

HP Performance Center

for the Windows® and UNIX® operating systems

Software Version: 9.00

System Configuration and Installation Guide

Document Number: PCSCIG9.00/01

Document Release Date: July 2007

Software Release Date: July 2007



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Table of Contents

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 describes: | On page: |
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How This Guide Is Organized

This guide contains the following parts:

Part I Introduction

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 Using Firewalls in Performance Center

Describes how to run Vusers and monitor your servers when the load generators are outside the firewall.

Part V Upgrade

Describes the steps that you need to carry out when upgrading to HP Performance Center 9.0.

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

HP Performance Center includes the following online documentation:

Readme provides last-minute news and information about Performance Center. You access the Readme from the **Start** menu.

What's New gives a brief description of the new features in this release of Performance Center, including links to video walkthroughs. Select **Miscellaneous > What's New** in the User site.

Books Online/Printer-Friendly Documentation includes PDF versions of the Performance Center guides. Select **Start > Programs > HP Performance Center > Documentation** and select the relevant book.

HP Performance Center Online Help is available by clicking the **Help** button at the top of the Performance Center site page or in a dialog box.

HP Performance Center System Configuration and Installation Guide explains how to install and configure Performance Center. You access this guide from the root directory of the installation disk.

Additional Online Resources

Knowledge Base. This site enables you to browse the Customer Support Knowledge Base and add your own articles. The URL for this Web site is <http://support.mercury.com/cgi-bin/portal/CSO/kbBrowse.jsp>.

Customer Support Web site. This site enables you to access the Knowledge Base, post to and search user discussion forums, submit support requests, download patches and updated documentation, and more. The URL for this Web site is <http://support.mercury.com>.

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Typographical Conventions

This guide uses the following typographical conventions:

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

Welcome to This Guide

Part I

Introduction

1

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 describes: | On page: |
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Understanding Performance Center Components

The HP Performance Center installation is composed of a number of inter-related components that allow you to load test your application.

- ▶ **Administration Site.** The Administration Site provides overall resource management and technical supervision of the system. The administrator performs functions such as assigning user privileges, creating projects, and managing resource usage.
- ▶ **User Site.** The User Site is used to create, conduct, and monitor load tests. The users create tests, reserve resources, run tests, and receive analysis information through the User Site.
- ▶ **Utility Server.** The Utility Server provides a centralized location for specific information that can exist only once within the system. Currently, the License Manager, AutoRun, and Monitor Profiles reside on the Utility Server.
- ▶ **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.
- ▶ **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 ramp up timing. At the conclusion of the test run, the Controller collates the data.

In a regular configuration, the Controller solicits information from the Performance Center Agent. When running and monitoring over a firewall, the Controller solicits information from the MI Listener. The Controller displays the run information in run-time graphs.

There is only one Controller per load test. You can configure the Controller to also serve as either a load generator or an MI Listener, but not both.

Note: While a machine can be configured as a shared Controller and Load Generator machine, it is not recommended to run Vusers on the Controller machine.

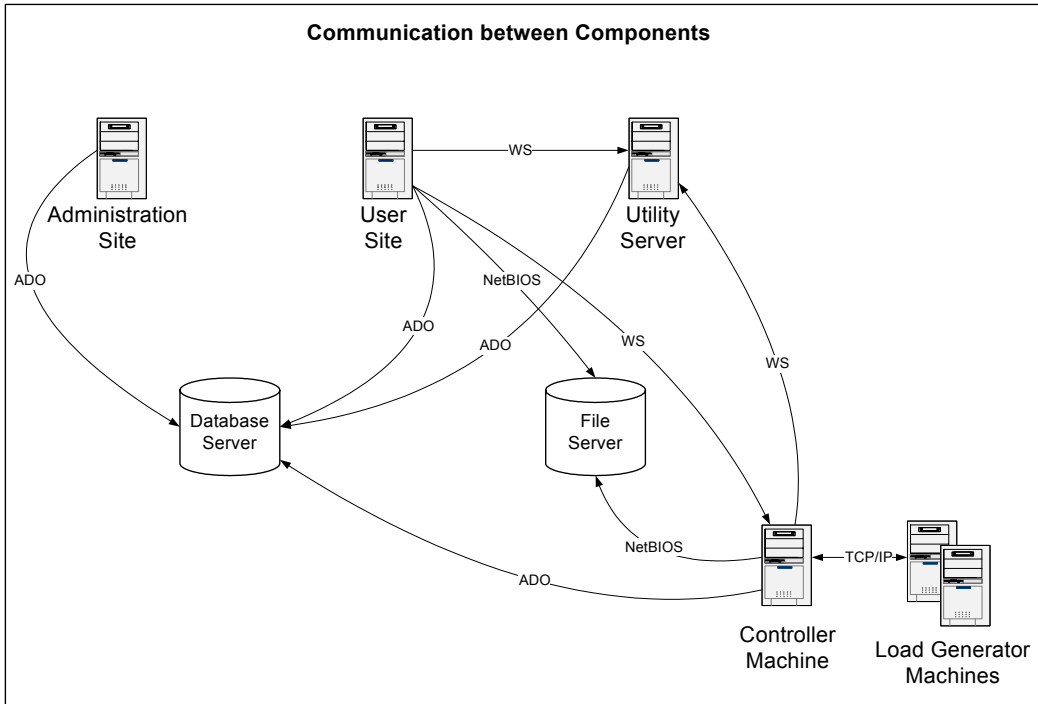
- ▶ **Load Generators.** There can be any number of load generators for a given load test. A load generator runs the Vusers. The Controller dictates the manner in which they start and stop running.
- ▶ **Performance Center Agent.** The Performance Center Agent gathers information from the load generators, and reports it directly to the Controller. For information about configuring the Performance Center Agent, see “Working with Performance Center Agent” on page 80.
- ▶ **Monitor Agent** (for monitoring and running Vusers over a firewall). The Monitor Agent gathers information from the load generators or servers over the firewall. There are two types of agents. The MI Agent runs Vusers over the firewall, while the Monitor Over Firewall Agent monitors over the firewall. An agent reports its information to the MI Listener either directly or via a proxy server, depending on the system configuration.
- ▶ **MI Listener** (for monitoring and running Vusers over a firewall). The MI Listener is the communication center during the load test. It receives data from the Monitor Agent at regular intervals. During the course of the load test, the Controller solicits the data from the MI Listener to process as run-time data.

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:



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 Chapter 9, "Working with Firewalls."

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

| Machine | Quantity within the system | Load | Considerations |
|---------------------|----------------------------|--|---|
| Administration Site | One | Light | |
| User Site | At least one | Heavy | |
| Database Server | One | Light | |
| File Server | One | Light | |
| Utility Server | One | Generally light with heavy spikes during Monitor configuration | Standalone installation is recommended |
| Host | At least one | Controller has heavy load. Load Generator has medium load. | Can configure a host as a Controller + Load Generator, but a standalone configuration is recommended. Unless your project is allowed to use the Controller machine as a load generator, you cannot assign Vusers to run from the Controller machine. |

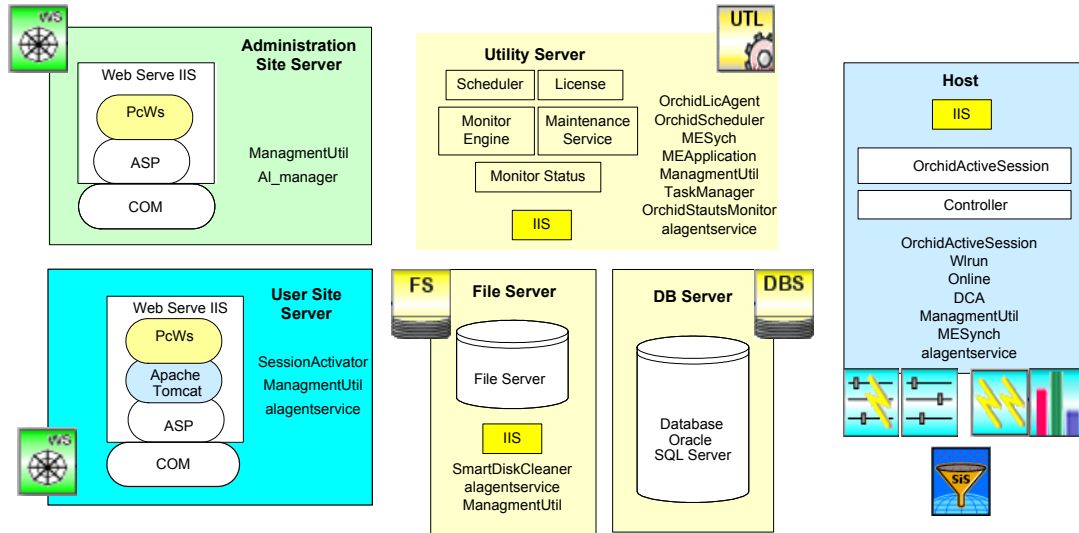
| Machine | Quantity within the system | Load | Considerations |
|-------------|---|--------|--|
| MI Listener | At least one if you are monitoring over a firewall. | Medium | Cannot exist on a machine running IIS or a machine that is running Vusers. |
| MOFW Agent | At least one if you are monitoring over a firewall | Light | Standalone installation is required. |

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.

Processes and Services

Each server runs various components or services based on its particular function within the Performance Center system. The following diagram contains a list of processes on each Performance Center component.



The following tables provide some basic information about each process and service and its purpose within the Performance Center system.

Performance Center Processes

| Name | Runs on | Purpose |
|-----------------------------------|-------------------------------|---|
| AnalysisOperator | Host/Controller | Zips the data and saves it to the File Server (invokes the AnalysisManager) |
| Collator(1) | Host/Controller | Invokes the component that collates the results from the load generator machines |
| ManagementUtil | All machines, except database | Responsible for the entire system configuration |
| MEApplication.Application | Host and Utility Server | Retrieves measurements from, and adds measurements to the monitor engine (invoked by MESyncApplication.Application) |
| MESyncApplication.Application | Host and Utility Server | Invokes the MEApplication.Application |
| OrchidActiveSession | Host/Controller | Retrieves all the required run details from the database, launches the Controller and provides it with run details, and passes the run data to the Web Server |
| OrchidInstallationUtil.PdhChecker | All machines | Checks the CPU, memory usage, and memory space on all Windows platforms, and detects and deletes any problematic Performance Center files |
| SessionObject Activator | User Site | Writes all run details to the database, and invokes the OrchidActiveSession |

| Name | Runs on | Purpose |
|----------------|--------------|---|
| wlrun.LrEngine | Controller | Runs the Controller |
| PCImkeeper.exe | All machines | Saves references to COM objects that are running on each machine. |

Performance Center Services

| Name | Process Name | Runs on | Purpose |
|----------------------------------|---------------------|----------------|--|
| DataCollection Agent (DCA) | datacollectionagent | Host | Provides information about the processes/resource usage of the selected host, and enables you to end a process. Also creates a routing table when you define IP addresses as targets for load testing. |
| Performance Center Agent Service | magentservice | Host | Receives instructions from the Controller to initialize, run, pause, and stop Vusers, and relays data from the load generators back to the Controller. |
| Performance Center Disk Cleaner | SmartDiskCleaner | File Server | Cleans the File Server of unnecessary files. |
| Performance Center Scheduler | | Utility Server | Checks the database at regular intervals and activates the Autostart feature. |

| Name | Process Name | Runs on | Purpose |
|---|----------------|------------------|--|
| Performance Center Task Manager Service | TaskManager | Utility Server | Responsible for the maintenance services (IIS memory check and restart, IIS daily restart, host resource failure detection and recovery, abnormally terminated test run detection and cancellation). |
| RemoteManagement Agent | alagentservice | Host/ Controller | Responsible for rebooting and installing patches on remote machines, and providing information about the installed Performance Center components (in the Hosts > Properties tab). |
| Apache Tomcat | tomcat5 | User Site | Serves as a Web server for supporting JSP pages. Currently handles all the Load Test configuration pages. |

System Component Requirements

The Performance Center system includes several components. The following sections list the components, and provide the hardware and software requirements for each.

Note: Do not install Performance Center components on machines with existing LoadRunner installations. Doing so causes conflicts between the products.

User Site Server

| Component | Requirement |
|---|---|
| Computer/Processor | 2 GHz processor or higher |
| Operating System | Windows 2000 SP4 Server/Advanced Server (IIS 5.0) Windows 2003 SE/EE (Standard Edition or Enterprise Edition) SP1 or SP2 (IIS 6.0) |
| Server Software | Microsoft Internet Information Server (IIS) version 5.x or later |
| Memory | 1 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 6.0 or later (IE 6.0 SP1 is recommended) |
| Screen Resolution for Viewing User Site | 1024*768 or 1280*1024 pixels |

Administration Site Server

| Component | Requirement |
|--|---|
| Computer/Processor | 2 GHz processor or higher |
| Operating System | Windows 2000 SP4 Server/Advanced Server (IIS 5.0) Windows 2003 SE/EE (Standard Edition or Enterprise Edition) SP1 or SP2 (IIS 6.0) |
| Server Software | Microsoft Internet Information Server (IIS) version 5.x or later |
| Memory | 1 GB of RAM |
| Swap Space | Twice the total physical memory |
| Free Hard Disk Space | 1 GB |
| Browser for Viewing Admin Site | Internet Explorer 5.5 SP2 or later (IE 6.0 SP1 is recommended) |
| Screen Resolution for Viewing Admin Site | 1024*768 or 1280*1024 pixels |

File Server

| Component | Requirement |
|----------------------|---|
| Computer/Processor | 2 GHz processor or higher |
| Operating System | Windows 2000 SP4 Server/Advanced Server (IIS 5.0) Windows 2003 SE/EE (Standard Edition or Enterprise Edition) SP1 or SP2 (IIS 6.0) |
| Server Software | Microsoft Internet Information Server (IIS) version 5.x or later |
| Memory | 1 GB of RAM |
| Swap Space | Twice the total physical memory |
| Free Hard Disk Space | 20 GB |

Utility Server

| Component | Requirement |
|----------------------|---|
| Computer/Processor | 2 GHz processor or higher |
| Operating System | Windows 2000 SP4 Server/Advanced Server (IIS 5.0) Windows 2003 SE/EE (Standard Edition or Enterprise Edition) SP1 or SP2 (IIS 6.0) |
| Server Software | Microsoft Internet Information Server (IIS) version 5.x or later |
| Memory | 1 GB of RAM |
| Swap Space | Twice the total physical memory |
| Free Hard Disk Space | 1 GB |

Performance Center Hosts

| Component | Requirement |
|----------------------|--|
| Computer/Processor | 2 GHz or higher processor |
| Operating System | Windows 2000 SP4 Server/Advanced Server (IIS 5.0) Windows 2003 SE/EE (Standard Edition or Enterprise Edition) SP1 or SP2 (IIS 6.0) Windows XP SP1 or later (IIS 5.1) |
| Server Software | Microsoft Internet Information Server (IIS) version 5.x or later |
| Memory | For running multithreaded Vusers - at least 1 MB RAM per Vuser For running non-multithreaded Vusers - at least 4.9 MB RAM per Vuser |
| Swap Space | Twice the total physical memory |
| Free Hard Disk Space | 1 GB |

SiteScope Server

| Component | Requirement |
|----------------------|---|
| Computer/Processor | 1 GHz processor or higher |
| Operating System | Windows 2000 SP4 Server/Advanced Server Windows 2003 SE/EE (Standard Edition or Enterprise Edition) SP1 or SP2 |
| Memory | 512 MB of RAM |
| Swap Space | Twice the total physical memory |
| Free Hard Disk Space | 1 GB |

MI Listener

Note: The MI Listener cannot exist on a machine running IIS or on a machine that is running Vusers.

| Component | Requirement |
|----------------------|--|
| Computer/Processor | 2 GHz processor or higher |
| Operating System | Windows 2000 SP4 Server/Advanced Server Windows 2003 SE/EE (Standard Edition or Enterprise Edition) SP1 or SP2 Windows XP SP1 or later |
| Memory | For running multithreaded Vusers - at least 1 MB RAM per Vuser For running non-multithreaded Vusers - at least 4.9 MB RAM per Vuser |
| Swap Space | Twice the total physical memory |
| Free Hard Disk Space | 1 GB |

Pre-Installation Requirements

Important: If you are upgrading to Performance Center 9.0 from an earlier version, you need to back up existing data and uninstall old versions before running the installation. After the installation, you need to perform database migration and reconfigure your system. For more information, see Chapter 10, “Upgrading to Performance Center 9.0.”

Before you begin running the installation process, review the requirements described in the sections that follow.

General Requirements

- The Performance Center system user must have administrative privileges on all machines. (You should ensure that there is no security system in place that will remove the system user from the Administrators group.)
- Microsoft Windows Script Host should be version 5.6 or later.
- If the Performance Center database is configured to work in Named Instance mode, SQL client must be installed on all Performance Center machines.
- **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 IIS should not be installed on the MI Listener machine.
- Apache Tomcat must not be installed on the User Site.
- If you are installing the User Site server or 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.

Configuration Requirements

- The date separator in the date format must be a forward slash ("/") on all Performance Center machines.
- "Default Web Site" must be configured on the IIS machine. To check, right-click the **My Computer** icon on the IIS machine, and click **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.
- Disk performance counters are disabled by default in standard Windows 2000 installations. To monitor disk drives using the SiteScope Disk monitor on machines running Windows 2000, you must enable these disk counters. Run `diskperf -y` from the command line on each Windows 2000 machine for which you want to monitor disk space, then reboot the machine. Select the disk drives you want to monitor from the machine's Resource Status tab.

- The following services must be running:

| Machine | Services |
|--|---|
| On all Performance Center Servers and Hosts | <ul style="list-style-type: none"> ➤ IIS Admin Service (Microsoft Service) and its startup type should be defined as “Automatic” (except for MI Listener, which cannot have IIS installed on same machine) ➤ Workstation (except on host machines designated as Load Generators only) ➤ TCP/IP NetBIOS Helper (except on host machines designated as Load Generators only) ➤ IPSEC Services (for TCP/IP security) ➤ NTLM Security support provider ➤ Remote Procedure Call (RPC) ➤ Management Instrumentation (for Performance Center health check) ➤ Event Log (optional— used for debugging) ➤ COM+ services (Event System and System application) ➤ HTTP SSL (for SSL) ➤ System Event Notification (for COM+) |
| On User Site and Administration Site Servers Only | <ul style="list-style-type: none"> ➤ IIS Admin Service (Microsoft Service) and its startup type should be defined as “Automatic” ➤ World Wide Web Publishing Service (Microsoft Service) and its startup type should be defined as “Automatic” ➤ Distributed Transaction Coordinator (MSDTC) |

Host Requirements

- Remote Registry Service (Windows Service) must be running on all host machines, and its startup type should be defined as **Automatic**.
- Hyper-Threading must be disabled. Performance Center does not support Intel Hyper-Threading technology. Hyper-Threading can be disabled in the BIOS. For more information, see:

<http://www.microsoft.com/windows2000/docs/hyperthreading.doc>.

Pre-installation Considerations and Tips

This section includes further considerations to take into account before you begin the installation process.

Performance Center Components

- ▶ When you install the MI Listener on a machine, make sure the machine does not run Vusers or have IIS installed.
- ▶ The Database Server and File Server do not have high demands but require a significant amount of memory space.
- ▶ The Utility Server does not usually experience high demands, but you must allow for spikes in demand.
- ▶ If possible, when configuring your system, try to provide room for additional components.

SiteScope Monitors

When using a SiteScope monitor, note that there are two possible SiteScope installations—one for SiteScope monitoring the Performance Center servers, and another to monitor Applications. You cannot use the same SiteScope instance for both of these installations.

Designating Machines

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. You should also have a user name and password of a user with database creation privileges.

Anti-Virus Software

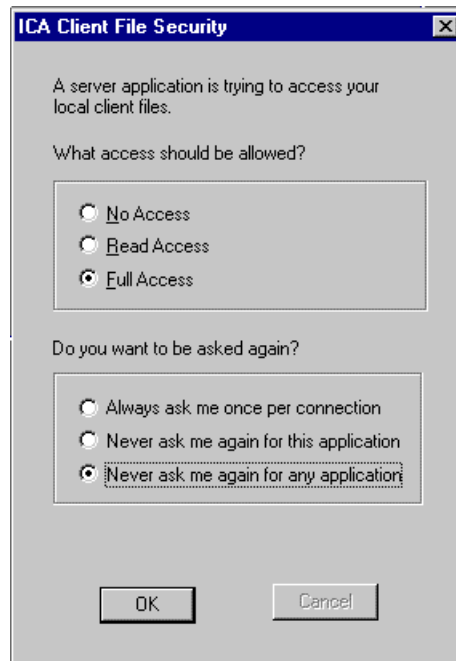
Anti-virus software can affect performance and cause IIS to be unresponsive (causing HTTP 500 errors). When using Performance Center, we strongly recommend disabling any anti-virus applications that are running in the following locations:

- ▶ Performance Center installation directory (and all sub-directories)
- ▶ shared LRFS folder of the File Server
- ▶ your local TEMP directory (optional), since the TEMP directory is used for storing temporary result files from the load generators

CITRIX Configuration

When using the CITRIX protocol, the CITRIX client must be installed on all load generators used to generate load against the application.

After installing the CITRIX client, it must be run at least once to initialize the following basic settings:



Internet Explorer Configuration

To view the Performance Center User site and Administration site correctly in Microsoft Internet Explorer (IE), configure the browser on any machine that accesses the sites so that it can allow cookies and active scripting. Performance Center supports IE 5.5 SP2 and later.

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 5.5 for use with Performance Center:

- 1** In IE, select **Tools > Internet Options**. The Internet Options dialog box opens.
- 2** Select the **Security** tab, and click **Custom Level**. In the Security Settings dialog box, enable:
 - ▶ **Cookies > Allow cookies that are stored on your computer**
 - ▶ **Cookies > Allow per-session cookies (not stored)**
 - ▶ **Scripting > Active scripting**
- 3** Select the **General** tab, click **Settings**, and ensure the following:
 - ▶ 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.
- 4** Click **OK**.

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** Select the **Security** tab, and click **Custom Level**. In the Security Settings dialog box, select **Scripting > Active scripting**.
- 4** Select the **General** tab and 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.

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 and server machines, and any VuGen and/or Analysis 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** Click **Start** and then click **Control Panel**.
- 2** In the Control Panel, click **Windows Security Center** (not in Advanced look of Control Panel).
- 3** Click **Windows Firewall**.
- 4** 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.

Oracle Configuration

Performance Center supports Oracle 9i or 10g on Windows or UNIX platforms. It no longer supports Oracle 8.1.7 database servers. If you are upgrading a previous installation of Performance Center using Oracle 8.i, you must upgrade your database before performing database migration. For more information, see Chapter 10, “Upgrading to Performance Center 9.0.”

You need to handle the following Oracle issues:

- ▶ Establishing Connectivity
- ▶ Setting Tablespaces
- ▶ Setting Oracle Database Instance
- ▶ Setting IWAM_<MachineName> Account Permissions
- ▶ Minimum Permissions Required for Oracle User

Note: If Oracle is installed on the intended Web or Administration site server machine, 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.

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 chose **Properties**.
- 2** Select the **Security** tab.
- 3** Click **Add** and add the IWAM_<SERVER> user.
- 4** Select **Read & Execute** and **Write**.
- 5** Click **OK**.

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
- create table with admin option
- create session with admin option
- create view with admin option
- drop user
- select from **dba_users**
- select from **dba_tablespaces**

These user permissions can be assigned by the database administrator 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 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";  
  
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>
```

MS-SQL Configuration

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>

Note: Configure the other machines (the non-database machines) with the alias.

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

- 1 Open the Enterprise Manager.
- 2 Open **Console Root > Microsoft SQL Servers > SQL Server Group > <machine name> > Security > Logins.**
- 3 Right-click the <pc_admin> user and select **Properties.**
- 4 In the **Server Roles** tab, enable the **Database Creators** and **Process Administrators** 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>
```

HP Performance Center Licensing

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.
- ▶ The **Host License** allows you to access the Vuser protocols and server monitors that are available for the specified host license key.

You set the license keys in the Administration site. For information about setting your license keys, see “Setting Your License Keys” on page 78.

UNIX Installation

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.”

Part II

Windows Installation

2

Installing Performance Center on Windows

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

| This chapter describes: | On page: |
|---|-----------------|
| Performing the Installation | 50 |
| Installing Additional Components | 64 |
| Removing or Changing your Performance Center Installation | 67 |

Performing the Installation

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.

Important: If you are upgrading to Performance Center 9.0 from an earlier version, you need to back up existing data and uninstall old versions before the installation. After the installation, you need to perform database migration and reconfigure your system. For more information, see Chapter 10, “Upgrading to Performance Center 9.0.”

Before installing Performance Center, be sure to also uninstall any versions of LoadRunner.

To install Performance Center or an additional component:

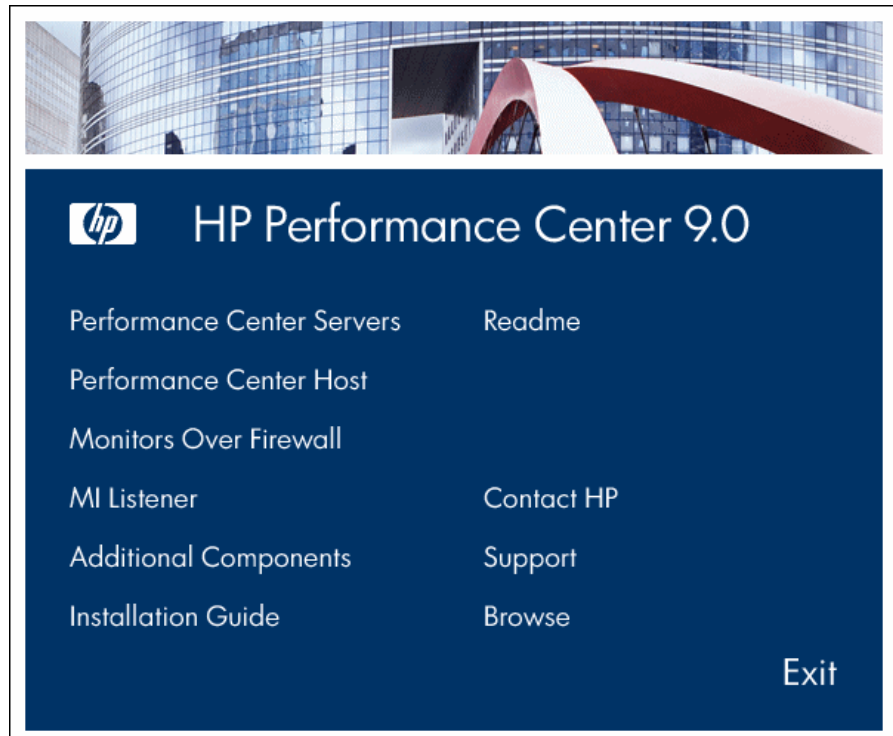
- 1** Insert the installation disk and run `setup.exe (<installation_disk_root_directory>\setup.exe)`.

Important: If you are installing Performance Center from a remote location onto a Windows 2000 SP4 machine, run Setup from the installation disk’s `setup` directory (`\setup\setup.exe`).

Note: 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 use the UNC (Universal Naming Convention) path to run the installation.

Due to a known Microsoft issue, if you are installing Performance Center from a mapped network drive and you are using a Remote Desktop connection, you may receive an error that prevents you from running the installation. To install Performance Center using a Remote Desktop connection, copy the installation directory to the local drive and run the installation locally.

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



2 Select the desired installation option.

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

- **Performance Center Servers.** Provides the option to install the Utility Server, the User Site server, the Administration Site server, and the File Server. These are all required components of Performance Center that you can install separately or together.

Note: The Administration site, User site, Utility server, and Host installation include the configurable file, **globals.ini**. Installing one component on a machine with any of the other components already configured overwrites the existing **globals.ini** file and its configuration information. To avoid having to reconfigure existing components, save your configured file, and copy it back after installing the new component.

- **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.

Note: When running a load test, a Performance Center host always checks a **.dat** instruction called Secure Mode. When enabled, Secure Mode instructs a host to check that functions within the test are included in the list of allowed functions.

By default, Performance Center installs all hosts with the Secure Mode disabled. Performance Center allows you to change the default option. You must install all hosts with the same Secure Mode setting. To enable Secure Mode, open **mdrv.dat** in the **<Performance Center>\dat** folder and locate the **General** section. Type **SecurityMode=On** at the bottom of the section.

- ▶ **Monitors Over Firewall.** Installs the components needed for monitoring over the firewall. For more information, see Chapter 9, “Working with Firewalls.”
- ▶ **MI Listener.** Installs the components needed on the MI Listener machine used in running Vusers over a firewall and monitoring over a firewall. For more information about working with firewalls, see Chapter 9, “Working with Firewalls.”
- ▶ **Additional Components.** Opens the **Additional Components** folder located in the root folder of the installation disk. From this folder, you can install or run the following components:
 - ▶ Citrix Replay Agent
 - ▶ Microsoft COM+ Server Monitor Probe
 - ▶ DB Migration
 - ▶ Download Monitor Over Firewall
 - ▶ IDE Add-ins
 - ▶ MQ Tester
 - ▶ MSDE.
 - ▶ SAP Tools
 - ▶ SiteScope
 - ▶ Standalone Applications
 - ▶ Unlock Utility
 - ▶ HP Performance Validation SDK
 - ▶ PC_Upgrade

For a description of each of these components see “Installing Additional Components” on page 64.

- ▶ **ERP and CRM Mediator.** Installs the component needed to gather and correlate offline transaction data for the ERP/CRM diagnostics modules. For more information, refer to the section in the *HP Performance Center User's Guide* that describes ERP/CRM Diagnostics.

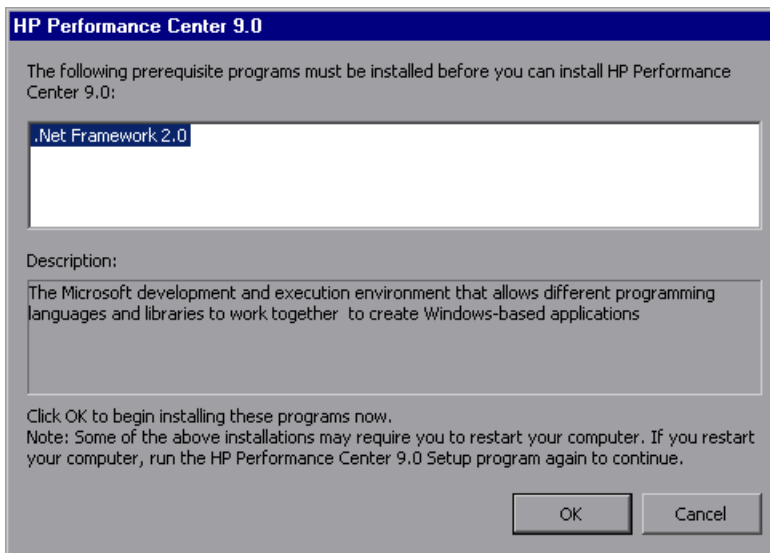
Important: The option to install the ERP and CRM Mediator is not available from the installation menu. To install this component, choose **Performance Center Servers** from the installation menu page. In the Setup Type page, choose the custom setup option and then select the ERP and CRM Mediator to be installed (step 8 on page 59).

The 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.

By default, the Mediator agent is installed to run as a process. It is recommended to configure the Mediator agent to run as a service. To configure the agent to run as a service, select **Allow virtual users to run on this machine without user login** in the User Login Settings window.

3 If necessary, install prerequisite software.

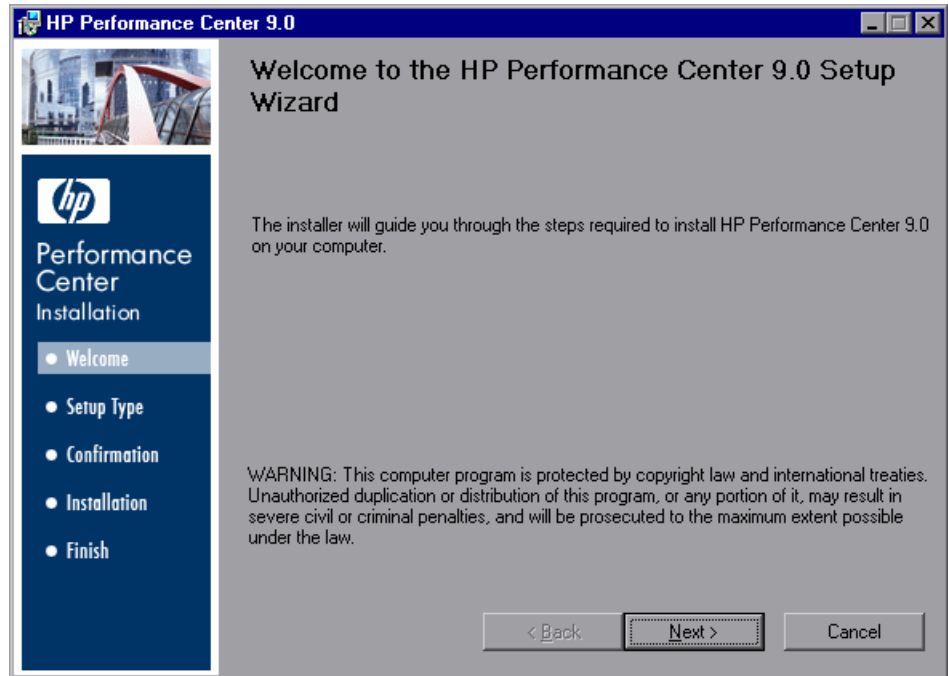
Specific software, for example, .NET Framework 2.0, needs to be installed before you can install Performance Center. If the prerequisite software is not already installed on your computer, the following dialog box opens.



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

4 Start the installation.

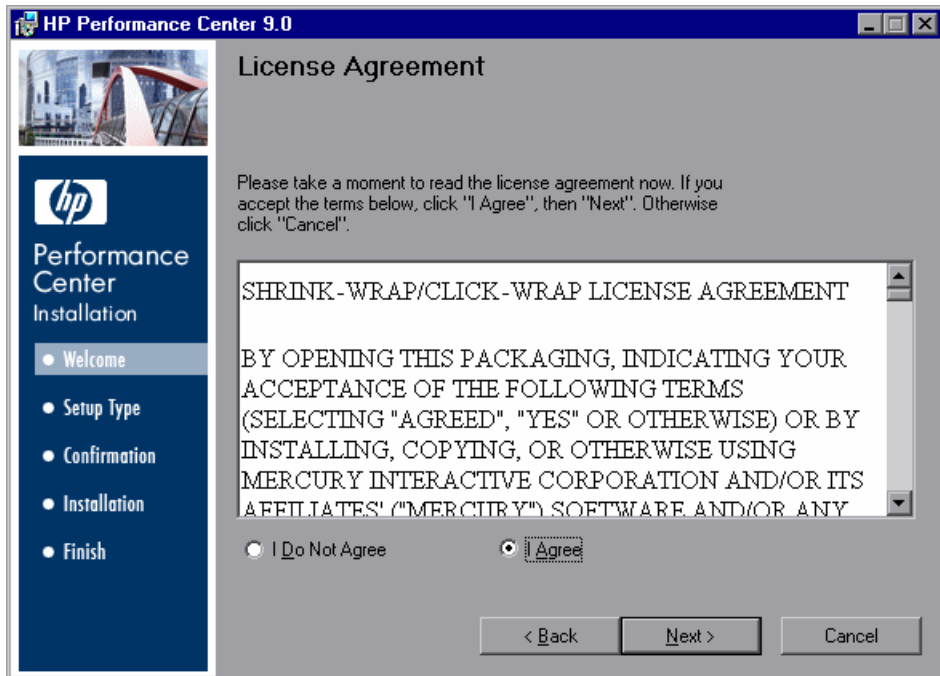
The Performance Center Setup Wizard opens, displaying the Welcome page.



Click **Next** to proceed.

5 Review the License agreement.

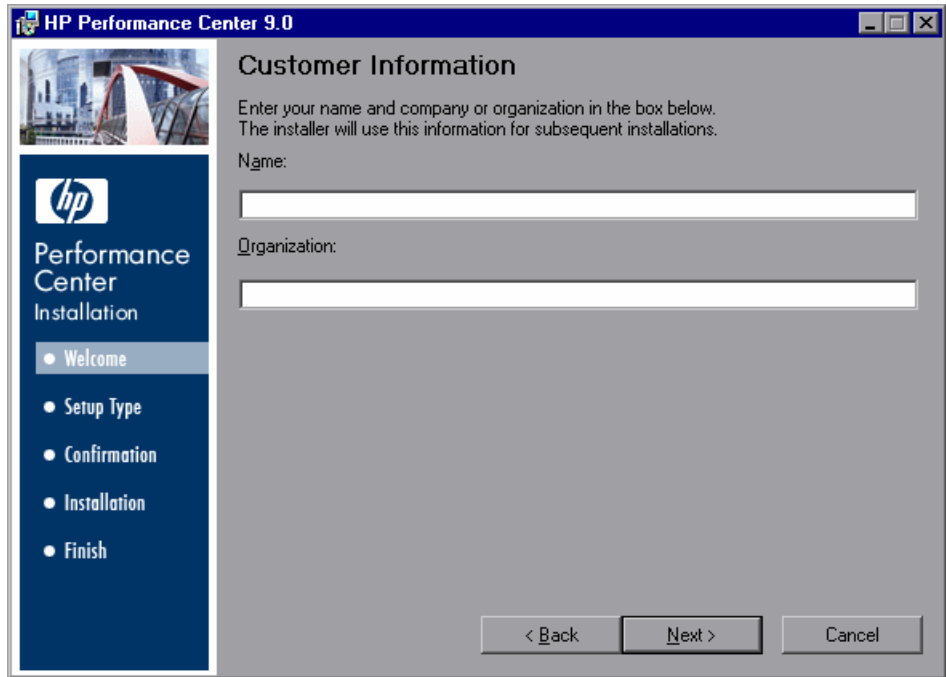
If the terms of the license agreement are acceptable to you, choose **I Agree**.



Click **Next** to proceed.

6 Register the Performance Center Installation on your computer.

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



The screenshot shows a Windows-style window titled "HP Performance Center 9.0". The window is divided into two main sections. On the left is a dark blue sidebar with the HP logo at the top, followed by the text "Performance Center Installation". Below this is a vertical list of steps: "Welcome" (highlighted with a white circle), "Setup Type", "Confirmation", "Installation", and "Finish". The main area of the window is light gray and 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 the second is labeled "Organization:". At the bottom right of the window are three buttons: "< Back", "Next >", and "Cancel".

Click **Next** to proceed.

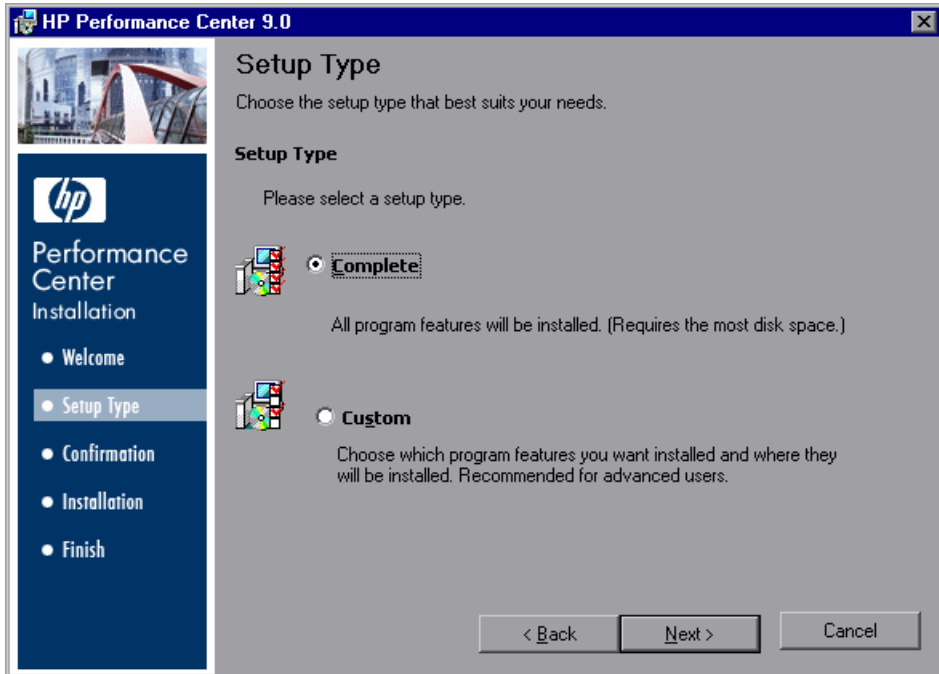
Next Step:

- ▶ If you selected to install the Performance Center Servers (step 2 on page 52), continue below.
 - ▶ If you selected to install a Performance Center component other than the Performance Center servers, skip to step 9 on page 60.
-

7 Select a setup type. (Only for installation of Performance Center Servers)

In the Setup Type page, select **Complete** or **Custom**.

- **Complete.** Installs the Performance Center features that you selected from the installation menu page in step 2 on page 52.
- **Custom.** Install only the Performance Center features that you want to install.



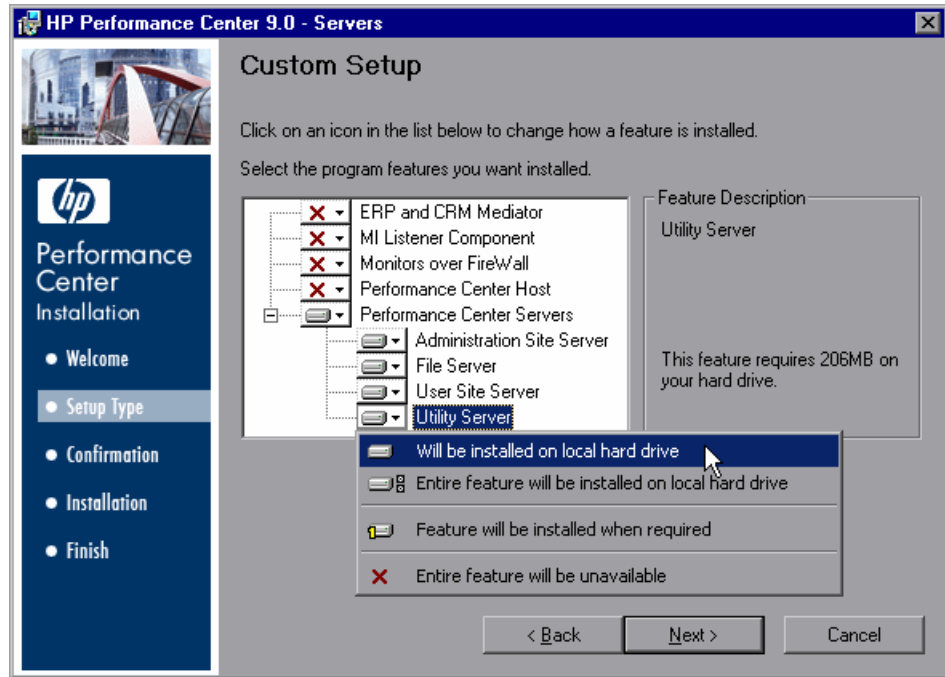
Click **Next** to proceed.

Next Step:

- If you selected Complete setup, skip to step 9 on page 60.
 - If you selected a Custom setup, continue below.
-

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.



By default, the features that you selected from the installation menu page (step 2 on page 52) are selected for installation. To select a different option (for example, excluding the feature), click the arrow next to the feature and select one of the following options from the menu that opens:

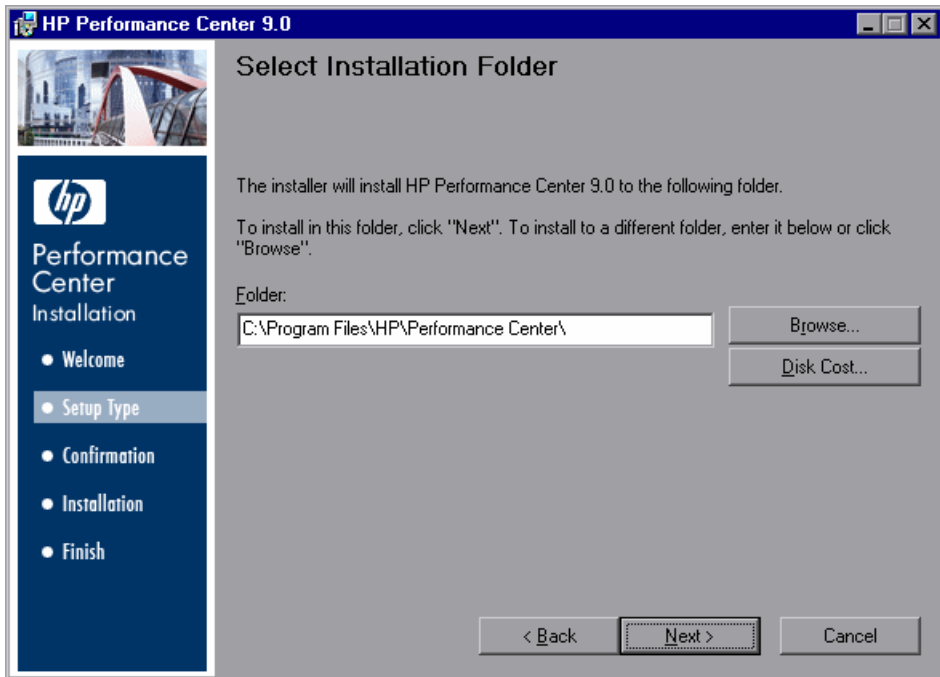
- **Will be installed on local hard drive.** This is the default option. The feature is installed on your hard drive.
- **Entire feature will be installed on local hard drive.** For features that contain sub-features, this option installs all sub-features.
- **Feature will be installed when required.** 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.

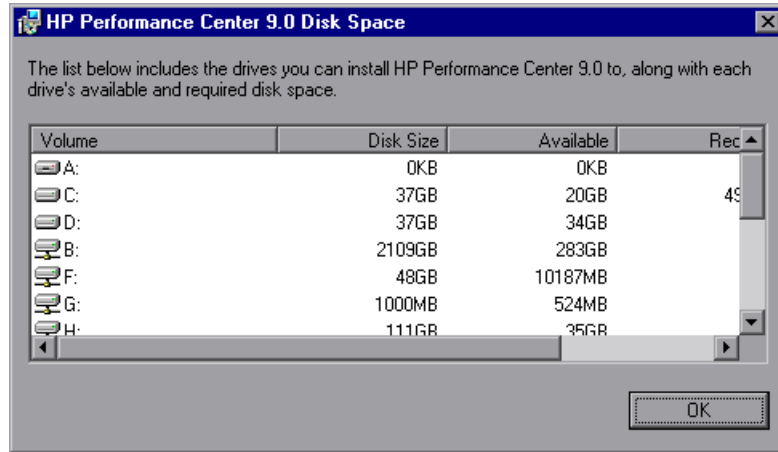
Note: For more information about the different Performance Center components, see “Understanding Performance Center Components” on page 18.

9 Select an installation folder.

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



You can check required and available disk space for each drive, by clicking **Disk Cost**.

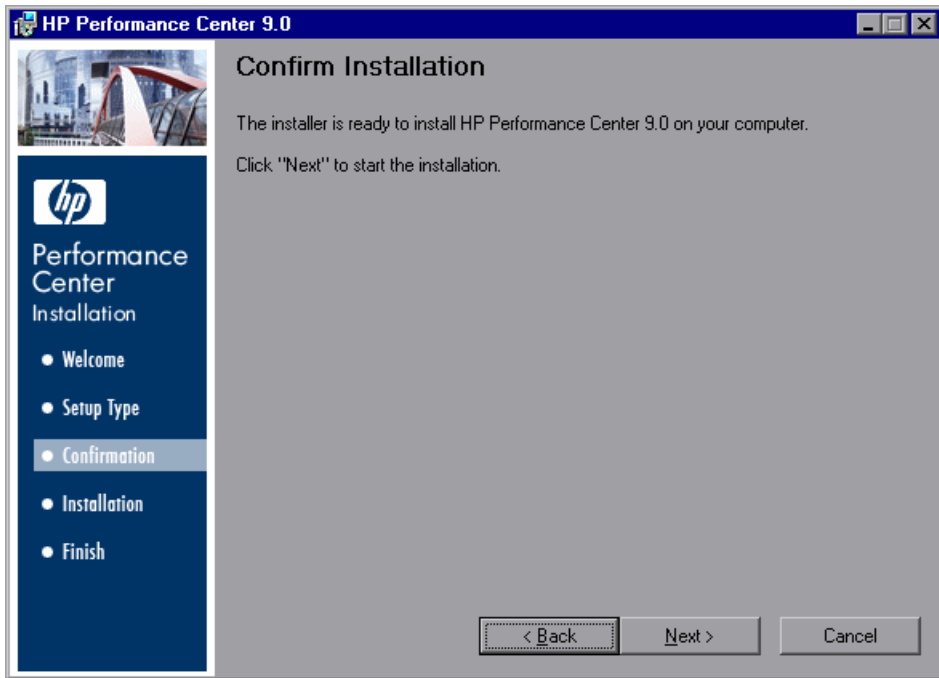


Click **OK** to close the Disk Space dialog box.

Click **Next** to proceed.

10 Start the installation process.

The wizard prompts you to confirm the installation.

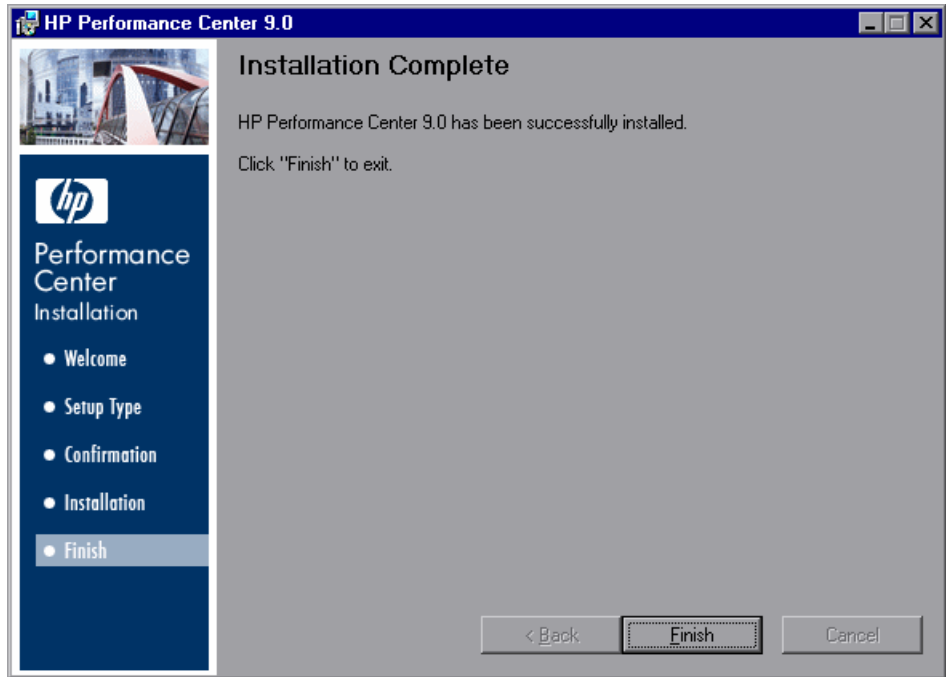


Click **Next** to start the installation.

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. For information about changing the system user, refer to the *HP Performance Center Administrator's Guide*.

11 Complete the installation process.

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



Click **Finish**.

The Performance Center installation is now complete.

Important: After installing any Performance Center components on a Windows 2000 machine, you must restart the computer after the installation.

Notes:

- ▶ To start Performance Center, select **Start > Programs > HP Performance Center**.
 - ▶ Select **Start > Programs > HP Performance Center > Readme** to see the new features in Performance Center and for information about any last-minute limitations.
-

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:

- ▶ **Citrix Replay Agent.** Installs an optional component on the server machine which enhances VuGen’s capabilities in identifying Citrix client objects. To install the Citrix agent, run the **CitrixAgent.exe** file.
- ▶ **Microsoft COM+ Server Monitor Probe.** Configures the server machine for COM+ monitoring. To install the COM+ Probe, run the **Com_Plus_Probe.exe** file. For more information, see the in the *HP Performance Center User’s Guide* that describes Application Component monitoring.
- ▶ **DB Migration.** Enables you to perform database migration if your Database server has a different Performance Center installation. For more information, see Chapter 10, “Upgrading to Performance Center 9.0.”
- ▶ **Download Monitor Over Firewall.** Enables you to access the Monitor Over Firewall Agent setup from the User Site and download it to designated machines inside the firewall, without having to install it from the installation disk. For more information, see “Downloading Monitor Over Firewall Agent Setup File” on page 82.

- **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.
- **MQ Tester.**
- **MSDE.** Installs the MSDE Database which is used for storing Analysis result data. To install MSDE, run the **Setup.exe** file.
- **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**, **Msflxgrd.ocx**, and **msvbvm60.dll** from the **SAP_Tools\SapGuiSpy\System32VBDlls** 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 the **SapSpy.exe** file 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 the **VerifyScripting.exe** file from the **SAP_Tools** 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 the file **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 the **VerifyRFCUser.exe** file.
- **SiteScope.** Installs the SiteScope server used for monitoring the Performance Center servers. It is recommend to install SiteScope on the same machine as the Controller, or on a dedicated server in order to reduce load on the Utility Server.

Performance Center supports integration with SiteScope 8.8. However, to install SiteScope 8.8, you need to first install SiteScope 8.5 as described in the procedure that follows.

To install SiteScope 8.8:

- a** Install SiteScope 8.5 by running the SiteScope 8.5 installation file from the **Additional Components\SiteScope\SiteScope 8.5** folder on the Performance Center installation disk.
- b** Stop the active SiteScope service and verify that it is not active.
- c** Install SiteScope 8.8 by running the SiteScope 8.8 installation file from the **Additional Components\SiteScope\SiteScope 8.8** folder on the Performance Center installation disk.
- d** Restart the SiteScope service.

Note: SiteScope should not be installed in a directory whose path contains spaces, and the installation path must end with a directory called SiteScope.

- **Standalone Applications.** Enables you to install the full standalone versions of HP Virtual User Generator and HP LoadRunner Analysis. See “Downloading Standalone Analysis/VuGen” on page 83 for more details.
- **Unlock Utility.** Use this utility to restore Performance Center authentication when you experience problems logging on to Performance Center with the LDAP or SSO server authentication configuration. For more information, refer to the section that discusses server authentication in the *HP Performance Center Administrator's Guide*.
- **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, refer to the *HP Performance Validation SDK Developer's Guide*.
- **PC_Upgrade.** Use this utility during the upgrade process. For more information, see “Uninstalling Previous Versions and Installing Version 9.0” on page 163.

Removing or Changing your Performance Center Installation

Using the Windows **Add/Remove Programs** utility, you can perform the following operations:

- **Remove.** Use this option to uninstall Performance Center and all its components from your machine.
- **Repair.** 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.
- **Modify.** Use this option to add Performance Center components to your original installation.

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 re-install the features that you want.

To uninstall Performance Center:

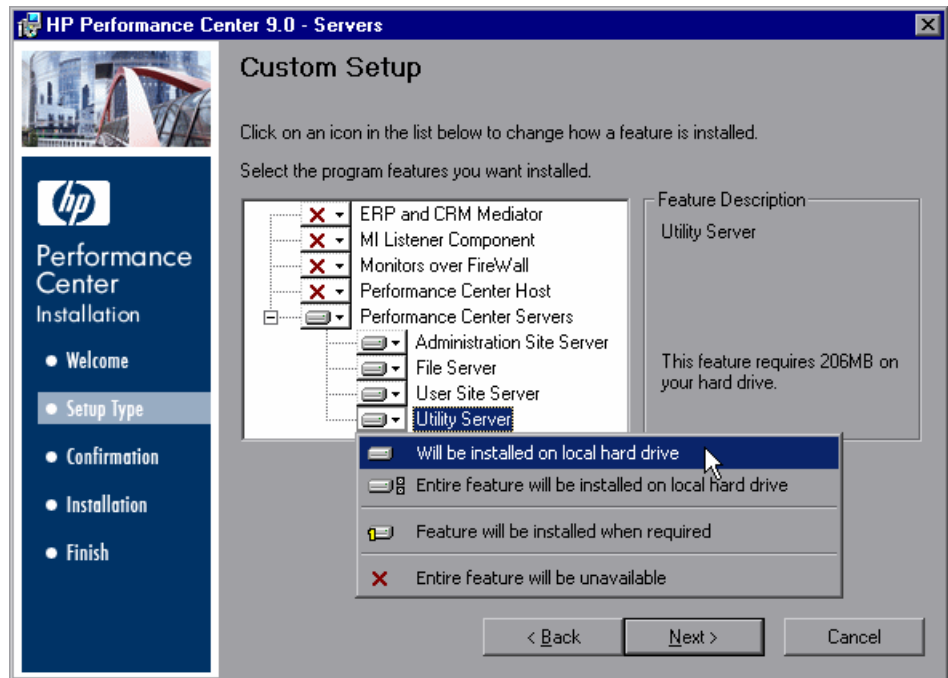
- 1** Open the Windows **Add/Remove Programs** utility.
- 2** Select **HP Performance Center** from the list of currently installed programs and click **Remove**.
- 3** Follow the instructions in the wizard to complete the uninstall process.

To repair your Performance Center installation:

- 1** Insert the Performance Center installation disk into your disk drive.
- 2** Open the Windows **Add/Remove Programs** utility.
- 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** In the Maintenance Type page, select **Repair** and click **Next** to proceed
- 5** Follow the instructions in the wizard to complete the repair process.

To add components to your Performance Center installation:

- 1** Insert the Performance Center installation disk into your disk drive.
- 2** Open the Windows **Add/Remove Programs** utility.
- 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** In the Maintenance Type page, select **Modify** and click **Next** to proceed.
- 5** In the Custom Setup page, select the Performance Center features that you want to add.



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

Note: You can only add components in this step. You cannot remove them.

For more information about the different Performance Center components that you can add, see “Understanding Performance Center Components” on page 18.

Click **Next** to proceed

- 6** Follow the instructions in the wizard to complete the process.

3

After Installing HP Performance Center

| This chapter describes: | On page: |
|--|----------|
| Introducing the Post Installation Process | 71 |
| Initial System Configuration | 72 |
| Setting MI Listener Name | 77 |
| Setting Your License Keys | 78 |
| Working with Performance Center Agent | 80 |
| Downloading Monitor Over Firewall Agent Setup File | 82 |
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Introducing the Post Installation Process

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

- Supply System Configuration information
- Set the MI Listener name
- Set your license key

You perform these tasks from the Performance Center Administration site. Details on how to log in to the Administration site follow. For more information on the Administration site, refer to the *HP Performance Center Administrator's Guide*.

In addition, you may need to change the Performance Center Agent settings or download the Monitor Over Firewall Agent setup, or Standalone Analysis or VuGen files, as described in:

- ▶ Working with Performance Center Agent
- ▶ Downloading Monitor Over Firewall Agent Setup File
- ▶ Downloading Standalone Analysis/VuGen

Initial System Configuration

Important: To perform initial system configuration, the Performance Center system user must have administrative privileges.

You log on to the Administration site to perform the setup completion tasks described in this section.

To log on to the Administration site:

- 1 Type the path to the Performance Center Administration Site installation directory, for example, `http://<Server_Name>/admin`.

If this is the first time you are entering the system, a system configuration page opens:

Welcome to Performance Center 9.0

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

System Configuration

| | | | | | | | | | | | |
|---|--|--|---------|--|------|--|----------|--|---|------|--|
| <p>Database:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 2px;">DB host</td> <td><input style="width: 90%;" type="text"/></td> </tr> <tr> <td style="padding: 2px;">DB type</td> <td><input style="width: 90%;" type="text" value="SQLServer"/> ▾</td> </tr> <tr> <td style="padding: 2px;">User</td> <td><input style="width: 90%;" type="text"/></td> </tr> <tr> <td style="padding: 2px;">Password</td> <td><input style="width: 90%;" type="password"/></td> </tr> </table> | DB host | <input style="width: 90%;" type="text"/> | DB type | <input style="width: 90%;" type="text" value="SQLServer"/> ▾ | User | <input style="width: 90%;" type="text"/> | Password | <input style="width: 90%;" type="password"/> | <p>File Server:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 2px;">Name</td> <td><input style="width: 90%;" type="text"/></td> </tr> </table> | Name | <input style="width: 90%;" type="text"/> |
| DB host | <input style="width: 90%;" type="text"/> | | | | | | | | | | |
| DB type | <input style="width: 90%;" type="text" value="SQLServer"/> ▾ | | | | | | | | | | |
| User | <input style="width: 90%;" type="text"/> | | | | | | | | | | |
| Password | <input style="width: 90%;" type="password"/> | | | | | | | | | | |
| Name | <input style="width: 90%;" type="text"/> | | | | | | | | | | |
| <input type="button" value="Save"/> | | | | | | | | | | | |

The page asks you to supply some basic information that is used to configure your system.

The System Configuration page displays the following information:

Database

- **DB host.** The machine on which the database resides. If you are using Oracle, enter the TNS name defined in your `tnsnames.ora` file.
- **DB type.** The type of Database installed on the server—either SQLServer or Oracle.
- **User.** The user name to connect to the Database.
- **Password.** The password to connect to the Database.

File Server

- **Name.** The name of the machine that contains the File Server installation where system files such as scripts are stored.

After you supply the necessary information, click **Save**.

Note: If Performance Center detects an existing database, a message is displayed asking 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 lower-left corner of the page.

```
Trying to login to Database Server - mister
Installing Database
Database installed successfully
Updating connection string on Admin Server (locally)
Updating Database with system details
System details were updated in Database successfully
System initial configuration completed successfully
```

[Log to Site](#)

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.

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

- 2** In the **User Name** box, type your user name. The first time you log on, use the default user name “Admin”. After you have logged on, you will be able to modify your user name and password for the future.
- 3** In the **Password** box, type your password. The first time you log on, use the default password **Admin**.

4 Click **Login**. The Administration Site opens.

The first time you log on to the Administration Site, you are redirected 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:

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

To complete the server configuration (the first time you log on to the Administration Site):

Important: For all servers, it is recommended to provide the **name** of the machine, rather than the IP address.

- 1** Click the **Test Connection** button to ensure that the specified connection works properly.
 - 2** In the **Utility Server** box, enter the name of the machine that hosts the Performance Center license.
-

Note: The Utility Server needs to be available at all times. When choosing a Utility Server, it is advisable to choose a machine that is not a host.

- 3** In the **User site Servers** section, enter the names of the computers on which the User Site will be installed.
- 4** If you are using SiteScope to monitor a server, enter the relevant values for the SiteScope server used by Performance Center to monitor its own resources.
 - **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.** Select this option to use a specific SiteScope user account, and enter the SiteScope account details—name/number, user name, and password.
- 5** Click **Save** to save the server configuration settings.

Setting MI Listener Name

MI Listeners enable running of Vusers over a firewall and collecting server monitor data and application diagnostics data over a firewall.

If you are running Vusers or collecting monitor or diagnostics data over a firewall, you must configure the Administration site to recognize the IP address of the machine on which you installed the MI Listener component. This enables the system to locate the MI Listener and provide the communication link needed to operate over the firewall.

Running Vusers over a Firewall

You can specify one or more MI Listener machines that will enable running Vusers over a firewall.

To add an MI Listener (running Vusers):

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

Collecting Data From Outside a Firewall

You can specify MI Listeners to collect monitoring or diagnostics data from outside 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.

To specify an MI Listener for collecting application diagnostics data:

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

Setting Your License Keys

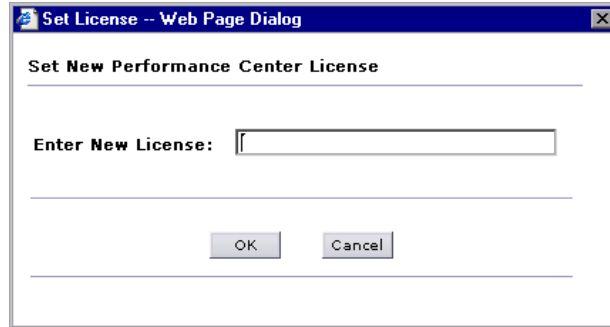
When you purchase HP Performance Center, you receive two license keys.

- The **Performance Center License** enables you to use the product and run load tests.
- The **Host License** allows you to access the Vuser protocols and server monitors that are available for the specified host license key.

Enter the license key information as described below:

To update your Performance Center license key:

- 1** On the Administration site **System Configuration** menu, click **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 update the host license key:

- 1** On the Administration Site **System Configuration** menu, click **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.

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:

From the **Start > Run** menu, 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 the service, run `<PC_dir>\launch_service\bin\magentservice.exe -install <user_domain>\<user_name> <password>`

This also runs the agent service.

- 4** To run the service later, after stopping it, start it from the Services dialog box.

Running SAPGUI Vusers

To run SAPGUI Vusers on a remote host, make sure that:

- the Performance Center agent is configured to run as a process (as described in “Running the Performance Center Agent as a Process” on page 80), and
- a user with administrative privileges is logged on to the host machine during run-time.

Note: To run SAPGUI Vusers 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>>.

Downloading Monitor Over Firewall Agent Setup File

You can access the Monitor Over Firewall Agent setup component from the Performance Center User Site and download it to the servers to be monitored inside the firewall, without having to install it from the installation disk. The Agent setup installs the components needed for monitoring over the firewall. You must install the Monitor over Firewall component on the File Server before you can download the Monitor Over Firewall Agent. Alternatively, you can install the Monitor Over Firewall Agent component directly from the installation disk.

To install the Monitor Over Firewall component on the File Server:

- 1 On the HP Performance Center Additional Components 9.0 CD, select **Additional Components**, and open the **Download Monitor Over Firewall** directory.
- 2 Copy the **monitors_over_fw.exe** file to the File Server's <installation directory>\LRFS\Downloads directory.

To download the Monitor Over Firewall setup file from the User Site:

- 1 After you have installed the standalone component on the File Server, select **Miscellaneous > Downloads** in the Performance Center User Site. The Downloads page opens.
- 2 Click the **Monitor Over Firewall Agent Download** link to launch Performance Center Agent setup.
- 3 Follow the on-screen instructions. The agent setup installs the monitoring over the firewall components.

To install the Monitor Over Firewall Agent setup file from the installation disk:

- 1** From the installation disk root directory, open the **Additional Components\Download_Monitor_Over_Firewall** directory.
- 2** Double-click **monitors_over_fw.exe** to launch the Performance Center Agent setup.
- 3** Download the Agent setup file and follow the on-screen instructions. The Agent setup installs the monitoring over the firewall components.

Note: For information on preparing Performance Center to perform load testing over a firewall, see “Working with Firewalls” on page 133. For information on configuring the monitoring components, see the section that describes monitoring over a firewall in the *HP Performance Center User's Guide*.

Downloading Standalone Analysis/VuGen

You can access the Standalone Analysis and Standalone VuGen setup files from the Performance Center User Site and download them to designated machines. Alternatively, you can install them directly from the installation disk.

To download Standalone Analysis/VuGen from the User Site:

- 1** After you have installed the standalone setup files on the File Server, in the Performance Center User Site select **Miscellaneous > Downloads**. The Downloads page opens.
- 2** Click the **Standalone Analysis Download** or **Standalone VuGen Download** link to download the setup file and launch the setup.
- 3** Follow the on-screen instructions to install Standalone Analysis/VuGen.

To install Standalone Analysis/VuGen from the installation disk:

- 1** From the installation disk root directory, open the **Additional Components\Standalone Applications** directory, and double-click **AnalysisSetup.exe** or **VugenSetup.exe**.
- 2** Follow the on-screen instructions to install Standalone Analysis or VuGen.

4

Recommended Configuration Settings

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 describes: | On page: |
|---|-----------------|
| Performance Center Machine Naming Convention | 86 |
| Operating System Configuration | 86 |
| Web Browser (Internet Explorer) Configuration | 87 |
| Web Server Configuration | 88 |
| Performance Center Web Site Configuration | 91 |
| Database Backups | 95 |
| File System Configuration | 97 |

Performance Center Machine Naming Convention

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.

Operating System Configuration

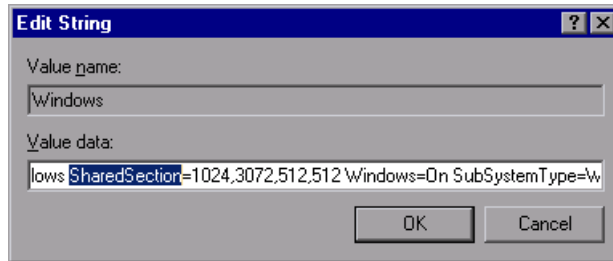
This section provides recommendations for configuring operating systems for host and server machines. It does not apply to end-user machines.

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).

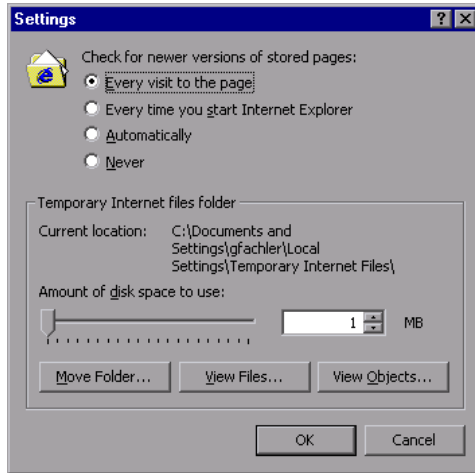
Web Browser (Internet Explorer) Configuration

You should specify Internet Explorer's behavior when you return to a previously viewed page.

Note: This should be done on the client machines that are accessing the Performance Center Web site through Internet Explorer.

To set browser behavior for previously viewed pages:

- 1 From the Internet Explorer menu, select **Tools > Internet Options** to open the Internet Options dialog box.
- 2 In the **General** tab under **Temporary Internet files**, click **Settings** to open the Settings dialog box.
 - a In the **Check for newer versions of stored pages** section, select either **Every visit to the page** or **Automatically**.



- - b In the **Amount of disk space to use** section, ensure that at least **100 MB** is set.

Web Server Configuration

This section provides the following recommendations for Web server configuration:

- Set a Reasonable Connection Timeout
- Set a Reasonable Session Timeout
- Set Hits Expected Per Day
- Set the ASP Upload Buffer

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

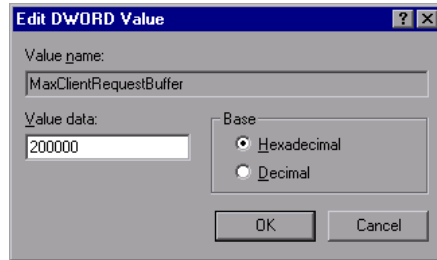
Set the ASP upload buffer to the maximum size of a file that you will permit to be uploaded to the server.

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.

Performance Center Web Site Configuration

This section provides the following recommendations for Performance Center Web site configuration:

- Disable Running Vusers on Controller
- Configure Hosts as Dedicated Machines or Shared Load Generator and Controller
- Some Machines should be set to Backup
- Configure AutoStart Retries to Ensure Running of Scheduled Autostart Tests
- Prepare the Load Test Environment Before Running Load Tests
- Allow Performance Center to Import all Monitors from SiteScope

Disable Running Vusers on Controller

In the Privilege Manager, select **Projects**, and make sure that **Running Vusers on Controller** is disabled. Vusers consume resources, and the Controller also consumes a lot of resources. If Vusers are run on the Controller, and the Controller machine is overloaded, Performance Center may lose control of the Controller machine, and the load test may become orphaned.

Configure Hosts as Dedicated Machines or Shared Load Generator and Controller

Dedicated Controllers

To ensure that a certain number of tests can be run at any time, at least that number of machines must be set as Controller machines. It is recommended that you always have 1-2 additional Controllers available for small implementations, and 2-3 Controllers available for large implementations.

Shared Controllers and Load Generators

If resources are scarce, it is a good idea to allocate machines with dual purposes as both Controller and Load Generator machines. This allows a single test to use all machines for a load test, or $N/2$ (or N) load tests to run concurrently. Since it is discouraged to use Controllers as load generators at the same time, Performance Center administrators should allow $N/2$ load tests only to run at any given time. Furthermore, it is strongly recommended that there be backup machines or extra Performance Center hosts (for example, 2-5 extra hosts) to handle potential availability issues.

Mix Dedicated and Shared Machines

If a minimum level of load test concurrency is required (for example, X) at any given time, it is a good idea to have the following configuration:

- ▶ X dedicated Controller machines
- ▶ Y shared Controller + Load Generators
- ▶ Z Load Generators (where $Z \geq X$)

This combination ensures that there are always Controllers and Load Generators for at least X number of concurrent load tests.

Some Machines should be set to Backup

Backup machines are not used in normal allocation. They do not show up when you are looking for available hosts. A backup machine is used only when a host machine does not work. If an allocated host machine does not work, a backup machine is used. Backup machines help ensure that runs will proceed as planned.

If you try to run a test and the Controller machine that you are going to use goes into **Resource Failure**, and the rest of the Controller machines are in use, a backup Controller machine is allocated, and your run can continue.

Configure AutoStart Retries to Ensure Running of Scheduled Autostart Tests

If autostart runs fail for whatever reason (for example, unavailable resources), by default Performance Center retries 3 times every minute before failing. Sometimes this retry count is not sufficient or is too quick for resources to become available. Increasing the retry count and interval might yield higher probability of autostart runs succeeding. This is especially useful for important tests that need to run during off-hours.

To configure autostart retry settings:

- 1 Log on to the Performance Center Administration site (http://<Server_Name>/admin).
- 2 In the left navigation panel, choose **System Configuration > General Settings**.
- 3 Set the following properties:
 - **Maximum Number of AutoStart Retries** = 10 (or as appropriate)
 - **Autostart Retries Interval** = 2 (or 3, as appropriate)

| Autostart | | |
|--|--------------------------------|--|
| Maximum Number of Autostart Retries | <input type="text" value="5"/> | Specifies the maximum number of attempts allowed by the Autostart mechanism to start a load test in case of failure. |
| Autostart Retries Interval (min) | <input type="text" value="1"/> | Specifies the interval, in minutes, that the Autostart mechanism waits between retry attempts. |

Prepare the Load Test Environment Before Running Load Tests

When launching load tests where there are many participants involved (for example, administrators, application engineers, customers, and vendors), it is recommended to prepare the load test environment before executing it. Depending on the scale of the load test and latencies in the environment, it may take anywhere between 30 seconds to 5 minutes for Performance Center to prepare all the machines for the load test before running the load test.

Therefore, instead of having all participants wait for Performance Center to set up the load test, it is recommended that the Performance Center user/driver prepare it beforehand, and issue the **Run** command only when everyone is ready.

To prepare the load test environment:

- 1** Log on to the Performance Center User site (http://<Server_Name>/loadtest).
- 2** Select the load test from the Load Tests page (**Load Tests > Manage**), and in the General tab, click **Advanced**.
- 3** In the Advanced dialog box, select **Pause scheduler at load test start**.
- 4** When you start a load test with this feature enabled, Performance Center displays the scheduler in the Pause status. Click the **Continue** button when you are ready to start the scheduler.

Allow Performance Center to Import all Monitors from SiteScope

By default, there are a few monitors that Performance Center imports from any given SiteScope instance. This filtering can be disabled to allow you to select all monitors defined in SiteScope.

To disable filtering, perform the following steps on the Performance Center Utility Server, and on all Controller machines:

- 1 Open the `xmlmonitorsshared.ini` file located in the `<Performance Center>\dat\monitors` directory.
- 2 In the SiteScope section, set the following attributes:

```
[SiteScope]
MetricDataURL=SiteScope/cgi/go.exe/SiteScope?page=topaz
MetricListURL=SiteScope/cgi/go.exe/SiteScope?page=topaz&operation=config
ActivateCounters=1
DefaultPort=8888
RefreshMetricList=1
```

Database Backups

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.

For MS SQL:

- 1 Launch **Microsoft SQL Server > Enterprise Manager**.
- 2 Choose the SQL Server that has **MI_LRDB** database.
- 3 Select the **Management** folder.

- 4** Right-click **backup**, and choose **Backup a Database**.
- 5** Under the **General** tab, choose **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**.

For Oracle:

- 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** Choose **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**.

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

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

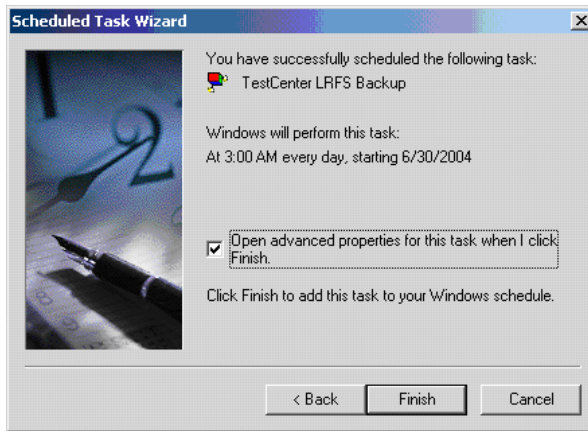
It is important to maintain backups of the LRFS file system. If there is hardware failure or any other serious problem, there needs to be a way to recover the data. Performing daily backups on the LRFS file system is a way to guarantee data protection. The **Tc_BackupFileSystem.vbs** script is provided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

5

Enabling Performance Center to Run Securely

The following procedure explains how to set up the Microsoft Internet Information Server (IIS) on the Performance Center server and host machines so that you can run the User and Administration sites in secure (HTTPS) mode.

To supply HTTPS security, perform the following steps:

- ▶ Generate a certificate signing request in IIS.
- ▶ Request a signed certificate from a certification authority.
- ▶ Install the signed certificate in IIS.

Important: These steps should be performed on all Performance Center server and host machines.

Generate a Certificate Signing Request in IIS

To generate a certificate signing request in IIS:

- 1** On the Performance Center host/server machine, invoke the IIS Internet Service Manager.
- 2** Under the IIS host name (in the Internet Information Server folder), right-click **Default Web Site** and select **Properties**. The Default Web Site Properties dialog box opens.
- 3** Select the **Directory Security** tab.

- 4** Click **Server Certificate**. The Server Certificate Wizard opens. Click **Next**.
- 5** Select **Create a New Certificate** and click **Next**.
- 6** Select **Prepare the request now but send it later**.
- 7** Complete the forms on each of the next four dialog boxes.
- 8** When you are asked to enter a file name and location, enter them or accept the default name and location.
- 9** Click **Next**, review the text, and click **Next**.

The Wizard confirms that the certificate request has been generated and placed in the file name and location you specified above.

- 10** Click **Finish**.

Request a Signed Certificate from a Certification Authority

When applying for the certificate, provide the information from the key request text file you created above. Make sure to include the text between BEGIN NEW CERTIFICATE REQUEST and END NEW CERTIFICATE REQUEST.

Install the Signed Certificate in IIS

To install the signed certificate:

- 1** When you receive your certificate (a file with a .cer extension), open the Server Certificate Wizard in the IIS Internet Service Manager.
- 2** Select **Process pending request and certificate**.
- 3** Browse to the certificate (the .cer file) that you received and click **Next**.
- 4** The Server Bindings dialog box opens. Click **OK**.
- 5** Select **Computers > Commit Changes Now** to apply the settings.
- 6** Close the Key Manager and the IIS Internet Service Manager.

You can now run the Performance Center User and Administration sites securely. To open the site securely, use https:// instead of http://.

6

Logon Considerations for Running Performance Center

Due to security concerns, by default Performance Center installs and configures itself to run with the Performance Center machines (Web Servers, Utility Server and hosts) in logged off mode.

This chapter discusses the various possibilities of running the Performance Center in either logged off or logged on modes.

To use the WRM (Windows Resource Monitor) on the AUT (Application Under Test) server, the Performance Center servers need to be able to access the AUT server with NT Authentication. The Performance Center servers' default user, **IUSR_METRO**, will not have access to the AUT.

The following are the various login possibilities:

- ▶ Use Performance Center's default option. This requires configuring the AUT to recognize the default Performance Center user: user name **IUSR_METRO** and password **MIOrchid#1**.
- ▶ Reconfigure Performance Center to log in as a different user on the AUT server. This user must have local administrator privileges on all Performance Center machines and permissions to monitor the AUT.
- ▶ Configure the Utility servers and Controller machines to have an active user identity as described in the following procedures.

To create an interactive user identity on the Utility Server:

- 1** Select **Start > Run** and type `dcomcnfg`. The Distributed COM Configuration Properties dialog box opens.
- 2** Select **MEApplication Application** and click **Properties**.
- 3** Click the **Identity** tab and select **The interactive user**.

The Utility Server must be logged on. It will now run with the identity of the logged on user, which may be sufficient to monitor the AUT.

- 4** If the logged on user does not have permission to monitor the AUT, run the `NETUSE` program from the command line to set permissions for a user with sufficient privileges on the AUT machine.

To create an interactive user identity on the Controller machine:

- 1** Select **Start > Run** and type `dcomcnfg`. The Distributed COM Configuration Properties dialog box opens.
- 2** Select **wlrun.LrEngine** and click **Properties**.
- 3** Click the **Identity** tab and select **The interactive user**.

The Controller machine must be logged on. It will now run with the identity of the logged on user, which may be sufficient to monitor the AUT.

- 4** If the logged on user does not have permission to monitor the AUT, run the `NETUSE` program from the command line to set permissions for a user with sufficient privileges on the AUT machine.

Configuring the Agent on Load Generator Machines

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

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

To run the agent as a process, stop the agent and restart it as a user process with the correct privileges—local administrator and network drive access.

To check whether the agent is running as a service or process, move your mouse over the agent's icon in the Windows task bar area, and read the description—**Performance Center Agent Service** or **Performance Center Agent Process**.

To restart the agent as a process:

- 1** Stop the agent. Right-click the **Performance Center Agent** icon on the system tray (bottom right), and select **Close**.
- 2** Run **magentproc.exe**, located in the <PC installation>\launch_service\bin directory.
- 3** To ensure that the correct Agent is launched the next time you start your machine, change the Start type of the Agent Service from Automatic to Manual. Then add a shortcut to **magentproc.exe** to the **Windows Startup** folder.

Part III

UNIX Installation

7

Introducing the UNIX Installation

You can install the Load Generator component on a UNIX platform to run virtual users. The UNIX virtual users interact with the Controller component, installed on a Windows machine.

This chapter discusses the installation steps and system requirements for installing the load generator on a UNIX platform.

Note: The Controller is installed as part of the Performance Center host. For information about installing the Performance Center host, see Chapter 2, “Installing Performance Center on Windows.”

| This chapter describes: | On page: |
|-----------------------------|----------|
| UNIX Installation Steps | 108 |
| System Requirements | 109 |
| System Resources | 110 |
| Increasing Process Entries | 112 |
| Increasing File Descriptors | 114 |
| Increasing Swap Space | 116 |

UNIX Installation Steps

This section describes the installation of the Load Generator component on all of the supported UNIX platforms. When a section applies only to a specific platform, it is explicitly stated.

The main steps of the installation process are:

- Installing the program files
- Setting the environment

For more information about how the Load Generator interacts with the other Performance Center components, see Chapter 1, “Before You Install.”

Setting the Environment

Since Performance Center Vusers emulate actual users of your system, the environment on the virtual user machine must be configured for the Vuser to run correctly. The environment variables are defined in the `.cshrc` file for cshell users, and in the `.profile` file for Bourne and kshell users.

- The installation process determines the platform on which the Vuser is running, and prepares a script to modify the `.cshrc` file for cshell users. Bourne and kshell users should modify the `.profile` file manually. See “Verifying Your UNIX Installation” on page 129, for sample `.cshrc` and `.profile` files.
- The installation process helps you set the environment variable to indicate the location of the Performance Center `bin` directory and any DLLs used by the underlying protocol. This environment variable is called `LIBPATH` on AIX, `SHLIB_PATH` on HP/UX, and `LD_LIBRARY_PATH` on Solaris and Linux.

System Requirements

Your actual memory requirements may vary, depending on your configuration. Note that the installation procedure uses additional memory, which is released after the installation. To ensure a smooth installation of the UNIX components, it is recommended that you make sure the disk partition where you intend to install Performance Center has sufficient storage space, process entries, swap space, and so forth.

The following table describes the system requirements for each platform supported by HP for Performance Center UNIX Vusers.

| Platform | Hardware | Version |
|----------|--------------------------|----------------------|
| Solaris | Ultra Sparc | Solaris 2.8 or later |
| HP | HP 9000 series 700, 800, | HP-UX 11.x or later |
| IBM | IBM RS/6000 | AIX 4.3.3 or later |
| Linux | PC i486 | Red Hat 9.0 or later |

Performance Center supports all X Servers.

Note: For Linux platforms, you should install the updated glibc packages that provide security and bug fixes. For more information, refer to <https://rhn.redhat.com/errata/RHSA-2003-325.html#Red%20Hat%20Linux%208.0>

System Resources

The following table describes the system resources required for each platform or operating system. The actual resources may vary, depending on the number of Vuser licenses purchased.

The resources for Vusers listed below apply to each Vuser. If you are installing multiple Vusers, calculate your requirements by multiplying the figures by the number of Vusers.

| Resource Type | Requirement |
|---|--|
| Disk Space required for program installation | 22 MB (34MB for Linux) |
| Memory Space each Vuser if run as thread | 300 KB (at least). This amount may vary, depending on the operating system and platform, and does not include the memory used by the process |
| Memory Space each Vuser if run as process | 1.5 MB (2.5 MB for Solaris) |
| Swap Space | Approximately 1:7 memory/swap ratio |
| Free Process Entries each Vuser if run as process | 1 |
| File Descriptors each Vuser if run as thread | 2 (see below) |

The Memory Space entries in the table above apply to a general C-Vuser type. Other types may require more memory space. For example, each Web Vuser uses at least 500 KB.

A load generator uses the following additional **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 the Performance Center launch service
- 20 for the Performance Center 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.

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

Note: Most operating systems using HP Performance Center 9.0 have sufficient default file descriptors, process entries and swap space, and rarely require reconfiguration.

Increasing Process Entries

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

Solaris 2.6

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 Log on as root user.
- 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.
 - ▶ **maxuprc**. 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** and **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

Each Vuser requires between 6 (for non-GUI Vusers) and 27 (for GUI Vusers) file descriptor entries. The procedure for increasing the number of file descriptors varies between platforms and shells.

All Platforms

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

- 1 For sh and ksh users, type:

```
ulimit -n 1024
```

- 2 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 of decimal 1024. In the following example, **kernel** is the name of the kernel file, that is, 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.

Log on as root user 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.

- 1 Log on as root user.
- 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 of 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.

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

Solaris

This section describes how 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
```

For example, `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 file system configuration. Type:

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

IBM

This section describes how 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:

```
mkpfs -a -n -s 50 chemvg
```

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

```
chps -s number paging_file
```

For example: `chps -s 10 page_01` adds 40 MB to `page_01`).

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

```
swapon paging_area
```

For example, `swapon /dev/paging_01`

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

```
swapon -a
```


8

Installing HP Performance Center on UNIX

Performance Center is installed using the installation media provided with the Performance Center distribution package. The installation uses a Java Runtime Environment (JRE).

The following sections describe installing the Performance Center UNIX components from a UNIX CD-ROM device. If a UNIX machine with a CD-ROM device is not available, you can copy the UNIX components from the CD into a directory on your computer, and transfer them to a UNIX directory via ftp or an NFS mounting at a later stage.

| This chapter describes: | On page: |
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| Checking your Environment | 120 |
| Installing HP Performance Center on Multiple Platforms | 120 |
| Running the Installation Program | 121 |
| Preparing to Install from a CD-ROM (IBM only) | 123 |
| Post UNIX Installation | 124 |
| Verifying Your UNIX Installation | 129 |
| Running the Uninstall Program | 130 |

Checking your Environment

- ▶ Verify that a CD-ROM device is attached to your local or remote machine.
- ▶ Find out which device driver is available for use with this drive. The device driver is usually located in the `/dev` directory of the machine to which the drive is attached. Consult your system administrator for the name of your device.

Installing HP Performance Center on Multiple Platforms

To run Performance Center on multiple UNIX platforms, you need to install a separate version of Performance Center, in a separate directory, for each platform. The installation directories must be accessible to all the platforms. At the end of installation, follow the instructions for modifying the environment variables (at the end of this chapter) to indicate the Performance Center installation directories.

For example, to install Performance Center on a site that has both Solaris and IBM machines, you could use the following directories:

- ▶ For HP Performance Center Solaris: `/tools/HP/sol/performance_center`
- ▶ For HP Performance Center IBM: `/tools/HP/ibm/performance_center`

If you intend to run multi-platform scenarios, both directories should be NFS mounted. The Solaris machine should access the IBM installation directory and vice versa.

Running the Installation Program

Before you begin the installation program, ensure that the install script, **install.sh**, is on the installation disk. Most operating systems require you to mount the CD-ROM drive to a local directory. For information for mounting a CD-ROM on IBM, see “Preparing to Install from a CD-ROM (IBM only)” on page 123.

There are two installation modes, UI (or AWT) mode and console mode.

- ▶ To run the installation in UI mode, make sure that the `DISPLAY` environment variable is properly configured.
- ▶ To run the installation in console mode, add the `-console` parameter to the command line. For example:

```
install.sh -console
```

To run the Performance Center installation program (in UI mode):

Note: Before entering the command, ensure that you have set the environment display correctly using the `setenv` command.

- 1 Type the following:

```
install.sh
```

The installation program begins and displays the license agreement.

- 2 Read the agreement, select the **I accept** option, and click **Next**. The Performance Center installation program begins and displays the installation location dialog box.

Choose the location where you want to install Performance Center. To select a different location, click **Browse**, choose a directory, and click **OK**.

Click **Next**.

- 3 The following screen displays a list of components that you can install.

Select **Performance Center Host**.

To enable remote management, select **Remote Management Agent**.

Click **Next**.

- 4 A read-only dialog box with your installation settings opens.

To select different installation settings, click **Back**. To begin installation, click **Next**.

- 5 At the end of the installation, a message appears about setting the Performance Center environment variables. The next step outlines this procedure. First complete the automatic installation by clicking **Next**.

- 6 The installation procedure displays the final screen.

Click **Finish** to exit the installation procedure.

- 7 The installation process prepared a file called **env.sh** that contains environment variable definitions for your cshell environment. Open the **.cshrc** file for each Performance Center user and add the following statement:

```
source <../Performance_Center>/env.sh
```

where **<../Performance_Center>** is the path to the Performance Center installation directory.

Bourne shell and kshell users should refer to “Post UNIX Installation” on page 124 for instructions on modifying the **.profile** file.

- 8 Bring up a new terminal to run the **.cshrc** file. For more information about **.cshrc** files, see “Post UNIX Installation” on page 124.
- 9 Run **verify_generator** to verify your Vuser installation. This is a confirmation step to ensure that the specified directory and device name are correct, and that you have sufficient disk space. For information about the tests performed by **verify_generator**, see “Verifying Your UNIX Installation” on page 129.

Preparing to Install from a CD-ROM (IBM only)

When installing Performance Center on an IBM platform, you must mount the CD-ROM drive to access the installation program.

To mount the CD-ROM drive:

- 1** Insert the CD-ROM into the drive and log in or *su* as root user.
- 2** Create the Performance Center installation directory by typing:

```
mkdir -p /usr/cdrom/lrun
```

- 3** To add a CD-ROM file system, you need to use SMIT. To enter the program, type:

```
smit storage
```

- 4** From within SMIT, select **File Systems**.
- 5** Select **Add/Change/Show/Delete File Systems**.
- 6** Select **CD ROM File Systems**.
- 7** Select **Add a CDROM File System**.
- 8** Choose a DEVICE name. Note that device names for CD-ROM file systems must be unique.
- 9** Type in the following MOUNT POINT:

```
/usr/cdrom/lrun
```

- 10** Select the **Do** command, or press Enter if you are using the ASCII interface.
- 11** Quit the SMIT program.
- 12** To mount the CD-ROM file system, type:

```
smit mountfs
```

- 13** For the FILE SYSTEM Name, select either **/dev/cd0** or **/dev/cd1**.

- 14** Select the mount directory:

```
/usr/cdrom/lrun
```

- 15** Select **cdafs** to set the TYPE of file system.
- 16** Select **Yes** to mount as a READ-ONLY system.
- 17** Select **Do** or **Enter** if you are using the ASCII interface.
- 18** Close your connection as the root user.

Post UNIX Installation

After installing Performance Center, prior to starting work, you should check that your environment is configured properly.

This section describes:

- Setting Environment Variables
- Checking Authorizations
- Sample .cshrc and .profile Files

After you complete the post-installation configurations, run the Performance Center verification utility to check your installation. For more information, see “Verifying Your UNIX Installation” on page 129.

Setting Environment Variables

The Performance Center installation procedure created a file, **env.sh**, which sets the environment variables. Instead of manually updating your **.cshrc** file with the variable definitions, you include a statement to access **env.sh** at the end of the **.cshrc** file. This section describes the environment variables in your **env.sh** file. If you are working with kshell or Bourne shell, you should manually set these variables in your **.profile** file. The syntax in the examples below are for cshell users. For kshell and Bourne shell users, see “HP Performance Center Settings in the .profile File” on page 128.

- **M_LROOT.** Set M_LROOT to the Performance Center installation directory. For example:

```
setenv M_LROOT /tools/lrunner
```

- **PATH.** The location of Performance Center’s executable programs, the **bin** directory, must be added to the PATH variable.

```
set path = ($path $M_LROOT/bin)
```

- **LD_LIBRARY_PATH.** (Solaris, Linux), LIBPATH (AIX), SHLIB_PATH (HP-UX)

The path should include the location of Performance Center’s dynamic libraries (**\$M_LROOT/bin**). To set the path, type:

```
setenv LD_LIBRARY_PATH ${LD_LIBRARY_PATH}:$M_LROOT/bin /*Solaris and
Linux*/
setenv SHLIB_PATH ${SHLIB_PATH}:$M_LROOT/bin/*HP Platforms */
setenv LIBPATH "${LIBPATH}:$M_LROOT/bin" /*IBM Platforms */
```

Check the dynamic libraries used by your application, and make sure that their path is also included in the appropriate dynamic library path environment variable (LD_LIBRARY_PATH, SHLIB_PATH or LIBPATH).

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

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

Note: To use Oracle73, you need to add the path Oracle73 libraries to the dynamic libraries path environment variable.

Checking Authorizations

To execute Vusers on remote hosts, you must be authorized to execute a remote shell.

To check your permissions on a Solaris, Linux, or IBM host, type:

```
rsh hostname ls
```

To check your permissions on an HP host, type:

```
remsh hostname ls
```

If you do not have permission, consult the **.rhosts** file (man **rsh** or **remsh**).

Sample .cshrc and .profile Files

This section includes examples of Performance Center settings within a user's `.cshrc` file and `.profile` file.

Performance Center Settings in the .cshrc File

The following is an example of Performance Center settings within a user's `.cshrc` file:

```
# HP Performance Center settings #
#Chooses a path based on the location of the machine dependent HP Performance
Center installation

switch ("`uname`")
case SunOS:
    setenv M_LROOT {replace with HP Performance Center Solaris
    installation path}
    setenv LD_LIBRARY_PATH ${LD_LIBRARY_PATH}:${M_LROOT}/bin
breaksw

    case HP-UX:
        setenv M_LROOT {replace with HP Performance Center HP-UX
        installation path}
        setenv SHLIB_PATH ${M_LROOT}/bin ${SHLIB_PATH}
breaksw

case Linux:
    setenv M_LROOT {replace with HP Performance Center SunOs
    installation path}
    setenv LD_LIBRARY_PATH ${LD_LIBRARY_PATH}:${M_LROOT}/bin
breaksw

case AIX:
    setenv M_LROOT {replace with HP Performance Center AIX
    installation path}
    setenv LIBPATH ${M_LROOT}/bin:${LIBPATH}
breaksw
endsw

set path = ($M_LROOT/bin $path)

# End HP Performance Center setting #
```

HP Performance Center Settings in the .profile File

The following is an example of Performance Center settings within a user's **.profile** file for kshell and Bourne shell environments:

```
# HP Performance Center settings #
#Chooses a path based on the location of the machine dependent HP Performance
Center installation

case "`uname`" in
SunOS)
  M_LROOT={replace w/ PC Solaris installation path} ; export M_LROOT
  LD_LIBRARY_PATH=${M_LROOT}/bin ; export LD_LIBRARY_PATH
  ;;

HP-UX)
  M_LROOT={replace w/ PC HP-UX installation path} ; export M_LROOT
  SHLIB_PATH=${M_LROOT}/bin ; export SHLIB_PATH
  ;;

AIX)
  M_LROOT={replace w/ PC AIX installation path} ; export M_LROOT
  LIBPATH=${M_LROOT}/bin ; export LIBPATH
  ;;

Linux)
  M_LROOT={replace w/ PC Linux installation path} ; export M_LROOT
  LD_LIBRARY_PATH=${M_LROOT}/bin; export LD_LIBRARY_PATH
esac

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

# End HP Performance Center settings #
```


Verifying Your UNIX Installation

Performance Center has a setup verification utility, **verify_generator**, that checks the Performance Center setup. It checks environment variables and your **.cshrc** file to verify that they are set up correctly. The **verify_generator** utility checks the remote Vuser hosts.

It is strongly recommended that you run **verify_generator** after a Vuser installation, before attempting to invoke Performance Center.

The **verify_generator** Test

The utility checks the following items in the Vuser environment:

- 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** defines the correct **M_LROOT**
- **.cshrc** exists in the home directory
- The current user is the owner of the **.cshrc**
- 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

The syntax of **verify_generator** is as follows:

```
verify_generator [-v]
```

Options:

-v

Provides detailed information about the checks.

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.

Running the Uninstall Program

The Performance Center uninstall program, like the installation program, uses a Java Runtime Environment (JRE). You can also run the uninstall program in UI mode or in console mode.

When running the uninstall program in console mode, add the console parameter to the end of the command line.

To run the uninstall program:

- 1 To access the program, type:

```
cd <installation directory>/_uninst
```

```
cd <installation directory>/_uninst
```

- 2 Type:

```
uninstall -console
```

Part IV

Using Firewalls in Performance Center

9

Working with Firewalls

You can run Vusers and monitor your servers when the load generators are outside the firewall.

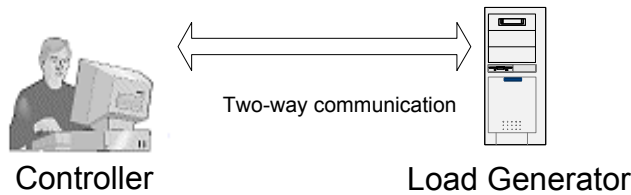
| This chapter describes: | On page: |
|--|-----------------|
| About Using Firewalls in HP Performance Center | 134 |
| Overview of Running Vusers or Monitoring Over a Firewall | 135 |
| Configuring Your Over-Firewall System | 136 |
| Configuring the MI Listener | 138 |
| Configuring HP Performance Center Agents Over the Firewall | 141 |
| Configuring the Firewall to Allow Agent Access | 151 |

About Using Firewalls in HP Performance Center

Working with a firewall means that you can prevent access to or from the outside world on specific port numbers.

For example, you can specify that no access is allowed to any port from the outside world, with the exception of the mail port (23), or you can specify that no outside connection is allowed to any ports except the mail port and Web port (80). The port settings are configured by the system administrator.

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



When running Vusers or monitoring servers over the firewall, this direct communication is blocked by the firewall. The connection cannot be initiated by the Controller, because it does not have permissions to make an opening in the firewall.

Performance Center provides the components needed to run Vusers and monitor over the firewall.

Overview of Running Vusers or Monitoring Over a Firewall

To prepare Performance Center to perform load testing over a firewall, follow these steps:

- ▶ **Install the Performance Center components.** Before installing Performance Center, make sure you understand the Performance Center system as explained in the Chapter 1, “Before You Install.” Install the needed components as described in Chapter 2, “Installing Performance Center on Windows.”
- ▶ **Configure the Over-Firewall system.** You must configure your components to communicate properly over the firewall so that instructions and information can be exchanged between components. For details, see “Configuring Your Over-Firewall System” on page 136.
- ▶ **Configure the MI Listener.** Configuring the MI Listener establishes part of the necessary link for over-the-firewall communication. For details, see “Configuring the MI Listener” on page 138.
- ▶ **Configure Performance Center Agents Over the Firewall.** You must configure the Performance Center agents over the firewall so that they can be identified when supplying information and receiving instructions. For details, see “Configuring HP Performance Center Agents Over the Firewall” on page 141.
- ▶ **Configure the Firewall to Allow Agent Access.** A port in the firewall must be opened so information can pass from one side of the firewall to the other. For details, see “Configuring the Firewall to Allow Agent Access” on page 151.

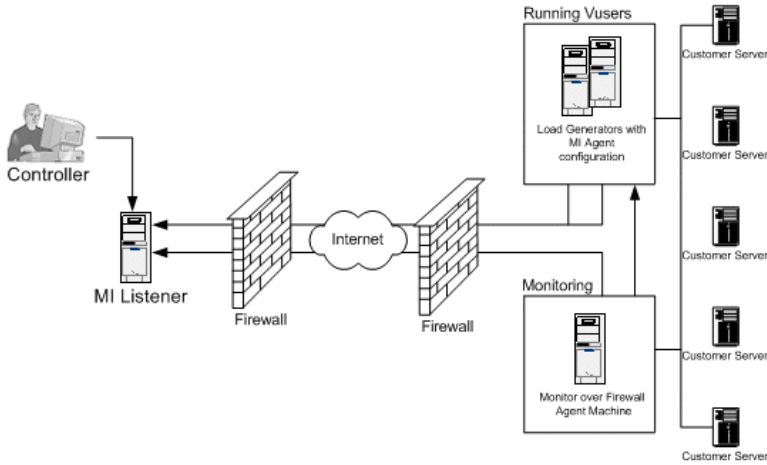
For instructions on monitoring over a firewall, refer to the *HP Performance Center User's Guide*.

For instructions on running Vusers over the firewall, refer to the *HP Performance Center Administrator's Guide*.

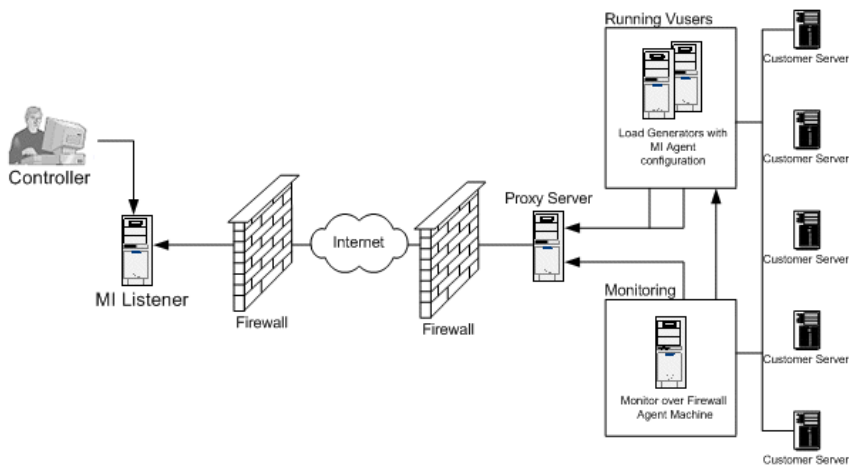
Configuring Your Over-Firewall System

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



HTTPS Configuration



During installation, the Performance Center agent is added as a Windows service. The MI Listener component serves as a router between the Controller and the Performance Center agent.

In the above configuration, the MI Listener is on a different machine than the Controller. Every Performance Center agent can behave as an MI Listener, so you can also use the Controller machine as the MI Listener without the need for a separate installation.

Note: When acting as the MI Listener, the Controller machine cannot have Vusers running on it. The Controller must be a pure Controller and not a Controller + Load Generator.

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.

After installation, you configure the Performance Center agent to operate over the firewall. You also modify firewall settings to enable communication between the agent machine(s) inside the firewall and machines outside the firewall. In addition, you prepare the Controller to work over the firewall.

Refer to the *HP Performance Center User's Guide* for additional information about configuring Performance Center to monitor servers from outside the firewall.

Configuring the MI Listener

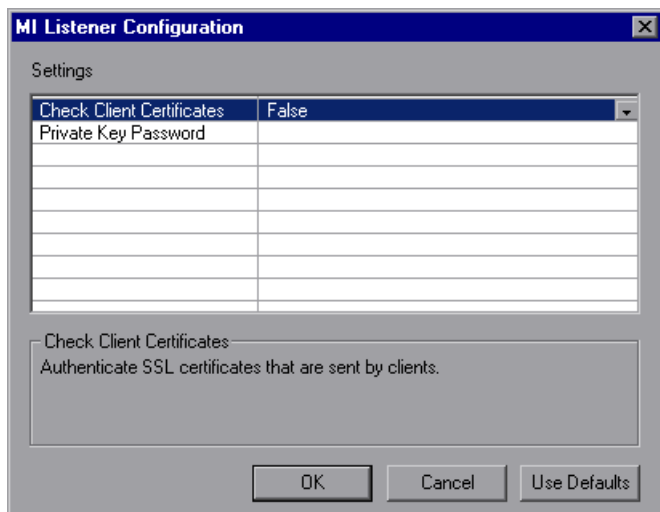
To enable running Vusers or monitoring over a firewall, you need to install the MI Listener on one or more machines in your in the same LAN as the Controller outside the firewall. For instructions, see, Chapter 2, “Installing Performance Center on Windows.”

Note: When installing the MI Listener:

- The MI Listener must be installed on either a dedicated machine or a Controller machine that does not run Vusers.
 - 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** Stop the Performance Center agent by right-clicking its icon in the system tray and selecting **Close**.
- 2** Select **Start > Programs > Performance Center > Advanced Settings > MI Listener Configuration**, or open `<Performance Center root>\launch_service\bin\MILsnConfig.exe`.



- 3** Set each option as described in “MI Listener Configuration Settings” on page 140.
- 4** Click **OK** to save your changes, **Cancel** to cancel them, or **Use Defaults**.
- 5** Restart the Performance Center agent from **Start > Programs > Performance Center**.
- 6** Make sure that port 443 is free on the MI Listener machine.

MI Listener Configuration Settings

The following settings are required to allow the MI Listener to communicate over the firewall:

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

Now that the MI Listener is installed and configured, you enter the IP address in the Administrator's site. This allows the other components to find and communicate with the MI Listener.

To specify the IP address of the MI Listener machine:

- 1** Open the Performance Center Admin site.
- 2** On the Performance Center left menu, select **Resources > MI Listeners**.
- 3** In the **Firewall Monitoring Communicator** box, type the IP address or name of the MI Listener machine.
- 4** Click **Save**.

Configuring HP Performance Center Agents Over the Firewall

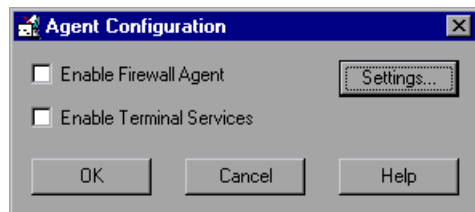
As shown in the diagrams in “Configuring Your Over-Firewall System” on page 136, the Performance Center servers over the firewall can be either load generators running Vusers or the server that hosts the monitor over firewall process. These Performance Center agents must be configured to operate over the firewall.

Configuring and Running the Windows Performance Center Agent

To configure the Performance Center agent on Windows machines:

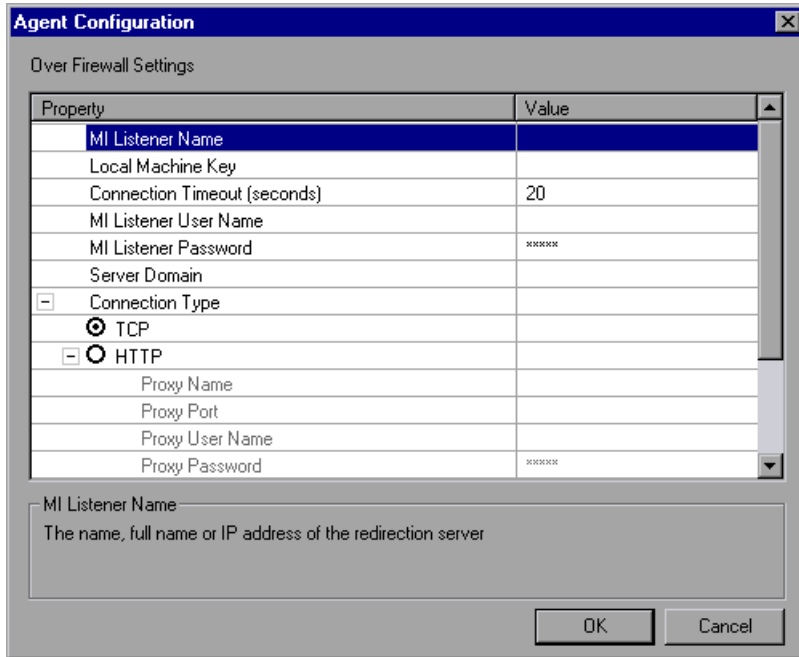
- 1 Select **Start > Programs > Performance Center > Advanced Settings > Agent Configuration**, or run
`<Performance Center root>\launch_service\bin\AgentConfig.exe.`

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 148. Pay careful attention to the first three settings.
- 5 Click **OK** to save your changes, or **Cancel** to cancel them.
- 6 When prompted, click **OK** to restart the Performance Center agent.

Configuring and Running the UNIX Performance Center Agent

To configure the Performance Center agent on UNIX machines:

- 1 Open <Performance Center root folder>/dat/br_Inch_server.cfg in a text editor.
- 2 In the Firewall section, set FireWallServiceActive to 1 and save your changes.
- 3 Run **agent_config** from the <Performance Center root folder>/bin directory to display the following menu:

```
Menu:
1. Show current settings.
2. Change a setting.
3. Save changes and exit.
4. Exit without saving.
5. Use default values.
```

- 4 Enter 1 to display the current settings:

```
Settings:
-----
1. MI Listener Name =
2. Local Machine Key =
3. Connection Timeout (seconds) = 20
4. Connection Type = TCP
5. Use Secure Connection (SSL) = False
6. Check Server Certificates = False
7. Client Certificate Owner = False
8. Private Key User Name =
9. Private Key Password =
10. Proxy Name =
11. Proxy Port =
12. Proxy User Name =
13. Proxy Password =
14. Proxy Domain =

Menu:
1. Show current settings.
2. Change a setting.
3. Save changes and exit.
4. Exit without saving.
5. Use default values.
```

- 5 To change a setting, enter **2** to display the settings menu:

```
Settings:
-----
1. MI Listener Name =
2. Local Machine Key =
3. Connection Timeout (seconds) = 20
4. Connection Type = TCP
5. Use Secure Connection (SSL) = False
6. Check Server Certificates = False
7. Client Certificate Owner = False
8. Private Key User Name =
9. Private Key Password =
10. Proxy Name =
11. Proxy Port =
12. Proxy User Name =
13. Proxy Password =
14. Proxy Domain =

Enter number of setting to change or 0 to go back to menu.
```

Enter the setting and continue according to the menu instructions. Set each option according to the “Agent Configuration Settings” on page 148.

Examples of Changing Agent Settings in UNIX

To change the MI Listener Name:

- 1 Enter **1** in the Settings menu to display the following screen:

```
MI Listener Name - The name, full name or IP address of the redirection server
Old value = ranch
Enter new MI Listener Name.
```

Line 1 is a description of the setting. Line 2 shows the current value of the setting.

- 2 Enter the new value (in this example: bunji) to display the following screen:

```

MI Listener Name - The name, full name or IP address of the redirection server
Old value =
Enter new MI Listener Name.
bunji
Change MI Listener Name from "" to "bunji"? 1.OK 2.CANCEL 3.FIX

```

- 3 To keep the new value and return to the menu, enter 1.
To discard the new value and return to the menu, enter 2.
To discard the new value and change the setting once more, enter 3.

To change the Connection Type:

- 1 Enter 4 in the Settings menu to display the following screen:

```

.xterm
Connection Type - The connection type: TCP or HTTP.
Old value = TCP
Enter number for new Connection Type: 1.TCP 2.HTTP 3.CANCEL

```

Line 1 is a description of the setting. Line 2 shows the current value of the setting.

- 2 Enter 1 to set the connection type to TCP, or enter 2 to set it to HTTP and display the following screen:

```

.xterm
Connection Type - The connection type: TCP or HTTP.
Old value = TCP
Enter number for new Connection Type: 1.TCP 2.HTTP 3.CANCEL
2
Change Connection Type from "TCP" to "HTTP"? 1.OK 2.CANCEL

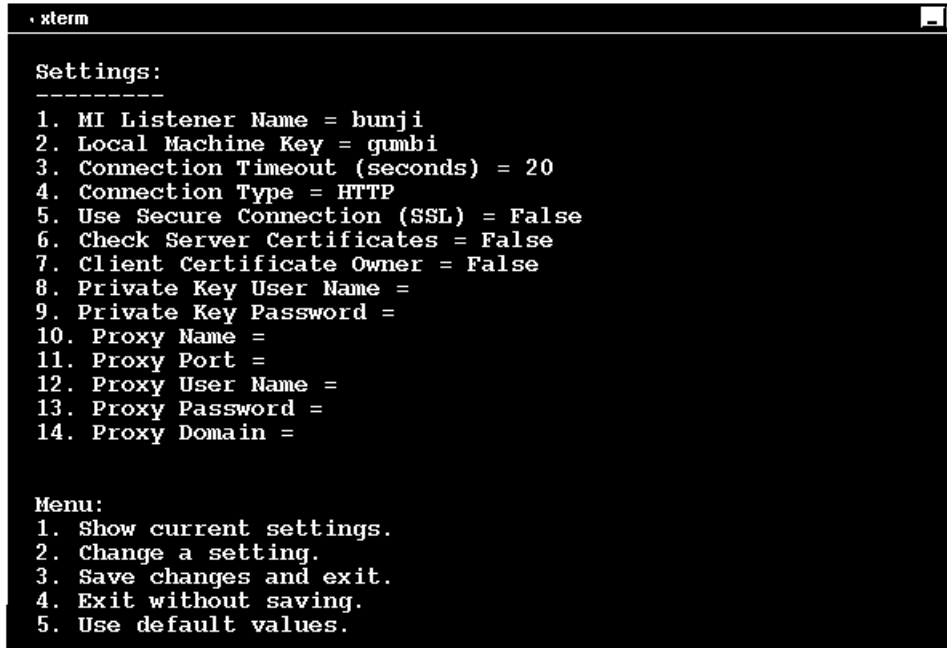
```

- 3 To keep the new value and return to the menu, enter 1.
To discard the new value and return to the menu, enter 2.

Viewing the Settings and Restarting the Agent

To view the current settings:

- 1 Enter **1** to return to the main menu.
- 2 In the main menu, enter **1** to display the settings. The following example includes the new settings for the MI Listener Name and the Connection Type:



```
· xterm
Settings:
-----
1. MI Listener Name = bunji
2. Local Machine Key = gumbi
3. Connection Timeout (seconds) = 20
4. Connection Type = HTTP
5. Use Secure Connection (SSL) = False
6. Check Server Certificates = False
7. Client Certificate Owner = False
8. Private Key User Name =
9. Private Key Password =
10. Proxy Name =
11. Proxy Port =
12. Proxy User Name =
13. Proxy Password =
14. Proxy Domain =

Menu:
1. Show current settings.
2. Change a setting.
3. Save changes and exit.
4. Exit without saving.
5. Use default values.
```

- 3 To save your changes, enter **3** from the main menu.

To cancel your changes, enter **4**.

To use the default values supplied by Performance Center (as described in “Agent Configuration Settings” on page 148), enter **5**.

To start or remove the Performance Center agent:

- 1** To start the Performance Center agent, run the command `m_daemon_setup -install` from the **<Performance Center root folder>/bin** directory.
- 2** To remove the Performance Center agent, run the command `m_daemon_setup -remove` from the **<Performance Center root folder>/bin** directory.

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.

Agent Configuration Settings

The following table provides an explanation of the agent configuration settings. To assign values to these settings, click **Settings** in the Agent Configuration dialog box.

| Option | Default Value | Description |
|-------------------------------------|---------------|--|
| MI Listener name | none | The name, full name, or IP address of the MI Listener. |
| Local Machine Key | none | <p>A string identifier used to establish a unique connection between the Controller host and the agent machine, via the MI Listener machine.</p> <p>When configuring to monitor over a firewall, you can enter any logical name, using lowercase letters only.</p> <p>When configuring to run Vusers over a firewall, you must use the format <code>hostname_locationname</code> where:</p> <ul style="list-style-type: none"> ▶ <code>hostname</code> is the name of the host as found in the Hosts page of the Administration site ▶ <code>locationname</code> is the name of the host location as found in the Host Location page of the Administration site. |
| Connection Timeout (seconds) | 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. |
| MI Listener User Name | none | The user name needed to connect to the MI Listener machine. |

| Option | Default Value | Description |
|---|---------------|--|
| MI Listener Password | none | The password needed to connect to the MI Listener machine. |
| Server Domain | none | The domain name needed to connect to the MI Listener machine. This field is required only if NTLM is used. |
| Connection Type - TCP/HTTP | TCP | Choose either TCP or HTTP , depending on the configuration you are using. |
| Connection Type - HTTP Proxy Name | none | The name of the proxy server. This field is mandatory if the Connection Type option is set to HTTP . |
| Connection Type - HTTP Proxy Port | none | The proxy server connection port. This field is mandatory if the Connection Type option is set to HTTP . |
| Connection Type - HTTP Proxy User Name | none | The user name of a user with connection rights to the proxy server. |
| Connection Type - HTTP Proxy Password | none | The password of the user with connection rights to the proxy server. |
| Connection Type - HTTP Proxy Domain | none | The user's domain if defined in the proxy server configuration. This option is required only if NTLM is used. |
| Use Secure Connection (SSL) | disabled | Enable to connect using the Secure Sockets Layer protocol. |

| Option | Default Value | Description |
|--|---------------|--|
| Use Secure Connection (SSL) - Check Server Certificates | none | Authenticates the SSL certificates that are sent by the server. Choose Medium to verify that the server certificate is signed by a trusted Certification Authority. Choose High to verify that the sender IP matches the certificate information. This setting is only available if Use Secure Connection is set to True . |
| Use Secure Connection (SSL) - Private Key Password | none | The password that may be required during the SSL certificate authentication process. This option is relevant only if the Client Certificate Owner option is enabled. |
| Use Secure Connection (SSL) - Use Client Certificate | 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 Use Secure Connection option is enabled. |

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. As a result, the agent connects to the MI Listener, and the MI Listener connects 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. As a result, the proxy server connects to the MI Listener, and the MI Listener connects back to the agent through the proxy server. From this point on, the agent listens to commands from the MI Listener.

Part V

Upgrade

10

Upgrading to Performance Center 9.0

This chapter explains how to upgrade your system to HP Performance Center 9.0. Before performing the upgrade, make sure you understand all the procedures involved in the upgrade process.

| This chapter describes: | On page: |
|---|----------|
| Before You Upgrade | 156 |
| Backing Up Data | 157 |
| Upgrading the Database | 161 |
| Uninstalling Previous Versions and Installing Version 9.0 | 163 |
| Performing File Migration | 166 |
| Performing Database Migration | 166 |
| Reconfiguring Performance Center | 169 |
| Troubleshooting the Upgrade | 170 |

Note: To enable upgrading to Performance Center 9.0 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.

Before You Upgrade

This section provides a general outline of the steps that you need to carry out to upgrade to HP Performance Center 9.0. Review these steps before you begin the upgrade process.

To upgrade your current version of Performance Center to version 9.0:

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" on page 157.
- ▶ Back up the user data folders on the Performance Center File Server. For more information, see "File Server" on page 158.
- ▶ Back up your database to protect your data in case of migration error or hardware failure. For more information, see "MI_LRDB Database" on page 159.
- ▶ Save your license key details. For more information, see "License Keys" on page 160.

2 Upgrade the database to a supported version.

If you are using an older unsupported version of the database, you need to upgrade your database to a supported version, before performing database migration. For more information, see "Upgrading the Database" on page 161.

3 Uninstall the current version of Performance Center.

For more information, see "Uninstalling Previous Versions and Installing Version 9.0" on page 163.

4 Install all of the Performance Center 9.0 components, including servers and hosts.

For information about pre-installation requirements, see Chapter 1, "Before You Install."

5 If you backed up the host data, restore the orchidtmp and temp folders.

For more information, see "Performing File Migration" on page 166.

6 Perform database migration.

Use the Performance Center DB Migration tool to make your databases compatible with HP Performance Center 9.0. For more information, see “Performing Database Migration” on page 166.

7 Reconfigure the system in the Performance Center Administration site.

For more information, see “Reconfiguring Performance Center” on page 169.

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

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. To locate a machine’s **Temp** directory, open Windows Explorer, type %temp% in the **Address** bar, and then 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:

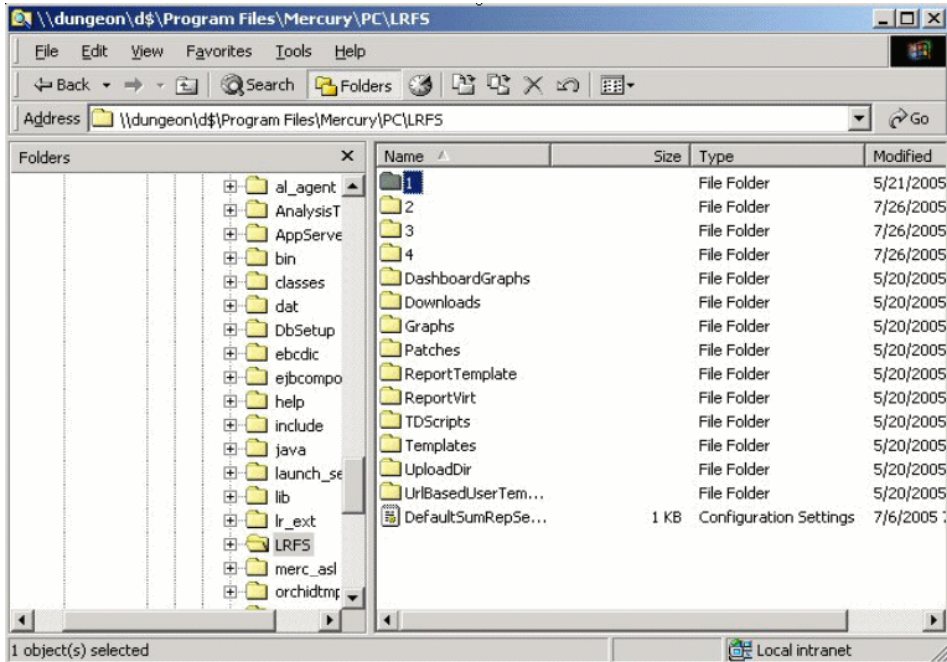
- Collate and analyze results from the load test runs on the User Site
- Delete all unnecessary runs

Note: For a list of supported operating systems, see “System Component Requirements” on page 27.

File Server

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.



MI_LRDB Database

Before performing database migration, you should create a database backup to protect your data in case of migration error or hardware failure. You can recover the data by restoring the backup database. For more details, see “Restoring Database Backup” on page 170.

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

Before performing database backup:

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

You can check the state of 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.

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 Keys

To use the same license keys in the migrated system, save both the Performance Center license key and the host license keys. You will need this information when you reconfigure the Performance Center system settings in “Reconfiguring Performance Center” on page 169.

Upgrading the Database

Performance Center 9.0 supports Oracle 9.i or 10g on Windows or UNIX, and SQL Server 2000 SP4 on Windows only. If you are using an older unsupported version of the database, you need to upgrade your database to a supported version, before performing database migration.

Upgrading an Oracle Database

The following steps outline how 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 8i client and later. 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.

Note: Make sure that IWAM_<machine> has full access to Oracle directories.

Uninstalling Previous Versions and Installing Version 9.0

After backing up the relevant data, you need to uninstall earlier versions of Performance Center and manually remove certain components. Only then, can you install the current version.

To uninstall previous versions of Performance Center in preparation for upgrade:

- 1** Uninstall previous versions of Performance Center from all machines.
- 2** Reboot all Performance Center machines.
- 3** Run the **PC_Upgrade.exe** file.
 - 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, go to the local directory where you copied the PC_Upgrade.exe file and run the following command from the command line:

```
PC_Upgrade.exe
```

- c** On all server machines, go to the local directory where you copied the PC_Upgrade.exe file and run the following command from the command line:

```
PC_Upgrade.exe TestCenter
```

- 4 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.
- 5 Delete the Performance Center directory on all machines.
- 6 Ensure that the virtual directories on the User and Administration sites have been removed. If they have not been removed automatically, delete them manually.
 - ▶ On the User site machine, in IIS, delete the **Loadtest** virtual directory, located under **Default Web Site**.
 - ▶ On the Administration site machine, in IIS, delete the **Admin** virtual directory, located under **Default Web Site**.
- 7 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**

Note: To maintain the capability to collate results that were not collated, do not delete the previous **orchidtmp** folder.

- 8 Delete cookies and temporary internet files from your browser to avoid UI problems (**Tools > Internet Options > General tab**).
- 9 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.

10 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.

- ▶ **On the User Site server only:** Delete the following Environment variables:
 - ▶ CATALINA_HOME
 - ▶ CLASSPATH
 - ▶ JAVA_HOME
 - ▶ JINTEGRA_HOME

11 Reboot all Performance Center machines.

12 Install all of the Performance Center 9.0 components, including servers and hosts. For information about pre-installation requirements, see Chapter 1, “Before You Install.”

Performing File Migration

If you backed up the host data (see “Host Data” on page 157), you need to restore the **orchidtmp** and **temp** folders. To restore these folders, copy **orchidtmp** to the new installation directory (for example, C:\Program Files\HP\Performance Center\orchidtmp), and copy the Vuser **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” on page 158), copy the project data folders to the File Server directory.

Performing Database Migration

Use the Performance Center DB Migration tool to make your databases compatible with HP Performance Center 9.0.

Performance Center supports data upgrades from Performance Center 7.8 SP4 and later.

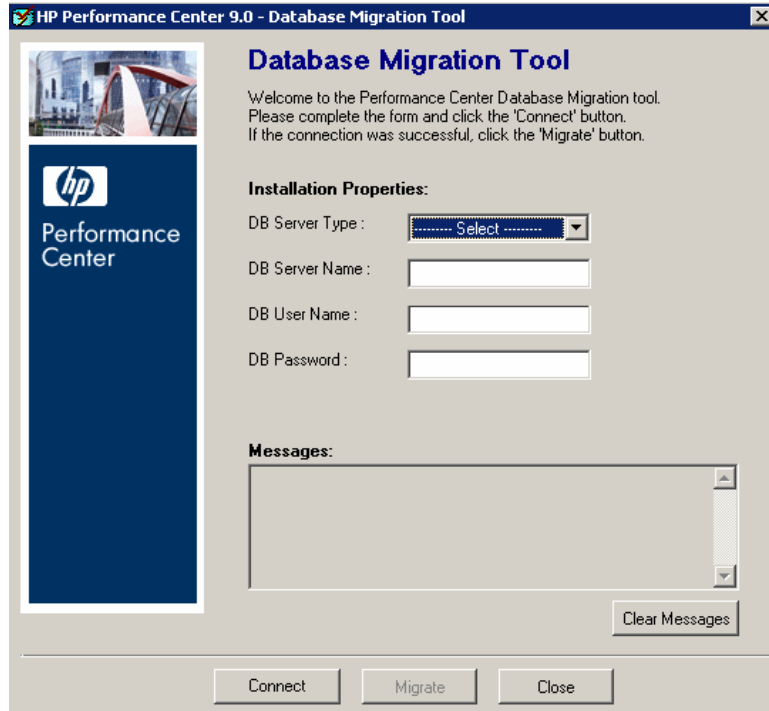
Note: Before performing database migration on a Microsoft SQL server, make sure that:

- ▶ all tables in the database have DBO set as owner.
- ▶ in the SQL Server Enterprise Manager, the user **OrchidUser** exists in the **User** section of the **MI_LRDB** database. The user should have the login name **OrchidUser** with **db_owner** permissions.

To perform database migration:

- 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. For backup purposes, SQL client or Oracle client must be installed on this machine.

- 2 Run **DBMigration90.exe** from the local directory. The Performance Center 9.0 Database Migration tool opens.



- 3 In the **DB Server Type** box, select the database type.
- 4 In the **DB Server Name** box, type the name of the database server.
- 5 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.
- 6 Click **Connect** to verify that you can connect to the database.
 - If connection to the database is successful, you receive a message confirming the database connection details.

- If connection to the database fails, you receive a message 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.
- 7** 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.

As part of the migration process, the Database Migration tool creates a backup of the database.

- For MS SQL, the database backup is created in the SQL Server Enterprise Manager under the **Databases** list.
- For Oracle, a backup file (.dmp) is created in the DB Migration folder on the Administration Site server. (This is the folder you copied from the installation disk.)

Note: If you experience problems with the DB 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%).

The following DB Migration log files are located in the **DB Migration** folder on the Administration Site server (This is the folder you copied from the installation disk):

- PC_V9_0.log
- db_migration.log
- sqlnet.log

Note: If you experience problems migrating Oracle databases, you should uninstall the Oracle client, delete all ORACLE registry entries from HKEY_LOCAL_MACHINE\SOFTWARE\ORACLE, and reinstall the client.

Reconfiguring Performance Center

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), and configure the license keys.

To supply system configuration information:

- 1** Log on to the Administration site as described in “Initial System Configuration” on page 72.
- 2** On the Performance Center left menu, select **System Configuration > Server Configuration**. The Server Configuration page opens.
- 3** Click **Reset**.

As part of the Reset action, the database and File Server connection strings are updated on all Performance Center machines except for the following:

- ▶ Hosts over firewalls
- ▶ Hosts which are defined as load generators only
- ▶ UNIX Hosts

The above components do not need to be connected to the database or File Server.

Note: If you want to change any details, you can edit any information that is not read-only and click **Save** to update the server information.

Troubleshooting the Upgrade

If you encounter an error during the migration process, you can check the error in the migration log file: **C:\Documents and Settings\.**

This section includes:

- Restoring Database Backup
- Login Failure
- Database Creation Failure

Restoring Database Backup

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

To restore the backup database files:

- For MS SQL:
 - a** Open **Microsoft SQL Server > Enterprise Manager** and select **Databases**.
 - b** Right-click **MI_LRDB** (if it exists), and select **Delete**.
 - c** Create a new database and name it **MI_LRDB**.
 - d** Right-click the new database and select **All Tasks > Import Data**.
 - e** Follow the wizard, and specify the backed up database (**MI_LRDB_<version>**) as the source database.
- For Oracle:
 - a** Drop user **MI_LRDB**.
 - b** Create a new empty user and name it **MI_LRDB**.
 - c** Import the **TC_Backup.dmp** into the new user.

Repeat steps 2-5 of “Performing Database Migration” on page 166.

Login Failure

If logging on to the Database Server fails, Performance Center displays the following message:

```
Operation terminated. Error description: Login to the Database Server failed. Check if user name and password are correct.
```

You should check the following:

1 Verify login details.

Verify that the database host name, type, user name, and password are correct. Consult your database administrator for assistance.

2 Check the database connection.

Check if you can connect to the database using the command line SQL client.

► For MS SQL Databases:

```
% osql -U <username> -P <password> -S <serverID>
```

For example:

```
% osql -U sa -P manager -S DBSERVER\LRTCDB
```

If your MS SQL server is configured with integrated security, make sure that the MS SQL database 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 and Web services run.

► For Oracle Databases:

```
% sqlplus <username>/<password>@<connect_string>
```

For example:

```
% sqlplus system/manager@LRTCORA
```

If the above command fails, check your TNS entry in the **%ORACLE_HOME%\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 Check the ADODB connectivity to the database.

To test the ADODB connectivity to the database, download the **TclN_AdoDBTester.exe** utility from the Customer Support Web site (<http://support.mercury.com>). After you log on to the Support site, click **Knowledge Base**, select **LoadRunner TestCenter**, and search for **ID39475**.

- ▶ In the Connection String, update the user name, password, and server fields.
 - ▶ For an MS-SQL Server, use `Provider=SQLOLEDB.1;...` connection string.
 - ▶ For an Oracle database, use `Provider=MSAORA.1;...` connection string.
- ▶ Set a valid SQL Statement (based on current DB tables).
- ▶ Execute and check the response. If an error occurs, an error message is displayed. Try to resolve the problem accordingly.

4 For Oracle databases, check that your Oracle client is properly installed.

- ▶ Check if the ORACLE_HOME registry entry is correct under `[HKEY_LOCAL_MACHINE\Software\Oracle]`. It should be pointing to your Oracle client installation.
- ▶ Remove **SQLPLUS.EXE** from the `<Performance Center Home Dir>/DB` directory.

5 Verify Database schema creation.

You should check **db_results.txt** file located under **%temp%** directory of the Administration Site server. This file is only available after system configuration.

You can also check if the **MI_LRDB** database exists by logging into the database itself.

Note: If you are able to log on to the User site after system configuration, the database schema was most likely built properly.

Database Creation Failure

If database creation fails, you can try to create the database by running the SQL files. These files are located on the Administration Site server in the **DbSetup** directory.

- For MS-SQL, run **TestCenter.sql** to create the database, and **InitDefinitions.sql** to initialize the tables.
- For Oracle, run **TC_oracle.sql** to create the database, and **InitDataOracle.sql** to initialize the tables.

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