

# **LoadRunner**

*Installation Guide*

Version 7.8

## LoadRunner Installation Guide, Version 7.8

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# Before You Install

Welcome to LoadRunner, Mercury Interactive's automated load testing tool for Windows and UNIX systems. This guide describes everything you need to know to install LoadRunner. It describes the LoadRunner package contents, the required system configuration, registration and backup procedures, and how to run the setup programs.

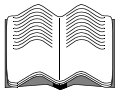
Before you begin to install LoadRunner, review the following pre-installation procedures.

## Checking Your LoadRunner Package

Make sure that your LoadRunner package contains the items described below. If any items are missing or damaged, contact Mercury Interactive or your local distributor.

### **CD-ROMS**

Your LoadRunner package includes a Windows CD-ROM and a UNIX CD-ROM containing the LoadRunner program and associated files.



### **Documentation**

LoadRunner is supplied with a set of documentation that describes how to:

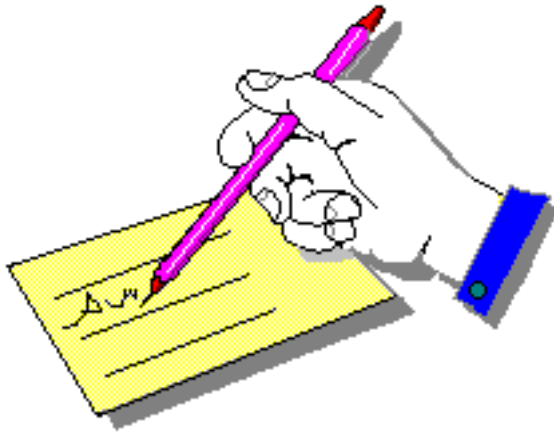
- install LoadRunner
- create virtual user scripts
- use the LoadRunner Controller
- analyze the results

## Registering Your Copy of LoadRunner

Register your copy of LoadRunner to become a licensed user with all rights and privileges. Registered users have access to technical support and information on all Mercury Interactive products. You will also be eligible for updates and upgrades.

To register your copy of LoadRunner, fill out the Mercury Interactive Software Registration card.

- If you are in the USA, fill out the USA Owners portion of the card. Send the card to the Sunnyvale, California address printed on the card. No postage is necessary.
- If you are outside the United States, fill out the Non-USA portion of the registration card and send it to the appropriate international address. Affix postage to the card before mailing.
- Remember to notify Mercury Interactive or your local representative if you move to a new address, so that you can continue to receive product information and updates.



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**Note:** You can also register your copy of LoadRunner on Mercury Interactive's Customer Support site: <http://support.mercuryinteractive.com>.

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## Where To Go From Here?

Your LoadRunner CD-ROM includes all the files that you need to install LoadRunner. Your actual setup procedure will differ depending on the environment that you will be testing using LoadRunner:

- ▶ If your environment consists of **only Windows-based** machines (i.e. the Controller and all the Vusers will run on Windows-based machines), follow the setup procedure described in Part I of this guide.
- ▶ If your environment consists of **both Windows-based and UNIX-based** machines, follow the setup procedures described in Part I and Part II of this guide.

<b>If your testing environment is...</b>	<b>See</b>
Windows only	Part I
Windows and Unix	Part I and Part II

## Terminology

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

## Typographical Conventions

This book uses the following typographical conventions:

<b>1, 2, 3</b>	Bold numbers indicate steps in a procedure.
►	Bullets indicate options and features.
>	The greater than sign separates menu levels (for example, <b>File &gt; Open</b> ).
<b>Stone Sans</b>	The <b>Stone Sans</b> font indicates names of interface elements on which you perform actions (for example, “Click the <b>Run</b> button.”).
<b>Bold</b>	<b>Bold</b> text indicates method or function names
<i>Italics</i>	<i>Italic</i> text indicates method or function arguments, file names or paths, and book titles.
Helvetica	The Helvetica font is used for examples and text that is to be typed literally.
<>	Angle brackets enclose a part of a file path or URL address that may vary from user to user (for example, < <i>Product installation folder</i> >\bin).
[ ]	Square brackets enclose optional arguments.
{ }	Curly brackets indicate that one of the enclosed values must be assigned to the current argument.
...	In a line of syntax, an ellipsis indicates that more items of the same format may be included.



# Part I

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## Windows Installation



# 1

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## Introducing the Windows Installation

Your LoadRunner CD-ROM 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. For details, see Chapter 2, "Installing LoadRunner on Your Computer."

You can install the LoadRunner Controller, the virtual user components, or both.

## Windows System Requirements

In order to successfully run LoadRunner, you need the following minimum system configuration.

Requirement	Controller with Online Monitors	Virtual Vuser Generator	Virtual Users	Analysis Module
<b>Computer/ Processor</b>	Pentium 350 MHZ or higher	Pentium 350 MHZ or higher	Pentium 1 GHz or higher	Pentium 350 MHZ or higher
<b>Operating System</b>	Windows NT® service pack 6 and higher Windows 2000 including service packs 2 and 3 Windows XP Professional including service pack 1	Windows NT® service pack 6 and higher Windows 2000 including service packs 2 and 3 Windows XP Professional including service pack 1	Windows NT® service pack 6 and higher Windows 2000 including service packs 2 and 3 Windows XP Professional including service pack 1	Windows NT® service pack 6 and higher Windows 2000 including service packs 2 and 3 Windows XP Professional including service pack 1
<b>Memory</b>	128 MB or more	128 MB or more	At least 1 MB RAM for non-multithreaded Vuser or at least 512 KB multi-threaded Vuser	128 MB or more
<b>Swap Space</b>	Two times the total physical memory	Two times the total physical memory	Two times the total physical memory	Two times the total physical memory
<b>Hard Disk Space</b>	Installation: 300 MB	Installation: 300 MB	Installation: 130 MB	Installation: 100 MB
	Free: 200 MB	Free: 200 MB	Free: Minimum 500 MB	Free: Minimum 500 MB
<b>Browser</b>	IE 5.x or higher Netscape Navigator 4.x, 6.x	IE 5.x or higher Netscape Navigator 4.x, 6.x	N/A	IE 5.x or higher Netscape Navigator 4.x, 6.x

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**Note:** Refer to <http://www.mercuryinteractive.com/products/loadrunner/technical/> for the most updated installation requirements.

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# 2

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## Installing LoadRunner on Your Computer

Before installing LoadRunner 7.8, be sure to uninstall any previous versions of LoadRunner.

The setup program installs LoadRunner on the hard disk of a single-user computer.

You can install the Controller, virtual user components, or both. In addition, you can choose to install the full LoadRunner configuration, a load generator configuration, or a custom configuration. Choosing custom configuration lets you specify which LoadRunner components to install.

### Performing the Installation

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**Note:** You must log on as an NT Administrator when performing an installation on Windows NT 4.0 or higher.

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**To install LoadRunner on your computer:**

- 1** Insert the LoadRunner CD-ROM into a CD-ROM drive.
- 2** Click **Start**, and select **Run**.
- 3** Type the location that you are installing from, followed by *setup.exe*. For example, if your CD-ROM drive letter is M, type:

```
m:\win32\setup.exe
```

- 4 The LoadRunner Setup program begins and displays the main installation screen.



Select the desired type of installation: LoadRunner, Load Generator, WAN Emulator Driver, Remote Performance Monitor, Monitors Over Firewall, or MI Listener.

- **LoadRunner Full Setup** provides the option to install the LoadRunner Controller, Virtual User (including GUI) components, online documentation, script samples, Load Generator, MI Listener, and support for the Remote Performance monitor. Use this option for the machine that controls the Vusers.
- **Load Generator** installs the components needed for running virtual users to generate load, and the MI Listener. Use this option for machines that are used only to generate load and not to control Vusers.



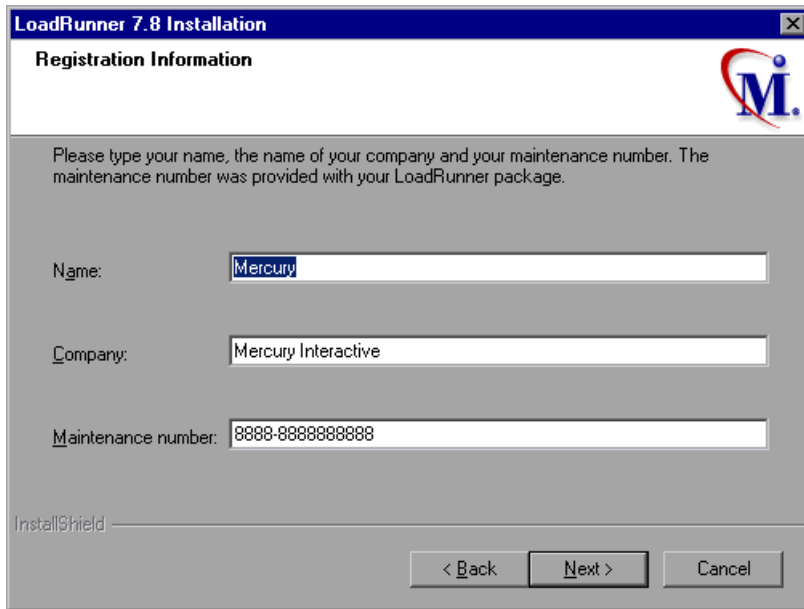
- **WAN Emulator Driver** installs a driver that enables you to emulate the behavior of a wide variety of network infrastructures during a load testing scenario. Install this driver on a Load Generator machine.
- **Remote Performance Monitor** configures an IIS Web server for the Remote Performance monitor. This requires a machine with IIS installed. For more information about the Remote Performance monitor, refer to the *LoadRunner Controller User's Guide*.
- **Monitors Over Firewall** installs the components on the agent machine for monitoring over the firewall. For more information, refer to the Using Firewalls chapter of the *LoadRunner Controller User's 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 about working with firewalls, refer to the *LoadRunner Controller User's Guide*.

Click an option to launch the Installshield Wizard and begin installation.

If you selected the **WAN Emulation Driver** installation, the LoadRunner installation creates a new program folder on the Load Generator machine, and begins copying files. Note that the WAN Emulation driver installation may disconnect your open network connections.

- 5** If you selected **LoadRunner, Load Generator, Remote Performance Monitor Server, or Monitors Over Firewall**, the installation displays the software license agreement.

Read the agreement and click **Yes** to accept it and to display the Registration Information dialog box.

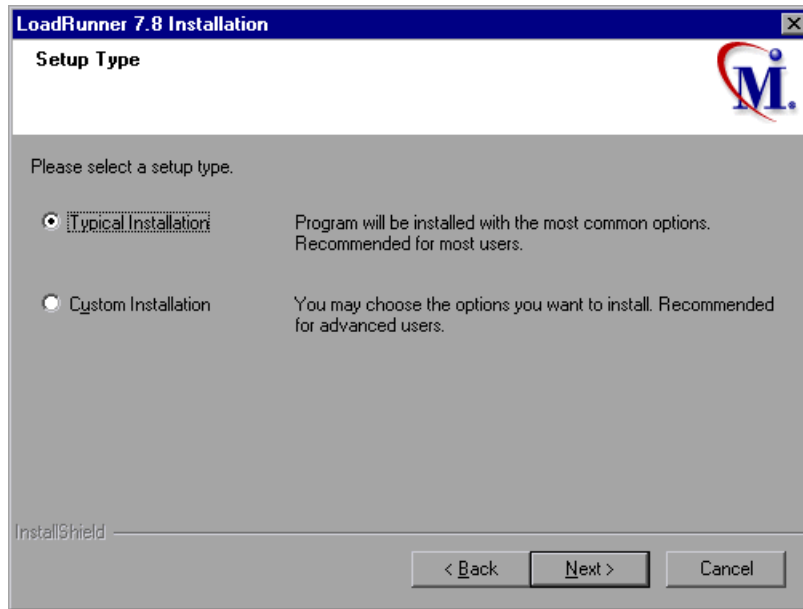


The screenshot shows a dialog box titled "LoadRunner 7.8 Installation" with a sub-header "Registration Information". The dialog contains a logo for Mercury Interactive (a stylized 'M' with a red and blue arc) in the top right corner. Below the logo, there is a text prompt: "Please type your name, the name of your company and your maintenance number. The maintenance number was provided with your LoadRunner package." There are three input fields: "Name:" with the text "Mercury", "Company:" with the text "Mercury Interactive", and "Maintenance number:" with the text "8888-8888888888". At the bottom left, it says "InstallShield". At the bottom right, there are three buttons: "< Back", "Next >", and "Cancel".

- 6 In the Registration Information dialog box, type your name, the name of your company, and your LoadRunner maintenance number. You can find the maintenance number in the maintenance pack shipped with LoadRunner.

Click **Next**.

- 7 If you are performing a full installation, the Setup Type dialog box displays the following options.



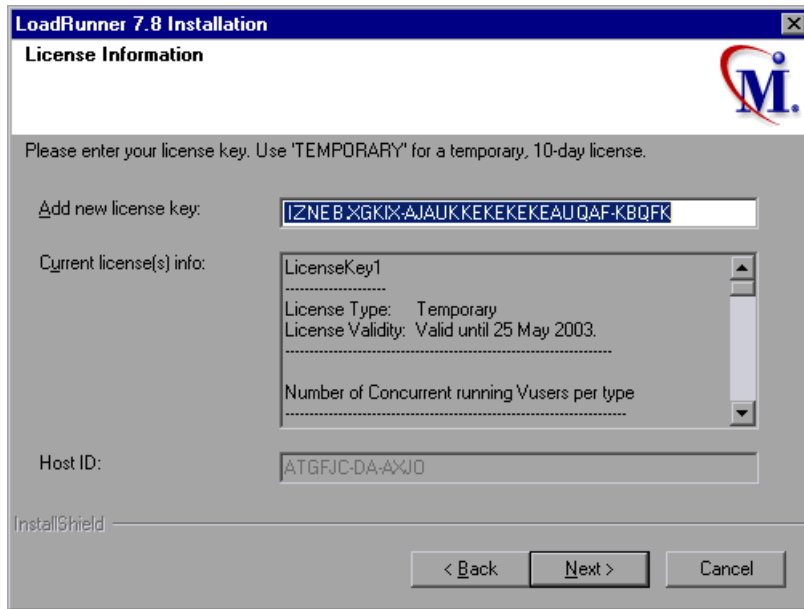
Select the type of installation that you want: Typical or Custom.

**Typical Installation** installs all commonly-used LoadRunner components, including the LoadRunner Controller, Virtual User (including GUI) components, online documentation, and script samples. Use this option for the machine that controls the Vusers.

**Custom Installation** lets you install all the LoadRunner components, or select the components that you want to install. For details, see “Custom Installation Options,” on page 19.

Click **Next**.

- 8 If you are performing a full installation, the License dialog box displays the settings for the current LoadRunner license on your machine.

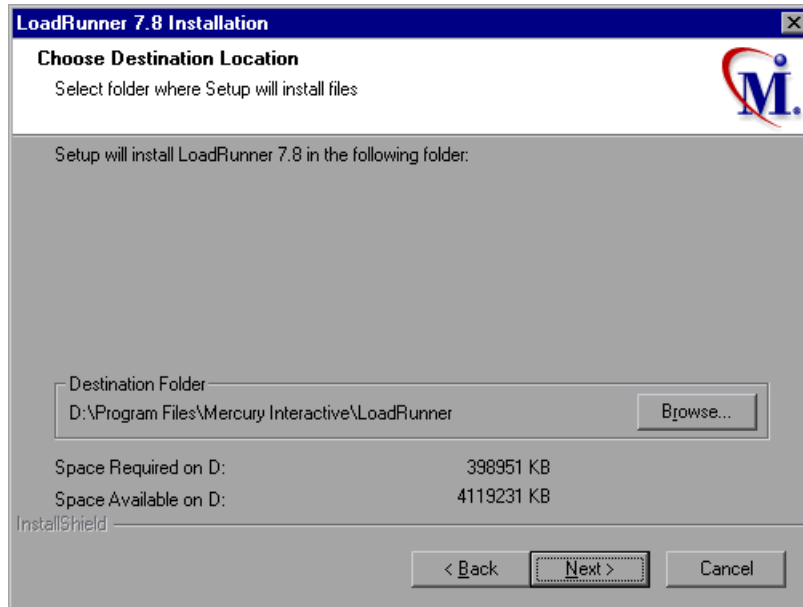


Enter the LoadRunner license key from your license agreement. If you are evaluating LoadRunner or waiting for a permanent license key, enter the license key 'TEMPORARY'. This will let you run up to 25 virtual users for a period of 10 days.

Click **Next**.

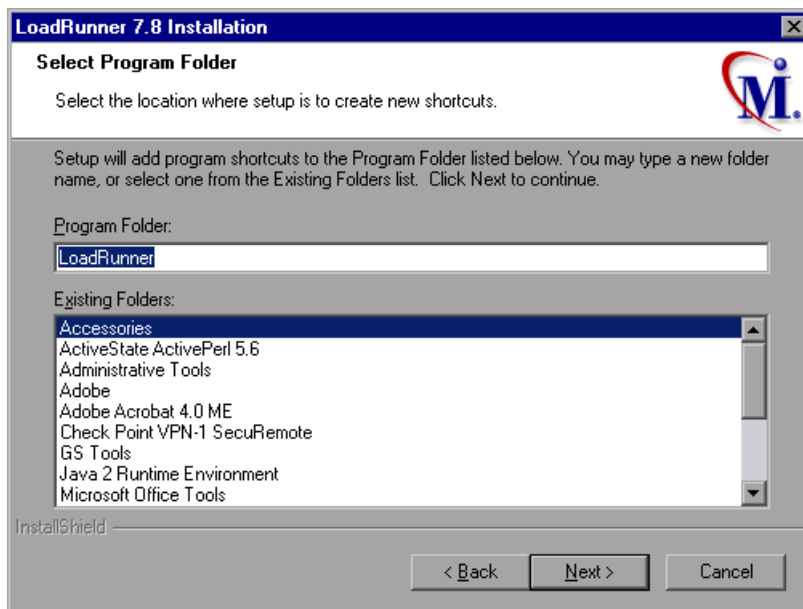
If you have a temporary license, LoadRunner issues a reminder indicating that you have 10 days to evaluate the product with 25 Vusers. Click **OK**. The LoadRunner installation updates the license information.

- 9 In the Choose Destination Location dialog box, specify the location where you want to install LoadRunner. To select a different location, click **Browse**, choose a folder, and click **OK**.



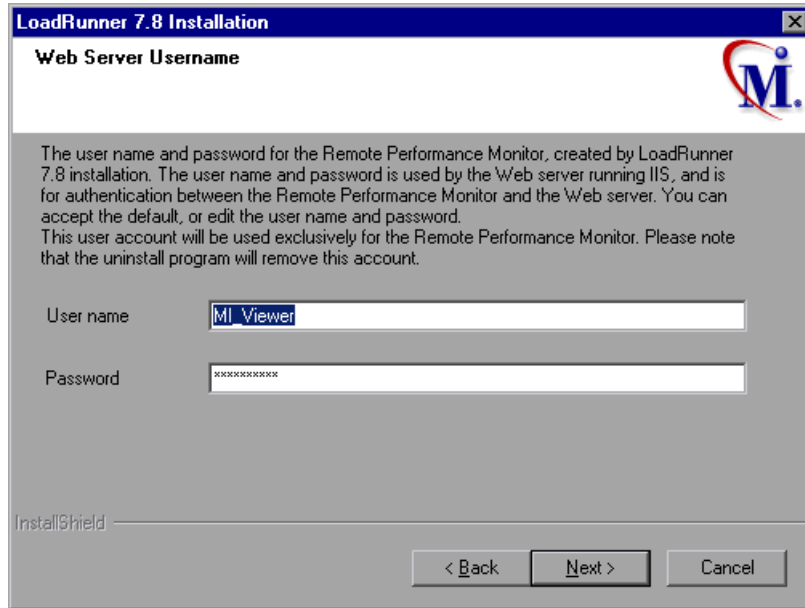
Click **Next**.

- 10 In the Select Program Folder dialog box, specify a program folder, or accept the default folder, *LoadRunner*.



Click **Next**.

- 11 If you are installing the Remote Performance Monitor Server, the installation program displays the default user name and password used by the Web server running IIS. You can accept the defaults or enter your own values.

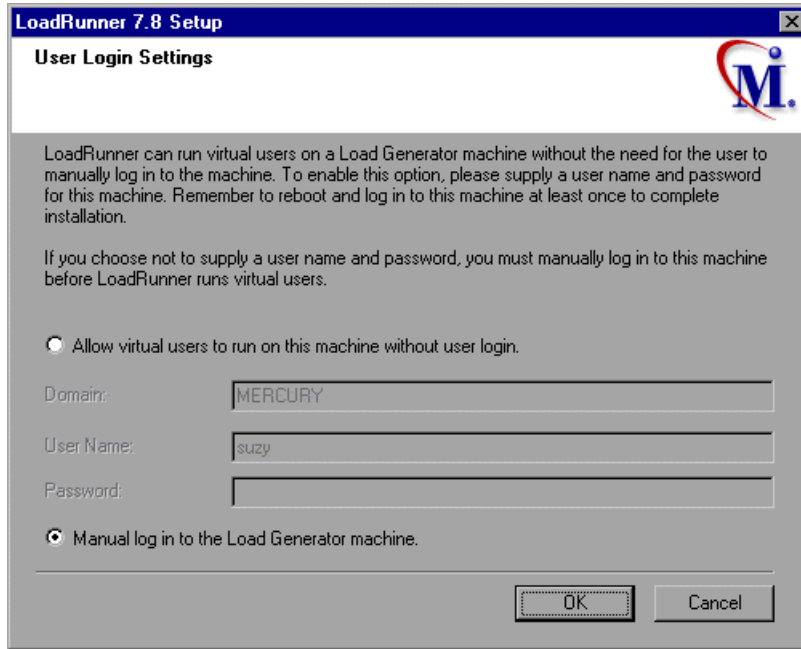


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**Note:** After you complete the Remote Performance Monitor Server installation, you need to enter the same user name and password in the LoadRunner Controller RPM User Configuration dialog box. On the Controller machine, select **Start > Programs > LoadRunner > Tools > RPM User Configuration**. Enter the specified user name and password in the relevant fields, and click **Close**.

---

- 12 The installation settings that you selected are displayed in a read-only window. To select different installation settings, click **Back**. To begin installation, click **Next**. The installation process begins.
- 13 In the User Login Settings dialog box, select a user login setting.



Select one of the following user login settings:

**Allow virtual users to run on this machine without user login:** An NT service running on this machine will recognize these user credentials, so the virtual users can run without any manual intervention. Enter a user name and password for a user that exists on the network domain where the user machine resides. Note that the user must have administrator privileges.

---

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

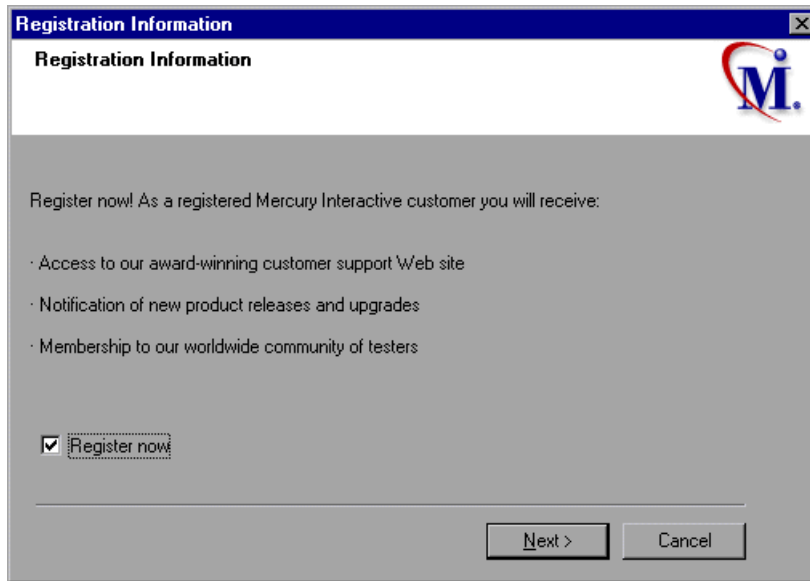
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**Manual log in to the Load Generator machine:** The user must manually log into the network from the Load Generator machine for each session of running Vusers.

Click **OK**.

- 14** In the Registration Information dialog box click **Next** to complete the installation.



- 15** The setup program prompts you to restart your computer. You can delay restarting your computer until a later point.

---

**Note:** The following message appears the first time that a user logs on after a full LoadRunner installation: "HCL Inetd CPLInquire cpl 8af40c". This message relates to the HCL (Hummingbird Communications Ltd.) Inetd service, when Inetd is installed as a Windows NT service. Please close the message box and continue to start your computer.

---

The LoadRunner installation is now complete.

## Completing the LoadRunner Installation Process

To complete the LoadRunner installation process:

- Select **Start > Programs > LoadRunner > Readme** to see what's new in LoadRunner, and any last-minute limitations.
- You use the Acrobat Reader to view the LoadRunner online documentation.

To install the Acrobat Reader, browse to the Adobe site at <http://www.adobe.com/products/acrobat/main.html> and install the latest version.

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**Note:** Before you run the Acrobat Reader setup, uninstall any previous versions of Acrobat Reader. If you already have version 5.05 installed, it is not necessary to run the Acrobat Reader setup.

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- To complete LoadRunner's sample installation, run the Samples setup after LoadRunner setup is complete. Refer to Chapter 5, "Installing LoadRunner Samples" for explanations of the sample tests and setup instructions.
- 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.
- To create Vuser scripts for **Baan**, you need to specify the correct application server in the Baan user file:

The user file, u[username], is located under the Baan installation folder in bse/lib/user. Add the following line to the beginning of the user file:

```
std_program:ottstpteststand
```

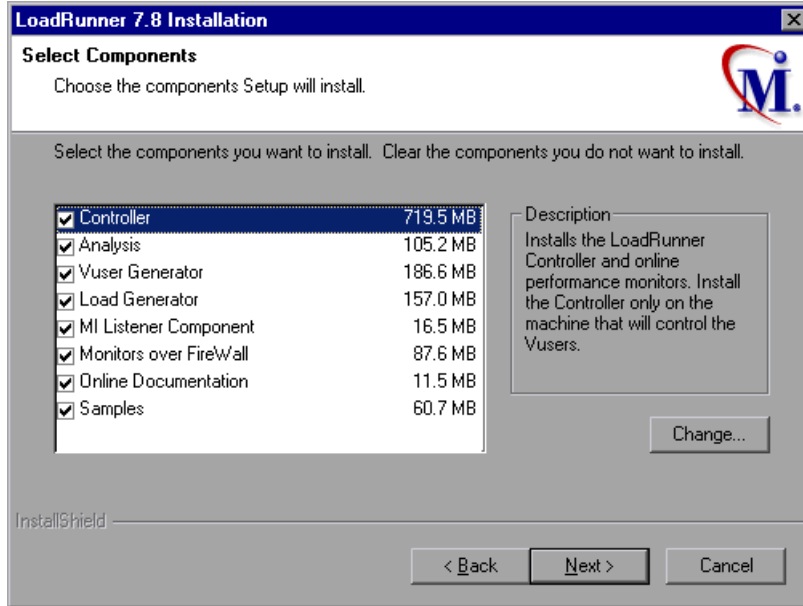
This tells LoadRunner to use the Test Standard Program when recording and running Vusers.

- To start LoadRunner, select **Start > Programs > LoadRunner > Controller**.

## Custom Installation Options

If you choose to perform a Custom installation of LoadRunner, the setup program allows you to select the LoadRunner components that you want to install. You can install the following LoadRunner components:

- ▶ **Controller:** Controls the execution of scenarios and Vusers. Includes the online monitors which monitor and display information about the test execution.
- ▶ **Analysis:** Graphs and reports for analyzing the load test.
- ▶ **Vuser Generator:** LoadRunner's tool for creating virtual user (Vuser) scripts, through recording. Vuser scripts emulate users without a graphical user interface by using direct function calls. See the Readme file for supported protocols.
- ▶ **Load Generator:** The components for running virtual users (including Windows-based GUI Vusers) to generate load. Note that you must have WinRunner installed to run GUI Vusers.
- ▶ **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 *LoadRunner Controller User's 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 *LoadRunner Controller User's Guide*.
- ▶ **Online Documentation:** All user guides in Acrobat format.
- ▶ **Samples:** The LoadRunner sample flight application.



Clear the check boxes next to the components that you do not want to install, and select the check boxes next to the components that you want to install.

Click **Next** to proceed with the installation process.

## Running the Uninstall Program

Your LoadRunner installation includes an uninstall program which uninstalls LoadRunner software and files from your computer and removes LoadRunner shortcuts from your Start menu.

**To run the LoadRunner uninstall program:**

- 1 Click **Start > Programs > LoadRunner > Uninstall LoadRunner**.
- 2 A message asks you to confirm your decision to uninstall LoadRunner.

Click **Yes** to uninstall LoadRunner. Otherwise, click **No** to keep LoadRunner installed on your computer.

If you clicked **Yes**, the Uninstall Shield dialog box opens.

- 3** You may be prompted to terminate an active magentproc.exe process.

Click **Yes** to terminate the process. Otherwise, click **No** to exit the uninstall program without removing LoadRunner from your computer.

- 4** You may be prompted to remove shared files that are not being used by any program. If you are not sure what to do, click **No to All**.

The Uninstall program removes LoadRunner from your computer.

- 5** When the Uninstall program is completed, you are prompted to restart your computer. Click **Yes** to immediately restart. Otherwise, click **No** to delay restarting your computer. If you click **No**, close all your applications and restart your computer as soon as possible.

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**Note:** To uninstall LoadRunner immediately after you have installed the program, first restart your computer.

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# 3

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## Adding LoadRunner Components

After you install LoadRunner, you can run the setup program at any time to add LoadRunner components, such as samples, the Virtual User Generator, or the online documentation.

### To add components:

- 1 Insert the LoadRunner CD-ROM into a CD-ROM drive.
- 2 Click the **Start** button, and select **Run**.
- 3 Type the location that you are installing from, followed by *setup.exe*. For example, if your CD-ROM letter is M, type:

```
m:\win32\setup.exe
```

Click **OK**.

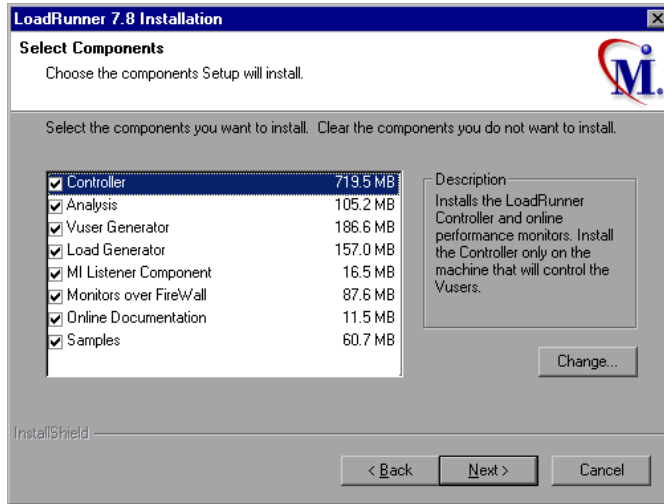
- 4 The Installshield Wizard begins and displays the software licensing agreement. Read the agreement and click **Yes** to accept it. The LoadRunner setup program starts.
- 5 In the User Information dialog box, type your name, the name of your company, and a LoadRunner serial number. You can find this number on the outside of your LoadRunner box. Click **Next**.
- 6 Click **Custom Installation**, and then click **Next**.

Select the LoadRunner components that you want to add. Clear the check boxes next to the options that you do not want to add.

---

**Note:** The custom installation procedure will *not* remove previously-installed components that are not checked.

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Click **Next**.

**7** The installation settings you selected are displayed in a read-only window. Review the settings. If you want to select different installation settings, click **Back**. If you are satisfied with the installation settings, click **Next**. The installation process begins.

**8** If you installed LoadRunner's samples, a message tells you to run the samples setup from the LoadRunner Samples program group to complete the samples installation. Refer to Chapter 5, "Installing LoadRunner Samples" for detailed explanations of the sample tests and setup instructions.

Click **OK** to continue with the setup procedure.

**9** By default, the setup program creates the program group, LoadRunner, and creates the LoadRunner icons in the program group.

To add the LoadRunner icons to an existing program group, select the group from the list of Existing Groups. Click **Next**.



- 10** Depending on which components you added, the setup program either prompts you to restart your computer or informs you that the setup is complete. You can delay restarting the computer until a later time.
- 11** If you installed LoadRunner's online documentation, you use the Acrobat Reader to view the documentation files.

To install the Acrobat Reader, browse to the Adobe site at <http://www.adobe.com/products/acrobat/main.html> and install the latest version.

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**Note:** Before you run the Acrobat Reader setup, uninstall any previous versions of Acrobat Reader. If you already have version 5.05 installed, it is not necessary to run the Acrobat Reader setup.

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# 4

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## Viewing and Modifying a License

You can modify your license at any time directly from the LoadRunner interface. This chapter describes:

- Viewing License Information
- Modifying a License
- Troubleshooting

Normally, you enter your license key during installation. The setup program prompts you for a license key. If you do not have your license key at the time of installation, you can use the temporary license by typing 'TEMPORARY' in the license key box. This grants you a 10 day license for 25 users. Afterwards contact Mercury Interactive Customer Support to obtain your permanent license key.

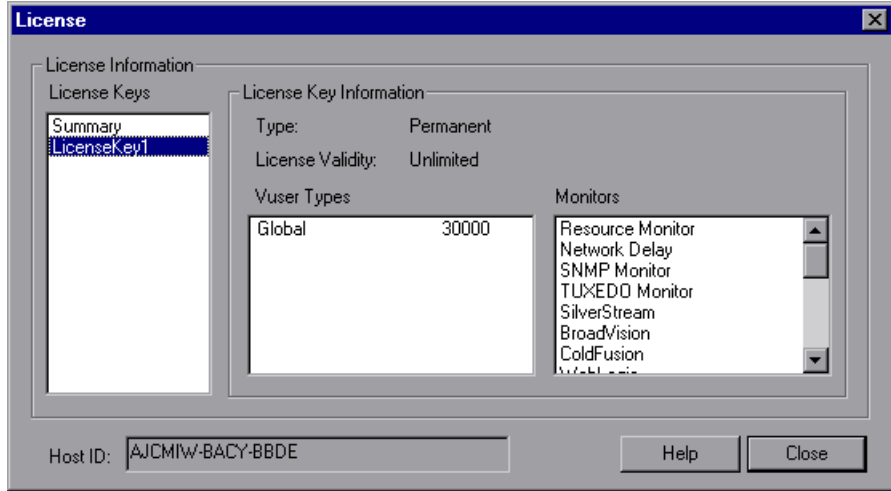
This chapter describes how to enter a license key *not* during installation, and how to upgrade an existing license.

### Viewing License Information

You can only view license information from the LoadRunner Controller, not from the Virtual User Generator.

**To view the current license information:**

- 1** In the Controller, choose **Help > About LoadRunner**, and click **License Info**. The License dialog box opens, displaying the license information.
- 2** Scroll through the license information to determine the scope of your current license.



The License Keys list lists all the available license keys. In addition, you can select to view a summary of all the information in all the license keys.

The License Key Information box displays the license type, validity duration, Vuser types, and monitors for each selected license key.

The following types of licenses are available:

- ▶ **Permanent:** The license never expires.
- ▶ **Time Limited:** The license is limited by a start date and an expiration date.
- ▶ **Temporary:** The license is granted for a pre-defined number of days after product installation.
- ▶ **VUD-based:** The license is limited by a number of Virtual User Days (VUDs). A VUD license enables the user to use the product an unlimited number of times within a period of 24 hours.
- ▶ **Plugged:** The license requires a dongle.

The following groups of Vuser protocols are available:

- ▶ **Global:** The license lets you run all Vuser types, provided you stay within the global, or total limit. The number following Global indicates the total number of Vusers purchased.
- ▶ **Group ERP-1:** Includes SAP, Web, Oracle, MSSQL, and Siebel (GUI-Oracle) Vuser protocols.
- ▶ **Group ERP-2:** Includes SAP, Siebel (GUI-Oracle), Oracle, and Oracle-NCA Vuser protocols.
- ▶ **Group 3:** Includes all Vuser protocols, except for SAP, Siebel (GUI-Oracle), Oracle, and Oracle-NCA.

The following types of monitors are available: System Resources, Web Resources, Web Server Resources, Web Application Server Resources, Database Server Resources, Network Delay, Streaming Media Resources, Firewall Server Resources, and ERP Server Resources.

The Host ID box displays an ID for a specific machine. To receive a license key for a specific machine, contact Mercury Interactive's Customer Support.

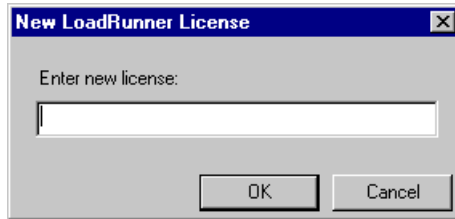
## Modifying a License

You can only modify license information from the LoadRunner Controller, not from the Virtual User Generator.

**To modify the current license information:**

- 1** In the Controller, choose **Help > About LoadRunner**. The About LoadRunner window opens.

- 2 Click the **New License** button. The New LoadRunner License dialog box opens.



- 3 Enter the new license number exactly as it was given to you. Click **OK**. If your license is limited for a specific amount of time, LoadRunner issues a message accordingly.
- 4 Click **OK** to close the New LoadRunner License dialog.

## Troubleshooting

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

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

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

**To add Registry permissions:**

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

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

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





# Part II

---

## UNIX Installation



# 5

---

## Installing LoadRunner Samples

The LoadRunner installation includes sample Vuser scripts, a sample application, and sample database server and tables. In order to use the LoadRunner samples you must run complete the LoadRunner samples installation.

This chapter describes:

- Samples Setup Program
- Samples Setup Procedure
- Accessing the Readme File for Web, Corba or RMI

### About LoadRunner Samples

The LoadRunner samples include:

- Sample Vuser scripts

The scripts demonstrate some of LoadRunner's features and allow you to run a true test.

- Sample flight application

The sample application is a flight reservation system which enables travel agents to order flight tickets. Travel agents work on the client application which connects to a central database server. This application is available for the following protocols: Web, Com, Corba, RMI, ODBC, MS ACCESS, Oracle, Sybase, and WinSocket.

➤ Sample database server and tables

You can install the Quadbase server, which is an ODBC database server provided with LoadRunner for demonstration purposes, or you can configure the flight reservation system to connect to an existing database server. The installation program installs all of the necessary tables for working with the sample application on the server of your choice.

## Samples Setup Program

The LoadRunner samples setup program:

- Installs the sample Quadbase ODBC Server and Client (optional).
- Creates and populates data tables for use with the sample Flight application, on the Quadbase server or one of the other specified servers.
- Installs the sample Vuser scripts and updates the database connection strings for the sample Vuser scripts.
- Manages the *flights.ini* file to make it available for the Flight application.
- Registers the datasource for Flight-ODBC\_Access and Flight-Winsock with the ODBC Administrator.
- Adds icons for the LoadRunner Samples program group.

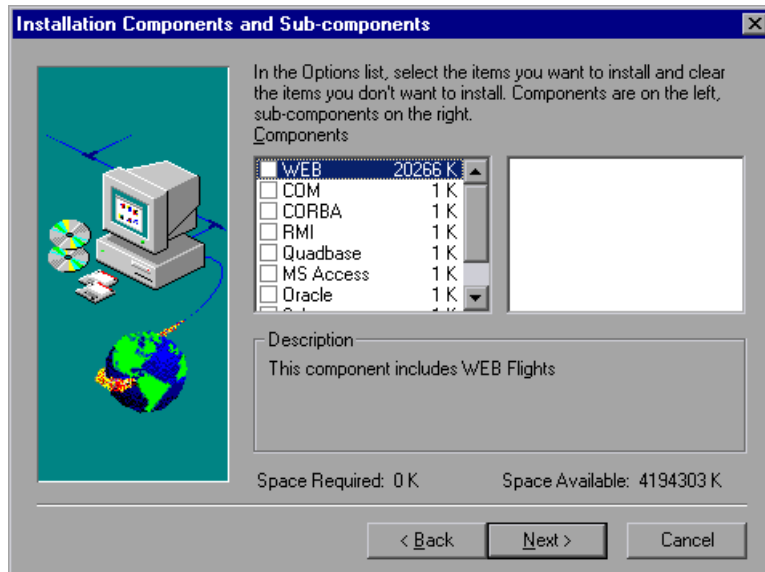
## Samples Setup Procedure

**To install the LoadRunner samples on your computer:**

- 1** If you plan to use an existing database or WinSock application server, rather than installing the sample Quadbase ODBC server, make sure that your server is running and that you are familiar with the connection parameters.
- 2** Run the samples setup from the LoadRunner Samples program group.

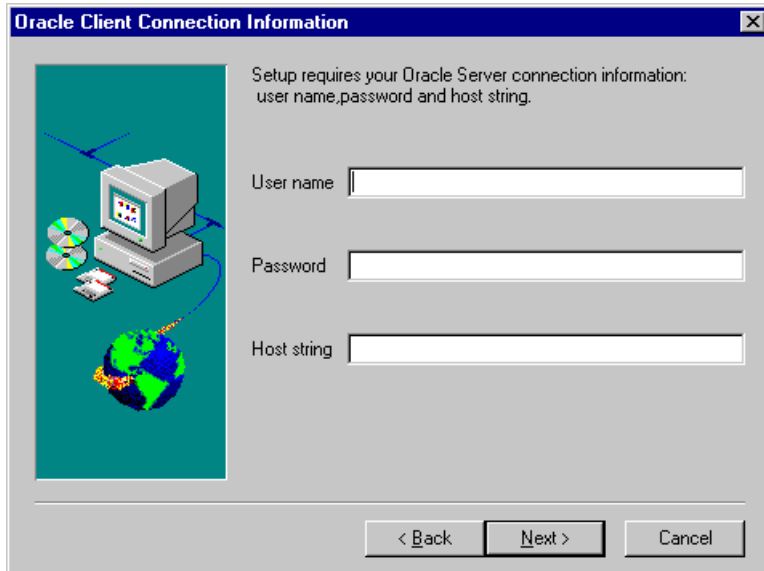
The LoadRunner Samples Setup program begins and displays the Welcome dialog box.

- 3 Click **Next** to proceed to the list of components and sub-components. Select one or more components.



Click **Next**.

- 4 If you are installing samples for an Oracle or Sybase server, you will be prompted to provide connection information, according to the selected server type. The User Name, Password, and Host String fields will be filled in with the most recent information, if available on your system.



ODBC\_access will display the default "flight32lr" and try to register it as a DSN with ODBC.

If you are installing the ODBC\_Quadbase client, it will display the default "Quadbase". This is the same name used by the Quadbase server installation setup.

- 5 Enter the connection information and click **Next**. For Oracle servers, select the version of the Oracle client and click **Next**.
- 6 A message appears asking you if you would like to install or update the sample Flights database on your server. Click **Yes**.
- 7 After all of the tables are created, you will receive a prompt that setup is complete. Click **Finish** to close the setup program and view the new program icons.

---

**Note:** It is recommended to copy *dat/flight32.mdb* to your local drive and register it manually. If you leave this file on the network, other users may accidentally access it.

---

## Accessing the Readme File for Web, Corba or RMI

The sample Readme files provide detailed information about using the WEB, CORBA, and RMI sample applications:

- ▶ For **Web** samples, look in:

Start > Programs > LoadRunner > Samples > WEB > Mercury Demo Web Application Readme

or

LoadRunner\samples\Web\MercuryReadme.doc

- ▶ For **RMI** samples, look in:

Start > Start > Programs > LoadRunner > Samples > RMI > RMI Flights Help

- ▶ For **Corba** samples, look in:

Start > Programs > LoadRunner > Samples > Corba > Corba Flights Help





# 6

---

## Introducing the UNIX Installation

You can install LoadRunner to run virtual users on a UNIX platform. The UNIX virtual users interact with the LoadRunner Controller, installed on a Windows machine. Refer to Part I of this Installation Guide for information about installing the LoadRunner Controller. This chapter discusses the installation steps and system requirements for the LoadRunner UNIX Virtual User components.

### UNIX Installation Steps

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

The main steps of the installation process are:

- Installing the program files
- Setting the environment

Once you complete the installation, refer to the additional documentation for details on working with LoadRunner.

## Setting the Environment

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

- The installation process determines the platform upon which the Vuser is running, and prepares a script to modify the *.cshrc* file for cshell users. Bourne and kshell users should manually modify the *.profile* file. Refer to Chapter 9, “Verifying Your Installation” for sample *.cshrc* and *.profile* files.
- The LoadRunner installation process helps you set the environment variable to indicate the location of the LoadRunner bin directory and any DLLs used by the underlying protocol. This environment variable is called LIBPATH on AIX, SHLIB\_PATH on HP/UX, and LD\_LIBRARY\_PATH on Solaris and Linux.

## System Requirements

Your actual memory requirements may vary, depending on your configuration. Note that installation procedure uses additional memory which becomes free after the installation. To ensure a smooth installation of the UNIX components, it is recommended that you make sure there is sufficient storage space, process entries, swap space, etc. in the disk partition where you intend to install LoadRunner.

The following table describes the system requirements for each platform supported by Mercury Interactive for LoadRunner UNIX Vusers.

Platform	Hardware	Version
Solaris	Ultra Sparc	Solaris 2.6 or higher
HP	HP 9000 series 700, 800,	HP-UX 11.x or higher
IBM	IBM RS/6000	AIX 4.3.3 or higher
Linux	PC i486	Red Hat 6.0 or higher

Note that LoadRunner supports all X Servers.

---

**Note:** Refer to <http://www.mercuryinteractive.com/products/loadrunner/technical/> for the most updated installation requirements.

---

## System Resources

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

The resources for Vusers listed below apply to each virtual user. If you are installing multiple virtual users, you must multiply the figure by the number of virtual users.

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

The **Memory Space** above describes a general C-Vuser type. Other types may take up more memory space. For example, each Web Vuser uses at least 500 KB.

A Load Generator additionally uses the following **File Descriptor** resources:

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

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

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

**Total:** 294 File Descriptors

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

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 LoadRunner 7.0 or higher have sufficient default file descriptors, process entries, and swap space, and rarely require reconfiguration.

---

## Increasing Process Entries

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

### Solaris 2.6

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

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

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

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

```
touch /reconfigure
```

- 4 Reboot the machine.

### HP-UX

The following section describes how to reconfigure the kernel for HP platforms.

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

```
sam &
```

- 3 Select Kernel Configuration>Configurable Parameters.
- 4 Set the following parameters to the desired values:

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

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

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

- 5 Reboot the machine.

## IBM

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

- 1 Display the current settings. Type:

```
lsattr -EHL sys0
```

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

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

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

## Linux

The following 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 File Descriptors

Each Vuser requires from 6 (non-GUI Vusers) to 27 (GUI Vusers) file descriptor entries. The procedure to increase the number of file descriptors differs between platforms and shells.

### All Platforms

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

- 1 For sh and ksh users, type:

```
ulimit -n 1024
```

- 2 For csh users type:

```
limit descriptors 1024
```

### Solaris

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

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

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

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

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

```
set rlim_fd_max=1024
```

Save the file and reconfigure the system by typing:

```
touch /reconfigure.
```

After reconfiguring the system, reboot the machine.

## HP-UX

The following section describes how to increase file descriptors for HP platforms.

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

```
sam &
```

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

## Linux

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

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

```
hard nfile 8192
```

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

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

- 3 Reboot the machine.



## Increasing Swap Space

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

### Solaris

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

- 1 List the available paging areas. Type:

```
swap -l
```

- 2 Display the available swap space. Type:

```
swap -s
```

- 3 Create a new paging file. Type:

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

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

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

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

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

## IBM

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

- 1 List the available paging areas. Type:

```
lsps -a
```

- 2 Display the available swap space. Type:

```
swap -s
```

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

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

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

```
chps -s number paging_file
```

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

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

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

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

```
swapon -a
```

# 7

---

## Installing LoadRunner on UNIX

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

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

### Checking your Environment

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

## Installing LoadRunner on Multiple Platforms

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

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

- ▶ For LoadRunner Solaris: */tools/mercury/sol/lrunner*
- ▶ For LoadRunner IBM: */tools/mercury/ibm/lrunner*

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

## Running the Installation Program

Before you begin the installation program, make sure you see the install script, *install.sh* from the CD. Note that most operating systems require you to mount the CD-ROM drive to a local directory. For information for mounting a CD-ROM on IBM, see “Preparing to Install from a CD-ROM (IBM only)” on page 57.

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

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

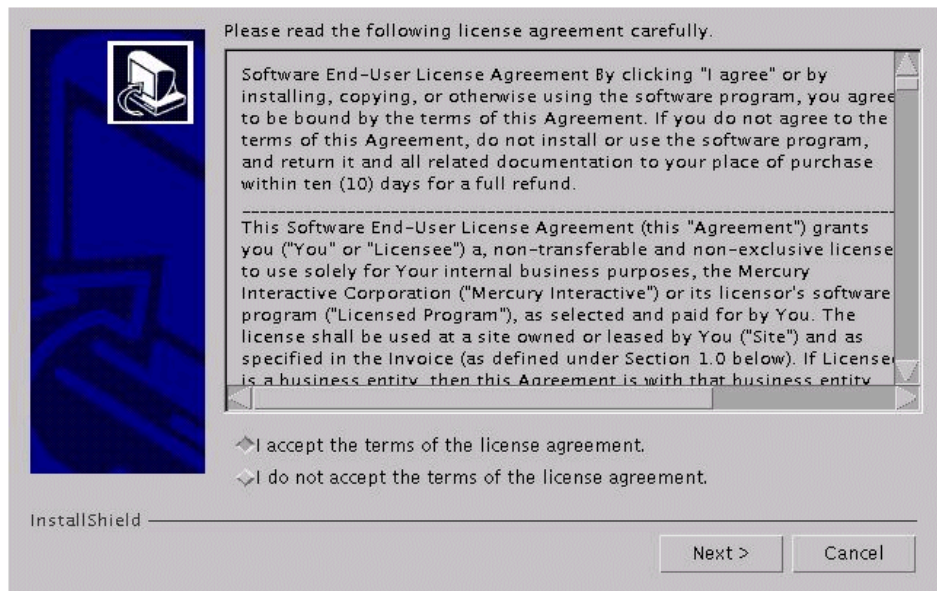
```
install.sh -console
```

**To run the LoadRunner installation program:**

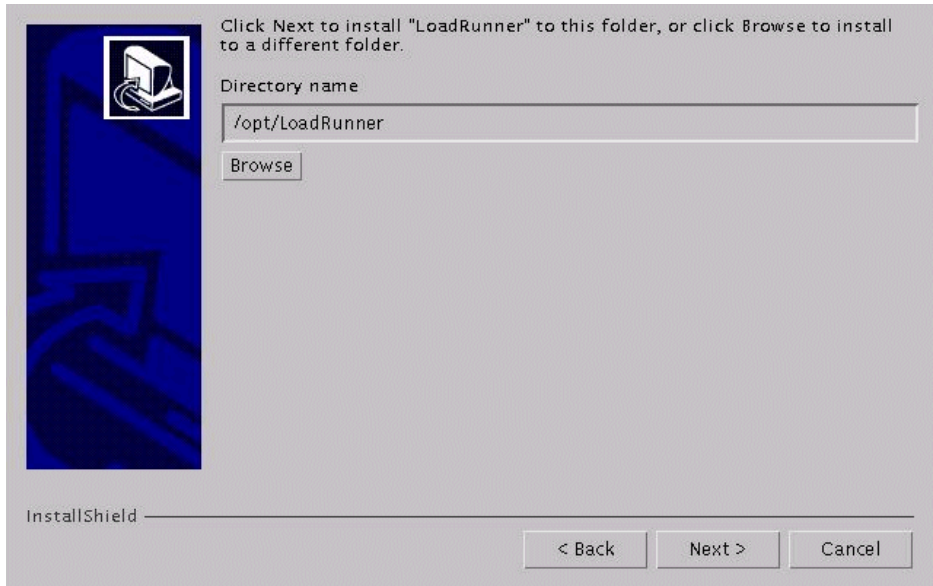
**Note:** The instructions below are for the UI mode.

- 1 Type :  
install.sh

The installation program begins and displays the license agreement.



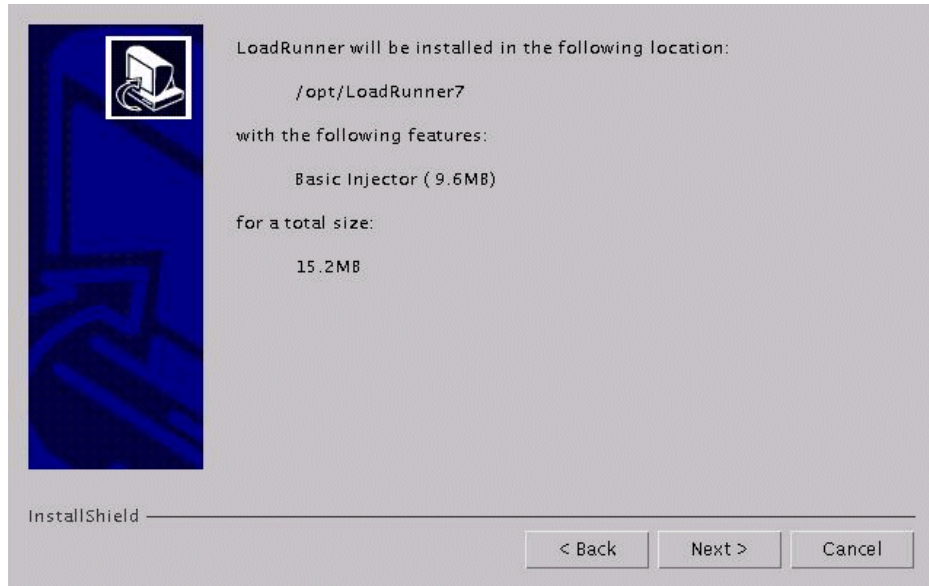
- 2 Read the agreement and select the option to accept it. The LoadRunner installation program begins and displays the installation location dialog box.



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

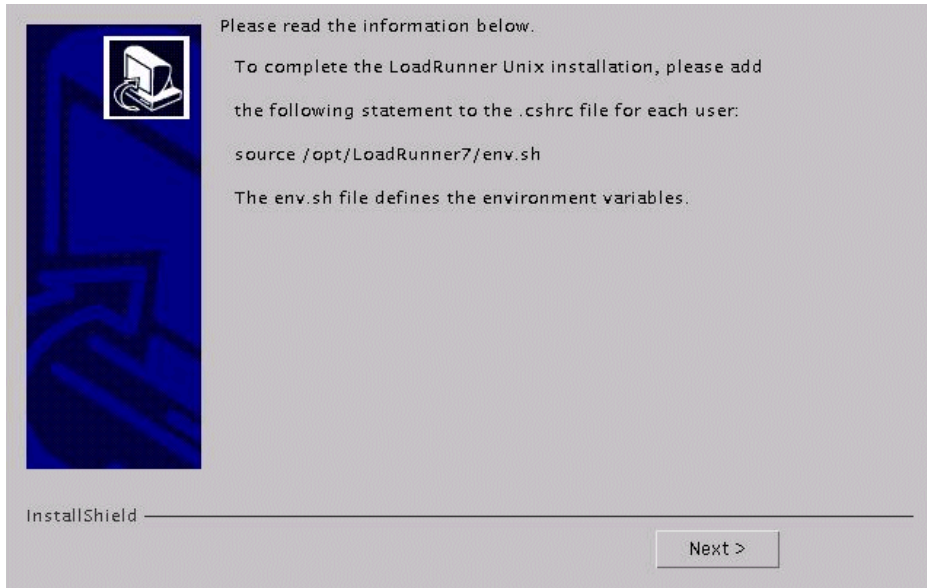
Click **Next**.

- 3 A read-only dialog box with your installation settings appears.



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

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



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

```
source /opt/LoadRunner7/env.sh
```

where `/opt/LoadRunner7` is the LoadRunner installation directory.  
Bourne shell and kshell users should refer to Chapter 8, “Post Installation” for instruction on modifying the `.profile` file.
- 6 Bring up a new terminal to run the `.cshrc` file. For more information about `.cshrc` files, see Chapter 8, “Post Installation.”
- 7 Be sure to run `verify_generator` to verify your Vuser installation. This is a confirmation step, to ensure that the specified directory and device name are correct, and that you have sufficient disk space. For information about the tests performed by `verify_generator`, see Chapter 9, “Verifying Your Installation.”



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

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

**To mount the CD-ROM drive:**

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

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

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

```
smit storage
```

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

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

- 10** Select the **Do** command, or click enter if you are using the ASCII interface.
- 11** Quit the SMIT program.
- 12** Type the following command in order to mount the CD-ROM file system:

```
smit mountfs
```

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

- 14 Select the mount directory:

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

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

## Running the Uninstall Program

The uninstall program, like the installation program, uses a Java Runtime Environment (JRE). You can also run the uninstall program in UI mode, or in console mode. To run the program in console mode, add the console parameter to the end of the command line.

### To run the LoadRunner uninstall program:

- 1 To access the program, type:  

```
cd <installation directory>/_uninst
```
- 2 Type:  

```
uninstall.bin [-console]
```

# 8

---

## Post Installation

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

This chapter discusses:

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

After you complete the post-installation configurations, run the LoadRunner verification utility to check your installation. For more information, see Chapter 9, “Verifying Your Installation.”

### Setting Environment Variables

The LoadRunner installation procedure created a file, `env.sh` which sets the environment variables. Rather than manually updating your `.cshrc` file with the variable definitions, you include a statement to access `env.sh` at the end of the `.cshrc` file. This section describes the environment variables in your `env.sh` file. Note that if you are working with kshell or Bourne shell, you should manually set these variables in your `.profile` file. The syntax in the examples below are for cshell users. For kshell and Bourne shell users, see “LoadRunner Settings in the `.profile` File” on page 62.

- ▶ `M_LROOT`
- ▶ `PATH`
- ▶ `LD_LIBRARY_PATH` (Solaris, Linux), `LIBPATH` (AIX), `SHLIB_PATH` (HP-UX)

**M\_LROOT:** Set M\_LROOT to the LoadRunner installation directory. For example:

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

**PATH:** The location of LoadRunner's executable programs, the *bin* directory, must be added to the PATH variable.

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

**LD\_LIBRARY\_PATH:** The path should include the location of LoadRunner's dynamic libraries (\$M\_LROOT/bin). To set the path, type:

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

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

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

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

---

**Note:** Remember that in order to use Oracle73, you need to add the path Oracle73 libraries to the dynamic libraries path environment variable.

---

## Checking Authorizations

In order to execute Vusers on remote hosts, you must be authorized to execute a *remote shell*. To check your permissions on a host, type:

- For Solaris, Linux and IBM platforms:

```
rsh hostname ls
```

- For HP platform:

```
remsh hostname ls
```

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

## Sample .cshrc and .profile Files

### LoadRunner Settings in the .cshrc File

The following is an example of LoadRunner settings within a user's *.cshrc* file:

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

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

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

  case Linux:
```

```
        setenv M_LROOT {replace with LoadRunner SunOs installation path}
        setenv LD_LIBRARY_PATH ${LD_LIBRARY_PATH}:${M_LROOT}/bin
    breaksw

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

set path = ($M_LROOT/bin $path)

# End LoadRunner setting #
```

### LoadRunner Settings in the .profile File

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

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

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

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

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

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

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

```
# End LoadRunner setting #
```





# 9

---

## Verifying Your Installation

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

It is strongly recommended that you run *verify\_generator* after a Vuser installation, before attempting to invoke LoadRunner.

### The *verify\_generator* Test

The utility checks the following items in the Vuser environment:

- at least 128 file descriptors
- proper *.rhost* permissions: *-rw-r--r--*
- the host can be contacted using *rsh* to the host. If not, checks for the host name in *.rhosts*
- *M\_LROOT* is defined
- *.cshrc* defines the correct *M\_LROOT*
- *.cshrc* exists in the home directory
- the current user is the owner of the *.cshrc*
- a LoadRunner installation does exist in *\$M\_LROOT*
- the executables have executable permissions
- *PATH* contains *\$M\_LROOT/bin*, and */usr/bin*
- the *rstatd* daemon exists and is running

## verify\_generator Option

The `verify` utility checks the local host for its communication parameters and its compatibility with all types of Vusers. If you intend to run all of the Vusers on one host, type:

```
verify_generator
```

`verify_generator` either returns 'OK' when the setting is correct, or 'Failed' and a suggestion on how to correct the setup.

The syntax of `verify_generator` is as follows:

```
verify_generator [-v]
```

**-v**

Provides detailed information about the checks.

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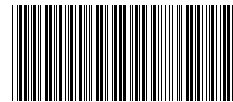
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