

HP LoadRunner

For the Windows and Linux operating systems

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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.

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 platforms

Describes how to install the full version of LoadRunner or a LoadRunner component on a Windows platform.

Chapter 3: Installing the HP Load Generator on Linux platforms

Describes how to install and configure the Load Generator on a Linux 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.

LoadRunner Documentation

The LoadRunner Documentation set 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>).

Accessing the Documentation

You can access the LoadRunner documentation as follows:

- After installing LoadRunner, click **Start > All Programs > HP Software > HP LoadRunner > Documentation** and select the relevant document.

- From the Controller, VuGen, or Analysis Help menu, click LoadRunner Help to open the LoadRunner documentation.

Getting Started Documentation

- **Readme.** Provides last-minute news and information about LoadRunner. You access the Readme from the **Start** menu.
- **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, click **Start > All Programs > HP Software > HP LoadRunner > Documentation > Tutorial**.

LoadRunner Guides

- **HP Virtual User Generator User Guide.** Describes how to create scripts using VuGen. When necessary, supplement this user guide with the online *HP LoadRunner 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 run.
- **HP LoadRunner Analysis User Guide.** Describes how to use the LoadRunner Analysis graphs and reports to analyze system performance after running a scenario.
- **HP LoadRunner Installation Guide.** Explains how to install LoadRunner and additional LoadRunner components.

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.
- **Troubleshooting.** The Output dialog box (Controller > View > Show Output) displays details of any errors encountered during a scenario run. Click the icon in the Help column to open the Troubleshooting guide. This guide provides clear explanations and troubleshooting tips for many Controller connectivity and Web protocol errors. It also provides general troubleshooting tips for Winsock, SAPGUI, and Citrix protocols.

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HP Software is continually updating its product documentation with new information.

To check for recent updates, or to verify that you are using the most recent edition of a document, go to the HP Software Product Manuals Web site (<http://h20230.www2.hp.com/selfsolve/manuals>).

Additional Online Resources

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

Resource	Description
Troubleshooting & Knowledge Base	Opens 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 .
LoadRunner License Utility	Opens the LoadRunner License Utility dialog box. This dialog box displays a summary of existing licenses and allows you to install more licenses. For details, see the <i>LoadRunner Installation Guide</i> .
HP Software Support	<p>Opens the HP Software Support Web site. This site enables you to browse the Self-solve knowledge base. You can also post to and search user discussion forums, submit support requests, download patches and updated documentation, and more. Choose Help > HP Software Support Site. The URL for this Web site www.hp.com/go/hpssoftwaresupport.</p> <ul style="list-style-type: none"> • Most of the support areas require that you register as an HP Passport user and sign in. Many also require a support contract. • To find more information about access levels, go to: http://h20230.www2.hp.com/new_access_levels.jsp • To register for an HP Passport user ID, go to: http://h20229.www2.hp.com/passport-registration.html
HP Software Web site	Opens the HP Software Web site. This site provides you with the most up-to-date information on HP Software products. This includes new software releases, seminars and trade shows, customer support, and more. Choose Help > HP Software Web site . The URL for this Web site is www.hp.com/go/software

LoadRunner Terminology

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

Chapter 1

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.

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 Vuser and server side components.

For information about installing LoadRunner on a Windows platform, see ["Installing LoadRunner on Windows" on page 14](#).

Introducing the LoadRunner Linux Installation

You can install the LoadRunner Load Generator component on a Linux platform to run Vusers. The Linux-based Vusers interact with the LoadRunner Controller, installed on a Windows platform.

For more information, see ["Installing the HP Load Generator on Linux" on page 38](#).

Windows System Requirements

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

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

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Controller, VuGen, and Analysis System Requirements

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

Processor	CPU Type: Intel Core, Pentium, Xeon, AMD or compatible Speed: 1 GHz minimum. 2 GHz or higher recommended
Operating System	The following Windows operating systems are supported: <ul style="list-style-type: none"> • Windows XP Professional SP3 32-Bit • Windows Server 2003 Standard Edition/Enterprise Edition SP2 32-Bit • Windows Server 2008 Standard Edition/Enterprise Edition SP2 32-Bit and 64-bit • Windows 7 SP1 32-bit and 64-bit • Windows 2008 R2 SP1 • Windows 8
Memory (RAM)	Minimum: 1 GB <div> Note: Memory depends on protocol type and system under test and can vary greatly. </div>
Browser	<ul style="list-style-type: none"> • Microsoft Internet Explorer 11.0 • Microsoft Internet Explorer 10.0 • Microsoft Internet Explorer 9.0 • Microsoft Internet Explorer 8.0
Available Hard Disk Space	Minimum: 2 GB

Load Generator for Windows System Requirements

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

Processor	CPU Type: Intel Core, Pentium, Xeon, AMD or compatible Speed: 1 GHz minimum. 2 GHz or higher recommended
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Operating System	The following Windows operating systems are supported: <ul style="list-style-type: none"> • Windows XP Professional SP3 32-Bit • Windows Server 2003 Standard • Edition/Enterprise Edition SP2 32-Bit • Windows Server 2008 Standard • Edition/Enterprise Edition SP2 32-Bit and 64-bit • Windows 7 SP1 32-bit and 64-bit • Windows 2008 R2 SP1 • Windows 8
Memory (RAM)	Minimum: 1 GB <div> Note: Memory depends on protocol type and system under test and can vary greatly. </div>
Browser	<ul style="list-style-type: none"> • Microsoft Internet Explorer 7.0 • Microsoft Internet Explorer 8.0 • Microsoft Internet Explorer 9.0 • Microsoft Internet Explorer 10.0
Available Hard Disk Space	Minimum: 2 GB

Note: For information about system requirements for installing the Load Generator on a Linux platform, see ["Meeting the System Requirements" on page 40](#).

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:

- Microsoft Windows Installer 3.1
- .Windows Imaging Component. This is a prerequisite for .NET Framework 4.0
- .NET Framework 3.5 SP1 (See the note below for installation instructions.)
- .NET Framework 4.0
- 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
- Microsoft Core XML Services (MSXML) 6.0
- Microsoft Visual C++ 2005 SP1 Redistributable Package MFC Security Update (x86)
- Microsoft Visual C++ 2005 SP1 Redistributable Package MFC Security Update (x64)
- Microsoft Visual C++ 2008 SP1 Redistributable Package MFC Security Update (x86)
- Microsoft Visual C++ 2008 SP1 Redistributable Package MFC Security Update (x64)
- Microsoft Visual C++ 2010 SP1 Redistributable Package MFC Security Update (x86)
- Microsoft Data Access Components (MDAC) 2.8 SP1 (or later)

Note: Installing .NET Framework 3.5.1:

- **Windows 7:** .NET Framework 3.5.1 is installed by default.
- **Windows 2008 R2:** To install .NET Framework 3.5.1, click **Administrative Tools > Service Manager > Features**. Click **Add Features**, select the **.NET Framework 3.5.1** check box, and then click **Install**.
- **Windows 8:** The .NET Framework 3.5.1 is not automatically installed with Windows 8. To run LoadRunner components, you must enable .NET Framework 3.5.1 on your computer. This can be done either by installing or running an application that requires .NET Framework 3.5.1, or by enabling .NET Framework 3.5.1 in the Control Panel. Both options require an internet connection. For details, see: <http://msdn.microsoft.com/en-us/library/hh506443.aspx>.
- **All other supported versions of Windows:** Install .NET Framework 3.5.1 using the .NET Framework 3.5.1 installer.

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 any version of LoadRunner 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 folder 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 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.

Chapter 2

Installing LoadRunner on Windows

This chapter describes how to install the full version of LoadRunner or a LoadRunner component on a Windows platform.

Performing the Installation

Caution: Before you install LoadRunner, review the pre-installation information, including the system requirements, described in ["Before You Install" on page 10](#).

To install LoadRunner or an additional component:

1. Disable UAC (User Account Control) and restart the computer.

For details on how to disable UAC, refer to your Microsoft Windows documentation.

Note: Disabling UAC is not applicable to Windows XP Professional and Windows Server 2003.

2. Run the setup.exe file in the root folder of the installation disk.

The LoadRunner installation program begins and displays the installation menu page.



3. Select the required installation option.

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

- **LoadRunner Full Setup.** Installs the main LoadRunner components, including the Controller, the Virtual User Generator (VuGen), Analysis, and the Load Generator. Use this option for the machine that runs the load testing scenarios.

For details on the components that are included in the installation, see "[LoadRunner Installation Components](#)" on page 25

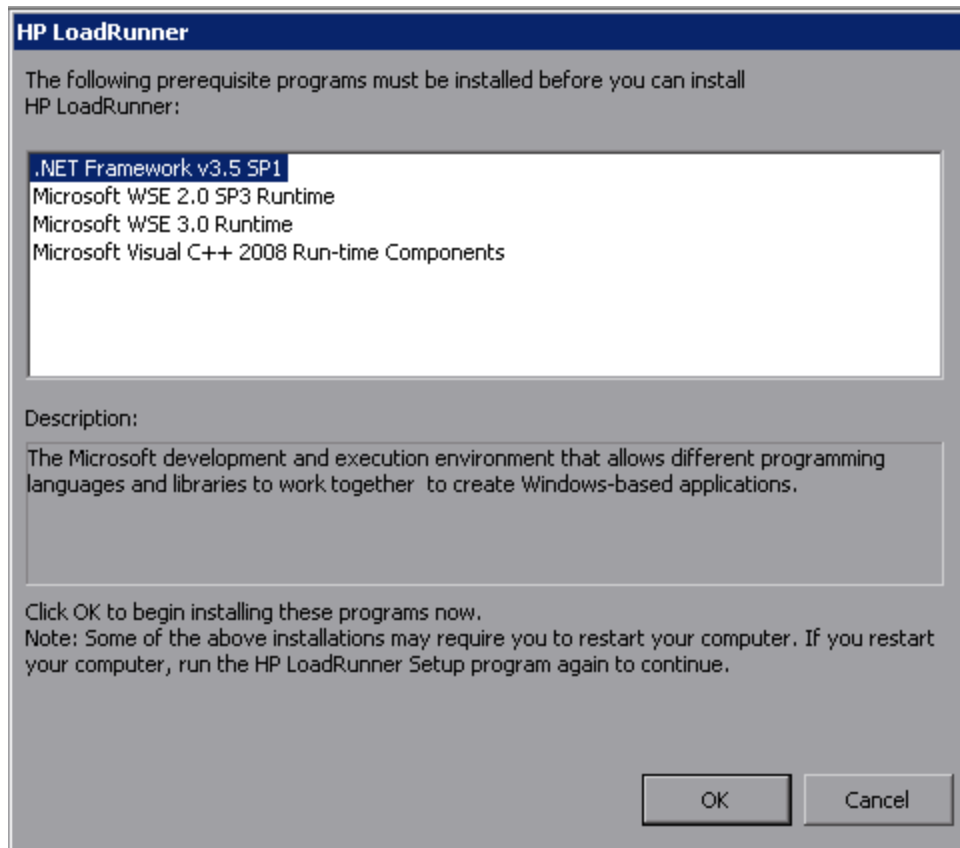
- **VuGen.** Installs a standalone version of the LoadRunner Virtual User Generator, VuGen.
- **Analysis.** Installs a standalone version of LoadRunner Analysis.
- **Load Generator.** Installs the components needed for running Vusers to generate load. Use this option for machines that are used to generate load only, and not to control Vusers.
- **Monitors Over Firewall.** Installs 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 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.
- **Host ID.** Opens the Host ID Generator that displays the computer's Host ID.

- **Additional Components.** Opens the Additional Components folder located in the root folder of the LoadRunner 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
 - HostID Generator
 - HP Diagnostics Mediator
 - HP Performance Validation SDK
 - IDE Add-Ins
 - LRTCPDump
 - Monitor Probe for Microsoft COM+ Server Components
 - MQTester
 - SAP Tools: SAPGUI Spy and SAPGUI Verify Scripting
 - Standalone Applications: Analysis, Load Generator, MI Listener, Monitors over Firewall, VTS (Virtual Table Server), and VuGen
 - WinPcap

For a description of each of these components, see ["Installing Additional Components" on page 26](#).

4. 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 dialog box opens displaying the list of prerequisite programs that are required.

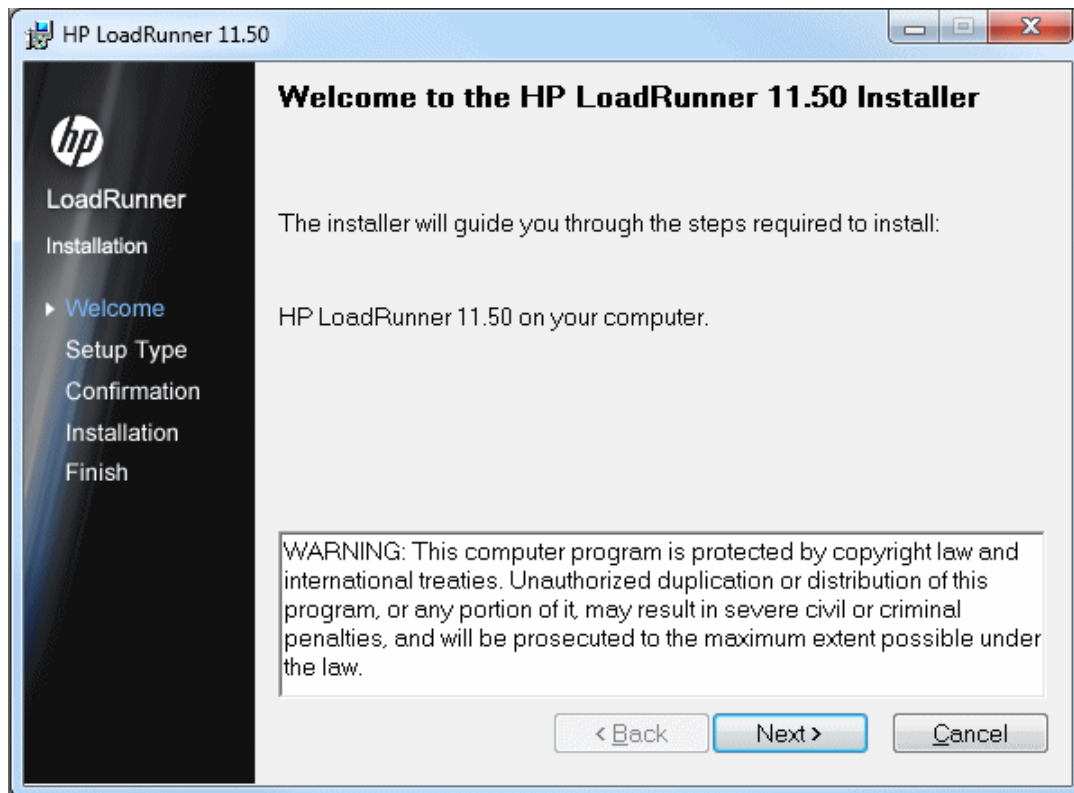


Click **OK** to install the listed software before continuing with the LoadRunner installation. If you click **Cancel**, the LoadRunner installer exits because LoadRunner cannot be installed without the prerequisite software.

Note: For the full list of prerequisite software, see "[Prerequisite Software](#)" on page 12.

5. Start the LoadRunner installation.

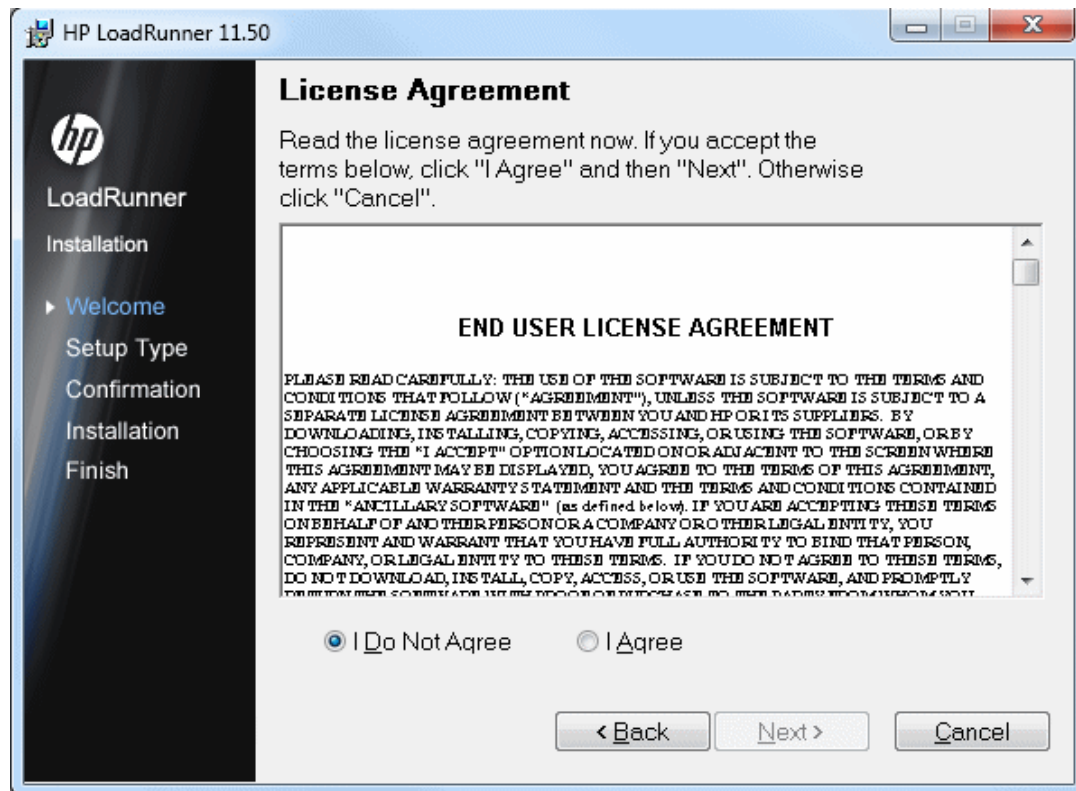
The LoadRunner Setup Wizard opens, displaying the welcome page.



Click **Next** to proceed.

6. Review the License agreement.

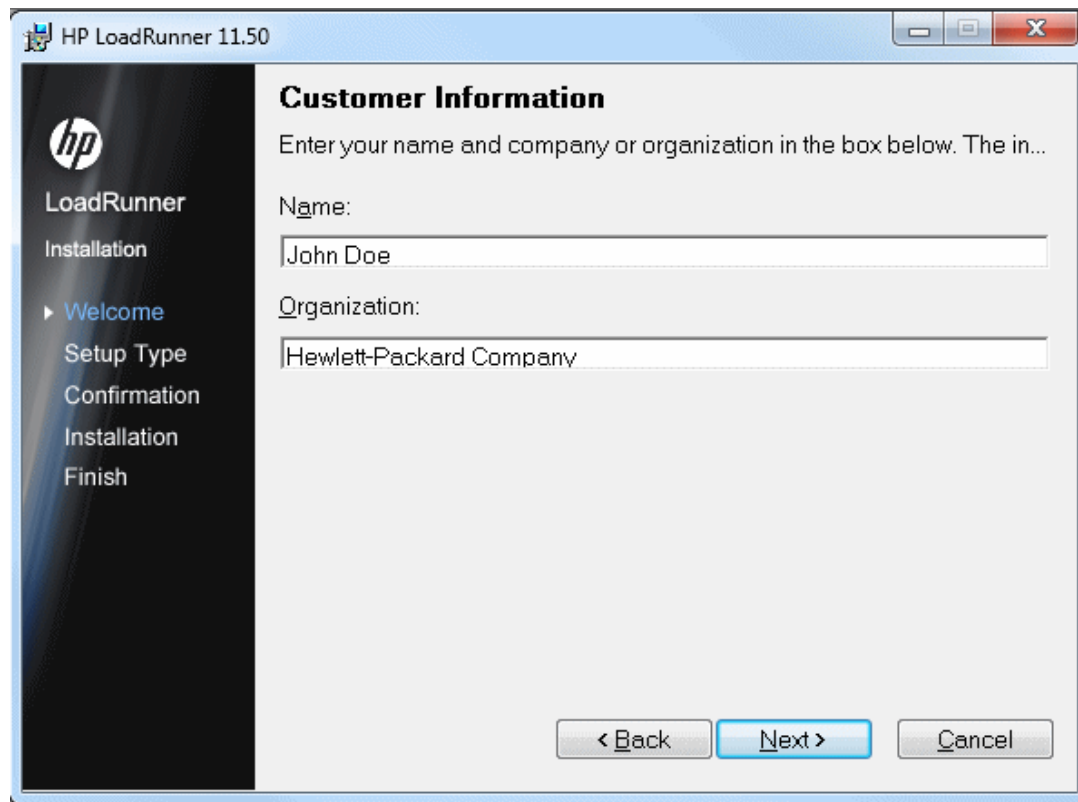
If the terms of the license agreement are acceptable to you, select **I Agree**.



Click **Next** to proceed.

7. Register the LoadRunner Installation on your computer.

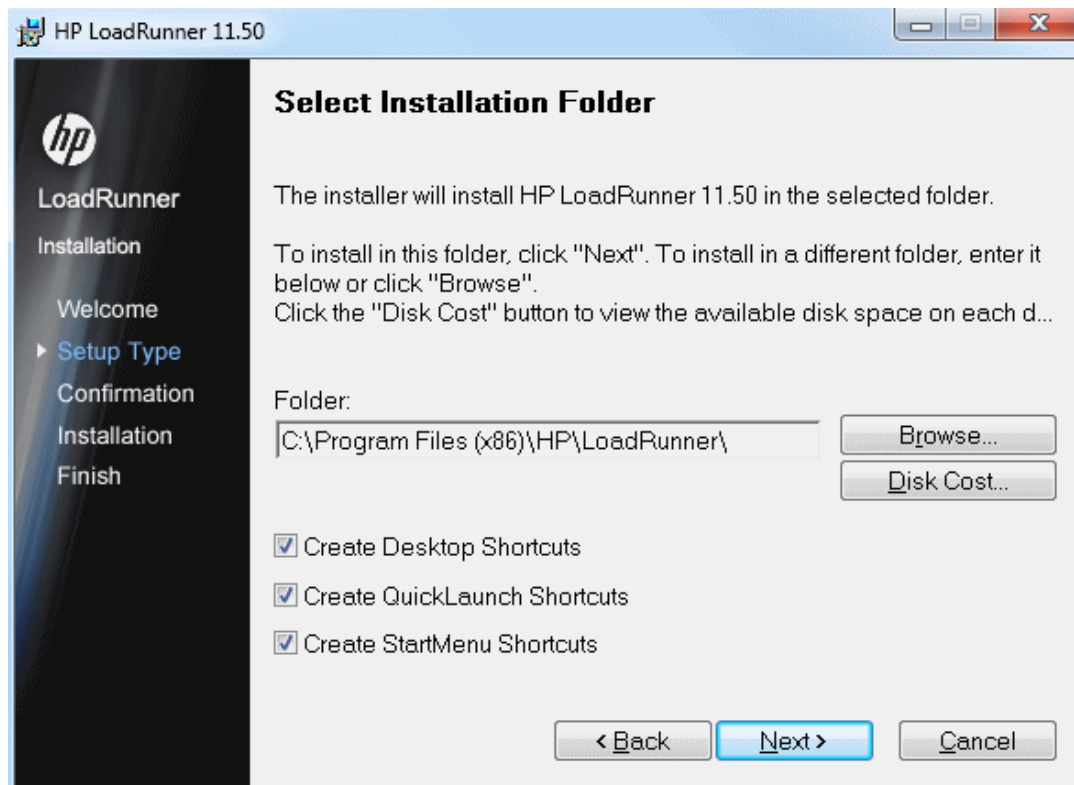
In the Customer Information page, enter your name and organization name.



Click **Next** to proceed.

8. Select an Installation folder.

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



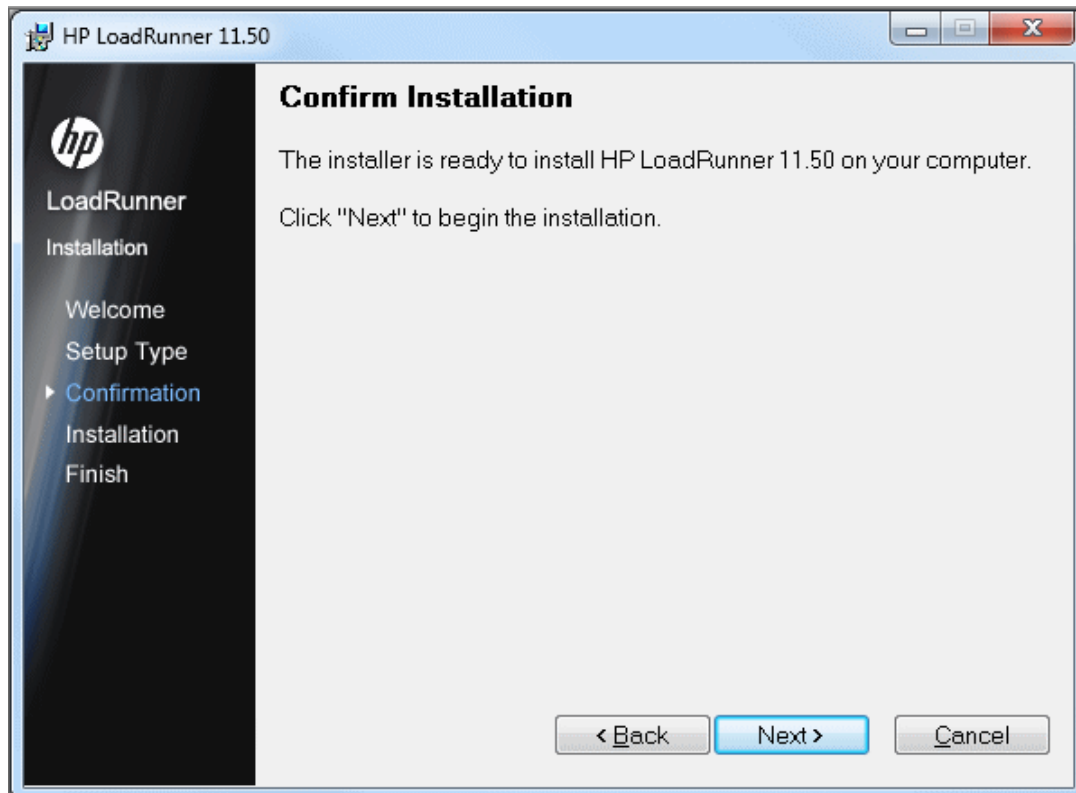
Click **Disk Cost** to check the disk space for each drive. The dialog box displays the size, available space, and required space for each disk.

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

Click **Next** to proceed.

9. Start the installation process.

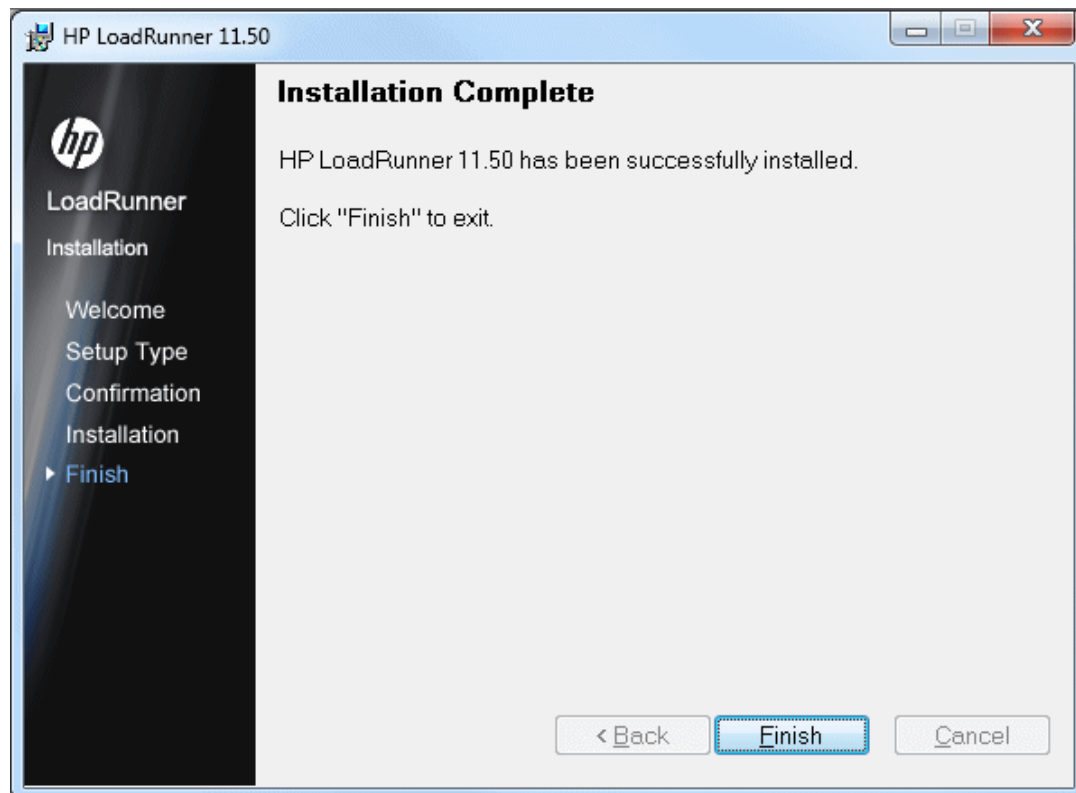
The wizard prompts you to confirm the installation.



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

10. Complete the installation process.

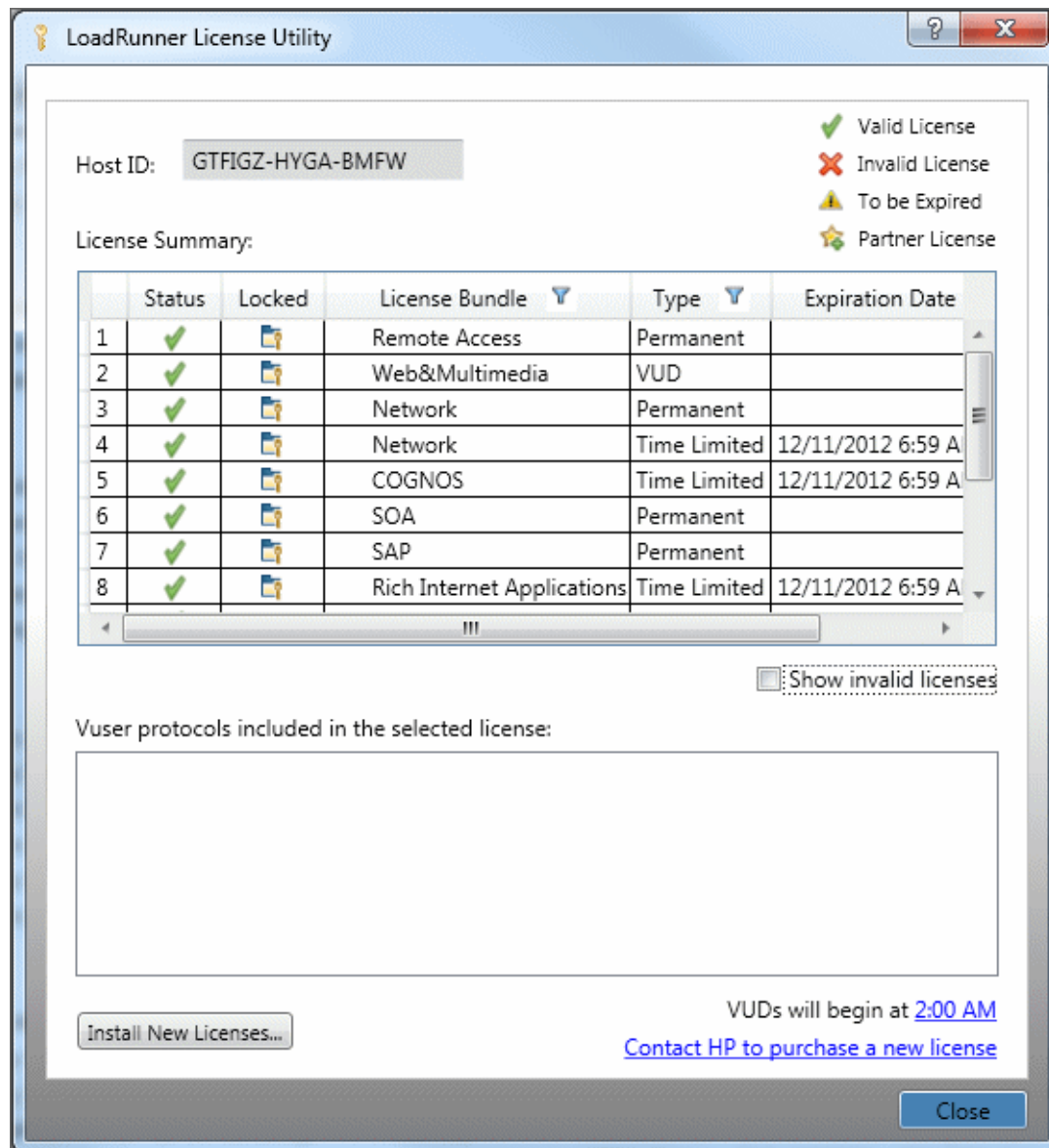
When the installation is complete, a wizard page opens, confirming successful installation.



Click **Finish** to close the LoadRunner installation program.

11. Check your license information.

The LoadRunner installation is now complete. The LoadRunner License Utility opens, displaying your LoadRunner license information.



During the LoadRunner installation, if LoadRunner does not detect a 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 or Modifying a License" on page 50](#).

Click **Close** to close the LoadRunner License Utility.

Note:

- 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 on 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 34](#)

LoadRunner Installation Components

The LoadRunner full installation includes the following 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 computer 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.

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 ["Configuring User Login Settings" on page 34](#).

- **Load Generator.** The components for running Vusers (including Windows-based GUI Vusers) to generate load.
- **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 LoadRunner 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.

- **Vuser Generator [VuGen].** LoadRunner's tool for creating virtual user (Vuser) scripts, primarily 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 following locations:

- The **Additional Components** folder inside the root folder of the LoadRunner 11.50 installation DVD.
- **HP Software Support Online (Help > HP Software Support Site).** After logging in to the support site, search for "**LR 11.52 Additional Components**", and download the file that contains all the additional components. Unzip the file, and run the installation wizard for the additional component that you want to install.

The table below indicates which additional components are available, and from where you should install each component:

Folder	Component	Description	Install on...
Agent for Citrix Server Install from HP Software Support Online.	Setup files for 32 and 64 bit machines	Installs the Citrix Agent which enhances VuGen's capabilities in identifying Citrix client objects. For installation instructions, see "Installing the Citrix Server Agent" on page 30.	Citrix Server
Agent for Microsoft Terminal Server Install from HP Software Support Online.	Setup file for MS Terminal Agent	Installs a utility that enhances RDP functionality in VuGen. For installation instructions, see "Installing the Microsoft Terminal Server Agent" on page 31.	RDP server
Assembly Crawler for Analysis API Install from the LoadRunner 11.50 DVD.	Setup file for Assembly Crawler Console	Installs a command-line utility to build a .NET configuration file for a LoadRunner Analysis API application. For more information, open the Analysis API Reference from the Start menu (not available with VuGen Standalone).	Load-Runner Analysis machine
HostID Generator Install from the LoadRunner 11.50 DVD.	Host ID Generator tool	Opens the Host ID Generator utility that displays the computer's Host ID. This is useful when requesting a license. For details, see "Determining the Host ID" on page 30	Load-Runner Controller

Folder	Component	Description	Install on...
HP Diagnostics Mediator Install from the LoadRunner 11.50 DVD.	Setup file	Installs the HP Diagnostics Mediator, the component that gathers and correlates offline transaction data for the ERP/CRM diagnostics modules. For details, see ERP/CRM Diagnostics in the Controller section of the LoadRunner User Guide.	On the same LAN as the diagnostics (e.g. Oracle) server
HP Performance Validation SDK Install from HP Software Support Online.	Configuration Builder Setup file	Installs the Configuration Builder which allows you to create a custom protocol. For more information, open the Configuration Builder from the LoadRunner group and click F1 to open the Help.	VuGen machine
IDE Add-Ins Install from the LoadRunner 11.50 DVD.	Add-in setup files for common versions of MS Visual Studio	Installs add-ins for Visual Studio enabling you to create Vuser scripts in your standard development environment using the LoadRunner API. This integration also allows you to run the test directly from Visual Studio to test its functionality. For details, see Advanced Topics in the VuGen section of the LoadRunner User Guide.	Visual Studio machine with VuGen
IDE Add-Ins Dev Install from HP Software Support Online.	Setup files for developer add-ins for Visual Studio 2010 and Eclipse	Installs add-ins for Visual Studio 2010 or Eclipse enabling you to create NUnit or JUnit tests in your standard development environment using the LoadRunner API. The unit test can be loaded directly into a scenario, just as a Vuser script. This integration also allows you to run NUnit, JUnit, or Selenium tests directly from their development platform, Visual Studio or Eclipse, to test its functionality. Note: After installing the Eclipse plugin, rebuild the plugin cache by running the following from the command line: Eclipse.exe -clean	Visual Studio 2010 or Eclipse machine with VuGen

Folder	Component	Description	Install on...
LRTCPDump Install from the LoadRunner 11.50 DVD.	Command line executable for Windows and UNIX platforms	Creates a trace file containing logs of TCP traffic over the network. This can be used as an alternative to Wireshark. Note: You must install WinPcap before using this command. For Windows, usage is: lrtcpdump.exe -i interface -f filename You must provide a filename. If you do not provide an interface, you are prompted to choose one.	Any machine with WinPcap
mobile RemoteAgent Install from the LoadRunner 11.50 DVD.	Executable files for several platforms	Starts the Mongoose Web server to provide mobile functionality.	VuGen machine
Monitor Probe for Microsoft COM+ Server Components Install from LoadRunner 11.50 DVD.	Setup file for the HP COM+ Probe	Installs the probe utility that prepares the server machine for COM+ monitoring. This is required in order to use the Application Component monitor. For details, see the Application Component monitor in the Controller section of the LoadRunner User Guide.	Any machine
MQTester Install from the LoadRunner 11.50 DVD.	Readme and Setup file for MQTester	Installs MetaStorm's MQTester for HP LoadRunner. It allows you to test IBM WebSphere MQ-based systems in a LoadRunner environment.	Web-sphere MQ with Load-Runner

Folder	Component	Description	Install on...
SAP Tools Install from the LoadRunner 11.50 DVD.	Executable files for SapSpy and VerifyScripting	<ul style="list-style-type: none"> SAPGUI Spy. Examines the hierarchy of GUI Scripting objects, on open windows of SAPGUI Client for Windows. To install the SAPGUI Spy component, copy the files mscomctl.ocx, Msflxgrd.ocx and msvbvm60.dll from the SAP_Tools\SapGuiSpy\System32VBdls directory to your C:\WINNT\system32 directory and then register the files. To register each file, open a Run box (Windows button + R) and type: <code>regsvr32 <File name></code>. Run the SapSpy.exe file from the SAP_Tools\SapGuiSpy folder. SAPGUI Verify Scripting. Verifies that the SAPGUI Scripting API is enabled. Run the VerifyScripting.exe file from the SAP_Tools\VerifySAPGUI folder and follow the instructions. For details, see the help files in the same folder. 	SAPGUI client machine with VuGen
Standalone Applications <ul style="list-style-type: none"> Analysis, VuGen, Load Generator, and VTS: Install from HP Software Support Online. MI Listener, Monitors Over Firewall: Install from the LoadRunner 11.50 DVD. 	Setup files for standalone LoadRunner components	This folder contains the setup files for following standalone applications: Analysis, Virtual User Generator (VuGen), Load Generator, MI Listener, Monitors Over Firewall, and VTS (Virtual Table Server) 32-bit and 64-bit. Run the relevant application's setup program and follow the wizard's instructions. For more information about the VTS installation, see "Installing VTS" on page 32 .	N/A
Third Parties Install from the LoadRunner 11.50 DVD.	Source files	Includes the source code for open source packages that are incorporated into LoadRunner, and which have licenses with source distribution clauses.	Load-Runner machine

Folder	Component	Description	Install on...
WinPcap Install from the LoadRunner 11.50 DVD.	Setup file	Installs WinPcap, the Windows Packet Capture libraries, enabling you to capture network traffic into a file. This is useful for creating a Web Services Vuser script from captured traffic. For details, see http://www.winpcap.org . This is to be used in conjunction with the additional component, LRTCPDump.	Any machine

Determining the Host ID

LoadRunner licenses may be either locked or unlocked.

- **Locked.** A locked license can be installed only on the specific computer for which the license was issued. You will need to provide the Host ID when purchasing a locked LoadRunner license.
- **Unlocked.** Indicates that the license can be installed on any computer. You will not need to provide the Host ID when purchasing an unlocked LoadRunner license.

To determine a Host ID, perform one of the following procedures on the computer for which you require a Host ID:

- Click **Start > All Programs > HP Software > HP LoadRunner > License > LoadRunner License Utility**. The HP LoadRunner License Utility opens and displays the computer's Host ID.

Or

- Run the **setup.exe** file in the root folder of the LoadRunner installation DVD.
- In the LoadRunner Setup window, click **Host ID**. The Host ID Generator opens.
- Click **Generate New**. The Host ID is displayed.

Installing the Citrix Server Agent

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

Note: The agent should be installed on your Citrix server machine—not Load Generator machines.

If you are installing a newer version of an agent, make sure to first uninstall the previous version (see removal instructions below).

To install the Agent for a 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 folder.
4. Follow the installation wizard to completion.

Note: After installation the agent is only active for LoadRunner invoked Citrix sessions—it is not 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 folder.

Note: The agent should 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** folder.
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**.

Installing VTS

Two versions of VTS are available: 32-bit and 64-bit. You can install 32-bit VTS on both 32-bit and 64-bit operating systems; 64-bit VTS can be installed only on 64-bit operating systems.

Note: Do not install 64-bit VTS and 32-bit VTS on the same machine.

To install VTS:

1. Run the appropriate VTS setup.exe file [**SetupVTS_x64.exe** or **SetupVTS_x86.exe**] that is located in the **Additional Components\Standalone Applications** folder in the LoadRunner installation media. The VTS Setup Wizard opens, displaying the welcome page.
2. Follow the online instructions to complete the VTS installation.

Note: At the end of the installation process, a shortcut for VTS is created and added to your desktop. This shortcut gives you access to the VTS UI on the local machine. If you change the port that is used to access the VTS UI, you must manually update the **URL** property of the shortcut. For details on how to change the VTS UI access port, see **Configuring VTS** in the VTS online documentation.

If you are unable to access the VTS UI, make sure that the VTS Service service is started. To start the VTS Service service, go to Control Panel > Systems & Security > Administration Tools > Services. Right-click VTS Service and select Start.

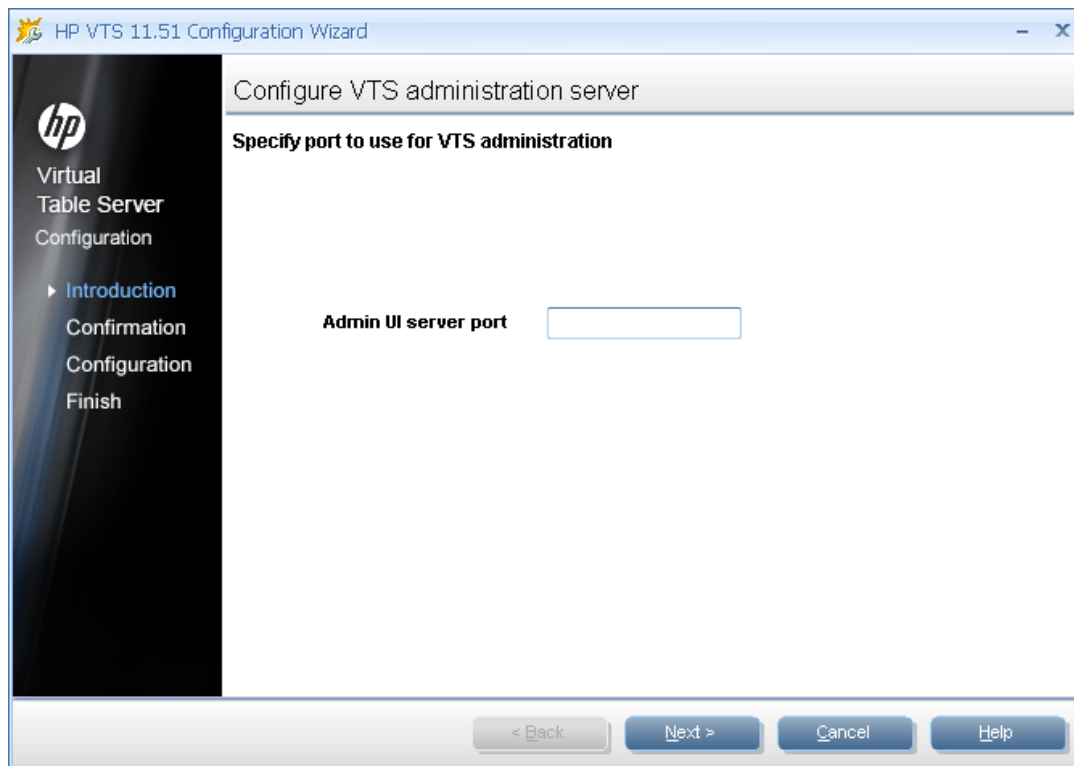
If you are unable to access the VTS UI, make sure that the **VTS Service** service is started. To start the VTS Service service, go to **Control Panel > Systems & Security > Administration Tools > Services**. Right-click **VTS Service** and select **Start**.

Configuring the VTS Administration Server

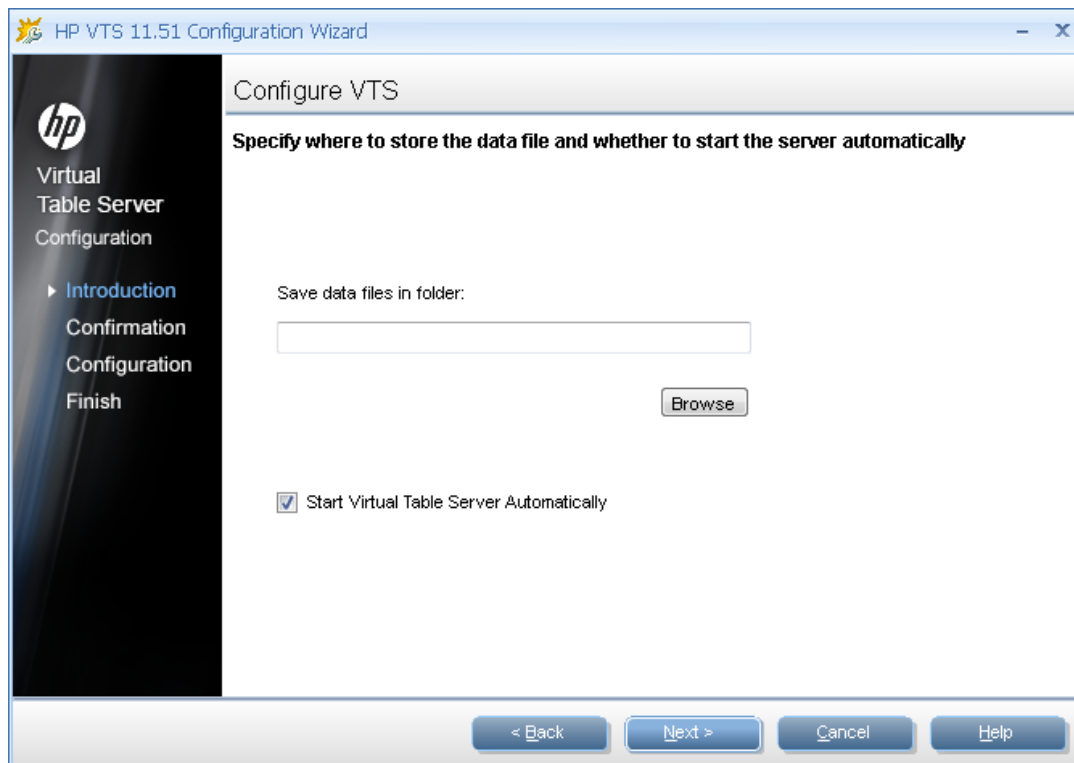
During the VTS installation process, you need to specify the port that is used to access the VTS server for administrative purposes.

To configure the VTS Administration server:

1. Begin the VTS installation process as described in ["Installing Additional Components" on page 26](#). During the VTS installation process, the Configure VTS administration server screen appears.



2. In the **Admin UI server port** box, enter 4000.
3. Click **Next** to continue with the installation. The Configure VTS screen appears.



4. Specify where to save the VTS data file.

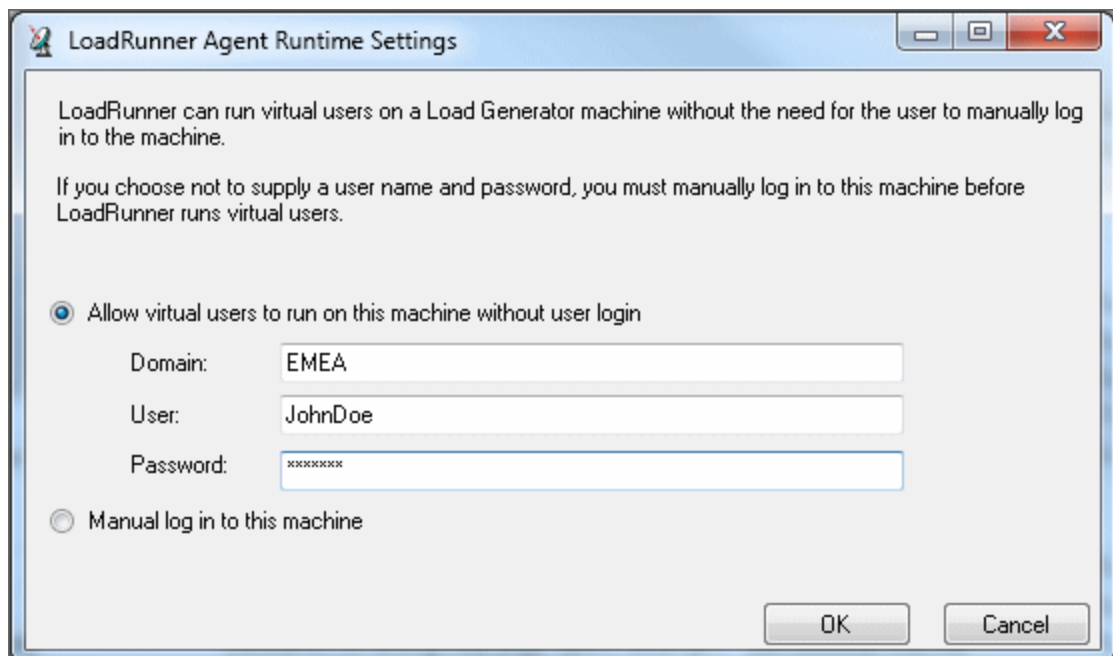
5. Make sure that the **Start Virtual Table Server Automatically** check box is selected.
6. Click **Next**, and then follow the wizard's instruction to complete the VTS installation procedure.

Configuring User Login Settings

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

To configure user login settings:

1. Select **Start > All Programs > HP Software > HP LoadRunner > Tools > 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 automatically logs on to the network from the Load Generator machine, so the Vusers can run without any manual intervention. Enter the network domain where the user machine resides, a user name, and password.

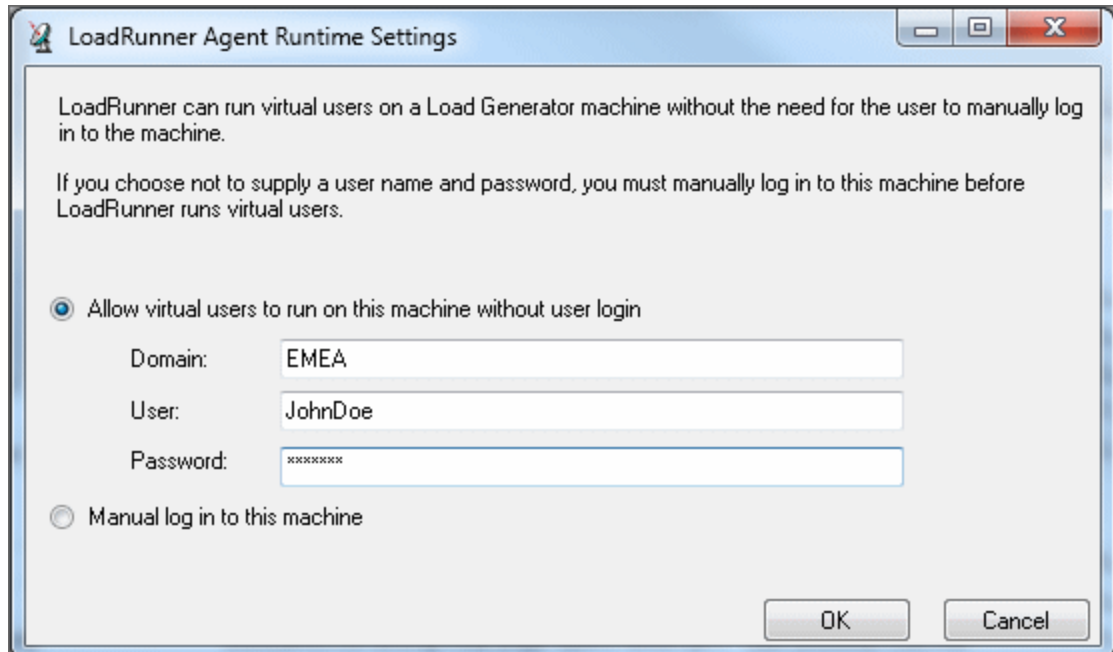
Note: The user specified in the automatic login must have administrator privileges on the Load Generator machine.

- **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.

4. Select **Start > All Programs > HP Software > HP LoadRunner > Tools > Agent Runtime Settings Configuration**. The LoadRunner Agent Runtime Settings dialog box opens.



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 12. You can begin the silent installation only after all the prerequisite software is installed.
2. To install all of the LoadRunner components, run one of the following commands from the command line:

```
msiexec.exe /qn /i "<Installation_disk>\lrunner\MSI\LoadRunner_x64.msi"
```

```
msiexec.exe /qn /i "<Installation_disk>\lrunner\MSI\LoadRunner_x86.msi"
```

Note:

- Each machine on which you are installing LoadRunner requires administration privileges.
- LoadRunner MSI supports both 32 bit and 64 bit operating systems. Ensure that you run the appropriate MSI version for your operating system.

- 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.

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.

Upgrading LoadRunner

Various options exist for upgrading your LoadRunner installation. The options vary depending on your installed version of LoadRunner, and the version to which you want to upgrade.

Note: The details in this section apply if you are upgrading the full version of LoadRunner, or one of the following LoadRunner components:

- VuGen standalone
- Analysis standalone
- Load Generator [Windows version]

Upgrading to LoadRunner 11.50

- If your installed version of LoadRunner is prior to version 11.00, uninstall LoadRunner and then install LoadRunner 11.50. For details, see ["Performing the Installation" on page 14](#).
- If you have LoadRunner 11.00 installed, install LoadRunner 11.50 as described in ["Performing the Installation" on page 14](#).

Upgrading to LoadRunner Service Pack 11.52

Before you can install LoadRunner Service Pack 11.52, you must have either LoadRunner 11.50 or LoadRunner Service Pack 11.51 installed. To install LoadRunner Service Pack 11.52, run the LoadRunner Service Pack 11.52 installation wizard, and then follow the online instructions.

Chapter 3

Installing the HP Load Generator on Linux

LoadRunner uses load generators to run Vusers. There are two versions of the LoadRunner Load Generator. One version runs Vusers on Windows platforms, and the other version runs Vusers on Linux platforms. You use a Windows-based Controller to control both the Windows-based and the Linux-based Vusers.

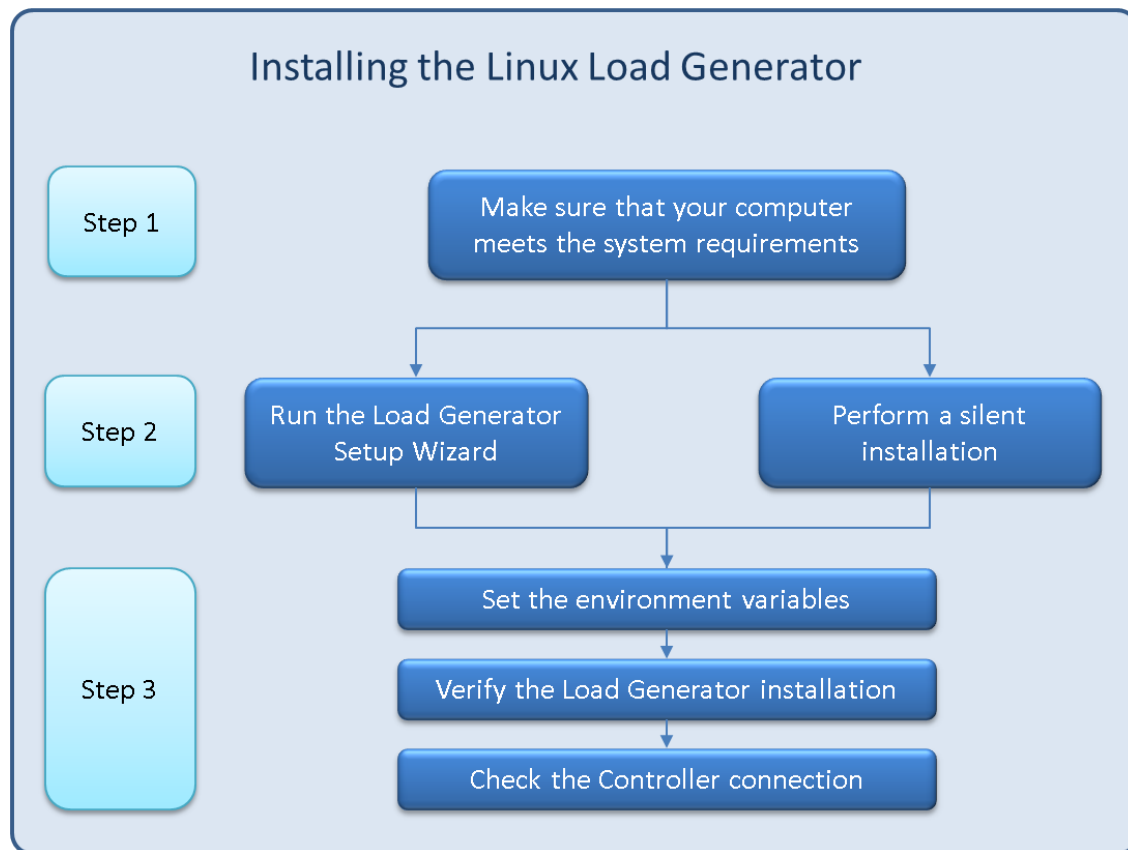
This section describes how to install the Load Generator on a Linux platform. For details on how to install the Load Generator on a Windows platform, see ["Installing LoadRunner on Windows" on page 14](#).

This section includes:

Understanding the Installation Process	39
Meeting the System Requirements	40
Running the Linux Load Generator Setup Wizard	41
Performing a Silent Installation	42
Configuring the Linux Environment	43
Setting the Environment Variables	43
Verifying the Linux Installation	44
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Upgrading the Linux LoadRunner Load Generator	47
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Increasing File Descriptors	48
Increasing Process Entries	49
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Understanding the Installation Process

Installing the HP Load Generator on a Linux platform involves the steps shown below:



1. Review the system requirements

Before you install the HP Load Generator on a Linux platform, make sure that your system meets the requirements, as described in ["Meeting the System Requirements"](#) on next page.

2. Install the HP Load Generator

You install HP Load Generator using the HP Load Generator Setup Wizard. For more information, see ["Running the Linux Load Generator Setup Wizard"](#) on page 41.

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 ["Configuring the Linux Environment"](#) on page 43.

Meeting the System Requirements

This section describes the hardware and software that are required for installing the HP Load Generator on a Linux platform.

Hardware requirements

Requirement	
Memory (RAM)	256 MB minimum Note: The exact memory depends on the types of Vuser protocols that are run, and the system under test, and can vary greatly.
Available Hard Disk Space	500 MB minimum
CPU Type	Intel Core, Pentium, AMD or compatible
CPU Speed	1 GHz minimum. 2 GHz or higher recommended

Supported Linux distributions

The following table lists the Linux distributions on which you can install a Linux Load Generator. Both 32-bit and 64-bit versions of the distributions are supported.

Distribution	Version
Red Hat Enterprise Linux	<ul style="list-style-type: none">Red Hat Kernel 5.0Red Hat Kernel 6.0
Oracle Enterprise Linux	<ul style="list-style-type: none">Enterprise Linux 5.0Enterprise Linux 6.0Unbreakable Enterprise Kernel 5.6Unbreakable Enterprise Kernel 6.0
Ubuntu Server	<ul style="list-style-type: none">10.04 LTS12.04 LTS
Amazon Linux	<ul style="list-style-type: none">2012.03 or later

Note: The HP Load Generator supports all X Servers.

Prerequisite packages for 64-bit installations

The following table lists the packages that must be installed before installing the 64-bit version of HP Load Generator.

Distribution	Prerequisites*	How to check if it is installed	How to install
Red Hat family including Oracle Linux and Amazon Linux	<ul style="list-style-type: none"> glibc.i686 	rpm -qa --qf '%{NAME}.%{ARCH}\n' grep -E 'glibc\.(i686 i386)'	yum install <package_name>
	<ul style="list-style-type: none"> libstdc++.i686 (Oracle Linux 6) libstdc++.i686 (Redhat Linux 5, Oracle Linux 5) libstdc++47.i686 (Amazon Linux) 	rpm -qa --qf '%{NAME}.%{ARCH}\n' grep -E 'libstdc\+.\+[0-9]*\.(i686 i386)'	
	<ul style="list-style-type: none"> ncurses-libs.i686 (needed by SecurityConsole) ncurses.i386 (Redhat Linux 5) 	rpm -qa --qf '%{NAME}.%{ARCH}\n' grep -E 'ncurses(-libs)?\.(i686 i386)'	
Ubuntu Server	<ul style="list-style-type: none"> libc6-i386 lib32stdc++6 	<ul style="list-style-type: none"> dpkg -l libc6-i386 dpkg -l lib32stdc++6 	apt-get install <package_name>
	<ul style="list-style-type: none"> lib32ncurses5 (needed by SecurityConsole) 		

Note: * The prerequisites listed in the table above indicate the naming patterns for the required packages. Actual names may vary depending on the exact system architecture.

Running the Linux Load Generator Setup Wizard

This section describes how to use the Load Generator Setup Wizard to install the HP Load Generator on a Linux platform.

For details on how to perform a silent installation, see ["Performing a Silent Installation"](#) on next page.

Note: There are two versions of the Load Generator Setup Wizard, a 32-bit version and a 64-bit version.

- The 64-bit version checks that the required pre-requisite software is installed on the computer. If any pre-requisite software is missing, a message is displayed, and the setup wizard will abort. Install the required package and then re-run the setup wizard.

- The 32-bit version of the setup wizard does not check that the pre-requisite software is installed.

Make sure that you run the correct version for your Linux installation.

To run the Load Generator Setup Wizard:

1. Change directory to `/<installation root directory>/InstData/Linux/VM`.
2. [sh and bash shells] Launch the setup wizard by typing: `source ./installer.sh`.
[csh and tcsh shells] Launch the setup wizard by typing: `./installer.sh`.

Note: It is recommended that you use the **source** command to run the setup wizard, as shown above. If you run the setup wizard without using the **source** command, you must set the environment variables for the current shell session. For details, see ["Setting the Environment Variables" on next page](#).

Follow the online instructions to install the HP Load Generator.

Note: If you encounter an error during the installation, see ["Troubleshooting" on page 56](#) for a possible solution.

3. Configure your environment

After you install the Load Generator, configure your environment as described in ["Configuring the Linux Environment" on next page](#).

Performing a Silent Installation

To perform a silent installation of the HP Load Generator, follow the procedure below:

1. Change the current directory to the installer directory:

```
cd <path_to_installer_cd>/InstData/Linux/VM
```

2. Run the following command to silent-install the Load Generator:

```
source ./installer.sh -i silent
```

Note: It is recommended that you use the **source** command to perform the silent installation, as shown above. If you perform the installation without using the **source** command, you must set up the environmental variables after installing the Load Generator. For details, see ["Setting the Environment Variables" on next page](#).

If you encounter an error during the installation, see ["Troubleshooting" on page 56](#) for a possible solution.

By default, the Load Generator will be launched at the end of the installation. If you do not want to automatically launch the Load Generator, run the **source** command using the following command-line option:

```
source ./installer.sh -i silent -DSTART_PRODUCT _AFTER_
INSTALL=No
```

Configuring the Linux Environment

This section describes the configuration steps you need to complete after installing the Load Generator, before you can begin working with the Load Generator.

To complete the setup process after installing the Load Generator:

1. Set the appropriate environment variables.
See ["Setting the Environment Variables" below](#).

Note: If you used the **source** command to install the Load Generator, the setup wizard automatically sets the appropriate environment variables - and there is therefore no need to perform this step.

2. Verify the Load Generator installation.
See ["Verifying the Linux Installation" on next page](#).
3. Check that the Controller can access the Load Generator.
See ["Checking the Controller Connection" on page 45](#).

Setting the Environment Variables

Note: This topic is applicable only if you ran the Load Generator Setup Wizard without using the **source** command. If you used the **source** command, there is no need to perform any of the procedures described below.

To enable the Load Generator to run, the following environment variables must be defined:

- **M_ROOT.** The location of the Linux Load Generator installation directory.
- **PATH.** The location of the Linux Load Generator **bin** directory.

The Load Generator Setup Wizard performs the following tasks relating to the environment variables:

- Adds the environment variable definitions to the system-wide startup scripts.
If the variable definitions were not correctly set during the setup, see ["Troubleshooting" on page 56](#) for possible solutions.
- Sets environment variables for the current shell session if the **source** command was used to run the setup wizard.

This topic describes how to set the environment variables for the current shell session if the **source** command was not used to run the setup wizard.

To determine if environment variables are set, run **verify_generator** (see ["Running verify_generator" on next page](#)) or use the following command:

```
echo $M_LROOT
```

If the name of the Load Generator installation folder is returned, then the environment variables are correctly set for current shell. If the name of the Load Generator installation folder is not returned, then manually set the variables as described below.

To manually set the environment variables for the current shell session (if the **source** command was not used to run the setup wizard), execute one of the following commands:

- Bash users:

```
source <Load Generator installation directory>/env.sh
```

- C Shell users:

```
source <Load Generator installation directory>/env.csh
```

Verifying the Linux Installation

The Load Generator installation includes a setup verification utility, **verify_generator**, that checks the Load Generator setup on your Linux machine. The verification utility checks environment variables and your startup scripts (`/etc/csh.cshrc`, `${HOME}/.cshrc` or `/etc/profile`, `${HOME}/.profile`) to verify that they are set up correctly.

It is strongly recommended that you run the **verify_generator** utility after installing the HP Load Generator, before attempting to invoke the Load Generator. For details on how to run the **verify_generator** utility, see ["Running verify_generator" on next page](#).

The **verify_generator** utility checks the following:

- All the prerequisite software is installed. (This check is performed for 64-bit installations only.)
- There are at least 128 file descriptors
- The `.rhosts` 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**
- `/etc/csh.cshrc`, `${HOME}/.cshrc` or `/etc/profile`, `${HOME}/.profile` defines the correct **M_LROOT**
- `.cshrc` or `.profile` exists in the home directory
- The current user is the owner of the `.cshrc` or `.profile`

- A Linux Load Generator installation exists in **\$M_LROOT**
- The executables have executable permissions
- PATH contains **\$M_LROOT/bin**, and **/usr/bin**
- The **rstatd** daemon exists and is running

Running `verify_generator`

It is recommended that you run the **verify_generator** utility after installing the HP Load Generator, before attempting to invoke the Load Generator. For details on what is checked by the **verify_generator** utility, see ["Verifying the Linux Installation" on previous page](#).

Note: To run this command, you must be a "normal" user and not root user.

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 any of the settings are incorrect, **verify_generator** returns **Failed**, and suggestions on how to correct the setup.

Checking the Controller Connection

If the LoadRunner Controller will connect remotely to the Load Generator using **rsh** (remote shell), you need to make sure that the Load Generator can be remotely accessed by the Controller.

1. On the Load Generator machine, locate the **.rhosts** file which is 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.

Connecting to a Linux Load Generator Without Using **rsh**

You can configure the Controller to connect to the Load Generator without using **rsh**. In this case, you need to activate the agent daemon on the Load Generator, as described below.

This section describes how to connect to a Linux Load Generator without using **rsh**.

1. On the Linux Load Generator, run the agent daemon by entering the following command from **<Load Generator installation directory>/bin**:

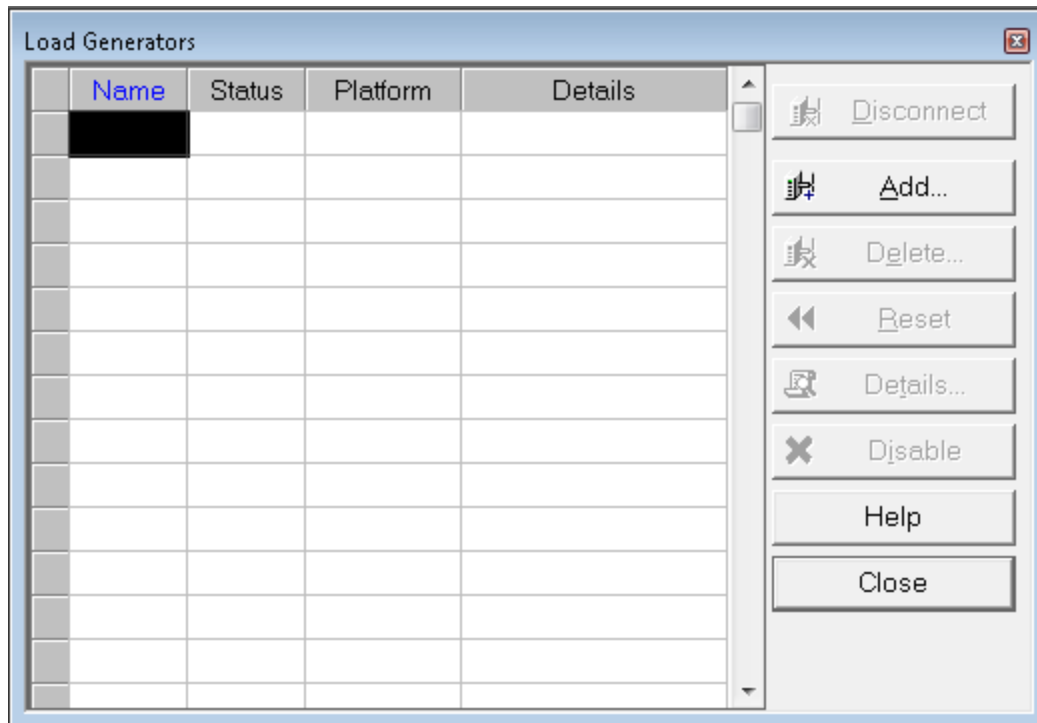
```
m_daemon_setup -install
```

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

The agent now keeps running, even if the user is logged off. You can stop the agent by using the command explained in step 9 below, or by rebooting the machine.

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

2. In the Controller, select **Scenario > Load Generators**. The Load Generators dialog box opens.



3. Click **Add**. The Load Generators dialog box opens.
4. In the **Name** box, enter the name of the computer on which the Load Generator is running.
5. From the **Platform** list, select **Linux**.
6. Click **More**.
7. Click the **Linux Environment** tab, and make sure that the **Don't use RSH** check box is selected.
8. Connect as usual.

9. 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** daemon, and if successful, you receive a message: **m_agent_daemon is down**.

Upgrading the Linux LoadRunner Load Generator

If you have a previous version of the Linux Load Generator installed and you want to upgrade to version 11.52, run the Load Generator Setup Wizard. The Setup Wizard will first uninstall the previous version, and will then install version 11.52. For details on how to run the setup wizard, see ["Running the Linux Load Generator Setup Wizard" on page 41](#).

Uninstalling the HP Load Generator

You can use the Load Generator Setup Wizard to uninstall the HP Load Generator, as described below. Note that the last step in the procedure enables you to perform either a regular uninstall or a silent uninstall.

1. Make sure that you are logged in as the same user who installed the HP Load Generator.
2. Change the current directory to the installation directory:

```
cd <path_to_installation_folder>/_HP_LoadGenerator_Installation
```

3. Run the following command, and then follow the instructions in the wizard to uninstall the HP Load Generator:

```
sh ./Change_HP_LoadGenerator_Installation
```

To perform a silent uninstall, run the following command:

```
sh ./Change_HP_LoadGenerator_Installation -i silent
```

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.

Note: Most operating systems using the Linux 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:

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Increasing Process Entries	49
Increasing Swap Space	49

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.
- File descriptors for the running Vusers. Each Vuser requires two descriptors.

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

Descriptors	Purpose of the descriptors
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 shells.

In the examples below, 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
```

Below is an alternate procedure to increase file descriptors. In this example, 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 Process Entries

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

This section describes how to reconfigure the kernel for Linux 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 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.

Chapter 4

Viewing or Modifying a License

To run Vusers from the LoadRunner Controller, you need the appropriate LoadRunner licenses. These licenses must be available on the computer on which the LoadRunner Controller is installed. You use the LoadRunner License Utility to manage your LoadRunner licenses. The LoadRunner License Utility enables you to:

- View the details of licenses that are currently installed
- Install additional licenses

During the LoadRunner installation, if LoadRunner does not detect a valid LoadRunner license on your computer, you are automatically issued with a temporary 10-day license for 25 Vusers. To use the Controller beyond the 10-day period, you must request and enter additional license information for your LoadRunner installation.

This chapter describes how to use the HP LoadRunner License Utility to view, enter, and modify license information.

Installing a New License

After you receive your license information from your HP representative, you can use the HP LoadRunner License Utility to enter the license information.

Using the LoadRunner License Utility, you can install a new license by using either a license file or a license key.

- **License file.** When you purchase a new license, HP may send you an email with an attached license file. The license file contains the license keys for one or more licenses. When you use the license file to install the new licenses, the LoadRunner License Utility reads the license file and extracts all the license keys that are included in the license file. You can then select which of the available licenses to install. You may choose to use a license file to install LoadRunner licenses because the license file enables you to install multiple licenses simultaneously.
- **License key.** Unlike a license file, a license key enables you to install just a single license at a time. You may receive the license key directly from HP, or the license key may be included in a license file that you receive from HP.

To install a new LoadRunner license:

1. Click **Start > All Programs > HP Software > HP LoadRunner > License > LoadRunner License Utility**. The HP LoadRunner License Utility opens.
2. In the LoadRunner License Utility, click **Install New Licenses**. The LoadRunner License Utility - New License dialog box opens.

To install using a license file

3. Click the **Browse** button to the right of **License file**, and locate the license file that was sent to you by HP.

4. Click **View License File Content** to display details of the licenses that are included in the license file.
5. In the list of licenses included in the license file, select the licenses to install.

To install using a license key

6. Click **Install a license using a license key**.
7. Enter the license key that you received from HP.

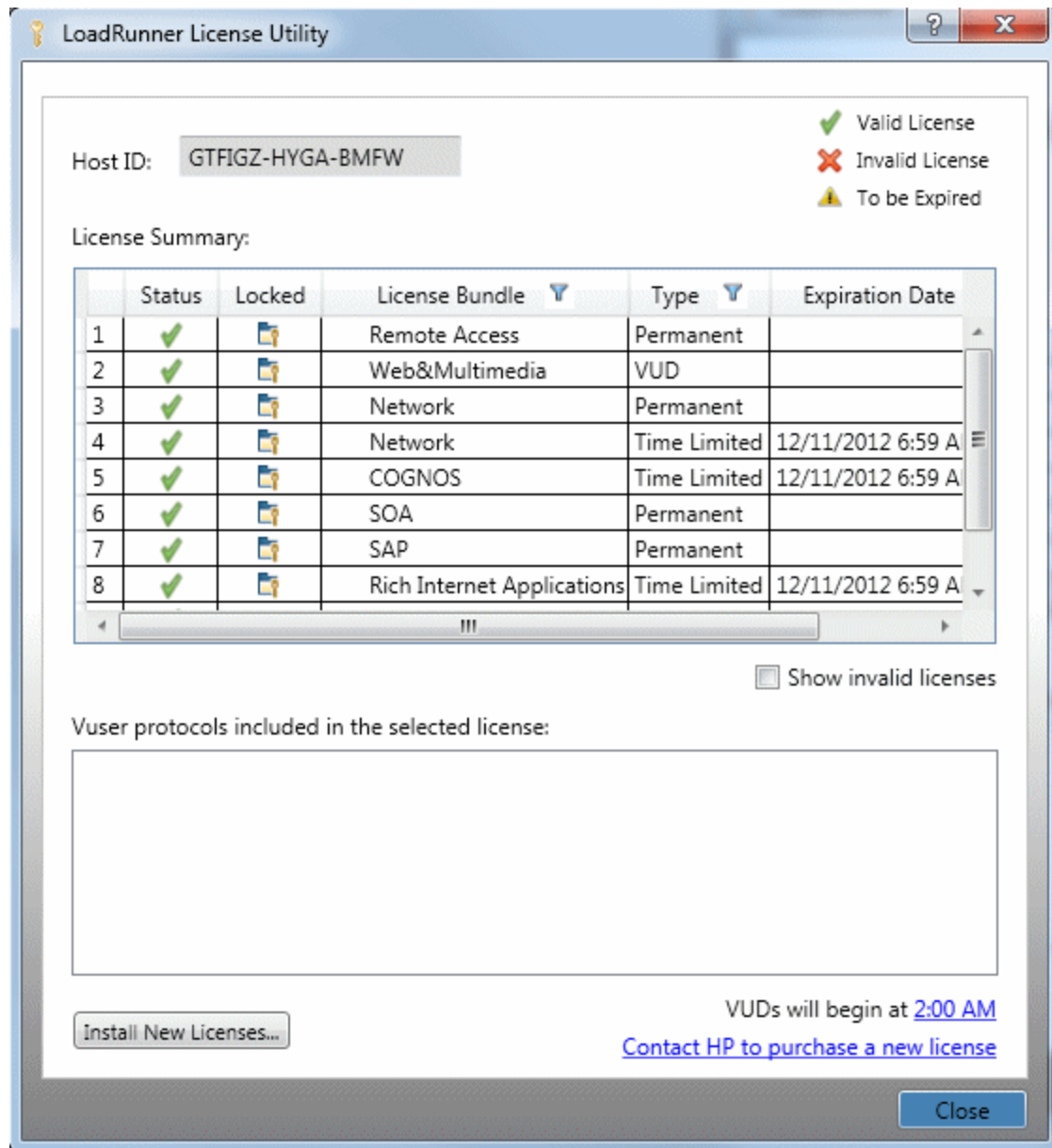
To complete the installation

8. Click **Install**. The selected licenses are installed.
9. Click **Close**. In the License Summary table, make sure that the new licenses appear in the list of installed licenses.

Viewing License Information

You can use the HP LoadRunner License Utility to view your license information.

To view your license information, click **Start > All Programs > HP Software > HP LoadRunner > License > LoadRunner License Utility**. The HP LoadRunner License Utility opens.



The HP LoadRunner License Utility displays the following information:

- **Host ID.** Identifies the computer on which the Controller is installed. You may need to provide the Host ID when purchasing new LoadRunner licenses. To obtain new LoadRunner licenses, click the Contact HP to purchase a new license link at the bottom of the LoadRunner License Utility.
- **License Summary.** Displays a list of the LoadRunner licenses that are installed on the Controller computer. Click on any license in the table to display additional details about the license. The Vuser protocols included in the selected license box displays a list of the Vuser protocols that are included in the selected license.
- **Status.** Indicates the status of the license.

- **Valid.** Indicates that the license is current and functional.
- **Invalid.** Indicates that the license is no longer valid. An Evaluation license or an Instant on license becomes invalid if a Time limited, Permanent, or VUD license is installed for the same Vuser bundle. A VUD license becomes invalid when the remaining capacity is zero. By default, the License Summary table does not show invalid licenses. Select the Include invalid licenses check box to show invalid licenses. Note that a license may become temporarily invalid if the LoadRunner License Utility detects that the system clock has been tampered with. To restore the affected licenses, reset the system clock to the current time.
- **To be Expired.** Indicates that the license will expire within 30 days.
- **Locked.**
 - **Locked.** Indicates that the license can be installed only on the computer on which it is currently installed – not on any other computer.
 - **Unlocked.** Indicates that the license can be installed on any computer.
- **License Bundle.** Indicates the name of the Vuser protocol bundle to which the license applies. The license enables the Controller to run Vusers of any protocol that is included in the protocol bundle. To display a list of the Vuser protocols that are included in a bundle, click the license in the License Summary table. A list of the associated Vuser protocols is displayed at the bottom of the LoadRunner License Utility.

Note that a Partner License icon that appears to the left of a license bundle indicates that the license is for a LoadRunner partner, and not for standard LoadRunner Vuser protocols. Partner licenses enable third-party applications to be controlled by the LoadRunner Controller. Partner licenses operate the same as standard LoadRunner licenses.

- **Type.** Indicates the type of license:
 - **Instant On** licenses are installed when LoadRunner is first installed. Note that the expiration date of an **Instant On** license is calculated based on the date on which LoadRunner is first installed. You cannot extend the **Expiration Date** of an **Instant On** license by uninstalling and then reinstalling LoadRunner.
 - **Evaluation** licenses are supplied to enable potential customers to evaluate LoadRunner functionality.
 - **Time limited** licenses are valid for a limited period only. Time limited licenses are typically issued for 60 or 365 days.
 - **Permanent** licenses do not expire - there is no time limit to the validity of these licenses.
 - **VUD** licenses are issued with a limited capacity. The capacity is defined by the measurement Vuser-days or VUDs. For example, the capacity of a VUD license may be 1000 VUDs. Each day that the Controller is used to run Vusers, the maximum number of Vusers that ran simultaneously on that day is deducted from the remaining license capacity. If a maximum of 200 Vusers ran on day 1, then 800 VUDs remain in the license.

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

- **Expiration Date.** Indicates the date and time when **Time limited**, **Instant on**, and **Evaluation** licenses expire.
- **Capacity.** Indicates the capacity of the selected license:
 - For **Instant on**, **Evaluation**, **Time Limited**, and **Permanent licenses**, **Capacity** indicates the maximum number of Vusers [of the type specified by the license bundle] that can be run simultaneously from the LoadRunner Controller.
 - For VUD licenses, **Capacity** indicates the number of VUDs that remain in the license.
- **Show invalid licenses.** Select this check box to show invalid licenses in the list of LoadRunner licenses that are installed.
- **Vuser protocols included in the selected license.** Displays the Vuser protocols that are included in the selected license.
- **Install New Licenses.** Opens the New License dialog box which enables you to install new LoadRunner licenses.

Generating a Host ID

LoadRunner requires the appropriate licenses to run Vusers from the Controller. The licenses may be either locked or unlocked.

- **Locked.** Indicates that the license can be installed only on the computer on which it is currently installed – not on any other computer. The computer is identified by the Host ID. For details on how to determine the Host ID for your computer, see ["Determining the Host ID" on page 30](#).
- **Unlocked.** Indicates that the license can be installed on any computer.

Troubleshooting Licenses

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

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 must include the required spaces. The license key is case sensitive.
- If you receive a permission denied error message during Controller startup, you must grant Full Control permission for the Registry's HKEY_LOCAL_MACHINE key and in the **WINNT** folder (the folder where Windows is installed), as described below.

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**.

Chapter 5

Troubleshooting

This topic describes troubleshooting tasks relating to the setup of the Linux Load Generator.

Environment variables were not set correctly in the system-wide startup scripts

To enable the Load Generator to run, the system-wide startup scripts must be modified to set specific environment variables. The required modifications to the startup scripts are made by the Load Generator Setup Wizard. If the startup scripts were not correctly modified during the setup of the Load Generator, you can manually make the required changes to the startup scripts as described below. The required changes differ slightly between C shell users, and Bourne and Korn shell users.

- **Manually modifying the startup scripts for C shell users**

During the Load Generator installation process, the setup wizard creates the **env.csh** script. This script includes the commands to set the required environment variables for C shell users. A sample **env.csh** script is shown below.

```
setenv PRODUCT_DIR <Load Generator installation directory>

setenv M_LROOT ${PRODUCT_DIR}

    if ( ! $?PATH ) then
        setenv PATH ""
    endif

setenv PATH ${M_LROOT}/bin:${PATH}"
```

Add the following line to the **/etc/csh.cshrc** or **~/.cshrc** startup script to execute the **env.csh** script during the shell startup:

```
source <Load Generator installation directory>/env.csh
```

For example:

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

The effect of making the above modification to the startup script is similar to the modifications that are made by the setup wizard. A sample of the modifications that the setup wizard makes to the **/etc/csh.cshrc** startup script is shown below:

```
# New environment setting added by HP_LoadGenerator on Wed Jan 30
16:20:10 IST 2013 2.
```



```
# The unmodified version of this file is saved in
/etc/.login1557000131.

# Do NOT modify these lines; they are used to uninstall.

setenv PRODUCT_DIR "/opt/HP/HP_LoadGenerator"

# End comments by InstallAnywhere on Wed Jan 30 16:20:10 IST 2013
2.

# New environment setting added by HP_LoadGenerator on Wed Jan 30
16:20:10 IST 2013 5.

# The unmodified version of this file is saved in
/etc/.login1557000131.

# Do NOT modify these lines; they are used to uninstall.

setenv M_LROOT "/opt/HP/HP_LoadGenerator"

# End comments by InstallAnywhere on Wed Jan 30 16:20:10 IST 2013
5.

# New environment setting added by HP_LoadGenerator on Wed Jan 30
16:20:10 IST 2013 8.

# The unmodified version of this file is saved in
/etc/.login1557000131.

# Do NOT modify these lines; they are used to uninstall.

if ( ! $?PATH ) then

setenv PATH ""

endif

setenv PATH "/opt/HP/HP_LoadGenerator/bin:${PATH}"

# End comments by InstallAnywhere on Wed Jan 30 16:20:10 IST 2013
8.
```

- **Manually modifying the startup scripts for Bourne and Korn shell users**

During the Load Generator installation, the setup wizard creates the **env.sh** script. This script includes commands to set the required environment variables for Bourne shell and Korn shell users.

Add the following line to the **/etc/profile** or **~/.profile** startup script to execute the **env.sh** script during the shell startup:

```
source <Load Generator installation directory>/env.sh
```

For example:

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

The effect of making the above modification to the startup script is similar to the modifications that are made by the setup wizard. A sample of the modifications that the setup wizard makes to the **/etc/profile** startup script is shown below:

```
# New environment setting added by HP_LoadGenerator on Fri Jan 18
11:14:24 IST 2013 1.

# The unmodified version of this file is saved in
/etc/profile1806316421.

# Do NOT modify these lines; they are used to uninstall.
PRODUCT_DIR=/opt/HP/HP_LoadGenerator

export PRODUCT_DIR

# End comments by InstallAnywhere on Fri Jan 18 11:14:24 IST 2013
1.

# New environment setting added by HP_LoadGenerator on Fri Jan 18
11:14:24 IST 2013 4.

# The unmodified version of this file is saved in
/etc/profile1806316421.

# Do NOT modify these lines; they are used to uninstall.
M_LROOT=/opt/HP/HP_LoadGenerator

export M_LROOT

# End comments by InstallAnywhere on Fri Jan 18 11:14:24 IST 2013
4.

# New environment setting added by HP_LoadGenerator on Fri Jan 18
11:14:24 IST 2013 7.

# The unmodified version of this file is saved in
/etc/profile1806316421.

# Do NOT modify these lines; they are used to uninstall.
PATH="/opt/HP/HP_LoadGenerator/bin:${PATH}"

export PATH

# End comments by InstallAnywhere on Fri Jan 18 11:14:24 IST 2013
7. LoadRunner settings #PATH=${M_LROOT}/bin:$PATH; export PATH
```

Error when installing the Load Generator on a Linux platform:

When you use the **source installer.sh** command to install the Load Generator [version 11.52] on a Linux machine on which the Load Generator [version 11.52] was previously installed, you may receive the following error message:

"An error occurred while trying to manage the selected instance."

Solution:

1. Open the registry file `/var/.com.zerog.registry.xml` and locate the element **"product"** with attribute **"name"="HP_LoadGenerator"**.

For example: `<product name="HP_LoadGenerator" id="77f695c1-1f0c-11b2-883d-c486a85f6555" version="11.52.0.0" copyright="2012" info_url="http://www.hp.com" support_url="http://www.hp.com" location="/opt/HP/HP_LoadGenerator" last_modified="2013-01-21 13:12:14">`

2. Record the value of the **"location"** attribute.
3. Remove the entire directory that is referred to by the **"location"** attribute.
4. Delete the registry file `/var/.com.zerog.registry.xml`.
5. Rerun the **source installer.sh** command.

Environment variables are not unset after uninstalling the Load Generator

When you uninstalled the Linux Load Generator, the setup wizard might not have unset the Load Generator environment variables (M_LROOT, PRODUCT_DIR, and PATH) for the current shell. To unset the environment variables, close the current shell session and invoke a new one, or manually unset the variables as described below:

- To unset the M_LROOT and PRODUCT_DIR variables:
 - [bash shells] Use the **unset** command.
 - [csh shells] Use the **unsetenv** command.
- To update the PATH variable to exclude the Load Generator binary directory, type:
 - [bash shells] `PATH=<required list of paths>; export PATH`
 - [csh shells] `setenv PATH <required list of paths>`

Unable to run Vusers on the Load Generator

If you are unable to run Vusers on the Load Generator, no specific error is reported, and the Vuser protocol requires a third-party application or client to be present on Load Generator side, check the dynamic libraries used by the application. This will enable you to establish if any shared objects cannot be found. A shared object that cannot be found may indicate either a missing prerequisite package or an environment variable issue.

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

```
ldd application_name
```

For example, type `ldd mdrv` to determine if all the dependencies of the **mdrv** executable can be found. If any dependencies are not found, run **verify_generator** as described in ["Running verify_generator" on page 45](#).

Note: 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).