration Site server, you must stop and disable the HTTPora service, and then run IIS and start the Web or Administration Site server installation.

---

## Establishing Connectivity

When installing Performance Center on an Oracle database, you must establish connectivity between the products.

During the Oracle database installation, you configure a database instance. In addition to the database instance, a default user name (system) and password (manager) are also created.

The database instance creates an Oracle TNS name entry that refers to the instance. For example, if the name of the instance is “LoadTest” then an Oracle TNS entry referring to “LoadTest” is established.

The first time you enter Performance Center, you are asked to supply system configuration information. When supplying the name of the Database Server, enter the name of the instance.

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

- 1 Open a Command Prompt.
- 2 Type

```
sqlplus system/manager@instancename
```

where `instancename` is the name of the current instance.

For each instance name that you enter, the Oracle server machine updates the `tnsnames.ora` file in the Oracle server directory with a new entry.

```
INST2.HP.CO.IL =
  (DESCRIPTION =
    (ADDRESS_LIST =
      (ADDRESS = (PROTOCOL = TCP)(HOST = orch3)(PORT = 1521))
    )
    (CONNECT_DATA =
      (SERVICE_NAME = inst2.HP.co.il)
    )
  )
```

- 3 Copy the **tnsnames.ora** file from the server to each Oracle client machine that hosts a Performance Center server or host. Copy it into the `..\oracle\ora9\network\ADMIN\tnsnames.ora` folder.
- 4 Verify that you are successfully logged on to Oracle.

## Setting Tablespaces

In the system configuration, you will need to specify your database type and server name. If you are working with an Oracle database, the **USERS** and **TEMP** tablespaces must exist in the database.

## Setting Oracle Database Instance

To avoid autostart errors and Oracle database errors on the Administration Site when using the autostart feature, it is recommended to increase the value of the processes property in Oracle database instance to 300.

## Minimum Permissions Required for Oracle User

When installing Performance Center, you need to provide an Oracle user with sufficient permissions to perform certain administrative tasks. In most cases, the system administrator cannot be used due to security concerns. Therefore, another Oracle user ("PCMANAGER") must be created to perform these tasks. This user must be granted the following Oracle permissions:

- create user with admin option
- create table with admin option
- create session with admin option
- create view with admin option
- alter user
- drop user
- select from **dba\_free\_space**
- select from **dba\_tablespaces**

In addition, this user must also be granted the following roles:

- connect
- resource

These user permissions can be assigned by the database administrator (**SYSDBA**) to the Performance Center administrator by running the following statements:

```
CREATE USER "PCMANAGER" PROFILE "DEFAULT" IDENTIFIED BY "pass"
DEFAULT TABLESPACE "USERS" TEMPORARY
TABLESPACE "TEMP" ACCOUNT UNLOCK;

GRANT CONNECT, RESOURCE TO "PCMANAGER" WITH ADMIN OPTION;

GRANT CREATE SESSION TO "PCMANAGER" WITH ADMIN OPTION;

GRANT CREATE TABLE TO "PCMANAGER" WITH ADMIN OPTION;

GRANT CREATE VIEW TO "PCMANAGER" WITH ADMIN OPTION;

GRANT CREATE USER TO "PCMANAGER" WITH ADMIN OPTION;

GRANT SELECT ON "SYS"."DBA_FREE_SPACE" TO "PCMANAGER";

GRANT SELECT ON "SYS"."DBA_TABLESPACES" TO "PCMANAGER";

GRANT ALTER USER TO "PCMANAGER";

GRANT DROP USER TO "PCMANAGER";
```

To verify that the new user, "PCMANAGER", was created successfully with the required Oracle permissions, you can try and perform the following tasks with the newly created user:

- Permission to select from **dba\_users**:

```
SELECT USERNAME FROM DBA_USERS
```

- Permission to drop user:

```
DROP USER <dbUser> CASCADE
```

- ▶ Permission to create users:

```
CREATE USER <dbUser> IDENTIFIED BY password DEFAULT TABLESPACE  
<tableSpace>  
  
    TEMPORARY TABLESPACE <tempTableSpace> QUOTA UNLIMITED ON  
<tableSpace>  
  
    QUOTA UNLIMITED ON <tempTableSpace>
```

---

**Note:** If the temporary table space is different to the default table space, then there is an unlimited quota on the temporary table space.

---

- ▶ Permissions to grant create table, create view, and create session:

```
GRANT CREATE TABLE TO <dbUser>  
  
GRANT CREATE VIEW TO <dbUser>  
  
GRANT CREATE SESSION TO <dbUser>
```

### **Oracle Client with Other Client/Server on Same Machine**

The Oracle client used to connect with the Performance Center database may be installed on the same machine as other Oracle clients or servers. In this case, you need to define the value of the ORACLE\_HOME system variable as the installation path of the Oracle client used to connect with Performance Center.

For example, if the installation path to the Oracle client used to connect with Performance Center is **C:\ORACLE\product\10.2\client\_1**, define the ORACLE\_HOME system variable as follows:

```
ORACLE_HOME="C:\ORACLE\product\10.2\client_1"
```



## Verifying the Oracle Character Set

If you are using an Oracle database, ensure that the character set defined on the Oracle clients corresponds with the character set defined on the Oracle server.

**To verify that the Oracle character sets correspond:**

**1** Verify the Oracle server character set as follows:

**a** On the Oracle server run the following query:

```
select * from nls_database_parameters where parameter like '%CHARACTERSET'
```

**b** Verify the value of the **NLS\_CHARACTERSET** parameter. For example, the value may be **UTF8**.

**2** On all the Oracle client machines (all Performance Center User Site and Administration Site machines), verify the Oracle client character set as follows:

**a** Select **Start > Run** and type **REGEDIT** to launch the Registry Editor.

**b** In the Registry Editor, navigate to the following directory:

**HKEY\_LOCAL\_MACHINE\SOFTWARE\ORACLE\<oracle home>**

For example: **HKEY\_LOCAL\_MACHINE\SOFTWARE\ORACLE\KEY\_OraClient10g\_home1**

**c** Find the key **NLS\_LANG** and verify its value, for example **AMERICAN\_AMERICA.WE8MSWIN1252**.

**3** If the character set values determined above do not correspond, change the character set value on the Oracle client machines.

For example, if the value on the server is **UTF8** and the value on the client is **AMERICAN\_AMERICA.WE8MSWIN1252**, change the value on the client to **AMERICAN\_AMERICA.UTF8**.

## Configuring Oracle Memory Structures

Oracle uses memory to store information such as the following:

- Program code
- Information about a connected session, even if it is currently inactive
- Information needed during program execution (for example, the current state of a query from which rows are being fetched)
- Information that is shared and communicated among Oracle processes (for example, locking information)
- Cached data that is also permanently stored on peripheral memory (for example, data blocks and redo log entries)

The basic memory structures associated with Oracle include:

- System Global Area (SGA), which is shared by all server and background processes and holds the following:
  - Database buffer cache
  - Redo log buffer
  - Shared pool
  - Large pool (if configured)
  - Java pool
- Program Global Areas (PGA), which is private to each server and background process

It is recommended that you consult with the database administrator before configuring your Performance Center database. The database administrator should use the following general guidelines for configuring the database:

- Shared pool size (**shared\_pool\_size**): minimum 200M
- Database buffer cache size (**db\_cache\_size**): minimum 500M
- PGA size (**pga\_aggregate\_target**): minimum 200M
- Java pool size (**java\_pool\_size**): Decrease to the minimum value possible as Performance Center does not use Java Code or JVM on the database therefore it does not need this pool

To view the values of these parameters, log in using SYSTEM user and use the following command from SQLPlus client:

```
sho parameter <parameter_name>
```

To set the values of these parameters, use the following command:

```
alter system set <parameter_name>=<value> scope=spfile;
```

Oracle server has to be restarted for the changes to be applied.

## Collecting Oracle System Statistics

Oracle System Statistics allow Oracle Cost Based Optimizer to execute queries in an efficient manner. This can significantly contribute to Oracle performance, resulting in better response times while using Performance Center. Oracle System Statistics are automatically collected in version 10g. If you are running Oracle 9i, it is recommended that you collect Oracle System Statistics manually.

To collect Oracle System Statistics, use the following command from SQLPlus client while logged in using SYSTEM user

```
exec dbms_stats.gather_schema_stats('MI_LRDB', cascade=>true)
```

It is recommended to run a job that collects statistics daily, after work hours.

## Performing Daily Backups of Your Oracle Database

In case of hardware failure or any other serious problem, there needs to be a way to recover lost data. Therefore, it is important to maintain backups of the database. Performing daily backups on the database is a way to guarantee data protection.

---

**Note:** Make sure that your database backup is in sync with your file system backup.

---

**To back up your Oracle database:**

- 1** Make sure your log mode is **ARCHIVELOG**.
- 2** Write a **hotbackup.bat** file and **hotbackup.sql** file.
- 3** Schedule the backup to run at night.
- 4** Go to the **Control Panel**, select **Scheduled Tasks**, and click **Add Scheduled Task**.
- 5** Select **hotbackup.bat** as the program to run.
- 6** Select **daily** and enter a time where the file system will not be heavily used (for example, 3:00 am).
- 7** Make sure that the **Task Scheduler** service is started and set to **automatic**.

## Restoring Oracle Database Backup

If you migrated your database and you encountered an error, you can restore the database backup files.

**To restore the backup database files:**

- 1** Drop user **MI\_LRDB**.
- 2** Create a new empty user and name it **MI\_LRDB**.
- 3** Import the backed up database into the new user.
- 4** Repeat the migration process. See “Performing Database Migration” on page 114.

## Setting IWAM\_<MachineName> Account Permissions

It is recommended to change the IWAM\_<MachineName> account permissions, to give the IWAM\_<MachineName> user read/write/execute privileges on the Oracle home directory and all its sub-directories.

- 1 In Windows Explorer, navigate to the Oracle home directory, right-click, and select **Properties**.
- 2 Select the **Security** tab.
- 3 Click **Add** and add the IWAM\_<SERVER> user.
- 4 Select **Read & Execute** and **Write**.
- 5 Click **OK**.

## Upgrading Oracle to a Supported Version

Performance Center 9.50 supports Oracle 9i or 10g on Windows or UNIX. If you are using an older unsupported version of the database, you need to upgrade your database to a supported version.

---

**Important:** We recommend having only one version of Oracle installed on your system, and that any unused versions of Oracle are cleaned off your system.

---

**To upgrade an Oracle database to a supported version:**

### 1 Drop user MI\_LRDB.

If the database that you are migrating to already has an **MI\_LRDB** user, you must first drop the user and then recreate the user.

Connect to the new database using SQLPlus, and run the following command:

```
DROP USER MI_LRDB CASCADE;
```

## 2 Create a new user.

On the new database create a new user, **MI\_LRDB**, with password **MIOrchid#1**.

Connect to the new database using SQLPlus, and run the following command:

```
CREATE USER MI_LRDB IDENTIFIED BY MIOrchid#1
```

## 3 Grant MI\_LRDB user DBA privileges.

Connect to the new database using SQLPlus, and run the following command:

```
GRANT DBA TO MI_LRDB
```

## 4 Export the old Performance Center database.

From the command line run:

```
% exp MI_LRDB/MIOrchid#1@<oldTNS> file=<Name of dump file>.dmp
```

where <oldTNS> corresponds to the name given in the **tnsnames.ora** file that identifies the old Oracle server to which you want to connect for exporting data.

## 5 Import the database backup file that you created earlier (.dmp file) to the new Oracle database.

From the command line run:

```
% imp MI_LRDB/MIOrchid#1@<newTNS> file=<Name of dumpfile>.dmp full=y
```

where <newTNS> corresponds to the name given in the **tnsnames.ora** file that identifies the new Oracle server to which you want to connect for importing data.

**6 Create a TNS entry for the new database.**

Copy or create a TNS entry for the new database in the **tnsnames.ora** file on all Performance Center Servers and Controller machines. Verify connectivity from each Performance Center Server and Controller Host by using SQLPLUS:

```
% SQLPLUS MI_LRDB/MIOrchid#1@<newTNS>
```

**7 Check that all servers and hosts have a supported Oracle client installed.**

Performance Center supports Oracle 9i and 10g clients. However, it is recommended to use Oracle 10g R2 client.

**8 (Optional) Add ORACLE/BIN directory into your PATH environment.**

Add ORACLE/BIN directory into your PATH environment, and remove SQLPLUS from <Performance Center directory>/DBSetup directory. This ensures that Performance Center uses the version of SQLPLUS that is installed on your system.

Make sure that **IWAM\_<machine>** has full access to Oracle directories.

---

**Note:** After upgrading, define the value of the ORACLE\_HOME system variable as the installation path of the Oracle client used to connect with Performance Center. For details, see “Oracle Client with Other Client/Server on Same Machine” on page 136.

---

## MS-SQL Configuration

This section provides the following recommendations for MS-SQL configuration:

- “Working with a Non-Default MS-SQL Instance Name” on page 144
- “Minimum Permissions Required for MS-SQL User in Performance Center” on page 147
- “Performing Daily Backups of Your MS-SQL Database” on page 149
- “Restoring MS-SQL Database Backup” on page 150
- “Changing the Database Model Compatibility Level” on page 151

### Working with a Non-Default MS-SQL Instance Name

If the Performance Center database is an MS-SQL database with a non-default instance name, configure the database server in one of the following ways:

- <server name>, <instance port>
- <server name>\<instance name>:

---

#### Notes:

- Ensure that the relevant service packs are installed on all MS-SQL instances.
  - Configure the other machines (the non-database machines) with the alias.
- 

If you are working with a non-default instance name, you also need to configure the Performance Center Administration Site server to communicate with the MS-SQL database server.

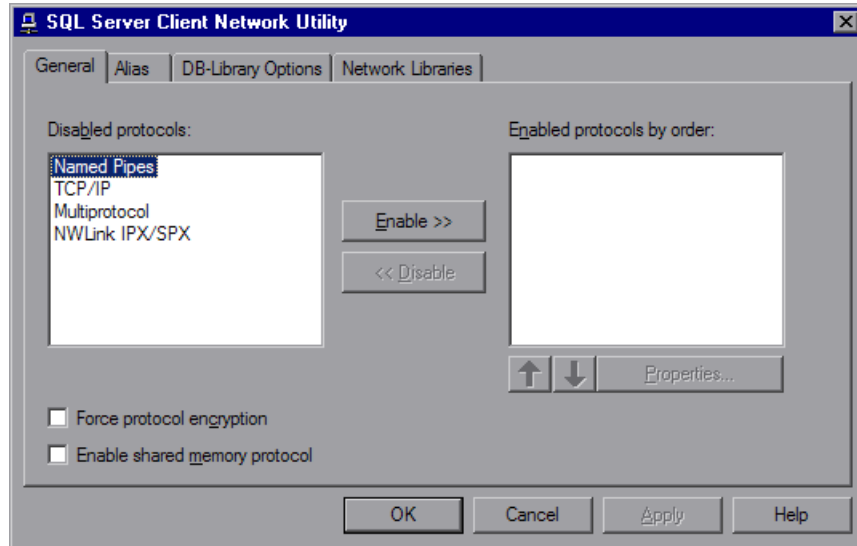


**To configure the Administration Site server for MS-SQL:**

- 1 From the Windows Start menu, select **Run** and enter the following command:

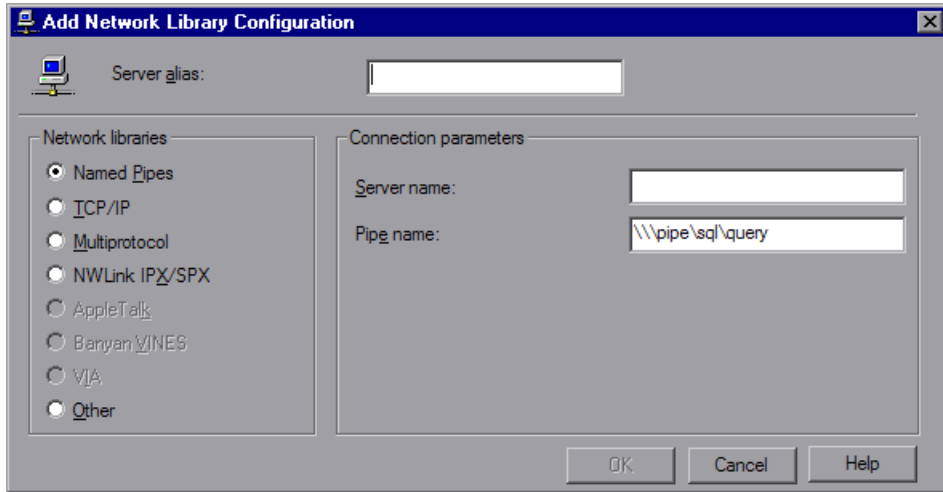
```
cliconfg.exe
```

The SQL Server Client Network Utility dialog box opens.



- 2 In the General tab, enable the **TCP/IP** and **Multiprotocol** protocols. If these protocols appear in the **Disabled protocols** list, double-click them to move them to the **Enabled protocols by order** list and click **Apply**.

- 3 In the **Alias** tab, click **Add** to open the Add Network Library Configuration dialog box.



- In the **Network libraries** area, select **TCP/IP**.
- In the **Server alias** box, enter the SQL server name in the following format:

<SQL server machine name>\<instance name>

- Click **OK**. The Add Network Library Configuration dialog box closes.
- 4 In the SQL Server Client Network Utility dialog box, click **OK**.

## Minimum Permissions Required for MS-SQL User in Performance Center

When installing Performance Center, you need to provide an MS-SQL user with sufficient permissions to perform certain administrative tasks. In most cases, the system administrator cannot be used due to security concerns. Therefore, another MS-SQL user (<pc\_admin>) must be created to perform these tasks. This user must be granted the following MS-SQL server roles:

- ▶ Database Creators
- ▶ Process Administrators (required for creating the td user (dbOwnerName))
- ▶ Security Administrator (required for creating the new Database user)

These user permissions can be assigned by the database administrator to the Performance Center administrator (<pc\_admin>) as follows:

- 1** Open the Database manager (Enterprise Manager / SQL Server Management Console).
- 2** Locate the **Logins** directory: <Machine Name> > **Security** > **Logins**
- 3** Right-click the <pc\_admin> user and select **Properties**.
- 4** In the **Server Roles** tab, enable the **Database Creators**, **Process Administrators**, and **Security Administrator** options.
- 5** Click **OK**.

To verify that the new user was created successfully with the required MS SQL permissions, you can try and perform the following tasks with the newly created user:

### MS SQL Server Authentication:

- ▶ Permission to select from the sysdatabases table in the master database:

```
SELECT name FROM sysdatabases where name='<dbName>'
```

- ▶ Permission to drop the database:

```
"DROP DATABASE " + dbName
```

- ▶ Permission to select from syslogins:

```
SELECT COUNT(*) FROM master..syslogins WHERE name='<dbOwnerName>'
```

---

**Note:** By default, the dbOwnerName is **td**.

---

- ▶ Permission to create a database:

```
CREATE DATABASE <dbName>
```

### MS SQL with Windows Authentication:

- ▶ Permission to change the database context.

```
USE <dbName>
```

- ▶ Permission to select from syslogins:

```
SELECT COUNT(*) FROM master..syslogins WHERE name='<dbOwnerName>'
```

- ▶ Permission to select from sysusers:

```
SELECT COUNT(*) FROM master..sysusers WHERE name='<dbOwnerName>'
```

- ▶ Permission to grant all to user td:

```
GRANT ALL TO <dbOwnerName>
```

- ▶ Permission to create a database:

```
CREATE DATABASE <dbName>
```

## Performing Daily Backups of Your MS-SQL Database

In case of hardware failure or any other serious problem, there needs to be a way to recover lost data. Therefore, it is important to maintain backups of the database. Performing daily backups on the database is a way to guarantee data protection.

---

**Note:** Make sure that your database backup is in sync with your file system backup.

---

**To back up your MS-SQL database:**

- 1** Launch **Microsoft SQL Server > Enterprise Manager**.
- 2** Select the SQL Server that has **MI\_LRDB** database.
- 3** Select the **Management** folder.
- 4** Right-click **backup**, and select **Backup a Database**.
- 5** Under the **General** tab, select **MI\_LRDB** as the database.
- 6** Click **Add**, and enter a name for the location where the backup will be saved. This should be on a different computer to the database.
- 7** Check the **schedule** box.
- 8** Edit and define the schedule for the backup.
- 9** Click **OK**.
- 10** Make sure that the **SQLSERVERAGENT** service is running. Set it to **automatic**.

## Restoring MS-SQL Database Backup

If you migrated your database and you encountered an error, you can restore the database backup files.

To restore the backup database files:

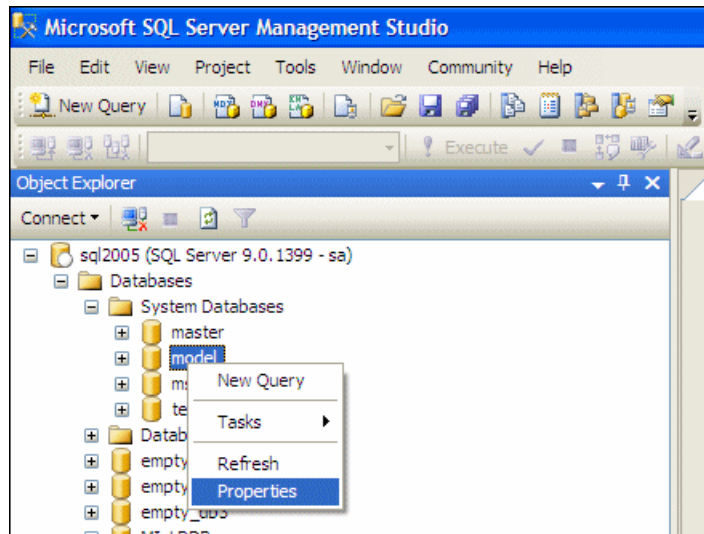
- 1** Open **Microsoft SQL Server > Enterprise Manager** and select **Databases**.
- 2** Right-click **MI\_LRDB** (if it exists), and select **Delete**.
- 3** Create a new database and name it **MI\_LRDB**.
- 4** Right-click the new database and select **All Tasks > Import Data**.
- 5** Follow the wizard, and specify the backed up database as the source database.
- 6** Under **Security > Logins**, ensure that **OrchidUser** has **public** and **db\_owner** permissions for the **MI\_LRDB** database.
- 7** Repeat the migration process. See “Performing Database Migration” on page 114.

## Changing the Database Model Compatibility Level

If you are using SQL Server 2005 SP2, you need to define the **Compatibility level** of the database model as **SQL Sever 2000 (80)**. You do this before you install and configure Performance Center.

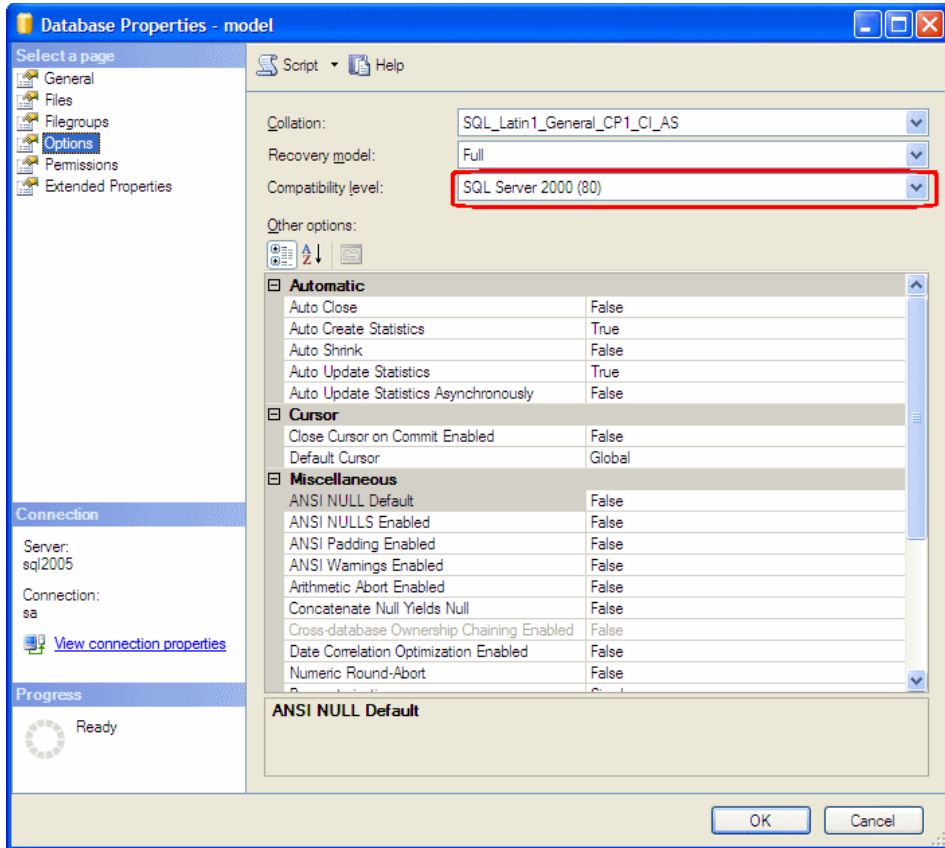
**To change the database compatibility level to SQL Server 2000 (80):**

- 1 In Microsoft SQL Server Management Studio, right-click **Databases > System Database > model** and select **Properties**.



- 2 In the Database Properties dialog box, in the **Select a page** area, select **Options**.

**3** In the **Compatibility level** box, select **SQL Server 2000 (80)**.



**Notes:**

- ▶ After you have completed the initial configuration of the Performance Center system as described in Chapter 5, “Required Configuration,” you can restore the original compatibility level setting.
- ▶ If you have already configured Performance Center and the database has been created, you can still change the compatibility level as follows: In Microsoft SQL Server Management Studio, right-click **Databases > MI\_LRDB** select **Properties**, and continue with step 2 above.



# 7

---

## Recommended Configuration

The Performance Center system has a default set of configuration settings. These settings work for the purposes of utilizing Performance Center with its intended purpose. This chapter includes additional tuning and configuration recommendations to help you get the most out of your Performance Center system. The use of these recommendations depends on each specific business case. Not all the recommendations in this chapter are suitable for all usage scenarios and the Performance Center administrator should therefore assess which of these recommendations will contribute to their specific needs.

### **This chapter includes:**

- ▶ Configuring Host Security Settings on page 154
- ▶ Windows XP Professional SP2 Configuration on page 157
- ▶ Configuring IIS on Performance Center Machines to Use SSL on page 158
- ▶ Identifying the SiteScope Account Name on page 162
- ▶ Working with Performance Center Agent on page 163
- ▶ File System Configuration on page 166
- ▶ Installing Multiple Components on One Machine on page 172
- ▶ Naming Performance Center Machines on page 173
- ▶ Modifying Default Heap Sizes on page 173
- ▶ Working with McAfee VirusScan Enterprise 8.0 on page 175
- ▶ Web Server Configuration on page 175

## 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 load 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 it 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 > Tools > Host Security Setup**. For details, see “Local Security Configuration” on page 155.

Another utility, the **Host Security Manager**, which is installed on the Administration Site server, can be used to remotely and simultaneously update security settings on all the hosts. You can use 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.

For details on using this utility, see the *HP Performance Center Administrator Guide*.

---

**Note:** We recommend configuring initial security settings locally on each host. After that, the remote utility can be used to update security settings on the hosts.

---

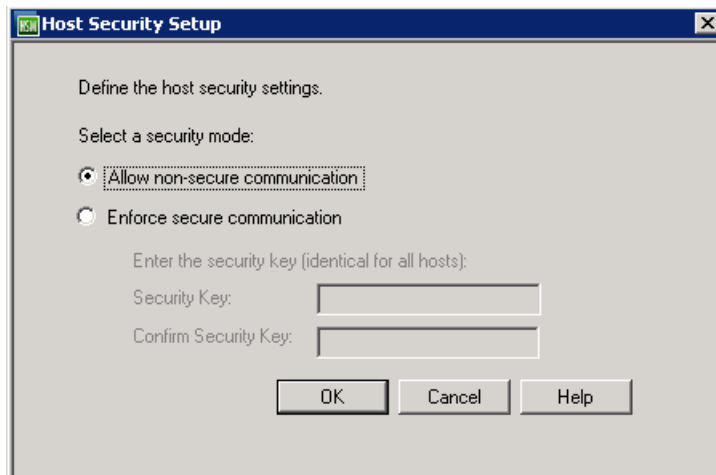
For more information about secure host communication, see the *HP Performance Center Administrator Guide*.

## Local Security Configuration

You can use the Host Security Setup utility to manually define or update a host's security settings.

**To update the security settings manually (Windows):**

- 1** Launch the Host Security Setup utility on the host machine:
  - **Performance Center users:** Select **Start > Programs > Performance Center > Tools > Host Security Setup**.
  - **LoadRunner users:** Select **Start > Programs > LoadRunner > Tools > Host Security Setup**.



- 2** Select a security mode for the host:
  - **Allow non-secure communication.** Allows the host to communicate with other machines over a non-secure channel. (Default)
  - **Enforce secure communication.** Enforces the host to communicate with other machines over a secure channel.
- 3** If you selected **Enforce secure communication**, you must provide the host with a security key. This security key must match the security key on other machines with which it needs to communicate.

In the **Security Key** box, enter the host security key. The key must be 6 - 16 characters long.

- 4 Enter the key a second time for confirmation.
- 5 Click **OK** to save the security settings and close the utility.

**To update the security settings manually (UNIX):**

- 1 Log in as root user and change for tcsh.
- 2 Go to the `/opt/HP/HP_LoadGenerator` directory and type:

```
>source ./env.csh
```

- 3 Run **SecurityKeyConsole.exe**, located in `<Installation_folder>/bin/` directory.



- 4 In the Console window, enter an option as follows:
  - To change the security mode, enter 1.
  - To change the security key, enter 2.
- 5 If you are changing the security mode:
  - To turn the security on, enter 1.
  - To turn the security on, enter 0.
- 6 If you are changing the security key, enter the new key. A valid key is 6 - 16 characters long.

## Windows XP Professional SP2 Configuration

If you are running Windows XP Service Pack 2 (SP2), 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

Performance Center host and server machines all require IIS (Microsoft Internet Information Server) to be installed. You can configure the following IIS Performance Center virtual directories to use SSL (Secure Socket Layer):

- ▶ **PCWS.** Exists on all Performance Center hosts and servers.
- ▶ **Admin.** Exists on the Performance Center Administration Site server.
- ▶ **LoadTest.** Exists on the Performance Center User Site server.

This section describes how to configure Performance Center IIS virtual directories to use SSL and the actions you need to complete before and after configuring.

### 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 different port other than 443.

The following Performance Center components may be configured to use port 443:

- ▶ **Performance Center agent.** Resides only on Performance Center host machines.
- ▶ **Remote Management agent.** Resides on all Performance Center host and server machines.

## Changing the Port on the Performance Center Agent

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

**To change the port on the Performance Center agent:**

- 1** On the Performance Center host machines, go to the directory `<Performance Center installation directory>\launch_service\dat` and open the file `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, above.

- 5** Restart the Performance Center 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 **Performance Center Agent Service** and restart it.

## Changing the Port on the Remote Management Agent

On all Performance Center host and 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 host and server machines, go to the directory **<Performance Center installation directory>\al\_agent\dat** and open the file **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. Do not use the same number that you used for the Performance Center agent.

- 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, above.

- 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 Performance Center server and host machines to use SSL.

**To configure IIS to use SSL on Performance Center machines:**

- 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 all other Performance Center hosts and servers that will need 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**.

For example, if you were configuring the Administration Site to work over SSL, you would generate the SSL certificate, install it on the Administration Site, and then you would install it on all the Performance Center hosts and servers, such as the Utility Server, that interact with the Administration Site.

## After You Configure IIS

After you configure IIS to use SSL, you need to ensure that the IIS sub-virtual directories used by Performance Center on the Administration Site server and the User Site server have the correct connection details.

On the Administration Site server you need to verify the connection details of the **Admin > Graphs** sub-virtual directory.

On the User Site server you need to verify the connection details of the following sub-virtual directories:

- **LoadTest > Graphs**
- **LoadTest > FileServer**
- **LoadTest > DashboardGraphs**
- **LoadTest > Downloads**
- **LoadTest > ReportVirt**

**To verify the connection details of the IIS sub-virtual directories:**

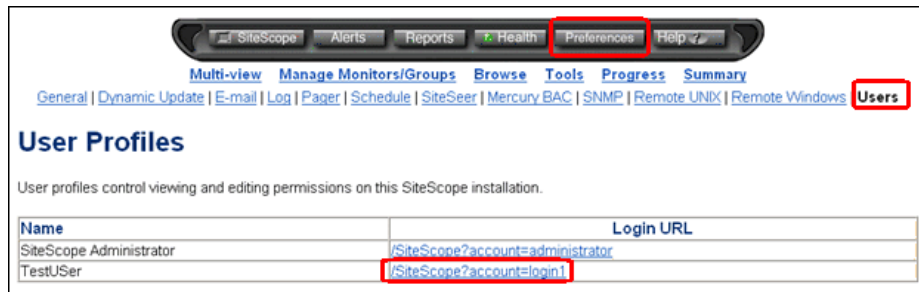
- 1 Go to the relevant sub-virtual directory.
- 2 Right-click the sub-virtual directory, and select **Properties**. The Graphs Properties dialog box opens.
- 3 In the **Virtual Directory** tab, click **Connect As**. The Network Directory Security Credentials dialog box opens.
- 4 Ensure that the username is the Performance Center system user (by default, **IUSR\_METRO**)
- 5 Verify that the password is filled in. If the **Password** box is empty, enter the correct password. If you are using the default Performance Center system username (**IUSR\_METRO**), and you do not know the password, contact Customer Support.

## Identifying the SiteScope Account Name

This section describes how to identify the SiteScope account name for a particular SiteScope user.

**To identify a SiteScope account name:**

- 1 Log on to SiteScope as follows: <SiteScope server>:8888/sitescope.
- 2 Click the **Preferences** button, and then select the **Users** link.



- 3 The User Profiles page shows a table that displays the Login URL associated with each user name. Inside the Login URL you can identify the account name. In the above example, the account name for the user, **TestUser** is **login1**.

## 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 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 say either **Performance Center Agent Service** or **Performance Center Agent Process**.

### Changing the Performance Center Agent Password

To change the password of the Performance Center Agent service:

- 1 Select **Start > Settings > Control Panel > Administrative Tools > Services > Performance Center Agent Service**.
- 2 Click **Startup** to open the Services dialog box.
- 3 Enter a new user name and password, then click **OK**.
- 4 Stop and restart the service.

## 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:**

- 1** Stop the Performance Center Agent service by right-clicking its icon in the system tray and selecting **Close**.
- 2** If the Performance Center Agent is to always run as a process, you need to disable the Performance Center Agent service in the Services directory.
- 3** Locate the Performance Center Agent process (`<PC_dir>\launch_service\bin\magentproc.exe`) and create a shortcut for it in the system startup folder.
- 4** Using the shortcut, start the Performance Center Agent process.  
Alternatively, run `<PC_dir>\launch_service\bin\magentproc.exe`.

## 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:**

- 1** Stop the agent process by right-clicking its icon in the system tray and selecting **Close**.
- 2** To uninstall the process, delete its shortcut from the system startup folder.
- 3** To install and run the agent service, select **Start > Programs > Performance Center > Advanced Settings > Performance Center Agent Configuration**.  
Alternatively, run `<PC_dir>\launch_service\bin\magentservice.exe -install <user_domain>\<user_name> <password>`.
- 4** To run the service later, after stopping it, start it from the Services dialog box.

## Configuring the Agent on Load Generator Machines

When working with protocols that use network files or Web protocol Users 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 Users

To run SAPGUI Users 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 164).
- ▶ A user with administrative privileges is logged on to the host machine during run-time.

---

**Note:** To run SAPGUI Users on a Localhost (Controller + Load Generator machine), the Controller must be configured to work as an Interactive User.

1. Make sure **wlrun** process is not running on the machine.
  2. Select **Start > Run** and type **dcomcnfg**.
  3. Click **Enter** to display the list of DCOM applications.
  4. In the displayed application list, double-click **wlrun.LrEngine**.
  5. In the **Identity** tab, select **The interactive user**.
  6. Click **OK** twice to close both dialog boxes.
-

## 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>\>.

## File System Configuration

This section provides the following recommendations for file system configuration:

- ▶ Modify Access to the Performance Center File System (LRFS)
- ▶ Set Up Daily Backups
- ▶ Using a Network Drive as the File Server

### Modify Access to the Performance Center File System (LRFS)

In order to secure the data on LRFS, access to it should be limited. Full access (**Read, Write, Execute, and Modify**) should be granted only in specific cases where necessary.

**To define access permissions:**

- 1** In Windows Explorer, right-click the **LRFS** directory and select **Properties**.
- 2** Click the **Security** tab. Add or remove users and/or groups, giving them the minimum access that is required.
- 3** Click the **Sharing** tab. In this tab you can grant users and/or groups different permissions for accessing the drive over the network. Give only the minimum access that is needed. By default, only the Performance Center system user has access.

## Set Up Daily Backups

It is important to maintain backups of the LRFS file system. If there is hardware failure or any other serious problem, there needs to be a way to recover the data. Performing daily backups on the LRFS file system is a way to guarantee data protection. The **Tc\_BackupFileSystem.vbs** script is provided to execute daily backups of the file system.

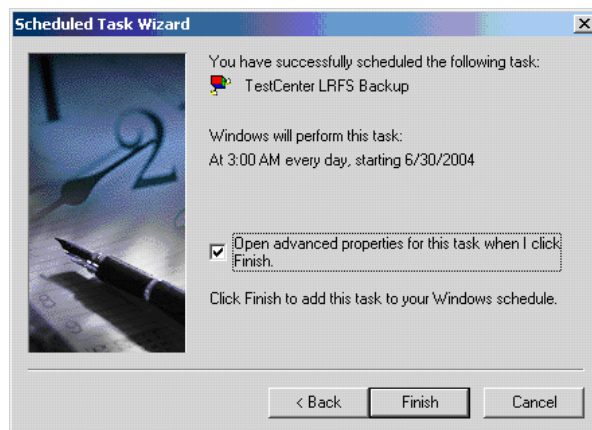
- 1** Select **Start > Settings > Control Panel > Scheduled Tasks > Add Scheduled Task**.
- 2** Under **WinNT\system32**, select **CScript.exe** as the program to run.
- 3** Type a descriptive name for the task such as **Performance Center LRFS Backup**.
- 4** Select **Daily** and enter a time when the file system will not be heavily used (for example, 3:00 am).

---

**Note:** Make sure that your file system backup is in sync with your database backup.

---

- 5** Select **Open advanced properties for this task when I click Finish**. Alternatively, right-click the newly created task and select **Properties**.



- 6 Edit the **Run** field, in the **Task** tab, and enter **Tc\_BackupFileSystem.vbs** (including the full path), the source directory and the destination directory, for example:

```
C:\WINNT\system32\cscript.exe D:\HP\bin\Tc_BackupFileSystem.vbs  
D:\HP\Performance Center\LRFS Y:\HPBackup\LRFS
```

- 7 Make sure that the **Task Scheduler** service is started and set to **automatic**.

## Using a Network Drive as the File Server

You can configure the Performance Center system to use a network drive as the File Server.

**To configure Performance Center to use a network drive as a file server:**

- 1 Install the Performance Center File Server component on the same machine as another Performance Center component. The File Server installation creates the **LRFS** directory in the Performance Center installation directory.
- 2 Using the File Server that you installed above, complete the initial configuration of the Performance Center system as described in Chapter 5, "Required Configuration."
- 3 From the machine on which you installed the file server, copy the **LRFS** directory and paste it onto the designated network drive.
- 4 On the network drive, share the **LRFS** directory and set full permissions for the Performance Center system user (by default, **IUSR\_METRO**) as follows:
  - a Right-click the LRFS directory and select **Properties**.
  - b In the **Properties** dialog box, in the **Sharing** tab, select the **Share this folder** option and click **Permissions**.
  - c In the Permissions dialog box, add the Performance Center system user with full permissions and click **OK**.



- d** In the **Properties** dialog box, in the **Security** tab, add the Performance Center system user with full permissions and click **OK**.

---

**Note:** You can verify that the permissions were correctly set by mapping the LRFS folder on the network drive from other Performance Center servers, using the Performance Center system user. If you can add or remove folders on the mapped drive, the permissions have been set correctly.

---

- 5** On the original machine on which you installed the File Server, update the <Performance Center installation directory>\bin\SmartDiskConf.ini file as follows:

- a** In the **MonitoredDirectries** section, set the **BasePath** property as the location of the **LRFS** directory on the network drive, for example:

```
[MonitoredDirectries]
BasePath=\\PCNetWork\PC_FS\LRFS\
```

- b** Save the **SmartDiskConf.ini** file.
- c** Restart the SmartDiskCleaner service

- 6** Connect to the Performance Center database (**MI\_LRDB** scheme). Open the **GlobalData** table, and change the following entry values to represent the location of the File Server on the network drive:

Entry	Value
FSName	<Network_Path>
MainDir	<Network_Path>\LRFS\
UploadDir	<Network_Path>\LRFS\UploadDir
TempGraphDir	<Network_Path>\LRFS\graphs

where **<Network\_Path>** is the network location of the File Server directory (LRFS).

---

**Note:** When entering values in the GlobalData table, do not include the double slash (\\) preceding the name of the network path.

For example if the network path is \\PCNetWork\PC\_FS, then for **MainDir** enter the value **PCNetWork\PC\_FS\LRFS\**.

---

- 7** On the User Site server and the Administration Site server, change the File Server location of the relevant IIS Performance Center virtual directories to represent the location of the File Server on the network drive.

On the User Site server, change the File Server location on the following virtual directories:

- **LoadTest > DashboardGraphs**
- **LoadTest > Downloads**
- **LoadTest > FileServer**
- **LoadTest > Graphs**
- **LoadTest > ReportVirt**

On the Administration Site server, change the File Server location on the following **Admin > Graphs** virtual directory:

To change the File Server location of the virtual directories:

- a** Open the Internet Service Manager (Select **Start > Run**, type **inetmgr** and press **ENTER**).
- b** Right-click the virtual directory and select **Properties**.
- c** In the **Virtual Directory** tab, in the **Network Directory** box, change the location to represent the location of the File Server on the network drive. For example:

```
\\PCNetWork\PC_FS\LRFS\DashboardGraphs
```

- d** Click **Connect as** and ensure that the Performance Center system user credentials are filled in.
  - e** Click **OK** to save the changes.
  - f** Reset IIS.
- 8** On all Performance Center servers and hosts, update the connection to the File Server in the **globals.ini** file as follows:

---

**Note:** If you have many hosts in your database, instead of changing the **globals.ini** file, you can remove all the hosts and add them again on the Hosts page in the Administration Site. When you re-add the hosts, the File Server location is updated automatically on each host.

---

- a** Select **Start > Run**, type **globals.ini**, and press **ENTER**.
- b** In the **Drives** section, set the **SharedPath** property as the location of the **LRFS** directory on the network drive, for example:

```
[Drives]
SharedPath=\\PCNetWork\PC_FS\LRFS\
```

---

**Important:** On the Administration Site server configuration page (**System Configuration > Server Configuration**), if you click **Reset**, the original location of the File Servers is restored on all the Performance Center servers and the new network drive location is removed from the **globals.ini** file and from the IIS virtual directories.

---

- 9 Verify that you have correctly configured you Performance Center environment to use a network drive as the File Server:
  - ▶ In the Administration Site, go to the Event Log page (**Site Management > Event Log**) and click **Export Event Log**. If the Event log is ready for download, the File Server is correctly configured.
  - ▶ In the User Site, go to the Vuser Scripts page (**Project > Vuser Scripts**) and upload a new script. In the Load Test Results page (**Load Tests > Search Results**), open an HTML report for one of the load tests. If these actions were completed successfully, the File Server is correctly configured.

## Installing Multiple Components on One Machine

All Performance Center components include the configurable file, **globals.ini**. If you install a component on a machine which already includes a configured Performance Center component, the existing **globals.ini** file that contains the configuration information is overwritten by the new one.

To avoid having to reconfigure existing components, save your configured **globals.ini** file, and copy it back after installing the new component. The **globals.ini** file is located in the **<Performance Center Installation Directory>\bin** directory.

## Naming Performance Center Machines

It is easier to locate, troubleshoot, and manage Performance Center machines if you give them meaningful names. Meaningful names can be derived from the location, purpose, type, and identity of the machine.

For example, if the Performance Team has four Performance Center Web servers in California, the names of these servers might be:

PTCAPCWeb1, PTCAPCWeb2, PTCAPCWeb3, and PTCAPCWeb4

PT = Performance Team

CA = California

PCWeb = Performance Center Web Server

1-4 = a unique number for each web server

Other keywords might be added to a machine's name, such as software, operating system, and so on. There are a variety of ways to name machines. The more information that is provided with a name, the easier the system will be to use and maintain. Make sure that the names themselves are easy to remember and not too long.

## Modifying Default Heap Sizes

This section provides instructions about how to modify the default heap sizes for your desktop processes.

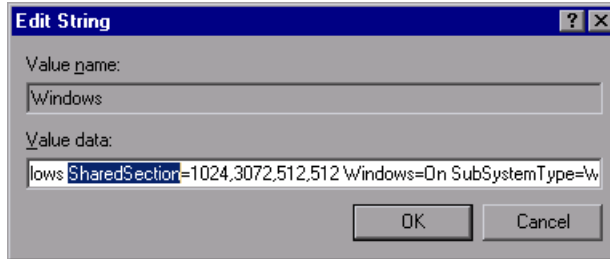
This recommendation applies to operating systems for host and server machines. It does not apply to end-user machines.

**To modify the default heap sizes for your desktop processes:**

- 1** Select **Start > Run** and type REGEDIT to launch the Registry Editor.
- 2** Go to:  
**HKEY\_LOCAL\_MACHINE\SYSTEM\CurrentControlSet\Control\Session Manager\SubSystems**

**3** Edit the **Windows** value, as follows:

- ▶ Right-click the **Windows** value and select **Modify**. The Edit String dialog box opens.



- ▶ In the Value data string there is a variable called **SharedSection**.  
The first value is the heap size of all common desktops, the second value is the heap size of all desktops associated with **interactive** mode and the third value is the heap size of all desktops associated with **noninteractive** mode.
- ▶ There should be at least 3 values in this section.
- ▶ Set them to **2048,4096,2048** respectively (or as appropriate, depending on available RAM).

## Working with McAfee VirusScan Enterprise 8.0

The McAfee VirusScan Enterprise 8.0 includes a **buffer overflow protection module**, which is incompatible with the Performance Center User Site. You can either upgrade to McAfee VirusScan Enterprise 8.5i patch 4 or perform the following workaround on version 8.0.

In McAfee VirusScan Enterprise 8.0, go to the properties of the buffer overflow protection module and add the following three exception rules: (Click **Add exclusion** to add an exception rule.)

```
process=w3wp.exe
api=recv
module=heap
```

```
process=w3wp.exe
api=select
module=heap
```

```
process=w3wp.exe
api=send
module=heap
```

## Web Server Configuration

This section provides the following recommendations for Web server configuration:

This section contains:

- “Set a Reasonable Connection Timeout” on page 176
- “Set a Reasonable Session Timeout” on page 176
- “Set Hits Expected Per Day” on page 177
- “Set the ASP Upload Buffer” on page 177

## Set a Reasonable Connection Timeout

You should set a reasonable connection timeout of between 60-600 seconds for the default Web site. Setting the connection timeout too high (for example, 3600) will only deplete unnecessary TCP/IP control blocks / connection handles.

**To set the connection timeout:**

- 1** Select **Start > Programs > Administrative Tools > Internet Services Manager**. The Internet Services Manager administrative tool opens.
- 2** Right-click **<Default Web Site>** and select **Properties**.
- 3** Click the **<Default Web Site>** tab.
- 4** Set a reasonable connection timeout (for example, 60 or 120 seconds).

## Set a Reasonable Session Timeout

You should set a reasonable session timeout of between 15-30 minutes for the default Web site. Avoid long session timeouts in excess of 60 minutes. Long session timeouts can consume unnecessary resources on the IIS application server for extended periods of time (even after the user has disconnected from the site).

**To set the session timeout:**

- 1** Select **Start > Programs > Administrative Tools > Internet Services Manager**. The Internet Services Manager administrative tool opens.
- 2** Right-click **<Default Web Site>** and select **Properties**.
- 3** Click the **Home Directory** tab.
- 4** Under **Application Settings**, click **Configuration**, and select the **App Options** tab.
- 5** Select **Enable session state**, and set the appropriate session timeout.



## Set Hits Expected Per Day

As more users use Performance Center and live load tests, hits on the Performance Center Web server increase dramatically. By default, live load tests are refreshed every five seconds, and typically load tests run for 1-4 hours. So, for example, if you have five concurrent load tests being viewed (or one load test being viewed from five different browsers), you will have 3,600 hits on the Web server in one hour. Accordingly, you should increase the setting for hits expected per day.

**To increase the hits expected per day:**

- 1** Select **Start > Programs > Administrative Tools > Internet Services Manager**. The Internet Services Manager administrative tool opens.
- 2** Right-click **<Default Web Site>** and select **Properties**.
- 3** Click the **Performance** tab, and in the **Performance tuning** section, set **hits expected per day** to **More than 100,000**.

## Set the ASP Upload Buffer

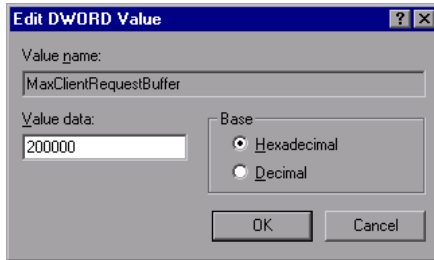
Set the ASP upload buffer to the maximum size of a file that you will permit to be uploaded to the server.

**To set the ASP upload buffer:**

- 1** Select **Start > Run** and type REGEDIT. The Registry Editor opens.
- 2** In the **HKEY\_LOCAL\_MACHINE\SYSTEM\CurrentControlSet\Services\W3SVC\Parameters**, check for the **MaxClientRequestBuffer** value.

If it does not exist, create it as a **DWORD** (Select **Edit > New > DWORD Value** from the menu).

- 3 Right-click the **MaxClientRequestBuffer** value, and select **Modify**. The Edit DWORD Value dialog box opens.



- 4 In the **Value data** box, enter the number of bytes that you would like to upload.

For example, a value of 2097152 is 2Mb.

# Part VI

---

## Using Firewalls in Performance Center



# 8

---

## Working with Firewalls

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

**This chapter includes:**

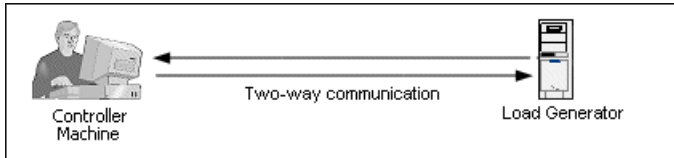
- ▶ About Using Firewalls in Performance Center on page 181
- ▶ Example: Over Firewall Deployment on page 184
- ▶ Setting Up your System to Use Firewalls: Basic Steps on page 185
- ▶ Installing Over-Firewall Components on page 186
- ▶ Initial Configuration of the Over-Firewall System on page 187

### About Using Firewalls in Performance Center

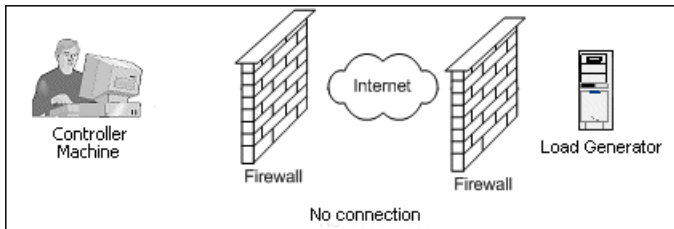
Working with a firewall means that you can prevent unauthorized access to or from a private network, on specific port numbers.

For example, you can specify that there is no access to any port from the outside world, with the exception of the mail port (25), or you can specify that there is no outside connection 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 Center load test scenario (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.



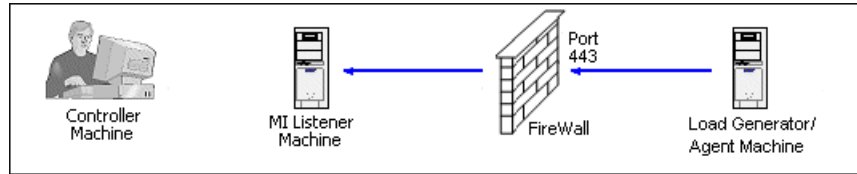
When running Vusers or monitoring applications over a firewall, this direct connection is blocked by the firewall. The connection cannot be established by the Controller, because it does not have permissions to open the firewall.



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 188.

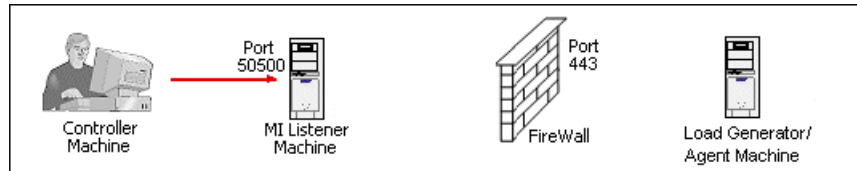
A Performance Center agent is installed on load generators running Vusers over a firewall, and on Monitor Over Firewall machines that monitor the servers that are located over a firewall. The agent communicates with the MI Listener machine through port 443 in the firewall.

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

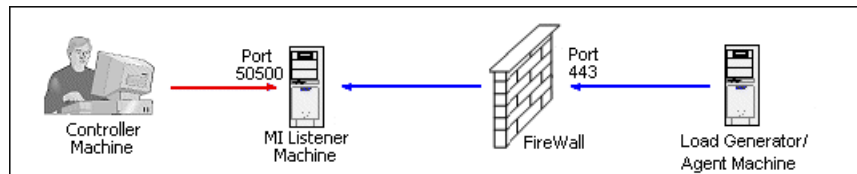


When the Performance Center agent connects to the MI Listener, the MI Listener keeps a listing of the connection to the agent using a symbolic name that the agent passed to it.

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

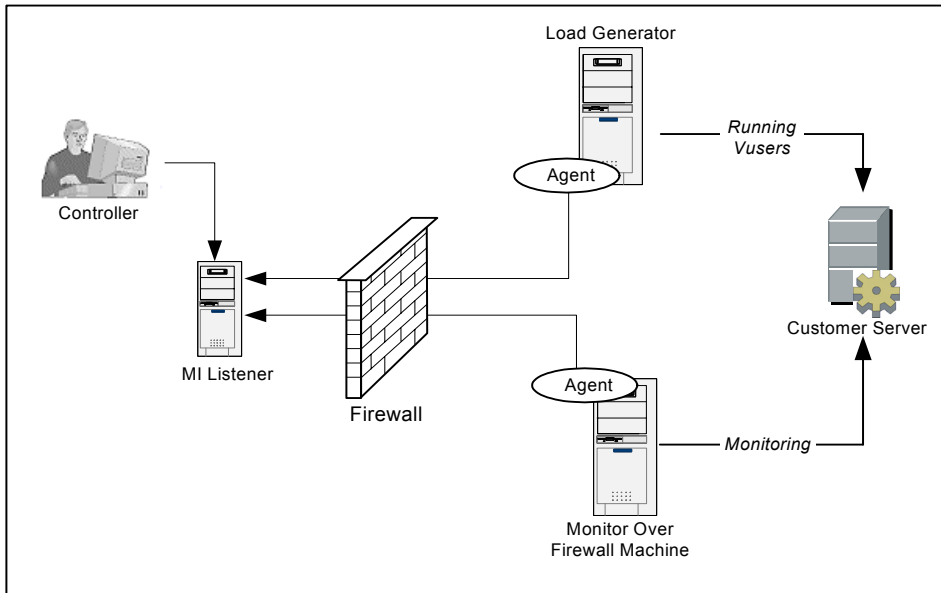


The Controller uses a symbolic name for the agent, and provides the MI Listener machine's name. If there has been a connection from the agent with the same symbolic name to this MI Listener, the connection is made between the Controller and the agent. Once you have a connection with the agent, you can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



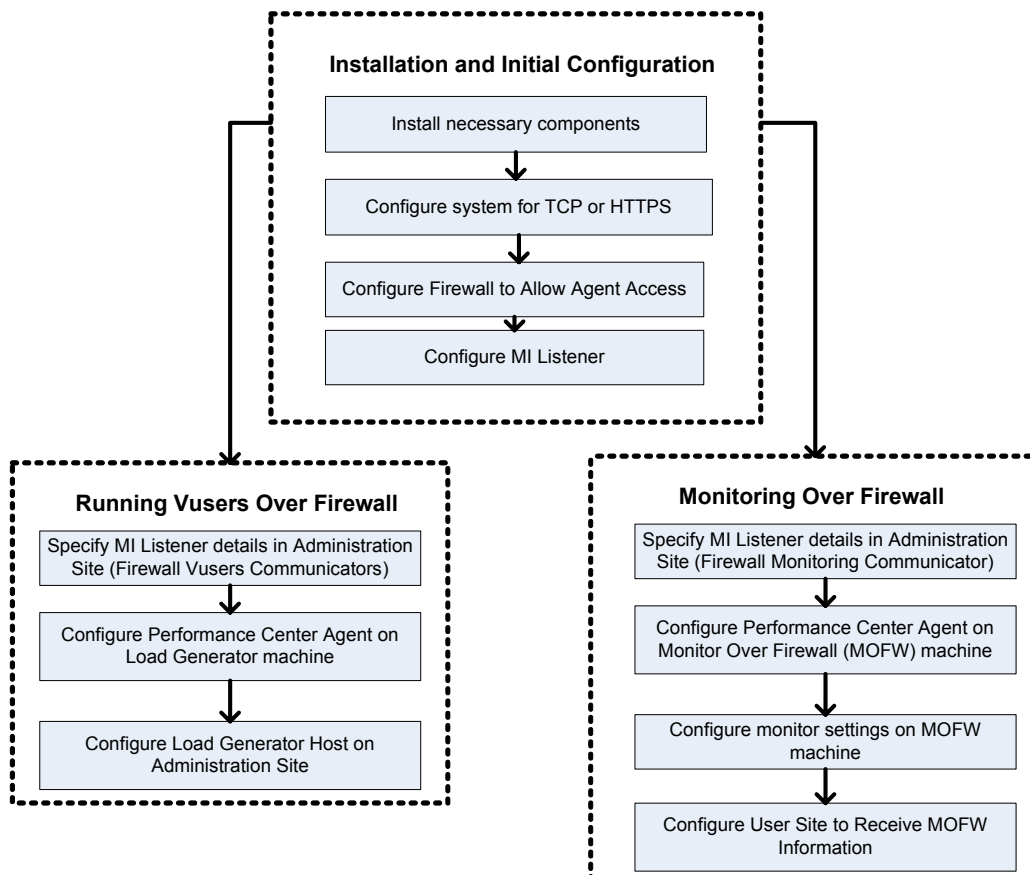
As explained in the previous section, the Performance Center agent is installed on both the load generator machine and the Monitor Over Firewall machine. During installation, the Performance Center agent is added as a Windows service.

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 your System to Use Firewalls: Basic Steps



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

- **Installation and initial configuration.** Installing the necessary components and doing initial configuration settings. See “Installing Over-Firewall Components” on page 186 and “Initial Configuration of the Over-Firewall System” on page 187.
- **Running Users over a firewall.** Setting up your system to run Users over a firewall when there is a firewall between the Controller and load generator host machines. See “Running Users Over a Firewall” on page 195.

- ▶ **Monitoring over a firewall.** Setting up your system to monitor the application under test (AUT) when there is a firewall between the Controller and AUT. See “Monitoring Over a Firewall” on page 203.
- ▶ **Checking Connectivity.** After installing and configuring all the necessary components, check that you are able to establish a connection between the Performance Center agent, MI Listener, and the Controller machine. See “Checking Connectivity” on page 224.

The following flow chart provides a general outline of the steps that you need to carry out to set up your system to use 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 Chapter 2, “Installing Performance Center on Windows.”

For instructions on configuring the MI Listener machine, see “Configuring the MI Listener” on page 191.

- ▶ **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 Chapter 2, “Installing Performance Center on Windows.”

For information about configuring the Monitor Over Firewall machine, see “Monitoring Over a Firewall” on page 203.

## Initial Configuration of the Over-Firewall System

After you have installed the necessary components as described in “Installing Over-Firewall Components” on page 186, you are ready to configure your over-firewall system.

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

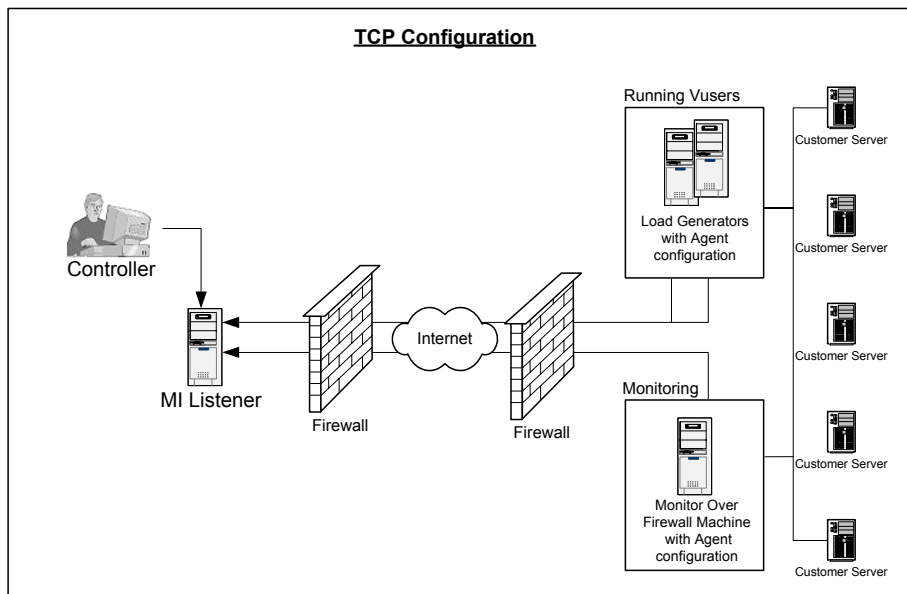
- 1** Configure your system according to TCP or HTTPS.  
See “Setting up your Deployment (TCP or HTTPS)” on page 188.
- 2** Modify your firewall settings to enable communication between the machines on either side of the firewall.  
See “Configuring the Firewall to Allow Agent Access” on page 190.
- 3** Configure the MI Listener.  
See “Configuring the MI Listener” on page 191.

## 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.

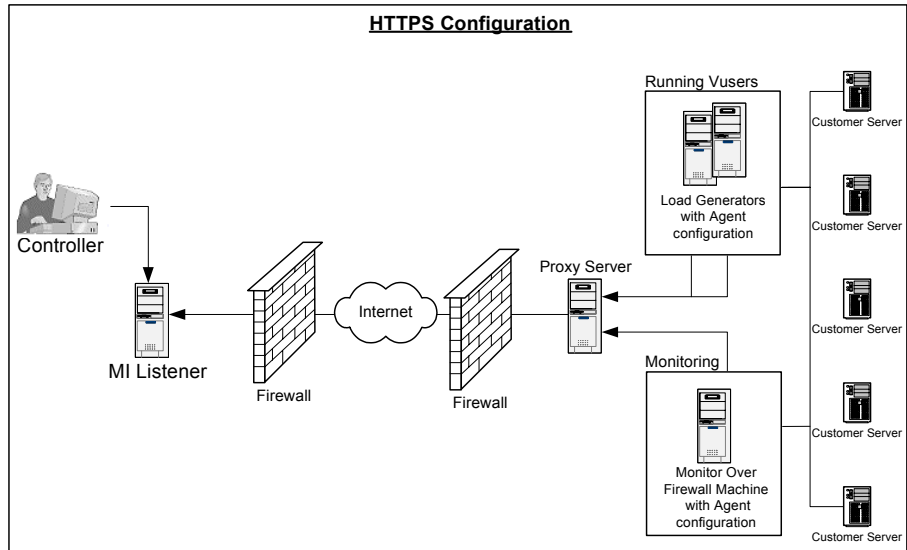
### ► TCP Configuration

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 Performance Center on Windows.”

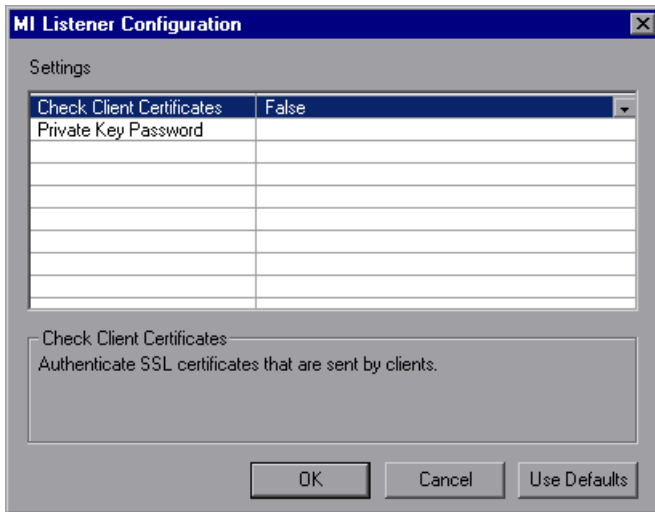
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**Note:** When installing the MI Listener:

- ▶ 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 will 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 root>\launch_service\bin\MILsnConfig.exe`.





**4** Set each option as described in the following table:

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

Click **OK** to save your changes, **Cancel** to cancel them, or **Use Defaults**.

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



# 9

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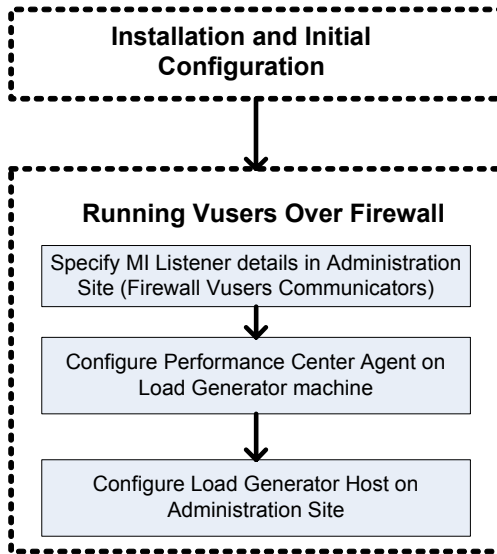
## Running Vusers Over a Firewall

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

**This chapter includes:**

- ▶ Running Vusers Over a Firewall: Basic Steps on page 196
- ▶ Specifying MI Listeners for Running Vusers on page 197
- ▶ Configuring the Performance Center Agent on page 198
- ▶ Configuring Hosts to Run Vusers Over a Firewall on page 199

## Running Vusers Over a Firewall: Basic Steps



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**Important:** 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 187.

---

### To set up your system to run Vusers over a firewall:

- 1** In the Performance Center Administration Site, specify the details of the MI Listener that will be used to run Vusers over the firewall.  
See “Specifying MI Listeners for Running Vusers” on page 197.
- 2** Configure the Performance Center agent on each load generator machine that will be running over a firewall.  
See “Configuring the Performance Center Agent” on page 198.

- 3 In the Performance Center Administration Site, configure the relevant load generator hosts to run over a firewall.

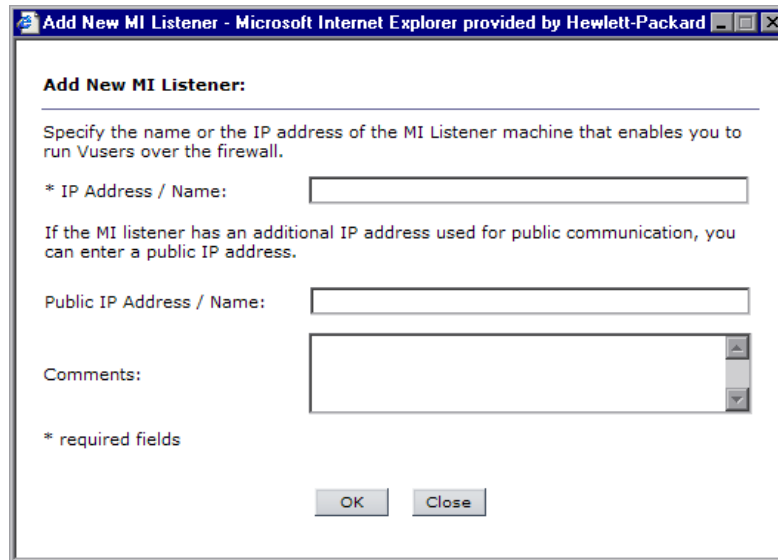
See “Configuring Hosts to Run Vusers Over a Firewall” on page 199.

## Specifying MI Listeners for Running Vusers

In the Performance Center Administration Site, you specify one or more MI Listeners that will enable running Vusers over a firewall.

**To add an MI Listener for running Vusers:**

- 1 From the Performance Center left menu, select **Resources > MI Listeners** to open the MI Listeners page.
- 2 In the **Firewall Vusers Communicators** area, click **Add**. The Add New MI Listener dialog box opens.



The screenshot shows a dialog box titled "Add New MI Listener - Microsoft Internet Explorer provided by Hewlett-Packard". The dialog box contains the following text and fields:

**Add New MI Listener:**

Specify the name or the IP address of the MI Listener machine that enables you to run Vusers over the firewall.

\* IP Address / Name:

If the MI listener has an additional IP address used for public communication, you can enter a public IP address.

Public IP Address / Name:

Comments:

\* required fields

At the bottom of the dialog box are two buttons: "OK" and "Close".

- 3** In the **IP Address / Name** box, type the IP address or DNS name of the MI Listener.

In some cases, you may want to use two different IP addresses for the same MI Listener—one address for internal communication with the Controller and a second address for public communication with a Load Generator located over a firewall.

In this case, enter the internal IP address in the **IP Address / Name** box, and the public IP address in the **Public IP Address / Name** box.

- 4** In the **Comments** box, type any comments that you want to note about the MI Listener.
- 5** Click **OK**. The MI Listener is added to the table.
- 6** Click **Save** at the bottom of the page.

## Configuring the Performance Center Agent

On each load generator machine that will be running over a firewall, you configure the Performance Center agent to communicate with the MI Listener.

For information on how to configure the Performance Center agent, see “Configuring the Performance Center Agent” on page 215.

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**Note:** After you have configured the Performance Center agent on the load generator machine, you can edit the configuration settings from the Performance Center Administration Site. For more information, see the *HP Performance Center Administrator Guide*.

---

## Configuring Hosts to Run Vusers Over a Firewall

When you want to use a Performance Center host to run Vusers over a firewall, you need to configure the relevant hosts as load generators in the Performance Center Administration Site.

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.

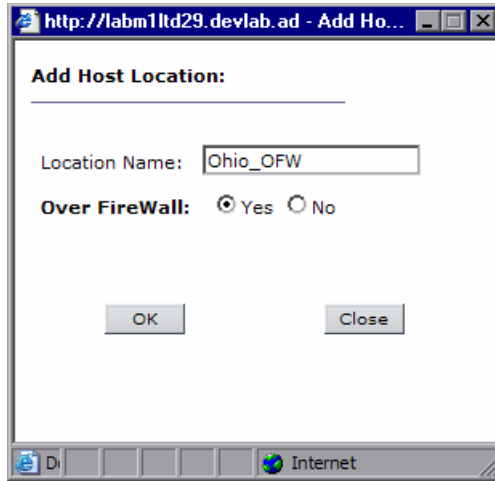
Before you configure the host, you need to ensure that you have added a location over a firewall. When you are configuring a host to operate over a firewall, you select a location that is located over a firewall.

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 Performance Center Administrator Guide*.

### To add a Host to run Vusers over a firewall:

- 1** Add a host location located over a firewall
  - a** In the Performance Center Administration Site, on the left menu, click **Resources > Host Locations** to open the Host Locations page
  - b** Click **Add Host Location**. The Add Host Location dialog box opens.
  - c** Type the location name. The name should have a logical connection to the host location.

- d Select **Yes** to indicate that the host is over the firewall.



- e Click **OK** to add the location to the list.
- 2 In the Performance Center Administration Site, on the left menu, click **Resources > Hosts** to open the Hosts page.



3 On the Hosts page, click **Add Host**. The Add New Host dialog box opens.

**Add Host:**

**Host Details**

\* **Name:**

\* **OS Type:** Win2000/2003/XP

\* **Location:** ofw

\* **MI Listener:**  Find MI Listener

**Installation:**  Standalone Load Generator

\* **Purpose:**  Load Generator  Controller  Data Processor

\* **Priority:** 3

\* **Host Pool:** General

\* **State:** Operational

**Comments :**

Use SSL communication between this Load Generator and the Controller

Enable SiteScope Monitoring

\* required fields

Save Close Help

4 In the **Name** box, type the unique name of the host machine.

5 In the **OS Type** box, select the operating system of the host.

6 In the **Location** list, select a location located over a firewall.

7 Select an MI Listener that will enable data collection.

- ▶ To automatically find the MI Listener connected to this load generator, click the **Find MI Listener** button next to the **MI Listener** list. The appropriate **MI Listener** is automatically selected in the list.

- If no MI Listener was found, it means that the Load Generator Performance Center Agent has not been 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 215.

- 8** If the host is a standalone installation of the Load Generator, under **Installation**, select **Standalone Load Generator**.  
If you selected UNIX as the operating system in the **OS Type** box, the **Standalone Load Generator** option is disabled.
- 9** Because you selected a location over a firewall, under **Purpose**, **Load Generator** is automatically selected.
- 10** In the **Priority** box, type a priority number.
- 11** In the **Host Pool** list, select a host pool to which to assign the host. A host can be assigned to a single pool only.
- 12** In the **State** list, select the appropriate description of the host state (possible states are **Operational**, **Unavailable**, **Resource Failure**, or **Maintenance**).
- 13** In the **Comments** box, type any relevant information about the host.
- 14** You can configure the load generator to communicate with the Controller via SSL (Secure Socket Layer) by selecting **Use SSL communication between this Load Generator and the Controller**.
- 15** To enable SiteScope monitoring of the host, select **Enable SiteScope Monitoring**.
- 16** If you selected a UNIX operating system, complete the **Configuration for Unix** section.
- 17** Click **Save** to add the host.

If you are prompted for the configuration user credentials, enter them and click **OK**.

# 10

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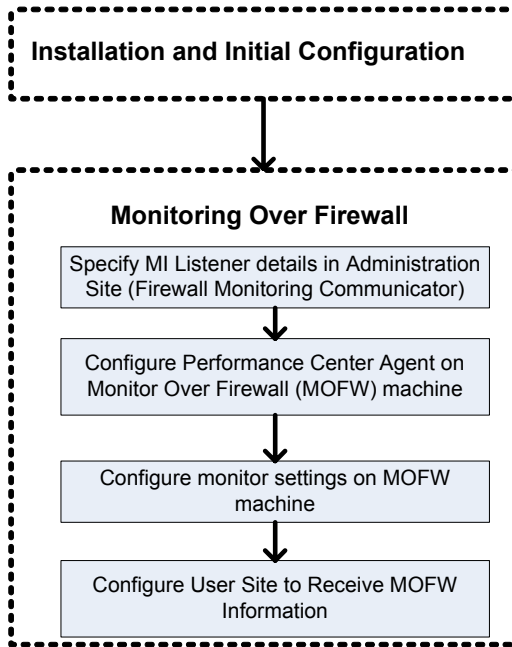
## Monitoring Over a Firewall

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

**This chapter includes:**

- ▶ Monitoring Over a Firewall: Basic Steps on page 204
- ▶ Specifying MI Listeners for Monitoring over Firewalls on page 205
- ▶ Configuring the Performance Center Agent on page 205
- ▶ Configuring Monitor Settings on page 206
- ▶ Configuring the User Site to Receive Monitor Over Firewall Information on page 211

## Monitoring Over a Firewall: Basic Steps



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**Important:** 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 187.

---

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

- 1** In the Performance Center Administration Site, specify the details of the MI Listener that will be used to monitor servers over the firewall.  
See “Specifying MI Listeners for Monitoring over Firewalls” on page 205.
- 2** Configure the Performance Center agent on each Monitor Over Firewall machine.  
See “Configuring the Performance Center Agent” on page 205.

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

See “Configuring Monitor Settings” on page 206.

- 4 In the User Site, establish a connection between the tests you are running and the Monitor Over Firewall machines.

See “Configuring the User Site to Receive Monitor Over Firewall Information” on page 211.

## Specifying MI Listeners for Monitoring over Firewalls

In the Performance Center Administration Site, you specify one or more MI Listeners that will enable monitoring over a firewall.

**To specify an MI Listener for collecting server monitor data:**

- 1 On the left menu, select **Resources > MI Listeners** to open the MI Listeners page.
- 2 In the **Firewall Monitoring Communicator** area, in the **IP Address / Name** box, type the IP address or name of the MI Listener that is configured to collect server monitor data from over the firewall.
- 3 Click **Save** at the bottom of the page.

## Configuring the Performance Center Agent

On each Monitor Over Firewall machine, you configure the Performance Center agent to communicate with the MI Listener.

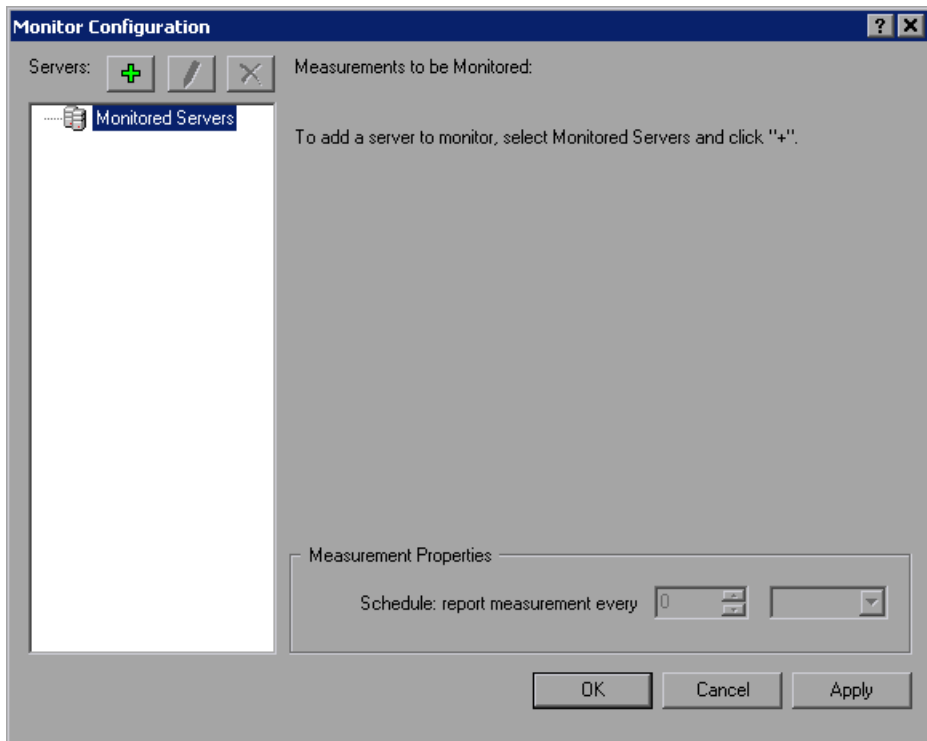
For information on how to configure the Performance Center agent, see “Configuring the Performance Center Agent” on page 215.

## 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 with which you want the monitored measurements to be reported.

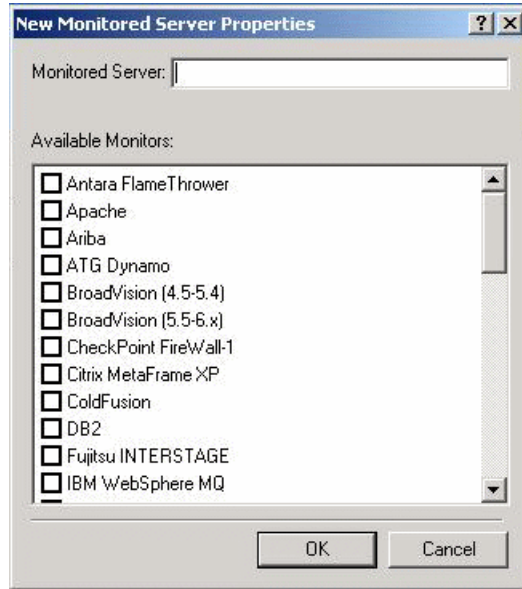
**To configure monitor settings:**

- 1 On the Monitor Over Firewall machine, choose **Start > Programs > HP Performance Center > 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.





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



- 3 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, separate the server names or IP ranges with commas. For example, 255.255.255.0-255.255.255.5, server1, server2.


---

- 4 From the **Available Monitors** list, select the monitors appropriate 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.



Performance Center displays default measurements for certain monitors in the Measurements to be Monitored section. You can specify the frequency at which Performance Center reports the measurement 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.

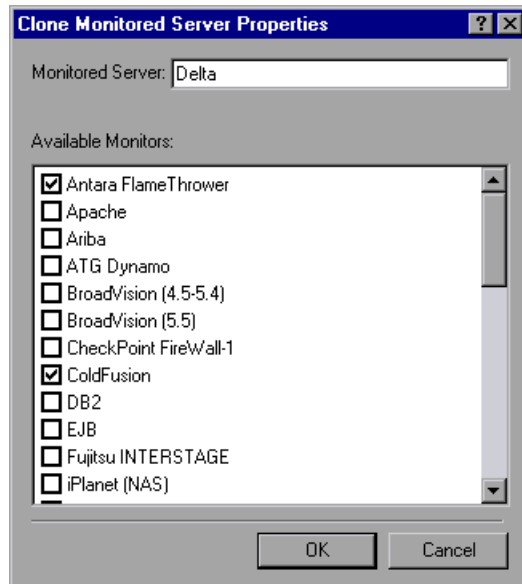


## Cloning a Monitored Server's Properties

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, separate the server names or IP ranges with commas. For example, 255.255.255.5, server1, server2.


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- 4 The **Available Monitors** list displays the monitors that were selected for the server being cloned. Select additional appropriate 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:

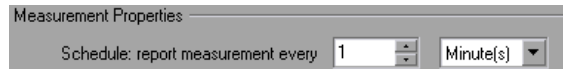
- 1 Open the Monitor Configuration dialog box.
- 2 Select a server from the Monitored Servers list.
-  3 Click the **Add Measurement** button. Select the appropriate monitor. A dialog box opens, enabling you to choose measurements for the monitor you selected.
- 4 Select the measurements that you want 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

Once you have configured monitor measurements, you configure measurement frequency, that is, you set a schedule for reporting each measurement.



**To set a schedule for reporting a measurement:**

- 1** In the Monitor Configuration dialog box, in 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 User Site to Receive Monitor Over Firewall Information

After you configure the monitors, you configure the Performance Center User Site to receive Monitor Over Firewall information during load tests.

**To configure the User Site to receive Monitor Over Firewall information:**

- 1** On the Monitor Profile page, add the Monitor Over Firewall machines that can be accessed by load tests in this project. See “Adding Monitor Over Firewall Machines” on page 212.
- 2** On the Load Test configuration page, select the Monitor Over Firewall machines you want to use in a specific load test. See “Selecting Monitor Over Firewall Machines for a Load Test” on page 213.

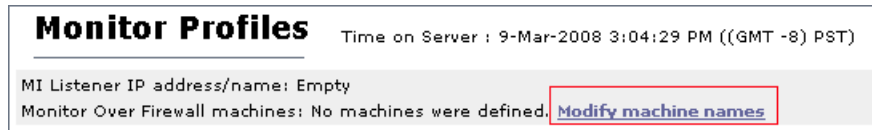
During a load test run you can edit Monitor Over Firewall machine information. See “Editing Monitor Over Firewall Machines During a Run” on page 214.

## Adding Monitor Over Firewall Machines

On the Monitor Profile page, you manage the Monitor Over Firewall machines that can be accessed by load tests in this project.

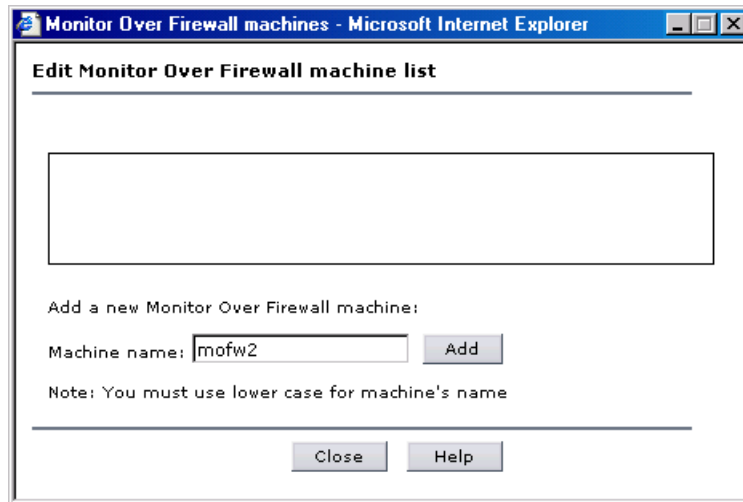
To add a Monitor Over Firewall machine to a project:

- 1 On the Monitor Profiles page, click **Modify machine names**.



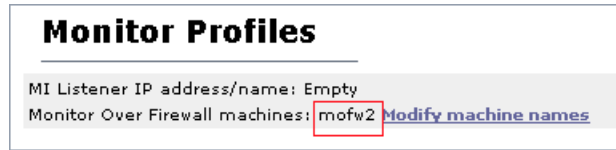
The Monitor Over Firewall Machines dialog box opens.

- 2 In the **Machine name** box, type the name of the Monitor Over Firewall machine.



- 3 Click **Add**. The Monitor Over Firewall machine is added to the list.

- 4 Click **Close**. The name of the Monitor Over Firewall machine now appears on the Monitor Profiles page.

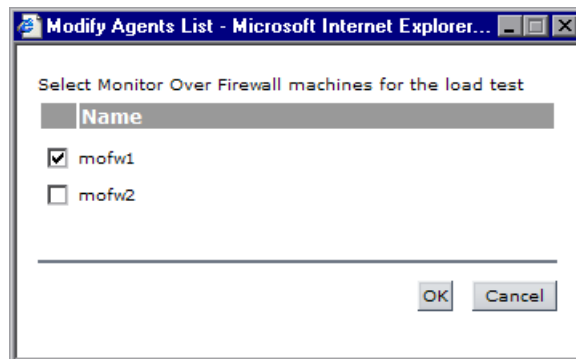


## Selecting Monitor Over Firewall Machines for a Load Test

On the Load Test configuration page, you can select the Monitor Over Firewall machines that you want to use to monitor your load test. Before you can do this, you must ensure that you have added Monitor Over Firewall machines to the Performance Center project. See “Adding Monitor Over Firewall Machines” on page 212.

**To select a Monitor Over Firewall machine for the load test:**

- 1 On the Load Test configuration page, click the **Monitors** tab.
- 2 Click the **Over Firewall Machines** button. The Modify Agents List dialog box opens.
- 3 Select the Monitor Over Firewall machines for the load test and click **OK**.



Your system is now configured to monitor Vusers over a firewall.

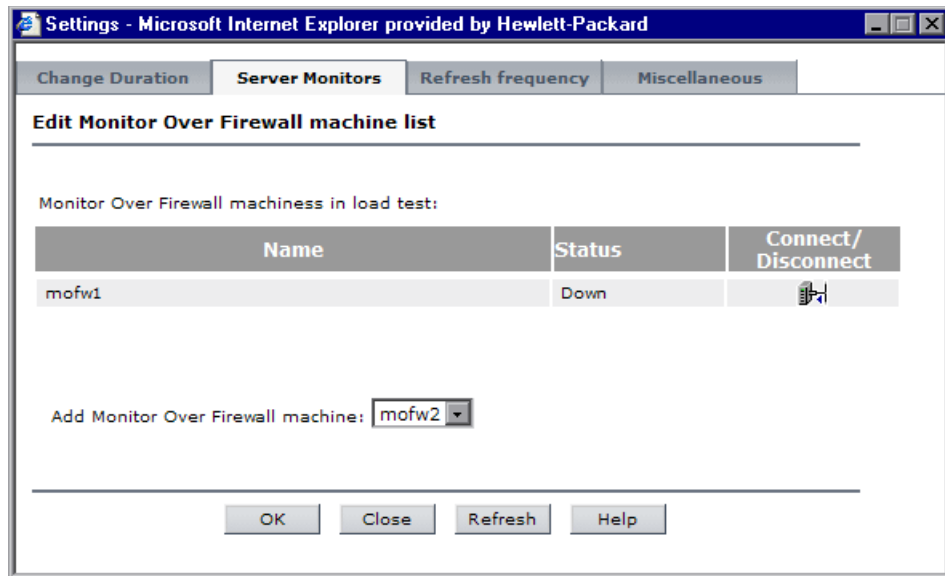
While the test is running, you can view graphs of the monitor over firewall data from the load test server monitors.

## Editing Monitor Over Firewall Machines During a Run

While the load test is running, you can change the status of a Monitor Over Firewall machine or add another monitor to the load test.

To modify the Monitor Over Firewall machines:

- 1 On the Load Test Run page, click the **Design** button. The Load Test Design dialog box opens.
- 2 Click **Settings**. The Settings dialog box opens.
- 3 Click the **Server Monitors** tab. Performance Center displays the Monitor Over Firewall machines that are monitoring the load test, as well as their connection status.



- To connect or disconnect a Monitor Over Firewall machine, click the **Connect/Disconnect** button.
  - To add a Monitor Over Firewall machine to the load test, select it from the **Add Monitor Over Firewall machine** list.
- 4 Click **OK**.
  - 5 Click **Close** to close the Settings dialog box.

# 11

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## Configuring the Performance Center Agent

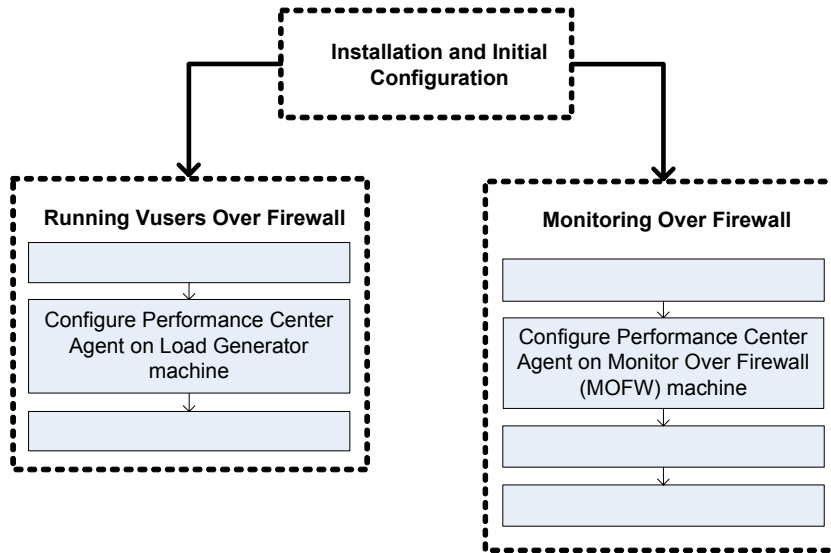
You can set up your Performance Center system to run Vusers and monitor servers over a firewall. As part of the process of setting up your Performance Center system to work over firewalls, you configure the Performance Center agent.

**This chapter includes:**

- ▶ About Configuring Performance Center Agents Over the Firewall on page 216
- ▶ Configuring the Windows Performance Center Agent on page 216
- ▶ Configuring and Running the UNIX Performance Center Agent on page 219
- ▶ Agent Configuration Settings on page 221
- ▶ Checking Connectivity on page 224

## 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

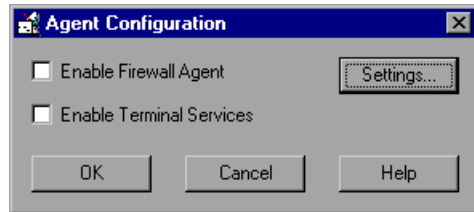
This section describes how to configure the Performance Center Agent on Windows machines to communicate with the MI Listener.



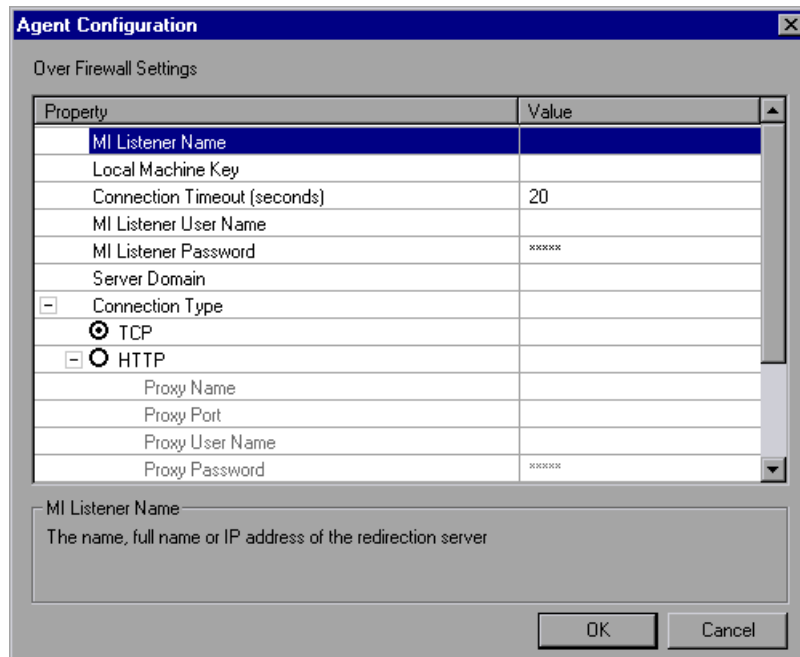
To configure the Performance Center agent on Windows machines:

- 1 Select **Start > Programs > Performance Center > Advanced Settings > 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 the settings.



- 4 Set each option as described in “Agent Configuration Settings” on page 221. Pay careful attention to the first three settings.

---

**Important:** When specifying the **Local Machine Key**, you must use the format `hostname_locationname` where `hostname` is the name of the host on the Hosts page of the Administration Site, and `locationname` is the name of the host location on the Host Location page.

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- 5 Click **OK** to save your changes, or **Cancel** to cancel them.
- 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.



A green light illuminated 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, which enables you to manage remote machines from the Administration or User Site, is automatically configured with the same settings.
  - ▶ After you have configured the Performance Center agent on the load generator machine, you can edit the configuration settings from the Performance Center Administration Site. For more information, see the *HP Performance Center Administrator Guide*.
-

## Configuring and Running the UNIX Performance Center Agent

Load generator hosts can be installed on UNIX machines. This section describes how to configure and run Performance Center agents on UNIX machines.

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**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 the Administration or User Site.

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### 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 221).

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**Note:** When you set the agent configuration settings, they are applied to both the Performance Center and Remote Management agents.

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**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.

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**5** Restart the Remote Management agent for the configuration changes to take effect.

- a** To stop the Remote Management agent, run the 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><b>The following applies to Performance Center only:</b></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 on the Hosts page of the Administration Site</li> <li>▶ <code>locationname</code> is the name of the host location as found on the Host Location page of the Administration Site.</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.

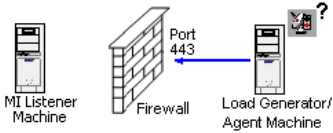
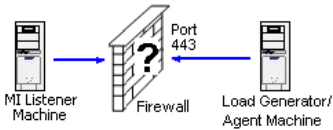
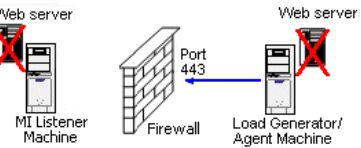
Setting	Default Value	Description
<b>MI Listener User Name</b>	none	The user name needed to connect to the MI Listener machine.
<b>MI Listener Password</b>	none	The password needed to connect to the MI Listener machine.
<b>Server Domain</b>	none	The domain name needed to connect to the MI Listener machine. 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	Enable to load 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.

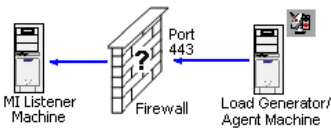
## Checking Connectivity

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 216.</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 will open. 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 will 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 data-bbox="349 225 706 347"><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 to the Firewall, and another blue double-headed arrow connects the Firewall to the Load Generator/ Agent Machine. The text 'Port 443' is positioned above the arrow connecting the Firewall to the Load Generator/ Agent Machine.</p>	<p data-bbox="735 225 1249 347">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 data-bbox="735 364 1206 390">▶ Check that port 443 is open. See above.</li> <li data-bbox="735 399 1249 555">▶ Check that the Agent Settings and Agent Configuration are correctly set. For details, see “About Configuring Performance Center Agents Over the Firewall” on page 216.</li> <li data-bbox="735 564 1249 911">▶ 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 VII**

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## **Troubleshooting**



# 12

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## Troubleshooting Installation and Upgrade

This chapter provides information on troubleshooting problems that occur during the Performance Center installation and configuration process.

**This chapter includes:**

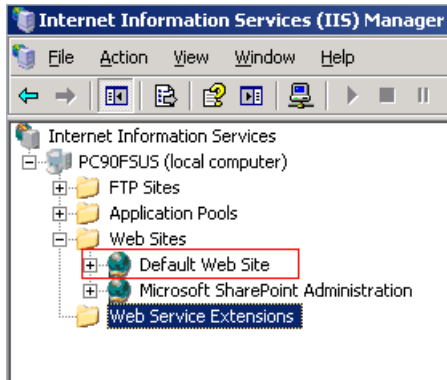
- Error: Method ~ of object ~ Failed During Installation on page 230
- DllHost.exe – Application Error on page 232
- Failure to Retrieve License Key on page 233
- Performance Center Does Not Load - Error 500 on page 234
- Error on Page During System Configuration on page 235
- Installation Does Not Recognize Prerequisite Software on page 235
- Performance Center Prerequisite Software on page 237

## Error: Method ~ of object ~ Failed During Installation

**Error message:** Operation terminated. Error description: Method '~' of object '~' failed.

### Troubleshooting

In the IIS, verify that the **Default Web Site** directory exists under **Web Sites**.



**If the Default Web Site directory does not exist:**

- 1 Create the **Default Web Site** directory.
- 2 Restart the installation.

**If the Default Web Site directory exists:**

- 1 Check the server's System Event log for **W3SVC** errors.
- 2 Verify the configured identity for the **IWAM\_<SERVER NAME>** account.
- 3 Make sure that the password for the IWAM account is synchronized in all three locations:
  - Internet Information Server (IIS) metabase
  - Local Users and Groups
  - Component Services

For more information on obtaining or setting the account password, see: <http://support.microsoft.com/default.aspx?scid=kb:en-us:297989>.

- 4 Verify that the COM+ service is running.

- 5 Verify that the COM+ service is correct:
  - a Select **Start > Run** and type `dcomcnfg` to open the COM+ manager.
  - b Expand **Component Services**.
  - c Expand **Computers**.
  - d Right-click **My Computer** and select **Properties**. The My Computer Properties dialog box opens.
  - e Click the **MSDTS** tab.
  - f Click **Security Configuration**. The Security Configuration dialog box opens.
  - g Ensure that **Enable XA Transactions** is not selected.
  - h Click **OK** to close the Security Configuration dialog box.
  - i Click **OK** to close the My Computer Properties dialog box.
- 6 If the problem persists, follow the steps below depending on your version of Windows:

**Windows 2003 SP2:**

- a Disable services such as cluster services, which are installed with W2K3 Enterprise Edition.
- b If this fails, re-image the machine as follows:
  - Reinstall Windows.
  - Install IIS.
  - Install SP1.
  - Install SP2.

- 7 If you receive an error message similar to the following:

```
Updating Applications:  
Name: IIS Out-Of-Process Pooled Applications Key:  
{3D14228D-FBE1-11D0-995D-00C04FD919C1}  
Error: 80110414
```

This might occur because the password for the **IWAM\_computer** account is mismatched between the Windows Active Directory and the **IIS metabase**. Therefore, **SynCiwam.vbs** cannot synchronize the processes to the **IWAM\_computer** account as needed. It might also occur if the **IWAM\_computer** account is locked out or disabled.

You need to match the password that is used by the **IWAM\_computer** account in the **IIS metabase** with the password that is used by the **IWAM\_computer** account in Active Directory.

For more information see: <http://support.microsoft.com/kb/269367>

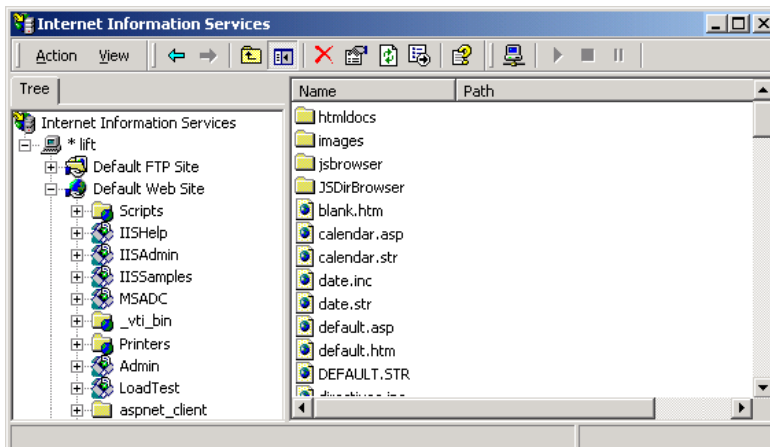
## DllHost.exe – Application Error

**Error message:** Operation terminated. DllHost.exe – Application Error.

### Troubleshooting

(IIS 5 only) Change the application protection level in the Internet Services Manager from **High (isolated)** to **Low (IIS Process)**.

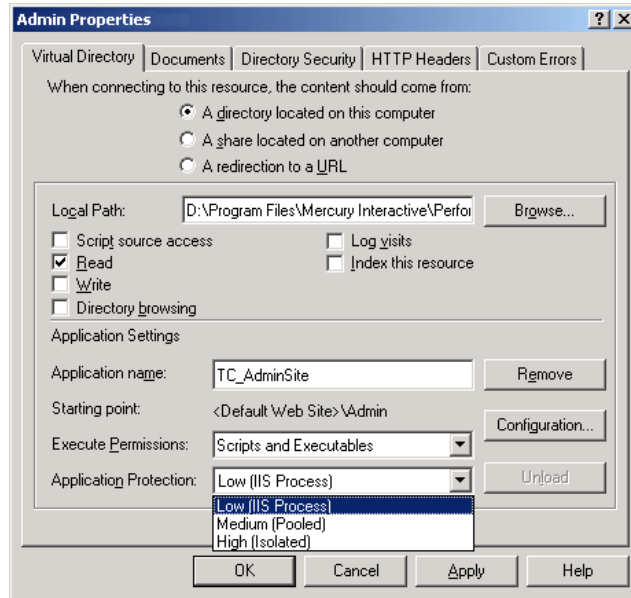
- 1 Select **Start > Programs > Administrative Tools > Internet Services Manager** to open the Internet Information Services dialog box.



- 2 In the Tree directory, expand **Default Web Site** and right-click **Admin**. Click **Properties** to open the Admin Properties dialog box.



- 3 Select the **Virtual Directory** tab, and in the **Application Protection** list, select **Low (IIS Process)**.



- 4 After installation, change the **Application Protection** back to **High (Isolated)** by repeating the above steps and clicking **High (Isolated)** in step 3.

## Failure to Retrieve License Key

**Problem description:** Configuring or retrieving license key fails.

- Administrator site: The License cannot be displayed on the License page. Get errors such as:
  - Failed to retrieve license key
  - Object is required
- User site: Load test fails to run with similar messages.

## Troubleshooting

This problem could be related to:

### ► .NET Framework installation

Make sure .NET Framework is installed correctly. To repair the installation run the following command from command line:

```
c:\WINDOWS\Microsoft.NET\Framework\v2.0.50727\aspnet_regiis.exe -i
```

### ► IIS configuration with PCWS directory

Try to re-install the PCWS virtual directory on the Utility Server by running the following command from command line:

```
<Performance Center installation directory>\bin\ AdminInstaller.exe" WebService  
IUSR_METRO MIOrchid#1
```

### ► Performance Center system user should be a domain user

- a Run the System Identity Utility (<PC Admin Site Server Installation directory>/bin/IdentityChangerUtil.exe )
- b Change the Performance Center system user to a domain user.

## Performance Center Does Not Load - Error 500

**Problem description:** After upgrading the database client, Performance Center does not load the Web browser and returns Error 500.

### Troubleshooting:

There might be a permissions problem between IIS and the Oracle home directory.

- Make sure oracle\_home is well defined in the HKLM\Software\Oracle directory.
- Make sure the IWAM\_<machine> user has execute and write permissions in the Oracle home directory.
- Make sure **tnsnames.ora** and **sqlnet.ora** are defined properly.

## Error on Page During System Configuration

**Problem description:** After you save your initial system configuration settings in the Administration Site, you receive an error in the Log area of the Initial System Configuration page stating that the page cannot be displayed.

### Troubleshooting

During system configuration, IIS is reset on the Administration Site server. When the File Server is installed on the same machine as the Administration Site server, **Error on Page** is sometimes displayed as a result of the IIS reset.

Even though this error is displayed, the system configuration is still saved successfully.

To continue configuring your system, log on to the Administration Site again and continue working.

## Installation Does Not Recognize Prerequisite Software

**Problem description:** Before you can install Performance Center, specific prerequisite software (for example, .NET Framework 3.5) needs to be installed on your machine. Without this prerequisite software, Performance Center will not function properly. During installation, if the prerequisite software is not already installed on your machine, Performance Center lists the prerequisite software that you need to install and enables you to automatically install the software from the Performance Center disk.

If the prerequisite software has been installed on your machine in an irregular way, Performance Center may not detect the installation and will not allow you to proceed with the installation.

### Troubleshooting

If you are certain that you have correctly installed all the prerequisite software, you can skip the prerequisite software check in the installation procedure.

**Important:** Skipping the prerequisite software check is not recommended practice, because Performance Center may not function properly as a result. The prerequisite software check should only be skipped under very limited circumstances, and after consultation with Customer Support.

---

To launch the Performance Center installation without the prerequisite software check, run the following command:

```
msiexec.exe /i HP_Performance_Center.msi SKIP_PREREQUISITE_CHECK=1
```

## Performance Center Prerequisite Software

Before you can install Performance Center, specific prerequisite software (for example, .NET Framework 3.5) needs to be installed on your machine. During installation, Performance Center checks whether the prerequisite software is installed on your machine. If anything is not installed, Performance Center enables you to automatically install the 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 detecting
.NET Framework 3.5	<ul style="list-style-type: none"> <li>▶ All Performance Center machines</li> <li>▶ VuGen Standalone</li> <li>▶ Analysis Standalone</li> </ul>	Searches the registry key: HKLM\Software\Microsoft\NET Framework Setup\NDP\v3.5
Microsoft Data Access Components (MDAC) 2.8 SP1 (or later)	<ul style="list-style-type: none"> <li>▶ All Performance Center machines</li> <li>▶ VuGen Standalone</li> <li>▶ Analysis Standalone</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 machines</li> <li>▶ VuGen Standalone</li> <li>▶ Analysis Standalone</li> </ul>	Queries the existence and version of: %systemroot%\system32\msxml6.dll
Microsoft Visual C++ 2008 Redistributable Package (x86)	<ul style="list-style-type: none"> <li>▶ All Performance Center machines</li> <li>▶ VuGen Standalone</li> <li>▶ Analysis Standalone</li> </ul>	Queries the MSI manager for one of the GUIDs below: {A49F249F-0C91-497F-86DF-B2585E8E76B7}  {437AB8E0-FB69-4222-B280-A64F3DE22591}

Prerequisite Software	Machines	Means of detecting
Microsoft Windows Installer 3.1	<ul style="list-style-type: none"> <li>▶ All Performance Center machines</li> <li>▶ VuGen Standalone</li> <li>▶ Analysis Standalone</li> </ul>	Looks for one of the two: <ul style="list-style-type: none"> <li>▶ Registration of the WindowsInstaller.Installer.com object version 3 or higher</li> <li>▶ MSI.dll version 3 or higher 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 machines</li> <li>▶ VuGen Standalone</li> </ul>	Queries the MSI manager for the GUID: {E3E71D07-CD27-46CB-8448-16D4FB29AA13}
Web Services Enhancements (WSE) 2.0 SP3 for Microsoft .NET Redistributable Runtime MSI	<ul style="list-style-type: none"> <li>▶ All Performance Center machines</li> <li>▶ VuGen Standalone</li> </ul>	Runtime installation GUID {F3CA9611-CD42-4562-ADAB-A554CF8E17F1}  Full installation GUID {6F396FFB-CC3A-4335-BC0B-2AEF38F4492C}
Internet Information Services (IIS)	<ul style="list-style-type: none"> <li>▶ All Performance Center machines</li> </ul> (In a machine used as load generator the IIS can be uninstalled after installation)	HKLM\SOFTWARE\Microsoft\IIS\IISStp  Looks for both Major and Minor numbers.  Supports versions 6.0, 5.1 and 5.0

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## Troubleshooting Databases

This chapter provides information on troubleshooting problems that occur with database in the Performance Center system.

**This chapter includes:**

- ▶ Login to Oracle Database Server Hangs on page 240
- ▶ Login to Database Server Fails on page 242
- ▶ Database/User Schema Creation Fails on page 244
- ▶ Warning Message Received During MS-QL Database Migration on page 245
- ▶ Conflict Warnings Received During Database Migration on page 245

## Login to Oracle Database Server Hangs

**Error message:** Trying to log on to database server.

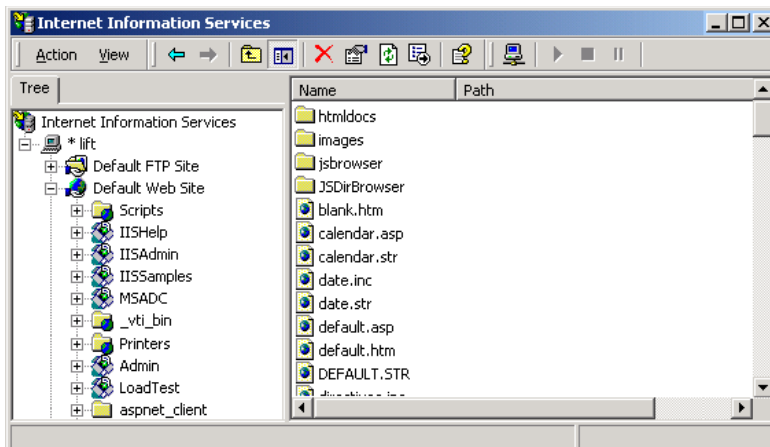
### Troubleshooting

- **Option 1 (IIS 5 only): Set the Application Protection level to High (isolated)**

Make sure that the **Application Protection** level is set to **High (isolated)** in the Internet Services Manager in both the Administration Site and User Site.

To set the application protection level:

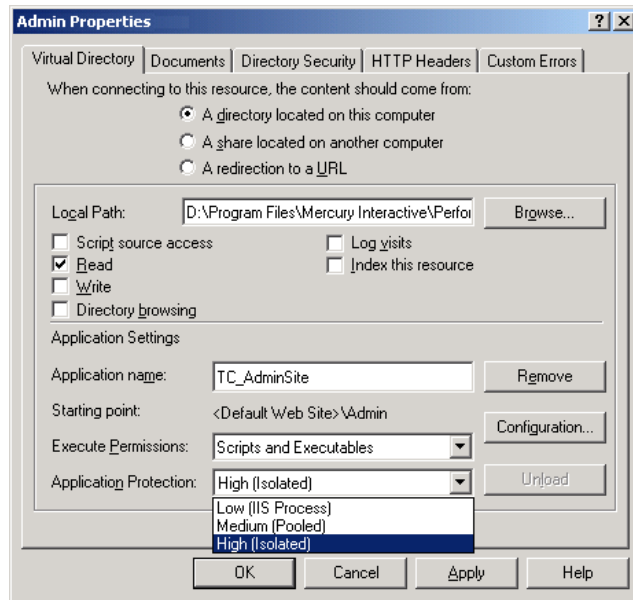
- 1** Select **Start > Programs > Administrative Tools > Internet Services Manager**. The Internet Information Services dialog box opens.



- 2** In the Tree directory, expand **Default Web Site** and right-click **Admin**. Click **Properties** to open the Admin Properties dialog box.
- 3** Click the **Virtual Directory** tab.



**4** In the **Application Protection** box, select **High (Isolated)**.



**5** Repeat steps 2 through 4 for the User Site. In step 2, right-click **LoadTest** instead of **Admin**.

**Option 2: Set the Correct Permissions Level for the IWAM\_<SERVER> user**

Problems with logging on might be caused by a permissions level problem with the IWAM\_<SERVER> user. By default, this account is set to the **Guest** permissions level. However, the IWAM\_<SERVER> user must have read/execute privileges on the Oracle home directory and all of its sub-directories.

**To set the correct permissions level:**

- 1** In Windows Explorer, right-click the Oracle home directory and select **Properties**.
- 2** Click the **Security** tab.
- 3** Click **Add** and add the IWAM\_<SERVER> user.
- 4** Check **Read & Execute**.
- 5** Click **OK**.

## Login to Database Server Fails

**Error message:** Operation terminated. Error description: Login to the database server failed. Check if user name and password are correct.

### Troubleshooting

- 1 Verify that the database server host name, type, user name, and password are correct. Consult your database administrator if you are unsure.
- 2 Check whether you can connect to the database server from the Administration Site server using the command line SQL client:
  - **For MS SQL Server:**

```
% osql -U <username> -P <password> -S <serverID>
```

For example:

```
% osql -U sa -P manager -S DBSERVER\LRTCDB
```

If your Microsoft SQL Server is configured with integrated security, make sure that the Microsoft SQL Server has an operating system account for **IUSR\_METRO** (password: **MIOrchid#1**), and is allowed access to the database. **IUSR\_METRO** is the default account under which the Performance Center Web server runs.

- **For Oracle Server:**

```
% sqlplus <username>/<password>@<connect_string>
```

For example:

```
% sqlplus system/manager@LRTCORA
```

If the above command fails, check your TNS entry in the **<Oracle installation directory>\network\admin\tnsnames.ora** file.

An example of a TNS entry is shown below:

```
LRTCORA =
(DESCRIPTION =
  (ADDRESS_LIST =
    (ADDRESS = (PROTOCOL = TCP)(HOST = TCDBSERVER)(PORT 1521))
  )
(CONNECT_DATA =
  (SERVICE_NAME =LRTCORA)
)
)
```

- 3 Test the ADODB connectivity to the database:
  - a Download the **TclIN\_AdoDBTester.exe** utility from the HP Software Support site's Self-solve Knowledge Search (<http://support.openview.hp.com/selfsolve/documents>) (ID: **39475**).
  - b Run the utility to test the ADODB connectivity to the database.
    - Update the **username**, **password**, and **server** fields in the connection string:
      - For MS SQL Server, use the Provider=SQLOLEDB.1;... connection string.
      - For Oracle Server, use the Provider=MSAORA.1;... connection string.
    - Set a valid SQL statement (based on current database tables).
    - Execute the statement and check the response. If an error occurs, address the error message appropriately.
- 4 If you are working with Oracle Server, check that Oracle Client is installed properly:
  - a Check whether the **ORACLE\_HOME** registry entry under [**HKEY\_LOCAL\_MACHINE\Software\Oracle**] is correct. It should be pointing to the Oracle Client installation.
  - b Remove **SQLPLUS.EXE** from the <**Performance Center installation directory**>\DB directory.
- 5 Verify that the version of MDAC is at least 2.8 SP1.

- 6 Verify that the database or user schema was actually created by checking whether the **db\_results.txt** file exists in the **%temp%** directory of the Administration Site server. Note that this file is available only after system configuration. In addition, you can check whether the **MI\_LRDB** database or user schema exists by logging in to the database/user schema.

---

**Note:** If you are able to log on to the User Site after system configuration, the database or user schema was most likely created properly.

---

## Database/User Schema Creation Fails

**Problem description:** You cannot create a Performance Center database or user schema.

### Troubleshooting

Try to create the database or user schema by running the SQL files located in the **DbSetup** directory of the Administration Site server.

- For MS SQL Server, run **TestCenter.sql** to create the database and **InitDefinitions.sql** to initialize the tables.
- For Oracle Server, run **TC\_oracle.sql** to create the user schema and **InitDataOracle.sql** to initialize the tables.

## Warning Message Received During MS-QL Database Migration

**Problem description:** The following warning message appears in the log file <DB\_Migration\_directory>\PC\_V9\_1.log when performing an MS-QL database migration:

```
Warning: The table 'Companies' has been created but its maximum row size (8227) exceeds the maximum number of bytes per row (8060). INSERT or UPDATE of a row in this table will fail if the resulting row length exceeds 8060 bytes.
```

### Troubleshooting

This message is related to a size limit that is related to the Project Options. Since this size limit will not be utilized, you can disregard this message.

## Conflict Warnings Received During Database Migration

**Problem description:** The following messages might appear in the log file <DB\_Migration\_directory>\PC\_V9\_0.log when performing a database migration:

```
DELETE statement conflicted with COLUMN REFERENCE constraint 'FK_ResultTransactions_RunPublishedResults'. The conflict occurred in database 'MI_LRDB', table 'DashboardResultTransactions', column 'RunResultId'.
```

```
DELETE statement conflicted with COLUMN REFERENCE constraint 'FK_GoalTransactions_TestGoals'. The conflict occurred in database 'MI_LRDB', table 'DashboardGoalTransactions', column 'TestGoalId'.
```

### Troubleshooting

These messages appear when performing database migration of Performance Center 8.14 and earlier. These warnings relate to features that are no longer relevant in the current version of Performance Center. You can disregard these messages.



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