

# HP LoadRunner

for the Windows and UNIX operating systems

Software Version: 11.00

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## Installation Guide

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# Welcome to This Guide

Welcome to the *HP LoadRunner Installation Guide*. HP LoadRunner, a tool for performance testing, stresses your entire application to isolate and identify potential client, network, and server bottlenecks.

This guide describes how to install and set up HP LoadRunner.

**This chapter includes:**

- ▶ How This Guide Is Organized on page 8
- ▶ Who Should Read This Guide on page 8
- ▶ Documentation Library Guides on page 8
- ▶ Additional Online Resources on page 10
- ▶ Terminology on page 11

## How This Guide Is Organized

This guide contains the following chapters:

### Chapter 1 Before You Install

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

### Chapter 2 Installing LoadRunner on Windows

Describes how to install either the full version of LoadRunner on a Windows machine.

### Chapter 3 Installing LoadRunner on UNIX

Describes how to install and configure the load generator on a UNIX platform.

### Chapter 4 Viewing and Modifying a License

Describes how to enter, modify, or view LoadRunner license information.

## Who Should Read This Guide

This guide is intended for users who need to install and set up LoadRunner.

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

## Documentation Library Guides

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

**Using this Documentation Library** explains how to use the Documentation Library and how it is organized.



## Accessing the Documentation

You can access the documentation as follows:

- ▶ From the **Start** menu, click **Start > LoadRunner > Documentation** and select the relevant document.
- ▶ From the **Help** menu, click **Documentation Library** to open the merged help.

## Getting Started Documentation

- ▶ **Readme.** Provides last-minute news and information about LoadRunner. You access the Readme from the **Start** menu.
- ▶ **HP LoadRunner Quick Start** provides a short, step-by-step overview and introduction to using LoadRunner. To access the Quick Start from the Start menu, click **Start > LoadRunner > Quick Start**.
- ▶ **HP LoadRunner Tutorial.** Self-paced printable guide, designed to lead you through the process of load testing and familiarize you with the LoadRunner testing environment. To access the tutorial from the Start menu, click **Start > LoadRunner > Tutorial**.

## LoadRunner Guides

- ▶ **HP Virtual User Generator User Guide.** Describes how to create scripts using VuGen. The printed version consists of two volumes, Volume I - *Using VuGen* and Volume II - *Protocols*, while the online version is a single volume. When necessary, supplement this user guide with the online *HP LoadRunner Online Function Reference*.
- ▶ **HP LoadRunner Controller User Guide.** Describes how to create and run LoadRunner scenarios using the LoadRunner Controller in a Windows environment. Also describes how to set up the server monitor environment and configure LoadRunner monitors for monitoring data generated during a scenario.
- ▶ **HP LoadRunner Analysis User Guide.** Describes how to use the LoadRunner Analysis graphs and reports after running a scenario to analyze system performance.

- ▶ **HP LoadRunner Installation Guide.** Explains how to install LoadRunner and additional LoadRunner components, including LoadRunner samples.

## LoadRunner References

- ▶ **LoadRunner Function Reference.** Gives you online access to all of LoadRunner's functions that you can use when creating Vuser scripts, including examples of how to use the functions.
- ▶ **Analysis API Reference.** This Analysis API set can be used for unattended creating of an Analysis session or for custom extraction of data from the results of a test run under the Controller. You can access this reference from the Analysis Help menu.
- ▶ **Error Codes and Troubleshooting.** Provides clear explanations and troubleshooting tips for Controller connectivity and Web protocol errors. It also provides general troubleshooting tips for Winsock, SAPGUI, and Citrix protocols.

## Additional Online Resources

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

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

To find more information about access levels, go to:

[http://h20230.www2.hp.com/new\\_access\\_levels.jsp](http://h20230.www2.hp.com/new_access_levels.jsp)

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## Terminology

<b>Vuser</b>	A virtual user—a LoadRunner-created user that emulates a human user.
<b>Load Generator machine</b>	The workstation used to host the LoadRunner Vusers.
<b>Controller machine</b>	The machine used to host the LoadRunner Controller.
<b>Vuser Group</b>	A collection of Vusers with common characteristics, such as the machine on which they run, or the client that they use.

Welcome to This Guide

# 1

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## Before You Install

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

**This chapter includes:**

- Introducing the LoadRunner Windows Installation on page 13
- Introducing the UNIX Installation on page 14
- Windows System Requirements on page 14
- Prerequisite Software on page 17
- Pre-installation Configuration on page 18

### Introducing the LoadRunner Windows Installation

Your LoadRunner installation disk includes a setup program that guides you through the process of installing LoadRunner's components. The setup program installs LoadRunner on the hard disk of a single-user computer.

The LoadRunner installation installs a full LoadRunner configuration, including virtual user and server side components.

For information about installing LoadRunner on a Windows machine, see Chapter 2, "Installing LoadRunner on Windows."

## Introducing the UNIX Installation

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

For more information, see “Installing the HP Load Generator on UNIX” on page 41.

## Windows System Requirements

This section describes the system requirements necessary for installing the LoadRunner components on a Windows machine.

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**Note:** For HP Diagnostics system requirements, refer to the *HP Diagnostics Installation and Configuration Guide*. For HP SiteScope system requirements, refer to the *HP SiteScope Deployment Guide*.

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## Controller, VuGen, and Analysis System Requirements

The following table describes the system requirements for installing the Controller, VuGen, or Analysis.

<b>Processor</b>	<p><b>CPU Type:</b> Intel Core, Pentium, Xeon, AMD or compatible</p> <p><b>Speed:</b> 1 GHz minimum. 2 GHz or higher recommended</p> <p><b>Note for Pentium Processors:</b> Intel Hyper-Threading technology is not supported. Hyper-Threading can be disabled in the BIOS. For more information, see: <a href="http://www.intel.com/support/processors/pentium4/sb/CS-017371.htm">http://www.intel.com/support/processors/pentium4/sb/CS-017371.htm</a></p>
<b>Operating System</b>	<ul style="list-style-type: none"> <li>➤ Windows Vista SP2 32-bit</li> <li>➤ Windows XP Professional SP3 32-bit</li> <li>➤ Windows Server 2003 Standard Edition/Enterprise Edition SP2 32-bit</li> <li>➤ Windows Server 2008 Standard Edition/Enterprise Edition SP2 32-bit and 64-bit</li> <li>➤ Windows 7</li> </ul> <p><b>Note:</b> VuGen recording is not supported on 64-bit operating systems.</p>
<b>Memory (RAM)</b>	<p><b>Minimum:</b> 2 GB</p> <p><b>Recommended:</b> 4 GB or higher</p>
<b>Screen Resolution</b>	<p><b>Minimum:</b> 1024 x 768</p>
<b>Browser</b>	<ul style="list-style-type: none"> <li>➤ Microsoft Internet Explorer 6.0 SP1 or SP2</li> <li>➤ Microsoft Internet Explorer 7.0</li> <li>➤ Microsoft Internet Explorer 8.0</li> </ul>
<b>Available Hard Disk Space</b>	<p><b>Minimum:</b> 2 GB</p>

## Load Generator for Windows System Requirements

The following table describes the system requirements for installing the Load Generator on a Windows machine.

<p><b>Processor</b></p>	<p><b>CPU Type:</b> Intel Core, Pentium, Xeon, AMD or compatible</p> <p><b>Speed:</b> 1 GHz minimum. 2 GHz or higher recommended</p> <p><b>Note for Pentium Processors:</b> Intel Hyper-Threading technology is not supported. Hyper-Threading can be disabled in the BIOS. For more information, see: <a href="http://www.intel.com/support/processors/pentium4/sb/CS-017371.htm">http://www.intel.com/support/processors/pentium4/sb/CS-017371.htm</a></p>
<p><b>Operating System</b></p>	<p>The following Windows operating systems are supported:</p> <ul style="list-style-type: none"> <li>▶ Windows Vista SP2 32-Bit</li> <li>▶ Windows XP Professional SP3 32-Bit</li> <li>▶ Windows Server 2003 Standard Edition/Enterprise Edition SP2 32-Bit</li> <li>▶ Windows Server 2008 Standard Edition/Enterprise Edition SP2 32-Bit and 64-bit</li> <li>▶ Windows 7</li> </ul>
<p><b>Memory (RAM)</b></p>	<p><b>Minimum:</b> 1 GB</p> <p><b>Note:</b> Memory depends on protocol type and system under test and can vary greatly.</p>
<p><b>Browser</b></p>	<ul style="list-style-type: none"> <li>▶ Microsoft Internet Explorer 6.0 SP1 or SP2</li> <li>▶ Microsoft Internet Explorer 7.0</li> <li>▶ Microsoft Internet Explorer 8.0</li> </ul>
<p><b>Available Hard Disk Space</b></p>	<p><b>Minimum:</b> 2 GB</p>



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**Note:** For information about system requirements for installing the Load Generator on a UNIX machine, see “UNIX System Requirements” on page 43.

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## Prerequisite Software

Specific software needs to be installed before you can install LoadRunner. When you run the LoadRunner installation wizard, if the prerequisite software is not already installed on your computer, the wizard detects which software is missing and provides the option to install it.

The following prerequisite software needs to be installed:

- ▶ .NET Framework 3.5 SP1
- ▶ Microsoft Data Access Components (MDAC) 2.8 SP1 (or later)
- ▶ Microsoft Windows Installer 3.1
- ▶ Microsoft Core XML Services (MSXML) 6.0
- ▶ Microsoft Visual C++ 2005 SP1 Redistributable Package (x86)
- ▶ Microsoft Visual C++ 2008 Redistributable Package (x86)
- ▶ Web Services Enhancements (WSE) 2.0 SP3 for Microsoft .NET Redistributable Runtime MSI
- ▶ Web Services Enhancements (WSE) 3.0 for Microsoft .NET Redistributable Runtime MSI
- ▶ Strawberry Perl 5.10.1

## Pre-installation Configuration

Before you begin the installation, review the following configuration information:

- ▶ To run the LoadRunner installation, you must have full local administrative rights on the designated machine.
- ▶ If LoadRunner 8.1 SP4 or earlier is installed on your machine, uninstall the current version before you begin the new installation.
- ▶ You cannot use the UNC (Universal Naming Convention) path to run the installation. Therefore, if the LoadRunner installation directory is located on a network drive, the network drive needs to be mapped before you can run the installation.
- ▶ LoadRunner does not support installation via terminal service. Installation must be performed at the destination machine.
- ▶ You cannot install LoadRunner on a machine that contains an existing installation of HP Performance Center or a standalone installation of either Analysis, VuGen, or Service Test.
- ▶ If you are working with a non-English version of Windows, and your machine does not have an internet connection, .NET Framework 3.5 SP1 must be installed before you run the LoadRunner installation.

# 2

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## Installing LoadRunner on Windows

This chapter describes how to install the full version of LoadRunner on a Windows machine.

**This chapter includes:**

- ▶ Performing the Installation on page 20
- ▶ Installing Additional Components on page 33
- ▶ Configuring User Login Settings on page 38
- ▶ Silent Installation of LoadRunner on page 39
- ▶ HP LoadRunner User Interface Pack Installation on page 40

## Performing the Installation

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**Important:** Before you install LoadRunner, review the pre-installation information, including the system requirements, described in Chapter 1, “Before You Install.”

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**To install LoadRunner or an additional component:**

- 1 Run the setup.exe file in the root folder of the installation disk.**

The LoadRunner 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:

- **LoadRunner Full Setup.** Provides the option to install the main LoadRunner features and components including the Controller, the Virtual User Generator (VuGen), Analysis, and the Load Generator. Use this option for the machine that controls the Vusers.

For details on the features and components included in the installation, see “LoadRunner Installation Components” on page 31.

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**Note:** To install a standalone version of VuGen or Analysis, run the relevant setup program from the **Additional Components\Standalone Applications** folder on the installation disk.

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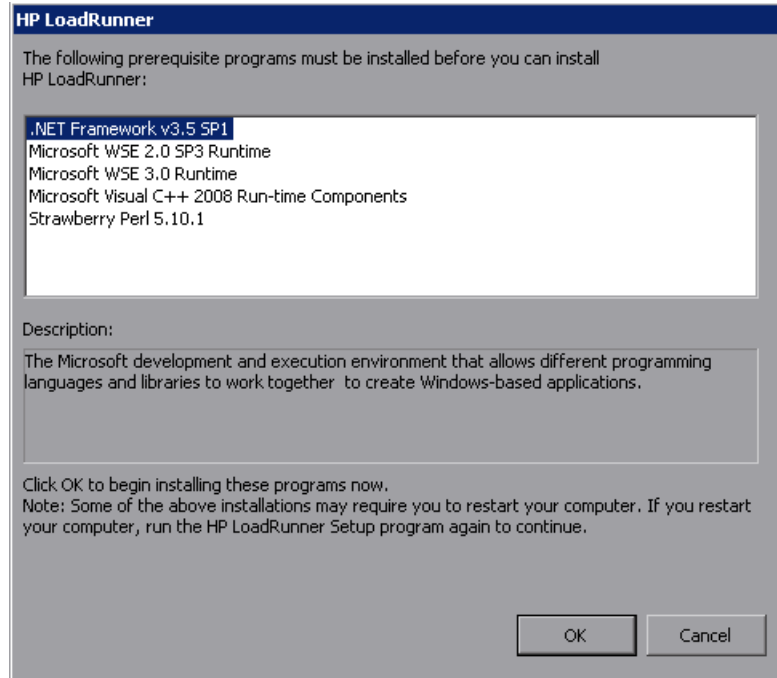
- **Load Generator.** Installs, as a standalone application, the components needed for running virtual users to generate load, and the MI Listener. Use this option for machines that are used only to generate load and not to control Vusers.
- **Monitors Over Firewall.** Installs, as a standalone application, the components on the agent machine for monitoring over the firewall. For more information, refer to the “Using Firewalls” chapter in the *HP LoadRunner Controller User Guide*.
- **MI Listener.** Installs, as a standalone application, the components needed on the MI Listener machine used in running Vusers over a firewall and monitoring over a firewall. For more information, refer to the “Using Firewalls” chapter in the *HP LoadRunner Controller User Guide*.
- **License Server Setup for Service Test.** Installs, as a standalone application, the Sentinel License Manager for use with HP Service Test. For more information, see the section about installing a Service Test license server in the *Service Test Installation Guide*, **hpst\_install.pdf**, located in the product’s **help** folder.
- **Additional Components.** Opens the **Additional Components** folder located in the root folder of the installation disk. From this folder, you can install the following components:

- Agent for Citrix Server
- Agent for Microsoft Terminal Server
- Assembly Crawler for Analysis API
- HP Performance Validation SDK
- IDE Add-Ins
- License Server for Service Test
- Monitor Probe for Microsoft COM+ Server Components
- MQTester
- SAP Tools: SAPGUI Spy, SAPGUI Verify Scripting, Verify RFC User
- Service Test Add-in
- Sitescope
- Standalone Applications: Analysis, Load Generator, MI Listener, Monitors over Firewall, VuGen
- WinPcap

For a description of each of these components see “Installing Additional Components” on page 33.

### 3 If necessary, install prerequisite software.

Specific software, for example, .NET Framework 3.5 SP1, needs to be installed before you can install LoadRunner. If the prerequisite software is not already installed on your computer, a screen opens displaying the list of prerequisite programs that are required.



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

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**Note:** For the full list of prerequisite software, see “Prerequisite Software” on page 17.

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**4 Start the installation.**

The LoadRunner Setup Wizard opens, displaying the welcome page.

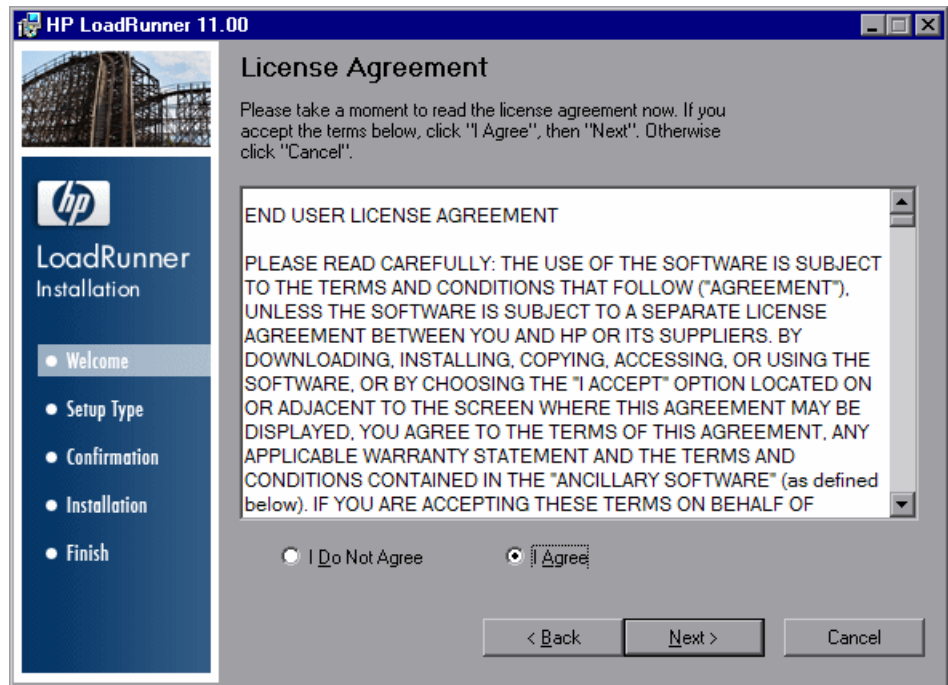


Click **Next** to proceed.



## 5 Review the License agreement.

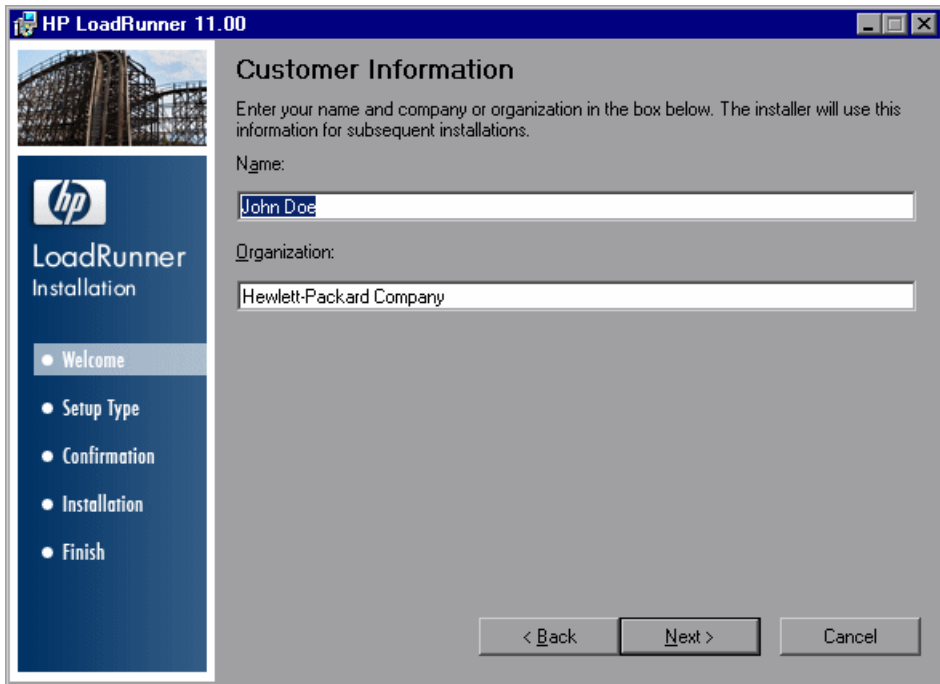
If the terms of the license agreement are acceptable to you, choose **I Agree**.



Click **Next** to proceed.

**6 Register the LoadRunner Installation on your computer.**

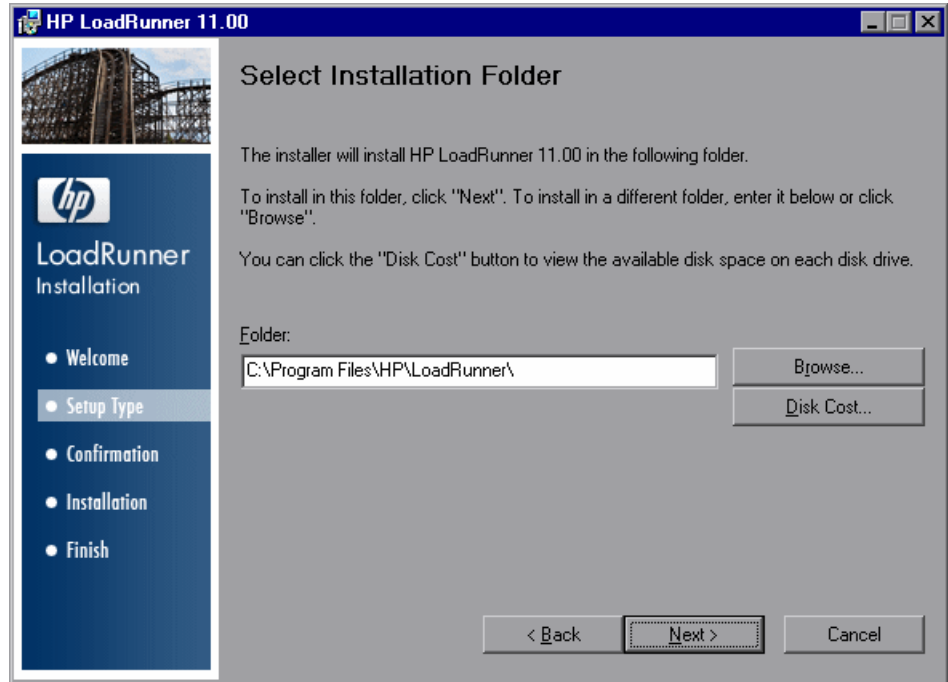
In the Customer Information page, enter your name and organization name.



Click **Next** to proceed.

**7 Select an Installation folder.**

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



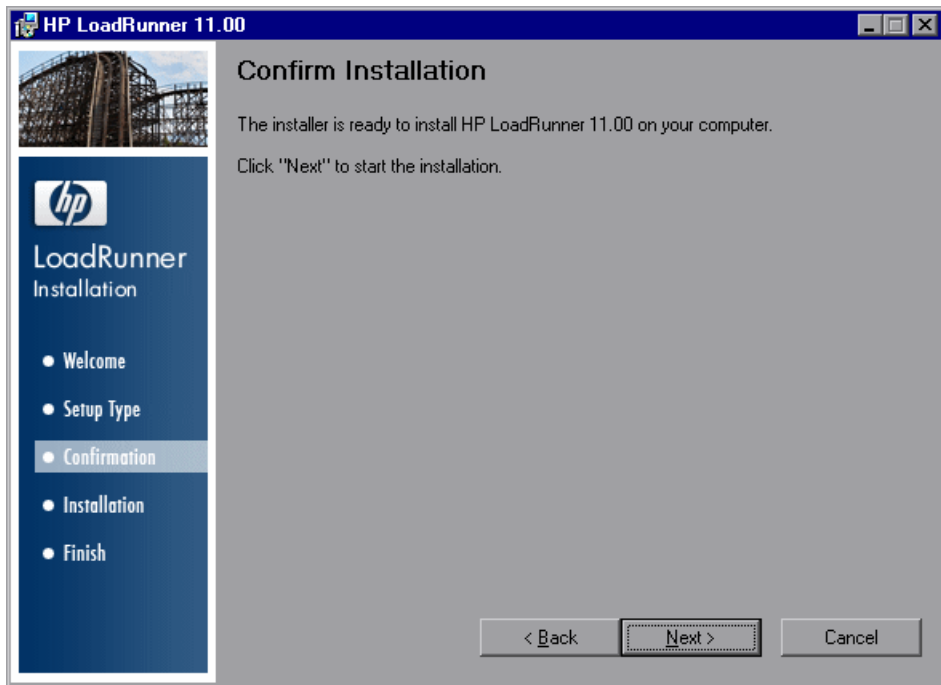
Click **Disk Cost** to check the disk space for each drive. The dialog box displays the size, available space, and required space for each disk.

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

Click **Next** to proceed.

**8 Start the installation process.**

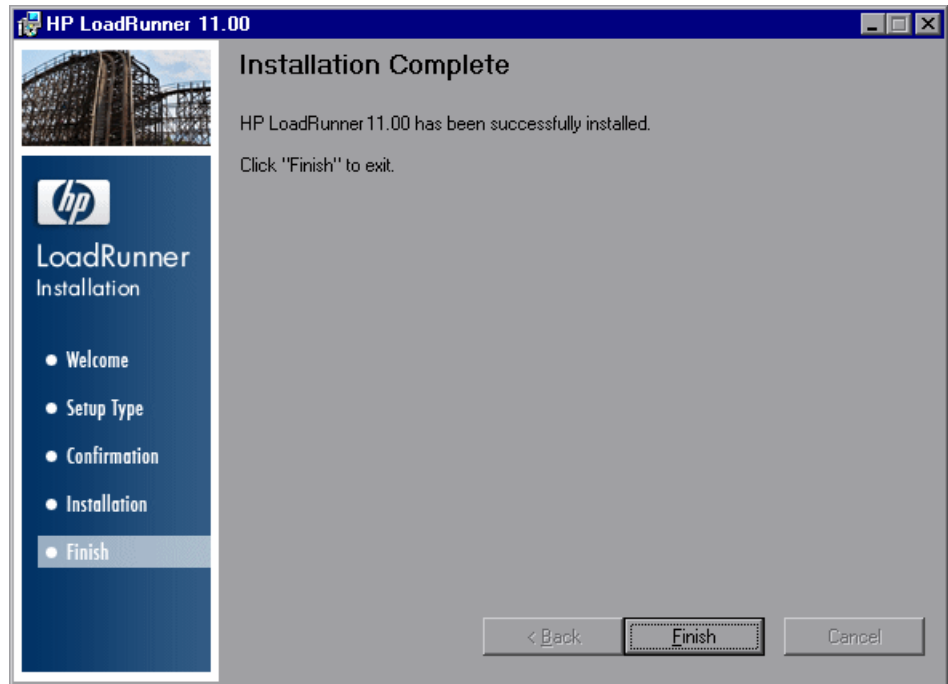
The wizard prompts you to confirm the installation.



Click **Next** to start the installation. The Installing HP LoadRunner screen opens indicating the progress of the installation.

**9 Complete the installation process.**

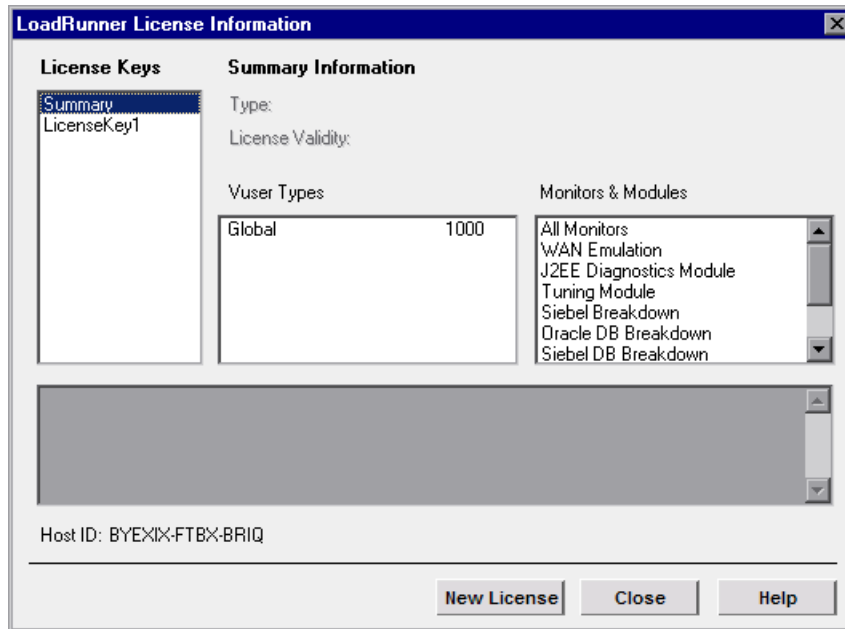
When the installation is complete, a wizard page opens, confirming successful installation.



Click **Finish** to close the setup program. The Readme file opens, displaying the latest technical and troubleshooting information. To open the Readme file at another time, select **Start > Programs > HP LoadRunner > Readme**.

## 10 Check your license information.

The LoadRunner installation is now complete. The LoadRunner Launcher opens displaying the LoadRunner License Information Dialog Box.



During the LoadRunner installation, if LoadRunner does not detect an existing valid license on your computer, you are automatically granted a temporary 10-day license for 25 Vusers. To use LoadRunner beyond the 10-day period, you must request and enter license information for your copy of LoadRunner. For more information, see “Viewing and Modifying a License” on page 65.

Close the LoadRunner License Information Dialog Box and select the application that you want to run from the LoadRunner Launcher window.

To start LoadRunner at another time, select **Start > Programs > HP LoadRunner > LoadRunner**.

**Notes:**

- To uninstall LoadRunner, use the Windows **Add/Remove Programs** utility. Alternatively, you can run the **setup.exe** file located in the root directory of the LoadRunner installation disk, select **LoadRunner Full Setup**, and then select the **Remove** option in the Setup Wizard.
  - To repair LoadRunner, run the **setup.exe** file located in the root directory of the LoadRunner installation disk, select **LoadRunner Full Setup**, and then select the **Repair** option in the Setup Wizard.
  - If your version of LoadRunner is supplied with a plug and you have not already installed the plug, do so now by inserting it in the parallel port.
  - You can configure LoadRunner to run Vusers in a Load Generator machine without the need for the user to manually log in to the machine. For more information, see “Configuring User Login Settings” on page 38.
- 

## **LoadRunner Installation Components**

The LoadRunner full setup installation includes the following features and components:

- **Controller.** Controls the execution of scenarios and Vusers. Includes the online monitors which monitor and display information about the test execution. Install the Controller only on the machine that will control the Vusers.
- **Analysis.** Graphs and reports for analyzing the load test.

- ▶ **ERP and CRM Mediator.** The component needed to gather and correlate offline transaction data for the ERP/CRM diagnostics modules. For more information, refer to the ERP/CRM Diagnostics section in the *HP LoadRunner Controller User Guide*.

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**Note:** 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, see Appendix , “Configuring User Login Settings”

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- ▶ **Launcher.** The LoadRunner launcher window used to open the installed components.
- ▶ **Load Generator.** The components for running virtual users (including Windows-based GUI Vusers) to generate load. Note that to run GUI Vusers you must have one of HP’s functional testing products - QuickTest Professional or WinRunner - installed.
- ▶ **MI Listener Component.** Components for the MI Listener machine used in running Vusers and monitoring over the firewall. For more information, refer to the Using Firewalls chapter of the *HP LoadRunner Controller User Guide*.
- ▶ **Monitors over FireWall.** Components on the agent machine for monitoring over the firewall. For more information, refer to the Using Firewalls chapter of the *HP LoadRunner Controller User Guide*.
- ▶ **Online Documentation.** All user guides in PDF format.
- ▶ **Protocol SDK.** Enables LoadRunner to work with the HP Performance Validation SDK. To install this feature, you also need to install either the Vuser Generator or Load Generator.

You install the HP Performance Validation SDK from the **Additional Components** folder located in the root folder of the installation disk.



- **Samples.** The LoadRunner sample flight application and Web server (Xitami).
- **Vuser Generator.** LoadRunner's tool for creating virtual user (Vuser) scripts, through recording. Vuser scripts emulate users without a graphical user interface by using direct function calls.

## Installing Additional Components

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

- **Agent for Citrix Server.** Installs an optional utility on the server machine which enhances VuGen's capabilities in identifying Citrix client objects. For installation instructions, see "Installing the Citrix Server Agent" on page 35.
- **Agent for Microsoft Terminal Server.** Installs an optional utility on the RDP server. It provides enhancements to the normal RDP functionality in VuGen. For installation instructions, see "Installing the Microsoft Terminal Server Agent" on page 36.
- **Assembly Crawler for Analysis API.** Installs a command-line utility to build a .NET configuration file for a LoadRunner Analysis API application. For more information, refer to the *Analysis API Reference*.
- **HP 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*.
- **IDE Add-ins.** Installs a component that enables you to create and run scripts, written in your standard development environment, in the application's native language. Select an add-in from the **IDE Add-ins** directory, and run the add-in's executable file.
- **License Server for Service Test.** Installs the Sentinel License Manager for use with HP Service Test. For more information, see the section about installing a Service Test license server in the *Service Test Installation Guide*, **hpst\_install.pdf**, located in the product's **help** folder.

- ▶ **Microsoft COM+ Server Monitor Probe.** Configures the server machine for COM+ monitoring. For more information on configuring the server, refer to the Application Component section in the *LoadRunner Monitor Reference*.
- ▶ **MQTester.** Installs MetaStorm's MQTester for HP LoadRunner. It allows you to test IBM's WebSphere MQ-based systems in a LoadRunner environment.
- ▶ **SAP Tools**
  - ▶ **SAPGUI Spy.** Helps examine the hierarchy of GUI Scripting objects, on open windows of **SAPGUI Client for Windows**. To install the SAPGUI Spy component, copy the three files **mscomctl.ocx**, **MsfIxgrd.ocx** and **msvbvm60.dll** from the **SAP\_Tools\SapGuiSpy\System32VBdlls** directory to your **C:\WINNT\system32** directory and 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\SapGuiSpy** directory.
  - ▶ **SAPGUI Verify Scripting.** Helps you verify that the SAPGUI Scripting API is enabled. To install the Verify Scripting component, run the **VerifyScripting.exe** file from the **SAP\_Tools\VerifySAPGUI** directory.
  - ▶ **Verify RFC User.** Determines whether the SAP user you have specified to connect to the SAP system, has permissions to invoke the required RFC functions necessary for working with SAP Diagnostics. To install the Verify RFC User component, copy the file **RFCTFunctionsCollection.dll** from the **SAP\_Tools\VerifyRFCUser** directory to your hard drive and then register the file by selecting **Run** from the Windows Start menu and typing: **regsvr32 RFCTFunctionsCollection.dll**. In the **SAP\_Tools\VerifyRFCUser** directory, load the **AddMTSDestinationsFolder.reg** by double-clicking the file and then run the **VerifyRFCUser.exe** file.
- ▶ **Service Test Add-in.** Enables you to run VuGen with all of the HP Service Test capabilities. This integration requires an HP Service Test license. For more information, see the section about installing HP Service Test in the *Service Test Installation Guide*, **hpst\_install.pdf**, located in the product's **help** folder.
- ▶ **SiteScope.** Installs the SiteScope server used for the Siebel Web Server, SAP CCMS, SAP Portal, and Server Resource monitors.

---

**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 run standalone installations of the following applications: Analysis, Load Generator, MI Listener, Monitors Over Firewall, and Virtual User Generator (VuGen). Run the relevant application's setup program from the **Additional Components\Standalone Applications** folder, and follow the wizard's instructions to completion.
- ▶ **WinPcap.** Installs the WinPcap utility. WinPcap allows the user to capture network traffic into a file and analyze it afterwards. WinPcap is used in the Server Side Recording feature in the VuGen Web Services protocol. For more information about WinPcap, see <http://www.winpcap.org/>

## Installing the Citrix Server Agent

The installation file for the Agent for Citrix Server is located on the LoadRunner installation disk, under the **Additional Components\Agent for Citrix Server** folder.

Note that the agent should only be installed on your Citrix server machine—not Load Generator machines.

If you are upgrading the agent, make sure to uninstall the previous version before installing the next one (see uninstallation instructions below).

### To install the Agent for Citrix Server:

- 1** If your server requires administrator permissions to install software, log in as an administrator to the server.
- 2** If you are using a Remote Desktop connection (RDP) to install the agent onto a machine running Windows 2003, run the following command on the target machine before starting the installation:

```
Change user /install
```

- 3 Locate the installation file, **Setup.exe**, on the product installation disk in the **Additional Components\Agent for Citrix Server\Win32** or **...\Win64** directory.
- 4 Follow the installation wizard to completion.

---

**Note:** After installation the agent will only be active for LoadRunner invoked Citrix sessions—it will not be active for users who start a Citrix session without LoadRunner.

---

To disable the agent, you must uninstall it.

**To uninstall the Agent for Citrix Server:**

- 1 If your server requires administrator privileges to remove software, log in as an administrator to the server.
- 2 Open **Add/Remove Programs** in the server machine's Control Panel. Select **HP Software Agent for Citrix Server 32 or 64** and click **Change/Remove**.

## **Installing the Microsoft Terminal Server Agent**

The installation file for the Agent for Microsoft Terminal Server is located on the product installation disk, under the **Additional Components\Agent for Microsoft Terminal Server** directory.

Note that the agent should only be installed on your RDP server machine, not Load Generator machines.

If you are upgrading the agent, make sure to uninstall the previous version before installing the next one (see uninstallation instructions below).

**To install the Agent for Microsoft Terminal Server:**

- 1 If your server requires administrator permissions to install software, log in as an administrator to the server.

- 2 If you are using a Remote Desktop connection (RDP) to install the agent onto a machine running Windows 2003, run the following command on the target machine before starting the installation:

```
Change user /install
```

- 3 Locate the installation file, **Setup.exe**, on the LoadRunner DVD in the **Additional Components\Agent for Microsoft Terminal Server** directory.
- 4 Follow the installation wizard to completion.

---

**Note:** To use the agent, you must set the recording options before recording a Vuser script. In the Start Recording dialog box, click Options. In the Advanced Code Generation node, check **Use RDP Agent**.

---

#### To uninstall the Agent for Microsoft Terminal Server:

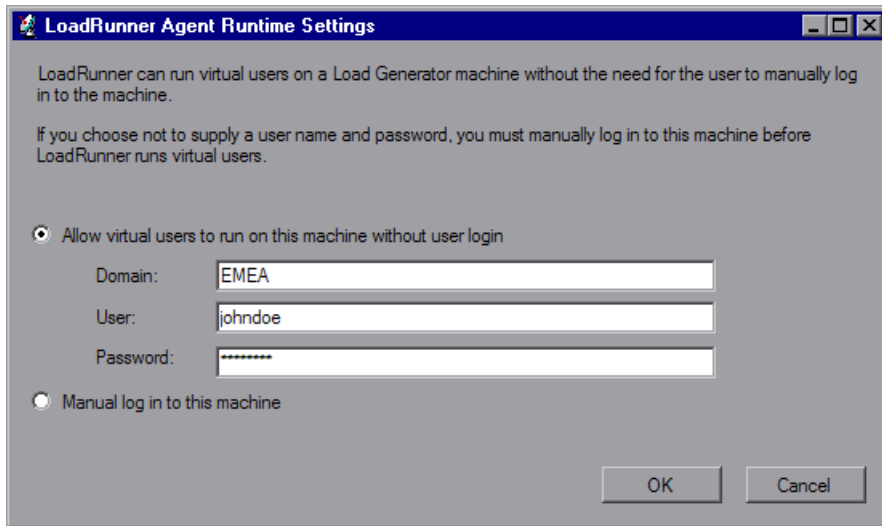
- 1 If your server requires administrator privileges to remove software, log in as an administrator to the server.
- 2 Open **Add/Remove Programs** in the server machine's Control Panel. Select **HP Software Agent for Microsoft Terminal Server** and click **Change/Remove**.

## Configuring User Login Settings

By default, you need to manually log on to a computer before LoadRunner can run virtual users on that computer. However, you can configure LoadRunner to run Vusers on a Load Generator machine without the need for the user to manually log in to the machine.

To configure user login settings:

- 1 Select **Start > Programs > LoadRunner > Tools > LoadRunner Agent Runtime Settings Configuration**. The LoadRunner Agent Runtime Settings dialog box opens.



- 2 Select one of the following options:

- **Allow virtual users to run on this machine without user login.**  
LoadRunner will automatically log on to the network from the load generator machine, so the virtual users can run without any manual intervention. Enter the network domain where the user machine resides, a user name, and password.

---

**Note:** The user specified in the automatic login must have administrator privileges on the load generator machine.

---

- ▶ **Manual log in to this machine.** The user must manually log on to the network from the load generator machine for each session of running Vusers.

**3** Click **OK**.

---

**Note:** You must boot and log on to the system at least once after the LoadRunner installation before the automatic login can work.

---

## Silent Installation of LoadRunner

A *silent installation* is an installation that is performed automatically, without the need for user interaction.

### To perform a silent installation of LoadRunner:

- 1** Install the prerequisite software. For the full list of prerequisite software, see “Prerequisite Software” on page 17. You can begin the silent installation only after all the prerequisite software is installed.
- 2** To install all of the LoadRunner components, run the following command from the command line:

```
msiexec.exe /qn /i "<Installation_disk>\lrunner\MSI\LoadRunner.msi"
```

Notes:

- ▶ Each machine on which you are installing LoadRunner requires administration privileges.
  - ▶ Use Standard MSI command line options to define installation properties. For example, use TARGETDIR to specify an alternate installation folder.
- 

## HP LoadRunner User Interface Pack Installation

The HP LoadRunner User Interface Pack enables you to view the LoadRunner, VuGen Standalone, and Analysis Standalone user interface in your local language. You install the User Interface Pack from the <Language> User Interface Pack CD-ROM.

**To install the User Interface Pack:**

- 1** Make sure that HP LoadRunner is already installed. For details, see “Performing the Installation” at the beginning of this chapter.
- 2** Insert the <Language> User Interface Pack CD into the CD-ROM drive. The **HP LoadRunner <Language> User Interface Pack Setup** window opens.

---

**Note:** If the CD-ROM drive is on a network computer, map the network drive, navigate to the root folder of the mapped network path, and double-click **setup.exe**.

---

- 3** Click the desired link (**LoadRunner, Vugen Standalone, or Analysis Standalone User Interface Pack Setup**) and follow the on-screen instructions.

The <Language> User Interface Pack is automatically installed in the location that was specified during the installation of the HP LoadRunner.



# 3

---

## Installing the HP Load Generator on UNIX

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

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

**This chapter includes:**

- Understanding the Installation Process on page 42
- UNIX System Requirements on page 43
- Installing Using the Setup Wizard on page 45
- Using Native Package Commands on page 48
- Silent Installation on page 50
- Storing Load Generator Content in Another Directory on page 51
- After Installing the HP Load Generator on UNIX on page 52
- Uninstalling the HP Load Generator on page 58
- Recommended Configuration on page 58

## Understanding the Installation Process

The HP Load Generator UNIX installation involves the following steps:

### 1 Review system requirements

Before you install the HP Load Generator on UNIX, review the system requirements as described in “UNIX System Requirements” on page 43.

### 2 Install the HP Load Generator.

The HP Load Generator UNIX installation disk includes a separate HP Load Generator native package for each UNIX platform. You install HP Load Generator using the **HP Load Generator Setup wizard**. The wizard runs the installation of the native package. For more information, see “Installing Using the Setup Wizard” on page 45.

Advanced users can install the The HP Load Generator native package directly using **Native package commands**. For example, if you are using a remote deployment tool to install the HP Load Generator on multiple machines, you may need to use native package commands. For more information, see “Using Native Package Commands” on page 48.

### 3 Configure your environment

Before you can begin working with the load generator you need to configure your environment. This involves setting the appropriate environment variables, checking access to the load generator, and verifying the installation. See “After Installing the HP Load Generator on UNIX” on page 52.

## Notes and Limitations

- ▶ The HP Load Generator installation is based on native packages per operating system. This requires you to be logged in as **root user** to run the installation.
- ▶ The load generator is installed in the **/opt/HP/HP\_LoadGenerator** directory for all platforms.

If you want to store the load generator content in another directory, you need to configure your system before the installation. For more information, see “Storing Load Generator Content in Another Directory” on page 51.

## UNIX System Requirements

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

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

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

The following table describes the supported operating systems on which you can install a UNIX HP Load Generator.

OS Type	OS Version	Platform
Sun Solaris	<ul style="list-style-type: none"> <li>▶ Solaris 9 (2.9)</li> <li>▶ Solaris 10 (2.10)</li> </ul>	Sun UltraSPARC-based systems
HP-UX	HP-UX 11iv2 (11.23)	HP PA-RISC
Red Hat Linux	<ul style="list-style-type: none"> <li>▶ Enterprise Linux 4.0</li> <li>▶ Enterprise Linux 5.0</li> </ul>	<ul style="list-style-type: none"> <li>▶ <b>CPU Type:</b> Intel Core, Pentium, AMD or compatible</li> <li>▶ <b>Speed:</b> 1 GHz minimum. 2 GHz or higher recommended</li> </ul>

**Notes:**

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

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

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

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

## Installing Using the Setup Wizard

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

To install the HP Load Generator using the setup wizard:

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

Run the following command to launch the setup wizard:

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

The setup wizard welcome screen opens.

```
-----  
Welcome to the HP Load Generator 11.00 Setup Wizard  
-----  
This wizard will guide you through the steps required to install HP Load Generat  
or 11.00 on the computer.  
  
WARNING: This computer program is protected by copyright law and international t  
reaties. Unauthorized duplication or distribution of this program, or any portio  
n of it, may result in several civil  
or criminal penalties, and will be prosecuted to the maximum extent possible und  
er the law.  
  
> To continue, select "Next"  
> To abort the setup wizard, select "Cancel"
```

Select **Next** to continue.

### 3 Review the License agreement.

```
-----  
LICENSE AGREEMENT  
-----  
  
Please take a moment to read the License Agreement, located in:  
/products/LI/LI-LR/masters/6285/LG_UnixCD/Solaris/sequencer/resources/EULA/EULA  
.  
  
>To review the full License Agreement, select "View Agreement"  
>To accept the agreement terms, select "Agree"  
>To go back to the previous step, select "Back"  
>To abort the setup wizard, select "Cancel"  
  
Select: [ View Agreement[v], Agree[a], Back[b], Cancel[c] ] : █
```

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

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

### 4 Start the installation process.

The wizard prompts you to confirm the installation.

```
CONFIRMATION  
-----  
  
The HP Load Generator 11.00 features you selected for installation are:  
  
+LoadGenerator  
-LoadGenerator-11.00.000-SunOS5.10.sparc  
  
Size:  
140143 KB  
  
HP Load Generator 11.00 will be installed in the following directory:  
/opt/HP/HP_LoadGenerator.  
  
If you want to install HP Load Generator 11.00 in an alternative directory, you  
must create a symbolic link from "/opt/HP/HP_LoadGenerator" to the alternative d  
irectory before continuing with this installation.  
  
> To start the HP Load Generator 11.00 installation, select "Install"  
> To go back to the previous step, select "Back"
```

The load generator is installed in the **/opt/HP/HP\_LoadGenerator** directory for all platforms.

If you want to store the load generator content in another directory, you need to configure your system before the installation. For more information, see “Storing Load Generator Content in Another Directory” on page 51.

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

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

```

-----
INSTALLATION
-----
LOG FILE: Native OS Install output log directory:
"/var/log/27.05.10_14-25-02_HP_LoadGenerator_11.00.000_iHP_log.txt".

Tail log to track detailed progress.
          Installing Package: LoadGenerator-11.00.000-SunOS5.10.sparc
sted.....█

```

### 5 Complete the installation.

When the installation is complete, the Finish screen opens.

```

-----
FINISH
-----
HP Load Generator 11.00 has been successfully installed in the /opt/HP/HP_LoadGe
nerator directory

LOG FILE: Install log directory:
/var/log/27.05.10_14-25-02_HP_LoadGenerator_11.00.000_iHP_log.txt

> To complete the setup wizard, select "Finish"
> To view the output log, select "View Log"

```

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

### 6 Configure your environment

After you install the load generator, configure your environment as described in “After Installing the HP Load Generator on UNIX” on page 52.

## Using Native Package Commands

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

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

For example: **/dev/cdrom/Solaris/packages/packages\_SunOS/LoadGenerator-11.00.000-SunOS5.10.sparc**.

---

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

---

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

- 1** Run the relevant installation command described in “Native Package Commands Table” on page 49.
- 2** Run the **run\_after\_install.sh** script located in the **/opt/HP/HP\_LoadGenerator** directory.



## Native Package Commands Table

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

Platform	Install Command	Get Package Information Command	Uninstall Command
<b>Solaris</b>	<p>pkgadd -d &lt;path to package file&gt;</p> <p><b>For example:</b>            pkgadd -d            /dev/cdrom/Solaris/packages/packages_SunOS/LoadGenerator-11.00.000-SunOS5.10.sparc</p>	pkginfo LoadGenerator	pkgrm LoadGenerator
<b>Linux</b>	<p>rpm --nodeps -i &lt;path to rpm file&gt;</p> <p><b>For example:</b>            rpm --nodeps -i            /dev/cdrom/Linux/packages/packages_Linux/LoadGenerator-11.00.000-Linux2.6.rpm</p>	rpm -q LoadGenerator	rpm -e LoadGenerator
<b>HPUX</b>	<p>swinstall -s &lt;path to depot file&gt;            &lt;package name&gt;</p> <p><b>For example:</b>            swinstall -s            /dev/cdrom/HP/packages/packages_HPUX/LoadGenerator-11.00.000-HPUX11.0.depot            HP_LoadGenerator.LOADGENERATOR</p>	swlist HP_LoadGenerator.LOADGENERATOR	swremove HP_LoadGenerator.LOADGENERATOR

## Silent Installation

To perform a silent installation of the HP Load Generator, you use native package commands.

### To perform a silent installation of the HP Load Generator:

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

Platform	Silent Installation Command	Example
<b>Solaris</b>	pkgadd -d <path to package file> -a <path to package admin file> all	pkgadd -d /dev/cdrom/Solaris/packages/packages_SunOS/LoadGenerator-11.00.000-SunOS5.10.sparc -a /dev/cdrom/Solaris/sequencer/resources/package_admin_file/admin_file all
<b>Linux</b>	rpm --nodeps -i <path to rpm file>	rpm --nodeps -i /dev/cdrom/Linux/packages/packages_Linux/LoadGenerator-11.00.000-Linux2.6.rpm
<b>HPUX</b>	/usr/sbin/swinstall -s <absolute path to depot file> <product_name>.<package_name> <b>Note:</b> The product name and package name are case sensitive.	/usr/sbin/swinstall -s /dev/cdrom/Hp/packages/packages_HPUX/LoadGenerator-11.00.000-HPUX11.0.depot HP_LoadGenerator.LOADGENERATOR

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

## Storing Load Generator Content in Another Directory

For all platforms, the HP Load Generator is installed in the `/opt/HP/HP_LoadGenerator` directory.

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

- ▶ **For all platforms:** Create a symbolic link from the installation directory to the other directory. See “Creating Symbolic Links” below.

### Creating Symbolic Links

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

#### To create a symbolic link:

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

- 1** Create the new directory. For example:

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

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

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

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

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

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

## After Installing the HP Load Generator on UNIX

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

To complete the setup process after installing the load generator, you must:

- ▶ **Set the appropriate environment variables.**  
See “Setting Environment Variables” on page 52.
- ▶ **Verify your UNIX installation.**  
See “Verifying the UNIX Installation” on page 54.
- ▶ **Check that the Controller can access the load generator.**  
See “Checking Controller Connection” on page 56.

### Setting Environment Variables

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

**Bourne and Korn shell** users need to set the variables manually. (See “Setting Environment Variables For Bourne and Korn Shell Users” on page 54.)

The following environment variables need to be included:

- ▶ **M\_LROOT.** The location of the UNIX Load Generator installation directory
- ▶ **PATH.** The location of the UNIX Load Generator *bin* directory.
- ▶ **LD\_LIBRARY\_PATH** (Solaris, Linux), **SHLIB\_PATH** (HP-UX). The location of UNIX Load Generator’s dynamic libraries.

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

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

```
ldd application_name /* Sun and Linux platforms */  
chrtr application_name /* HP platforms */
```

### Setting Environment Variables For C Shell Users

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

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

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

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

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

For example:

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

## Setting Environment Variables For Bourne and Korn Shell Users

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

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

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

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

Linux)
M_LROOT={replace w/ LR 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 LoadRunner setting #
```

## Verifying the UNIX Installation

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

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

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

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

### Running **verify\_generator**

Before you run the **verify\_generator** utility, make sure that you have set the **DISPLAY** environment variable on your machine.

To run the **verify\_generator** utility:

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

```
verify_generator
```

for example:

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

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

```
verify_generator -v
```

**2** View the results.

- ▶ If the settings are correct, **verify\_generator** returns **OK**.
- ▶ If they are incorrect, **verify\_generator** returns Failed and a suggestion on how to correct the setup.

## Checking Controller Connection

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

### To make sure that the load generator can be remotely accessed by the Controller:

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

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

---

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

---

## Connecting to a UNIX Load Generator Without Using RSH

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



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

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

```
m_daemon_setup -install
```

This runs a daemon called `m_agent_daemon`, and if successful you will receive a message: `m_agent_daemon <process ID>`.

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

---

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

---

- 2** In the Controller, in the **Generators > Load Generator Information > UNIX Environment** tab, select the **Don't use RSH** option. Connect as usual.

- 3 To stop the agent daemon, run the following command from the `<LR_root>/bin` directory:

```
m_daemon_setup -remove
```

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

## Uninstalling the HP Load Generator

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

---

**Note:** You can also uninstall the HP Load Generator using native package commands as described in “Using Native Package Commands” on page 48.

---

### To uninstall the HP Load Generator using the Maintenance wizard:

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

```
/var/opt/HP/iHP/HP_LoadGenerator/11.00.000/installer.sh
```

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

## Recommended Configuration

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

---

**Important:** Most operating systems using the UNIX Load Generator have sufficient default file descriptors, process entries, and swap space, and rarely require reconfiguration.

---

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

- ▶ “Increasing Process Entries” on page 59
- ▶ “Increasing File Descriptors” on page 61
- ▶ “Increasing Swap Space” on page 64

## Increasing Process Entries

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

### Solaris

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

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

**1** Locate the `/etc/system` file.

**2** Set the maximum number of processes in the system file. Type:

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

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

```
touch /reconfigure
```

**4** Reboot the machine.

### HP-UX

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

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

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

```
sam &
```

- 3 Select **Kernel Configuration > Configurable Parameters**.
- 4 Set the following parameters to the desired values:
  - nproc**: The number of simultaneous processes—(# of Vusers \* 2) + 200
  - maxuser**: The number of maximum users—DB + RTE Vusers + 20
  - maxuprc**: The number of processes per user—# of Vusers \* 2
- 5 Reboot the machine.

**Linux**

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

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

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

```
hard nproc 8192
```

- 3 Reboot the machine.

## Increasing File Descriptors

A load generator uses the following **File Descriptor** resources:

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

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

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

**Total:** 294 File Descriptors

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

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

### All Platforms

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

- For sh and ksh users, type:

```
ulimit -n 1024
```

- For csh users type:

```
limit descriptors 1024
```

## Solaris

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

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

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

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

Login as root and set the `rlim_fd_max` parameter inside the `/etc/system` file by typing:

```
set rlim_fd_max=1024
```

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

```
touch /reconfigure
```

- 4 After reconfiguring the system, reboot the machine.

## HP-UX

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

### To increase file descriptors for HP platforms:

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

```
sam &
```

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

## Linux

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

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

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

```
hard nfile 8192
```

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

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

- 3 Reboot the machine.

## Increasing Swap Space

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

### Solaris

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

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

- 1 List the available paging areas. Type:

```
swap -l
```

- 2 Display the available swap space. Type:

```
swap -s
```

- 3 Create a new paging file. Type:

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

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

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

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

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



# 4

---

## Viewing and Modifying a License

During the LoadRunner installation, if LoadRunner does not detect an existing valid license on your computer, you are automatically granted a temporary 10-day license for 25 Vusers. To use LoadRunner beyond the 10-day period, you must request and enter license information for your copy of LoadRunner.

This chapter describes how to enter, modify, or view license information in the HP LoadRunner Launcher window.

**This chapter includes:**

- Entering or Modifying a License on page 66
- Viewing License Information on page 67
- Troubleshooting Licenses on page 69

## Entering or Modifying a License

After you receive your license information from your HP representative, you can enter or modify license information in the HP LoadRunner Launcher window.

**To enter or modify license information:**

- 1** Select **Start > Programs > LoadRunner > LoadRunner** to open the HP LoadRunner launcher window.
- 2** In the HP LoadRunner launcher window, select **Configuration > LoadRunner License** to open the LoadRunner License Information dialog box.
- 3** Click **New License**. The New LoadRunner License dialog box opens.

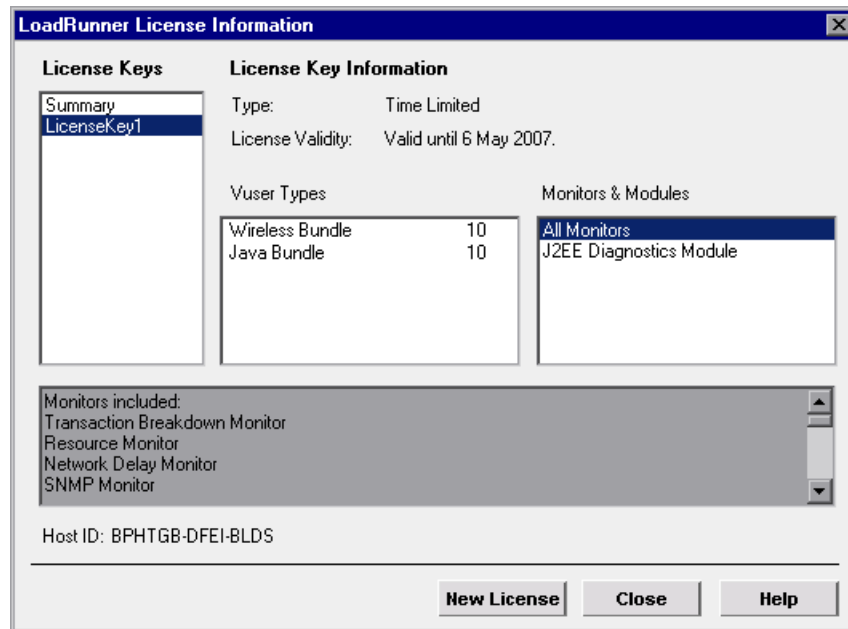


- 4** Enter the new license number exactly as it was given to you. Click **OK**.  
If your license is limited for a specific amount of time, you can view the time limitation in the LoadRunner License Information dialog box. When you select the relevant license, the **License Validity** field displays the time limitation.
- 5** Click **OK** to close the New LoadRunner License dialog box.

## Viewing License Information

You can view your license information from the HP LoadRunner launcher window.

To view your license key information, click **Start > Programs > LoadRunner > LoadRunner**. The HP LoadRunner launcher window opens. From the **Configuration** menu, select **LoadRunner License** to open the LoadRunner License Information dialog box.



The LoadRunner License Information dialog box displays the following information:

- ▶ **License Keys.** Displays the available license keys, as well as a summary of all the available license keys.
- ▶ **License Key Information**
- ▶ **Type.** Displays the type of license available for the license key you selected. The following types of licenses are available:
  - ▶ **Permanent.** The license never expires.

- ▶ **Time Limited.** The license is limited by a start date and an expiration date.
- ▶ **Temporary.** The license is granted for a pre-defined number of days after product installation.
- ▶ **VUD-based.** With Virtual User Days or VUD based licenses you purchase a number of VUD type Vusers. Within a 24 hour period a portion of those Vusers can be used repeatedly to run an unlimited number of tests. At the end of the 24 hour period those Vusers are deducted from your total amount of available Vusers.

For example, if you purchase 100 VUD type Vusers, you can run 3 different scenarios within the same 24 hour period, with 20 Vusers in each scenario. At the end of that period, only 20 Vusers (and not 60) are deducted from your total number of available Vusers, leaving you with 80 remaining Vusers which can be used at any time in the future.

---

**Note:** By default, LoadRunner begins the 24 hour cycle at midnight, however you can request a different cycle that best suits your test schedule

---

- ▶ **Plugged.** The license requires a dongle.
- ▶ **License Validity.** Displays the time limitation of the selected license key.
- ▶ **Vuser Types.** Displays a list of Vuser protocols available for the selected license key, or a list of protocol bundles for the new licensing implementation.
  - ▶ **Group <n>.** A group of protocols that are often used together. This Vuser type is relevant only for versions of LoadRunner earlier than 9.0.
  - ▶ **<bundle type> Bundle.** Each bundle contains a collection of protocols. When you select a protocol bundle, the dialog displays a list of included protocols.
  - ▶ **Global.** The global license lets you run all Vuser types, provided you stay within the global, or total limit. The number following Global indicates the total number of Vusers purchased.

- ▶ **Monitors and Modules.** Displays the online monitors available for the selected license key, and the modules included in the license, for example J2EE Diagnostics. If **All Monitors** is displayed in the list, it means that your license enables you to work with all the Controller online monitors. When you select **All Monitors**, the dialog displays a list of included monitors.
- ▶ **Host ID.** Displays an ID for a specific machine. To receive a license key for a specific machine contact Customer Support.
- ▶ **New License.** Opens the New LoadRunner License dialog box which enables you to enter a new license number. Enter the new license number exactly as it was given to you and click **OK**.

## Troubleshooting Licenses

If you have a temporary license key, contact Customer Support to obtain a permanent license key.

If LoadRunner does not accept your license key, perform the following checks:

- ▶ Make sure you typed in the license key exactly as it was given to you. The license key is case sensitive.
- ▶ If your LoadRunner license requires that you use a plug when running LoadRunner, and a message is issued stating that a plug is not installed, perform the following:
  - Login as Administrator.
  - Run `<loadrun_directory>/bin/hinstall.exe/i`.
  - Reboot the machine.
- ▶ If you receive a **permission denied** error message during Controller start-up, you must grant **Full Control** permission for the Registry's **HKEY\_LOCAL\_MACHINE** key and in the **WINNT** directory (directory where Windows is installed).

**To add Registry permissions:**

- 1** Run **regedt32** to modify the registry.
- 2** Select the **HKEY\_LOCAL\_MACHINE** key.
- 3** Select **Security > Permissions**.
- 4** Add **Full Control** permission to the user that is running the Controller.
- 5** Turn on the **Replace Permission on the Existing Subkeys** flag.
- 6** Click **OK**.

**To add permissions on an NTFS file system:**

- 1** Select the **<System Drive>:\WinNT** folder.
- 2** Invoke **Properties**.
- 3** Select the **Security** tab.
- 4** Click **Permissions**.
- 5** Add **Full Control** permission for the user.
- 6** Turn on the **Replace Permissions on Subdirectories** flag.
- 7** Click **OK**.

---

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