

HP LoadRunner

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LoadRunner 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.

LoadRunner Documentation

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.

Documentation Updates

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 online resources provide more information for LoadRunner users:

Resource	URL
HP Software Web site	http://www.hp.com/go/software
HP Software Support	http://www.hp.com/go/hpsupport
Troubleshooting & Knowledge Base	http://h20230.www2.hp.com/troubleshooting.jsp
LoadRunner Community Forums	http://www.hp.com/go/lrpc
LoadRunner Blog	http://h30499.www3.hp.com/t5/HP-LoadRunner-and-Performance/bg-p/sws-585
HP Live Network (HPLN)	https://hpln.hp.com/group/performance-center-and-loadrunner
LoadRunner Integrations	http://support.openview.hp.com/sc/solutions/index.jsp#tab=tab1

Resource	URL
LoadRunner on Twitter 	https://twitter.com/hploadrunner
LoadRunner on Linked In 	http://www.linkedin.com/groups?home=&gid=1879289

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.

This chapter includes:

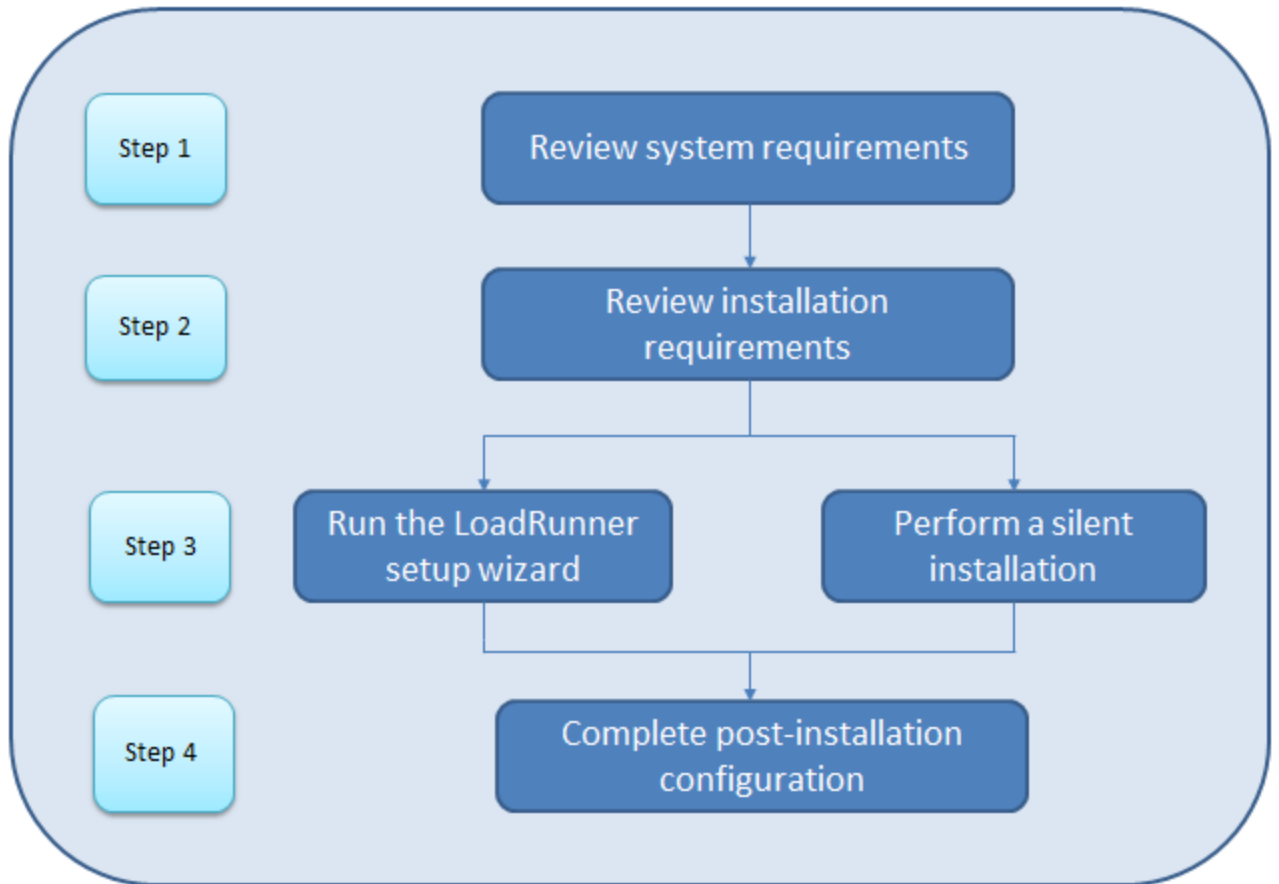
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LoadRunner Windows Installation Process

Your LoadRunner installation DVD includes a setup program that guides you through the process of installing LoadRunner's components.

The LoadRunner installation installs a full LoadRunner configuration, which includes the Controller, the Virtual User Generator (VuGen), Analysis, and the Load Generator. For details on the LoadRunner components, see "[LoadRunner Installation Components](#)" on page 10.

Installing HP LoadRunner on a Windows system involves the steps shown below:



1. Review system requirements

Before you install HP LoadRunner, make sure that your system meets the hardware and software requirements. For details, see ["Windows System Requirements" on the next page](#).

Note: Prerequisite software: 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 installs it. For details, see ["Prerequisite Software" on the next page](#).

2. Review installation requirements

Before you begin the installation, make sure you meet the following installation requirements:

- You must have full local administrative rights on the designated machine.
- Installation must be performed at the destination machine. LoadRunner does not support installation via terminal service.

- For the full list of components that can be installed on the same physical machine at the same time, refer to the support matrix on the HP Software Support site at: http://h20230.www2.hp.com/sc/support_matrices.jsp.

3. Perform the installation

- a. Run the setup wizard to install the full version of LoadRunner, LoadRunner standalone components, or additional components on a Windows system. For details, see "[Performing the Installation](#)" on page 12.

To perform a silent installation, see "[Silent Installation of LoadRunner](#)" on page 14.

- b. After you complete the LoadRunner installation, you can install a localized version to view the LoadRunner, VuGen Standalone, and Analysis Standalone user interface in your local language. For details, see "[LoadRunner User Interface Language Pack Installation](#)" on page 15.

4. Complete post-installation configuration

- Manage LoadRunner licenses. For details, see "[Viewing or Modifying a License](#)" on page 17.
- Configure LoadRunner to run Vusers on a Load Generator machine, without the need to log on manually. For details, see "[Configuring User Login Settings](#)" on page 22.

Load Generator 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 details on installation and configuration of the Load Generator on a Linux system, see "[Installing and Configuring the Load Generator on Linux](#)" on page 24.

Windows System Requirements

For the list of system requirements necessary for running LoadRunner on a Windows system, refer to the Readme, available from the LoadRunner installation menu page, or on HP Live Network: http://www.hp.com/go/PCLR_SysReq.

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

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. If you continue with the installation, all missing prerequisites will be installed.

Installing LoadRunner on Windows 8 and Windows 2012: .NET Framework 3.5 SP1 is not installed by the LoadRunner installer, due to a Windows policy preventing the standalone installation. You must install it using either Windows Update or the Windows installation disk. If you have not done so in advance, you will be prompted to select one of these options during LoadRunner installation to install .NET Framework 3.5 SP1.

To perform a silent installation, make sure that .NET Framework 3.5 SP1 is already installed, or is included in the machine image you use for installation.

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
- .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) and (x64)
- Microsoft Visual C++ 2008 SP1 Redistributable Package MFC Security Update (x86) and (x64)
- Microsoft Visual C++ 2010 SP1 Redistributable Package MFC Security Update (x86)
- Microsoft Visual C++ 2012 SP1 Redistributable Package MFC Security Update
- Microsoft Visual C++ 2012 SP1 Redistributable Package MFC Security Update x64 only on 64 bit OS
- Microsoft Data Access Components (MDAC) 2.8 SP1 (or later)

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. The Controller must be installed on the computer used to control the Vusers.
- **Analysis.** Graphs and reports for analyzing the load test.

- **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.
- **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 "Working with Firewalls in LoadRunner" chapter of the *HP LoadRunner User Guide*.
- **Monitors over Firewall.** Components on the agent machine for monitoring over the firewall. For more information, refer to the "Working with Firewalls in LoadRunner" chapter of the *HP LoadRunner User Guide*.
- **Online Documentation.** All LoadRunner user guides in PDF format.
- **Samples.** The LoadRunner sample flight application and Web server.

Chapter 2: Installing LoadRunner on Windows

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

This chapter includes:

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Performing the Installation

Caution: Before you install LoadRunner, review the pre-installation information, including the system requirements, described in ["Before You Install" on page 7](#).

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.

2. Run the **setup.exe** file in the root folder of the LoadRunner installation DVD.

The LoadRunner installation program begins and displays the installation options.

3. Select the required installation option.

Note: If LoadRunner 11.00 or later is installed on your machine, the installation process detects the older version, and gives you the option to upgrade or exit the installation.

If a version earlier than LoadRunner 11.00 is installed on your machine, you must first uninstall. For details, see ["Upgrading to LoadRunner 12.00" on page 16](#).

From the installation menu page, select one of the following installation 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 full installation, see "[LoadRunner Installation Components](#)" on page 10

- **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 "Working with Firewalls in LoadRunner" chapter in the *HP LoadRunner 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 "Working with Firewalls in LoadRunner" chapter in the *HP LoadRunner User Guide*.
- **User Interface Packs.** Enables you to install localized versions of LoadRunner. For details, see "[LoadRunner User Interface Language Pack Installation](#)" on page 15.

Note: This option is available on non-English operating systems only.

- **Additional Components.** Opens the Additional Components folder located in the root folder of the LoadRunner installation DVD. For details of the additional components that you can install, see the **Advanced Topics > Additional Components** section in the VuGen User Guide.

4. If necessary, install prerequisite software.

Specific software, for example, Microsoft Visual C++, 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 9.
- **Installing LoadRunner on Windows 8 and Windows 2012:** .NET Framework 3.5 SP1 is not installed by the LoadRunner installer, due to a Windows policy preventing the standalone installation. You must install it using either Windows Update or the Windows installation disk. If you have not done so in advance, you will be prompted to

select one of these options during LoadRunner installation to install .NET Framework 3.5 SP1.

5. Perform the LoadRunner installation.

The LoadRunner Setup Wizard opens, displaying the welcome page.

Follow the instructions in the wizard to complete the installation.

Note:

- The installation path for LoadRunner or LoadRunner components may not contain non-English characters.
- During installation, you can select the **Start LoadRunner Agent after installation** option, which starts the LoadRunner Agent on the Load Generator immediately after installation. The Agent enables communication between the Load Generator and the Controller. For more details on the LoadRunner Agent, see the *HP LoadRunner User Guide*.
- To repair LoadRunner, run the setup.exe file located in the root directory of the LoadRunner installation DVD, select **LoadRunner Full Setup**, and then select the **Repair** option in the setup wizard.
- 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 22

Silent Installation of LoadRunner

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

Caution: Before you install LoadRunner, review the pre-installation information, including the system requirements, described in "[Before You Install](#)" on page 7.

To perform a silent installation of LoadRunner:

Run one of the following commands from the command line:

- To install all of the LoadRunner components after prerequisite software is already installed:

```
<Installation_disk>\lrunner\<your_language_folder>\setup.exe /s
```

- To install all of the LoadRunner components, including prerequisite software, run both of the following commands:

```
<Installation_disk>\lrunner\<language_folder>\setup.exe  
/InstallOnlyPrerequisite /s
```

```
msiexec.exe /qn /i "<Installation_disk>\lrunner\MSI\LoadRunner_<x64_or_<br>x86>.msi"
```

- To install a LoadRunner standalone application:

```
<Installation_disk>\Standalone Applications\Setup<component_name>.exe /s /a /s
```

- To install a LoadRunner additional component:

```
<Installation_disk>\Additional Components\<setup_file_path> /s /a /s
```

Note:

- For the full list of prerequisite software, see ["Prerequisite Software" on page 9](#).
- 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.
- To prevent the LoadRunner Agent on the Load Generator from starting immediately after installation, add the following to the command line command: `START_LGA=0`. The Agent enables communication between the Load Generator and the Controller. For more details on the LoadRunner Agent, see the *HP LoadRunner User Guide*.

LoadRunner User Interface Language Pack Installation

The 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 LoadRunner installation DVD.

Note: Language packs must be installed on Windows operating systems with the same native language as the language pack you are installing. For example, on Windows 7 x64 - Spanish, you first install the LoadRunner English installation, and then the LoadRunner Spanish language pack.

1. Make sure that HP LoadRunner English is already installed.
2. In the root folder of the LoadRunner installation DVD, run **setup.exe**. The LoadRunner

installation program begins and displays the installation options.

3. Click **User Interface Packs**. The User Interface Packs folder on the installation DVD opens.
4. Navigate to the folder for the language and component that you want to install. Run the installation file and follow the on-screen instructions.

Upgrading to LoadRunner 12.00

The upgrade process varies depending on your installed version of LoadRunner.

Upgrading from LoadRunner 11.00 or later

Install LoadRunner 12.00 as described in ["Performing the Installation" on page 12](#). The installation process detects the older version, and gives you the option to upgrade or exit the installation.

Upgrading from a LoadRunner version earlier than 11.00

1. Uninstall LoadRunner.

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 DVD, select **LoadRunner Full Setup**, and then select the **Remove** option in the setup wizard.

2. Install LoadRunner 12.00.

For details, see ["Performing the Installation" on page 12](#).

Chapter 3: Post-installation Configuration

This chapter describes configuration you may need to perform after you complete the LoadRunner installation.

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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.

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

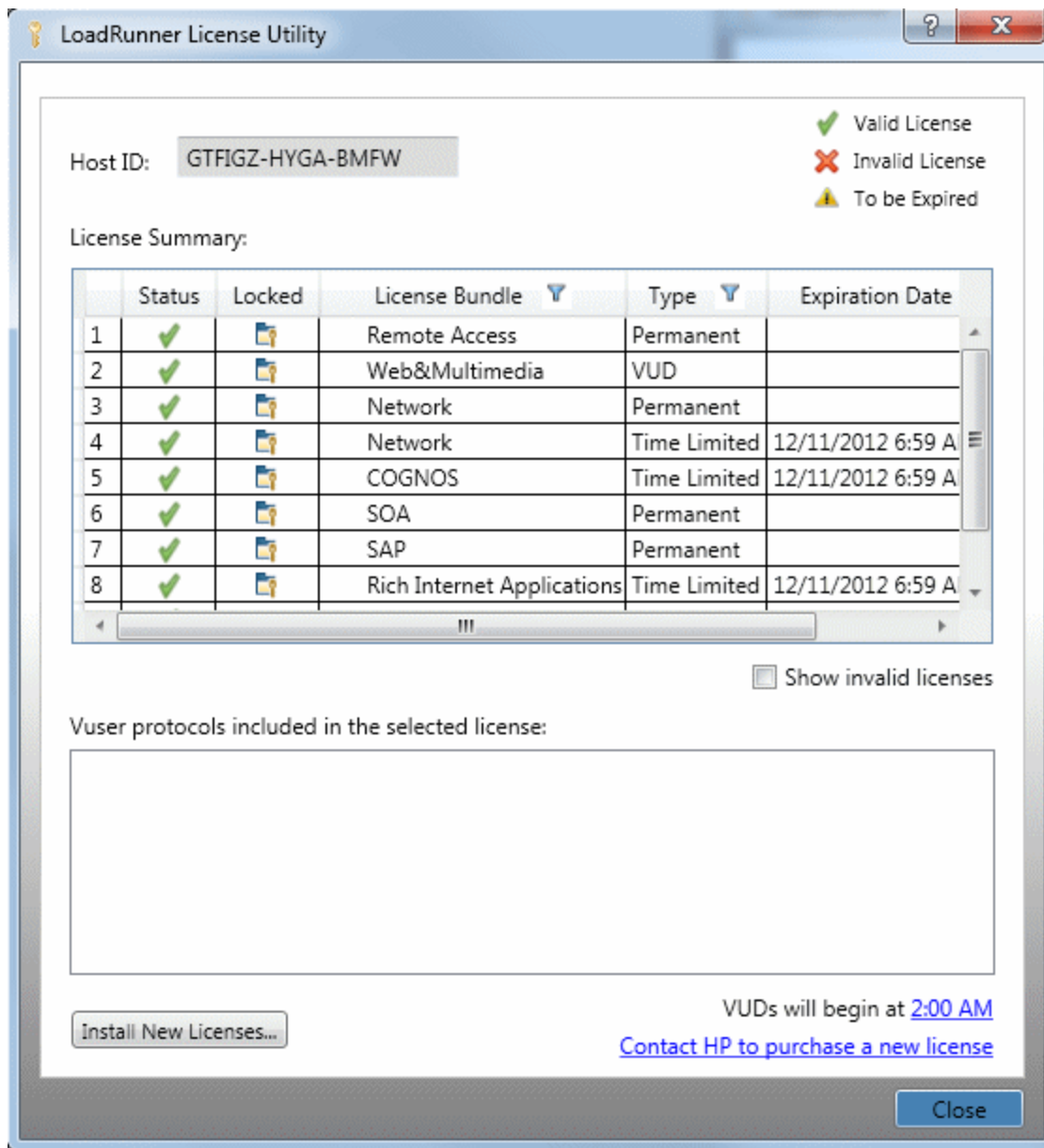
8. Click **Install**. The selected licenses are installed.
9. Click **Close**. In the License Summary table, make sure that the new licenses appear in the list of installed licenses.

Viewing License Information

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

The **Community** license provides 50 permanent Vusers at no cost. These Vusers are valid for all protocols except for GUI (UFT), COM/DCOM, and template protocols.

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 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:
 - **Freemium** licenses are installed when LoadRunner is first installed.
 - **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**, and **Evaluation** licenses expire.
- **Capacity.** Indicates the capacity of the selected license:
 - For **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.

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:

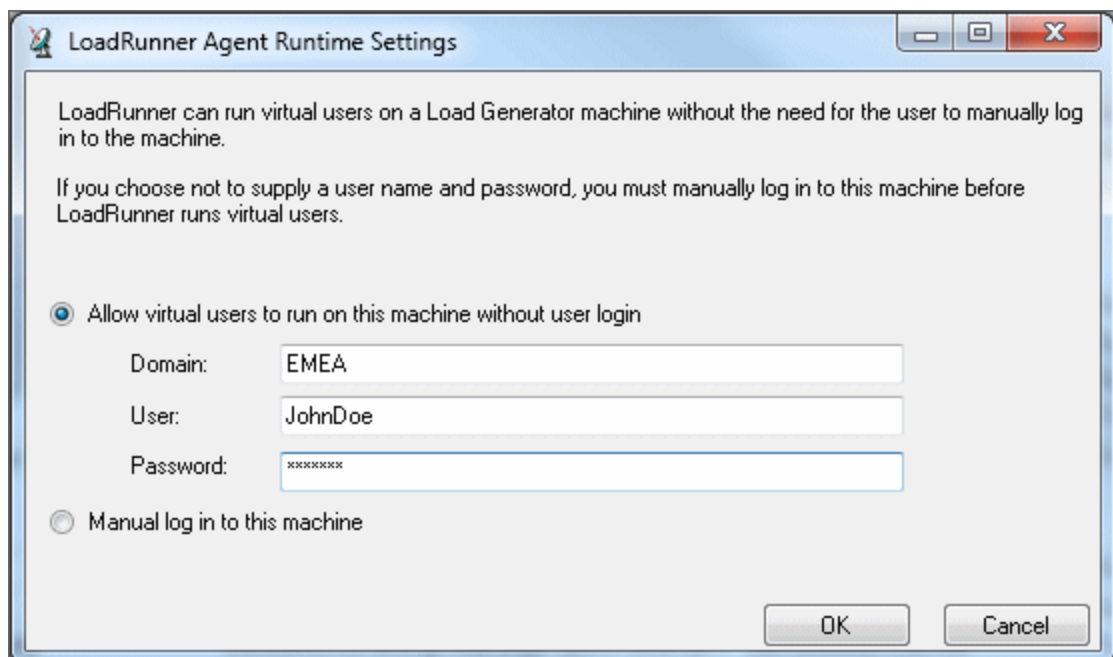
1. Select the <System Drive>:\WinNT folder.
2. Invoke **Properties**.
3. Select the **Security** tab.
4. Click **Permissions**.
5. Add **Full Control** permission for the user.
6. Turn on the **Replace Permissions on Subdirectories** flag.
7. Click **OK**.

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.

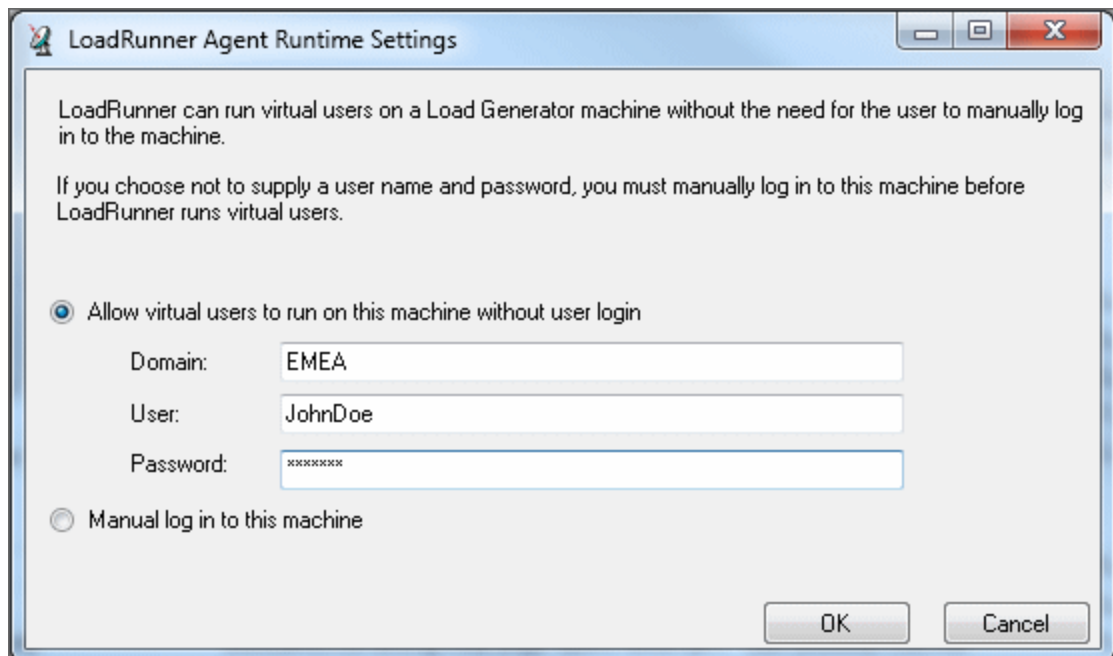
Note: When created, the LoadRunner Agent service starts with the **LocalSystem** account (not as a specified user). The specified credentials are used by the Agent service to start the *mdrv.exe* process when you run the script.

- **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.



Chapter 4: Installing and Configuring the 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 chapter 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 12](#).

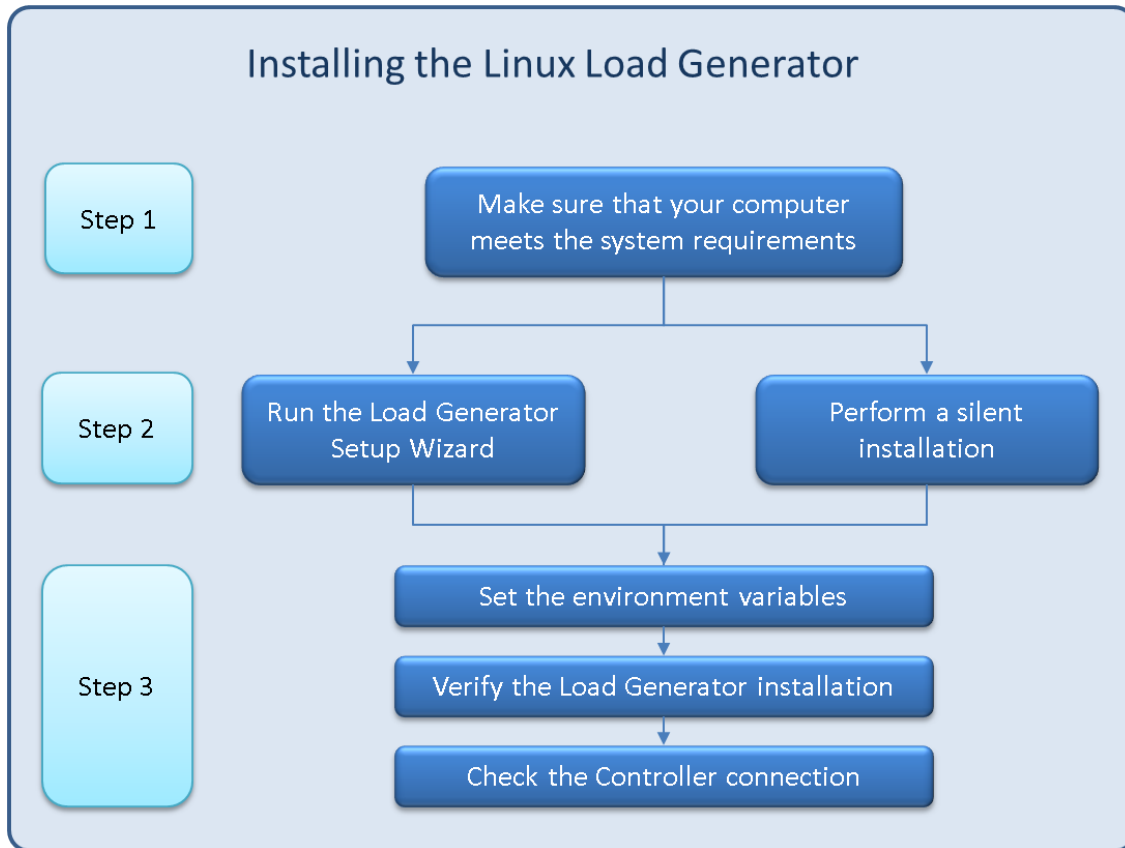
Note: For troubleshooting information, see ["Troubleshooting the Load Generator Linux Installation" on page 36](#).

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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 "[Linux System Requirements](#)" below.

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 the next page.

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 28.

Linux System Requirements

For the list of system requirements necessary for running LoadRunner on a Linux system, refer to the Readme, available from the LoadRunner installation menu page, or on HP Live Network: http://www.hp.com/go/PCLR_SysReq.

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 the next page](#).

Note: During installation, you can optionally install CA and SSL certificates for the Load Generator. These certificates are used for authentication and secure communication respectively. Both certificates should be in *.cer (X.509) format.

- For a CA certificate: You can enter the path to an existing certificate, or leave blank to skip the step. If you want to install the CA certificate, it should be generated in advance.
- For an SSL certificate: You can select it from an existing certificate file. Alternatively, it can be generated automatically if you provide the CA certificate containing the private key.

For details on generating a CA certificate, see "How to Create and Use Digital Certificates" in the *HP LoadRunner User Guide*.

For more information on working with certificates in LoadRunner, see the "Authentication Settings" documentation in the *HP LoadRunner User Guide*.

To run the Load Generator Setup Wizard:

1. Change directory to `<installation root directory>/InstData/Linux/VM`.

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 select the correct `<installation root directory>` version for your Linux installation.

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 the next page](#).

Follow the online instructions to install the HP Load Generator.

Note: If you encounter an error during the installation, see ["Troubleshooting the Load Generator Linux Installation" on page 36](#) 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 the 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 the next page](#).

If you encounter an error during the installation, see ["Troubleshooting the Load Generator Linux Installation" on page 36](#) 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 the next page](#).

3. Check that the Controller can access the Load Generator.

See ["Checking the Controller Connection" on page 31](#).

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_LROOT.** 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 the Load Generator Linux Installation" on page 36](#) 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 the 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 the 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 the 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**:

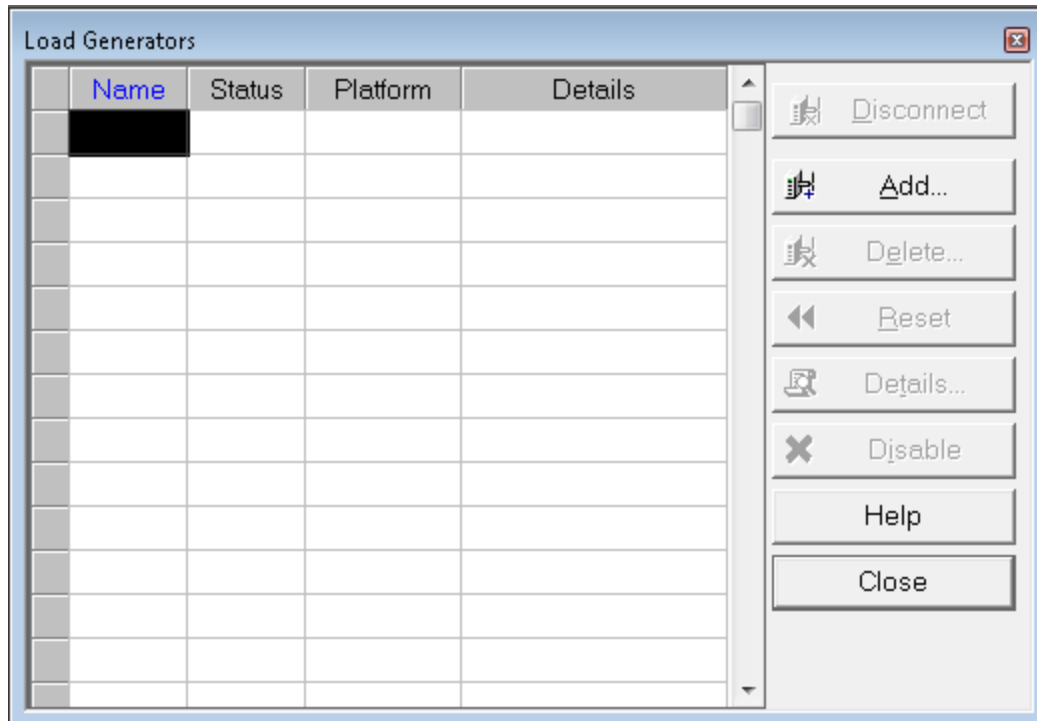
```
m_daemon_setup -install
```

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 12.00, run the Load Generator Setup Wizard. The Setup Wizard will first uninstall the

previous version, and will then install version 12.00. For details on how to run the setup wizard, see ["Running the Linux Load Generator Setup Wizard" on page 26](#).

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. This section includes recommendations for improving Load Generator performance.

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:

Increasing File Descriptors	33
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Increasing Swap Space	35

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 5: Troubleshooting the Load Generator Linux Installation

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

This chapter includes:

- ["Environment variables were not set correctly in the system-wide startup scripts" below](#)
- ["Error when installing the Load Generator on a Linux platform" on page 39](#)
- ["Environment variables are not unset after uninstalling the Load Generator" on page 39](#)
- ["Unable to run Vusers on the Load Generator" on page 40](#)

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. LoadR
unner 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 12.00 on a Linux machine on which the Load Generator version 12.00 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 30](#).

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).