
Mercury LoadRunner Quick Start

Welcome to the Mercury LoadRunner Quick Start. The Quick Start provides a short, step-by-step overview and introduction to using Mercury LoadRunner. LoadRunner load tests your application by emulating an environment in which multiple users work concurrently. While the application is under load, LoadRunner accurately measures, monitors, and analyzes a system's performance and functionality.

Introducing LoadRunner Technology

Using Mercury LoadRunner, you create **scenarios**, in which you define the events that occur during a performance testing session. In the scenario, LoadRunner replaces human users at physical machines with virtual users, or **Vusers**. These Vusers create load on your system by emulating actions of typical users in a repeatable and predictable manner.

Suppose you were testing a Web-based travel agency application that enables users to book flights online and you wanted to determine how the application behaves when multiple users try to perform the same transaction at the same time. Using LoadRunner you could create a scenario in which 1000 Vusers, replacing the travel agents, would simultaneously try and book a flight on your application.

The Testing Process

The LoadRunner testing process consists of four basic steps:

- **Step 1-Creating the Script:** Capturing typical end-user business processes performed on your application.
- **Step 2-Designing the Scenario:** Setting up the load test environment by defining events that occur during the testing session.
- **Step 3-Running the Scenario:** Driving, managing and monitoring the load test.
- **Step 4-Analyzing the results:** Analyzing the performance data generated by LoadRunner during the load test.

LoadRunner Components

Each step in the testing process is carried out by one of the Mercury LoadRunner components. The components are as follows:

► **Mercury Virtual User Generator (VuGen) - Creating the Script**

VuGen generates virtual users (*Vusers*) by recording actions that typical end-users would perform on your application. VuGen records your actions into automated virtual user scripts which form the foundation of your load tests.

► **Mercury LoadRunner Controller - Designing and Running the Scenario**

The **Controller** is the central console from which you build, manage, and monitor your load test. You use the Controller to run a script that emulates the actions performed by a real user, and create load on your system by having a number of Vusers (virtual users) concurrently perform these actions.

► **Mercury Analysis - Analyzing the Scenario**

Mercury Analysis provides graphs and reports with in-depth performance analysis information. Using these graphs and reports, you can pinpoint and identify the bottlenecks in your application and determine what changes need to be made to your system to improve its performance.

Sample Application - Mercury Tours

To illustrate the Mercury solution, this Quick Start uses a sample Web-based travel agency application system called Mercury Tours. Mercury Tours users connect to a Web server, search for flights, book flights, and check flight itineraries.

In the course of this Quick Start you will go through the basic steps of creating, running and analyzing a load test using the LoadRunner components—VuGen, Controller, and Analysis. The test will emulate 10 travel agents simultaneously using the flight reservation system (for example, logging on, searching flights, purchasing flights, and logging off).

Start Sample Web Server

The Web server should automatically start after the LoadRunner installation and reboot. If you rebooted your system again, and the server is not running, choose **Start > Programs > Mercury LoadRunner > Samples > Web > Start Web Server**. If you try to start the Web server and it is already running, an error message appears. You can disregard the message and continue with the Quick Start.

Creating the Script with VuGen

The first step in creating your load test is to use VuGen to record a typical end-user business process. VuGen works on a record-and-playback principle. As you walk through a business process on your application, VuGen records your actions into automated scripts which will later form the foundation of your load tests.

How do I start recording user activity?

You begin by opening VuGen and creating a blank script.

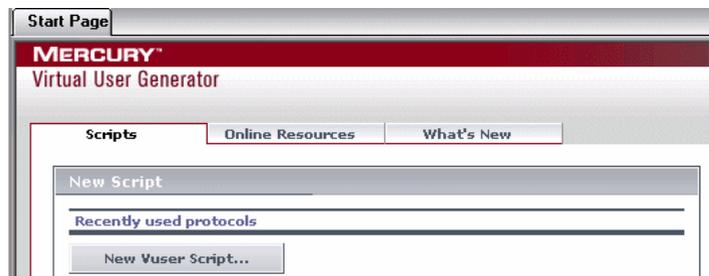
1 Start LoadRunner.

Choose **Start > Programs > Mercury LoadRunner > LoadRunner**. The Mercury LoadRunner Launcher window opens.



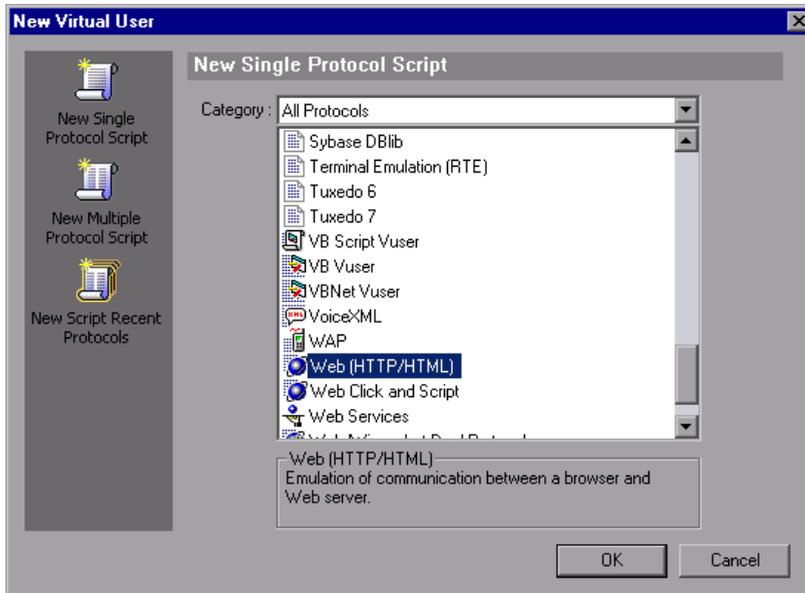
2 Open VuGen.

In the Load Testing tab, click **Create/Edit Scripts**. VuGen's Start Page opens.



3 Create a blank Web script.

Click **New Vuser Script** in the **Scripts** tab in the VuGen Start Page. The New Virtual User dialog box opens, showing the screen for a New Single Protocol Script.

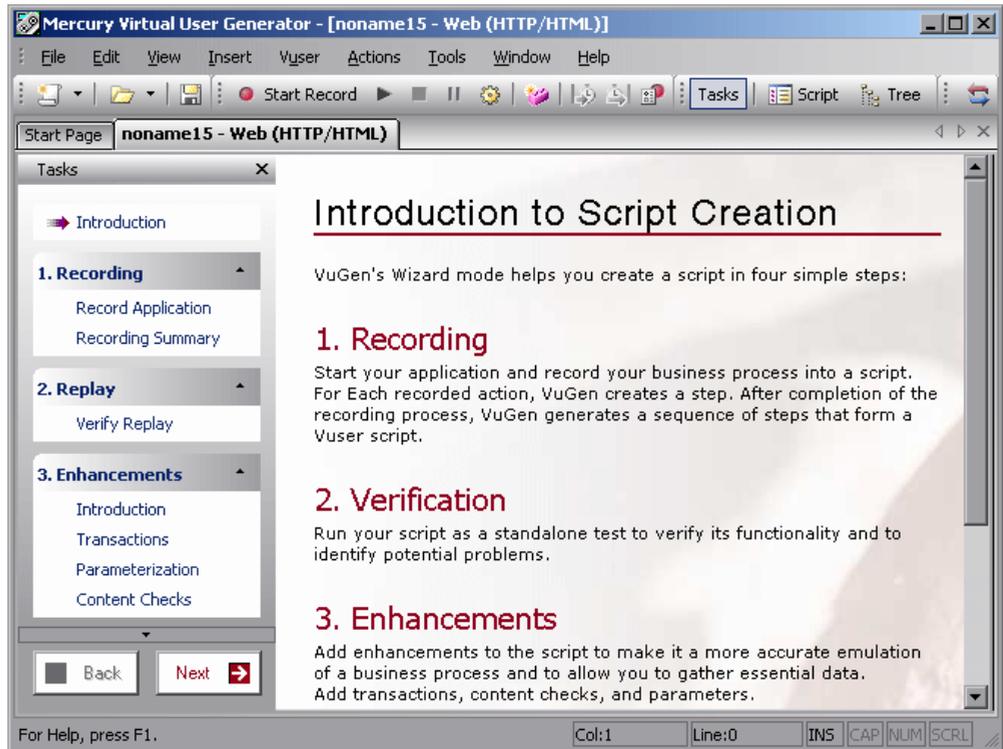


A protocol is the language that your client uses to communicate with the back-end of the system. Mercury Tours is a Web-based application, so you will create a Web virtual user script.

Make sure the Category type is **All Protocols**. VuGen displays a list of all of the available protocols for a single protocol script. Scroll down the list, select **Web (HTTP/HTML)**, and click **OK** to create an empty Web script.

Note: To record the business process using Mercury’s new Web (Click and Script) technology, select **Web (Click and Script)**. For more information on Web (Click and Script), see “Appendix: Using Web (Click and Script)” on page 22.

An empty script opens in VuGen's *wizard* mode with the *Task pane* displayed on the left.



If the task pane is not displayed click the **Tasks** button on the toolbar. VuGen's wizard takes you through a step-by-step process of creating a script and then adapting it for your test environment.

The Task pane lists each step or task in the script creation process. As you proceed through each step, VuGen displays detailed instructions and guidelines in the main area of the window.

How do I record a business process to create a script?

The next stage in creating user emulation, is recording the events performed by a real user. In the previous section, you created an empty Web script. Now you can begin to record events directly into the script. In this section, you will track the events of one passenger reserving a flight from Denver to Los Angeles and then checking the itinerary.

To record the script:

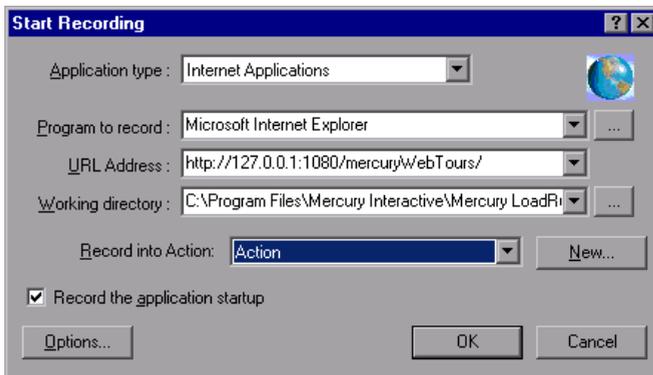
1 Start recording on the Mercury Tours Web site.

Click **Record Application** in step 1 in the Task pane.

Click **Start Recording** at the bottom of the instruction pane.



The Start Recording dialog box opens.



In the **URL** address box, type *http://localhost:1080/MercuryWebTours/*. In the **Record into Action** box, choose **Action**. Click **OK**.

A new Web browser opens and displays the Mercury Tours site. (If there is an error opening the site, make sure that the web server is running. To start the server choose **Start > Programs > Mercury LoadRunner > Samples > Web > Start Web Server**.) The floating Recording tool bar opens.



2 Log on to the Mercury Tours Web site.

For the **Member Name** enter *jojo* and for the **Password** enter *bean*. Click **Login**. A welcome page opens.

3 Enter flight details.

Click **Flights**. The Find Flight page opens:

- **Departure City:** Denver (default)
- **Departure Date:** Keep the default, current date
- **Arrival City:** Los Angeles
- **Return Date:** Keep the default, tomorrow's date.

Keep the rest of the default settings and click **Continue**. The Search Results page opens.

4 Select a flight.

Click **Continue** to accept the default flight selections. The Payment Details page opens.

5 Enter payment information and book flight.

Enter 12345678 in the **Credit Card** box and type 06/06 in the **Exp Date** box. Click **Continue**. The Invoice page opens, displaying your invoice.

6 Check the itinerary.

Click **itinerary** in the left pane. The Itinerary page opens.

7 Click Sign Off in the left pane.**8 Click Stop on the floating tool bar to stop the recording process.**

Once the Vuser script has been generated, the VuGen wizard automatically proceeds to the next step in the task pane and displays the recording summary which includes the protocol information and a list of the actions created during the session. For each step you performed during recording VuGen generated a *snapshot*, a picture of the window during recording. Thumbnails of these recorded snapshots are displayed in the right pane.

**9 Choose File > Save or click Save. Type basic_tutorial in the File name box and click Save. VuGen saves the file in the LoadRunner script folder and displays the test name in the title bar.**

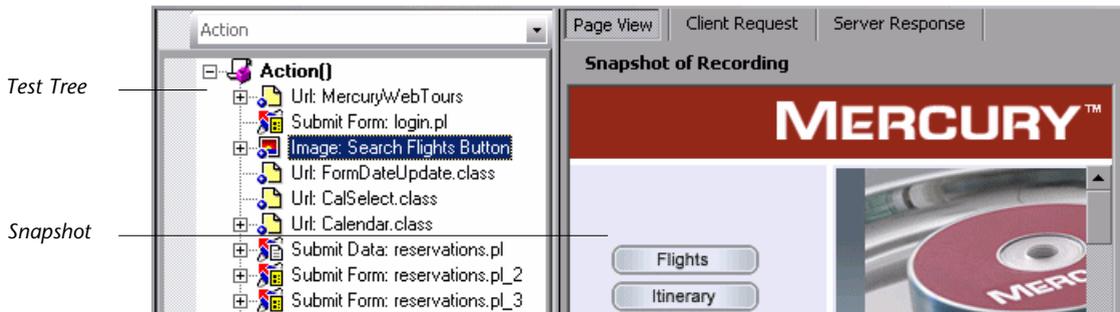
How do I view the script?

You can now view the script that you recorded inside VuGen. You can view the script in *Tree view* or *Script view*. Tree view is an icon-based view that lists the actions of the Vuser as steps while Script view is a text-based view that lists the actions of the Vuser as functions.

Tree View



To view the script in Tree view choose **View > Tree View** or click the Tree view button. For each step you performed during recording, VuGen generated an icon and a title in the test tree.



In Tree view, you see the actions of the user as script steps. Most steps are accompanied by a corresponding snapshot of the recording.

Script View



Script view is a text-based view that lists the actions of the Vuser as API functions. To view the script in Script view choose **View > Script View** or click the **Script View** button.

```

Action()
{
    web_url("MercuryWebTours",
        "URL=http://localhost:1080/MercuryWebTours/",
        "Resource=0",
        "RecContentType=text/html",
        "Referer=",
        "Snapshot=t1.inf",
        "Mode=HTML",
        LAST);
}

```

In Script view, VuGen shows the script in an editor with color coded functions and their argument values. You can type C or LoadRunner API functions, as well as control flow statements, directly into this window.

How do I verify the script recorded my actions?

Once you have finished recording, you can replay the script to verify that it accurately emulates your recorded actions.

To replay the script:

- 1 Ensure that the Task pane is displayed (If not click the **Task** button in the toolbar). Click **Verify Replay** in the task pane and then click the **Start Replay** button at the bottom of the instruction pane.
- 2 If the Select Results Directory dialog box opens and ask you where you want to store the results directory, accept the default name and click **OK**.

After a few moments, VuGen begins running the script. When the script stops running, you can view a summary of the replay in the wizard.

- 3 Click **Verify Replay** in the Task Pane to view the Last Replay Summary.

The **Last Replay Summary** lists any errors that may have been detected and displays thumbnails of the Recording and Replay snapshots. You can compare snapshots and look for discrepancies between your recording and the replay.

You can emulate different kinds of user behavior using the *Run-Time settings*. For example, you could emulate a user who responds immediately to the server, or a user who stops and thinks before responding. For more information about script verification and Run-Time settings, refer to the *Mercury LoadRunner Tutorial*, Lesson 4, “Playing Back your Script.”

How do I measure business processes?

In preparation for the load testing process, LoadRunner allows you to enhance your script to make it more reflective of real life situations. For example, you can insert a step in your script called a *content check* to verify that certain content appears on a returned page. You can modify your script to emulate multiple user behavior or you can instruct VuGen to measure a specific business process.

Transactions - Measuring Business Processes

When preparing an application for deployment, you need to measure the duration of specific business processes—how long does it take to log in, book a flight, and so on. These business processes are normally made up of one or more steps or actions within your script. In LoadRunner, you designate a series of actions you want to measure by marking them as transactions.

LoadRunner gathers information about the time it takes to perform a transaction and displays the results in color-coded graphs and reports. You use this information to see if the application meets the original requirements. In this section you will insert a transaction in your script to measure the amount of time it takes for the user to find and confirm a flight.

To insert a transaction:

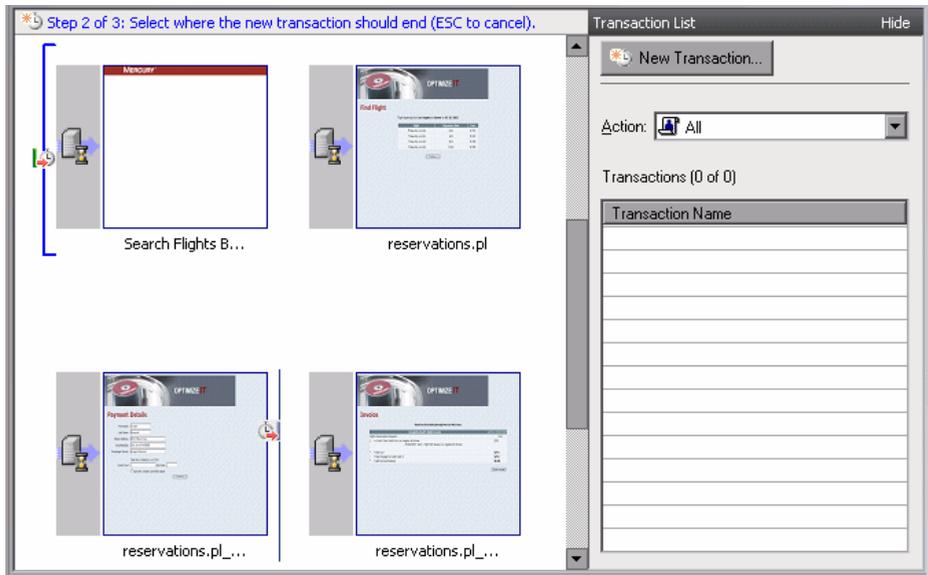
1 Open the Transaction Creation Wizard.

Ensure that the Task pane is displayed (If not click the **Task** button).

In the task pane under the heading Enhancements, click **Transactions**.

The Transaction Creation wizard opens. The Transaction Creation wizard displays thumbnails of the different steps in your script.

Click the **New Transaction** button. You are now able to drag the transaction markers and place them at their designated points in the script. The wizard prompts you to insert a starting point for the transaction.



2 Insert a start transaction and an end transaction marker.

Using your mouse, place the marker before the third thumbnail entitled **Search flights button** and click. The wizard prompts you to insert an end point.

Using your mouse, place the marker after the fifth thumbnail entitled **reservations.pl_2** and click.

3 Specify a name for the transaction.

The wizard prompts you to enter a name for the transaction. Type `find_confirm_flight` and press ENTER.

You can adjust the starting point or end point of the transaction by dragging the markers to different points in the script. You can also rename the transaction by clicking on the existing name above the start transaction marker and typing a new name.

For more information about enhancing the script (*Transactions, Parameterization and Content Checks*) refer to the *Mercury LoadRunner Tutorial*, Lesson 6, "Preparing a Script for Load Testing."

Designing the Scenario with the Controller

Load testing means testing your application under typical working conditions, in our case, many travel agents reserving flights on the same flight reservation system at the same time. Now that you have completed the first step of creating a script, you need to set up the load test environment.

Using the Controller, you divide your application performance testing requirements into scenarios. A scenario defines the events that occur during each testing session. Thus, for example, a scenario defines and controls the number of users to emulate, the actions that they perform, and the machines on which they run their emulations.

How do I create a scenario?

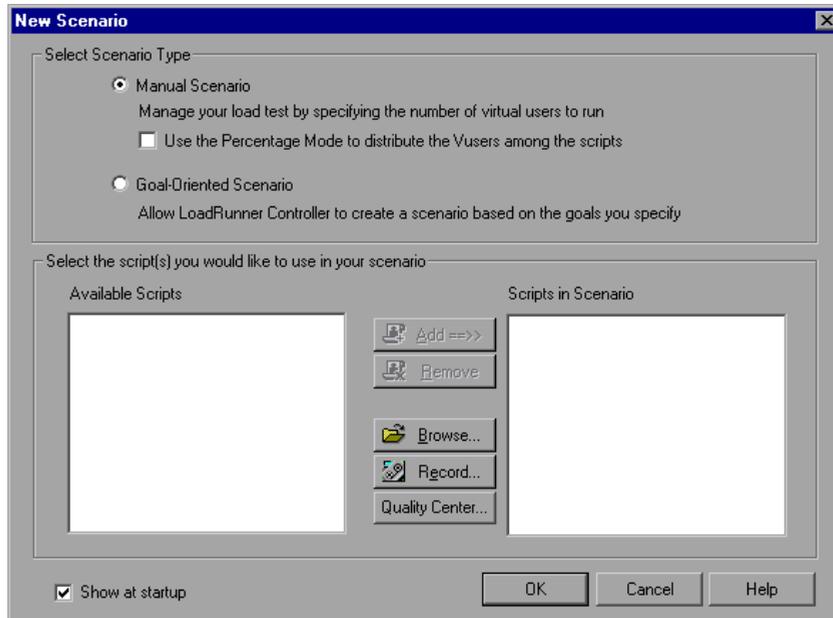
In this section, the objective is to create a scenario that emulates the behavior of ten travel agents simultaneously logging on, searching flights, purchasing flights, checking itineraries, and logging off the system.

1 Open Mercury LoadRunner.

Choose **Start > Programs > Mercury LoadRunner > LoadRunner**. The Mercury LoadRunner Launcher window opens.

2 Open the Controller.

In the **Load Testing** tab, click **Run Load Tests**. The LoadRunner Controller opens. By default, the Controller opens with the New Scenario dialog box.



3 Select a Scenario Type.

Select **Manual Scenario**. The Controller allows you to select a variety of different scenario types such as a *Goal-Oriented scenario*. For more information about the different scenario types refer to the *Mercury LoadRunner Tutorial*, Lessons 7 and 9.

4 Add a script to the load test.

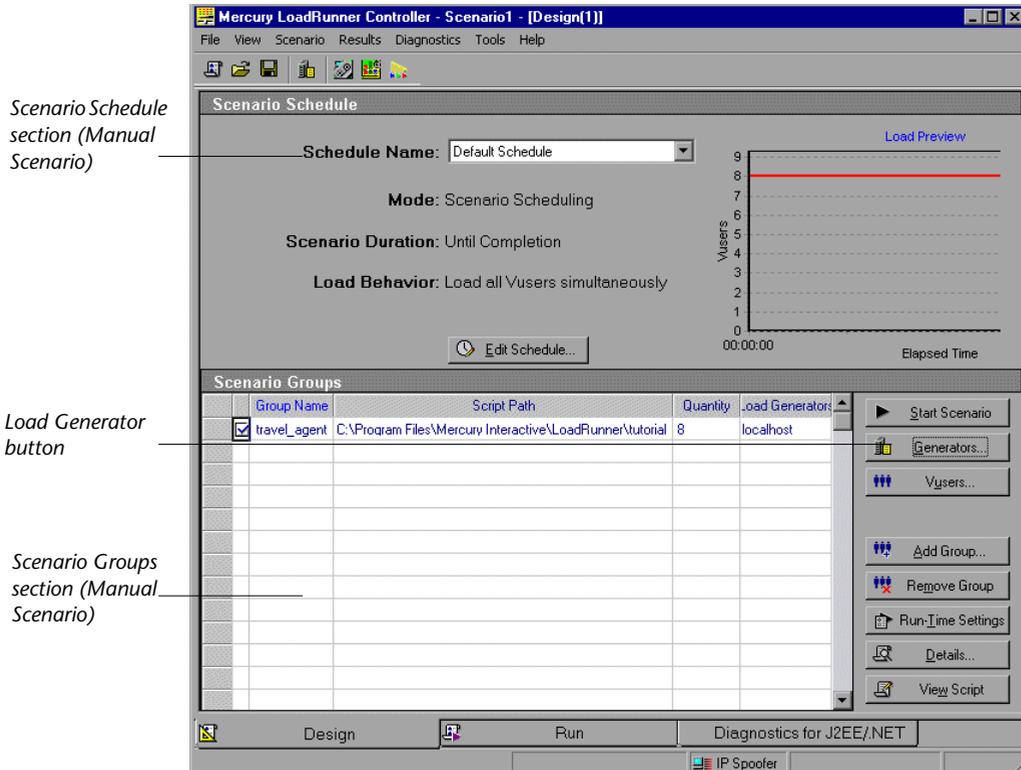
For the purpose of this Quick Start, a script is provided that is similar to the one you created for a Web (HTTP/HTML) Vuser. We recommend that you use the sample script.

Click **Browse**, and navigate to **basic_script** in the *<LoadRunner Installation>\Tutorial* directory. The script is displayed in the **Available Scripts** section and in the **Scripts in Scenario** section.

Click **OK**. The LoadRunner Controller opens your scenario in the Design tab.

The Controller Window at a Glance

The Controller window's Design tab contains two primary sections, the Scenario Schedule and the Scenario Groups:



Scenario Schedule: In the Scenario Schedule section, you set the load behavior to accurately portray user behavior. You determine the rate at which load is applied to the application, the load test duration, and how the load is stopped.

Scenario Groups: You configure the Vuser groups in the Scenario Groups section. You create different groups to represent typical users of your system. You define the actions that they will run, the number of Vusers that will run, and the machine that they will run on.

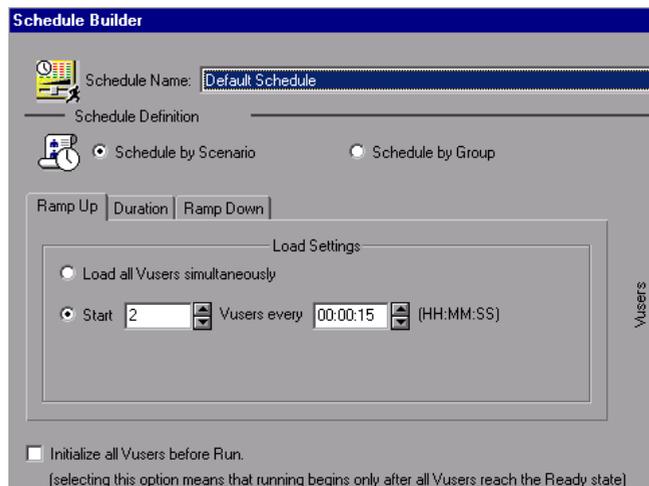
Load Generators: Load generators are the machines that create load on the application by running Vusers. You can use a number of load generator machines, each hosting many virtual users.

How do I generate real load behavior?

Since typical users do not log on and off the system at precisely the same time, LoadRunner's *Controller Schedule Builder* allows you to build a scenario schedule that gives a more accurate portrayal of typical user behavior. After you create a manual scenario, you can, for example, set the duration time of the scenario or select to gradually run and stop the Vusers within the scenario. You will now change the default load settings using the Controller Schedule Builder.

1 Change the Scenario Schedule default settings.

 **Edit Schedule.** Click the **Edit Schedule** button. The Schedule Builder opens.



2 Specify a gradual start.

In the **Ramp Up** tab, change the settings to: **Start 2 Vusers every 15 seconds**

3 Schedule the duration.

In the **Duration** tab, change the settings to: **Run for 3 minutes after the ramp up has been completed.**

4 Schedule a gradual closure.

In the **Ramp Down** tab, change the settings to: **Stop 5 Vusers every 30 seconds.** Click **OK**.

For detailed information about designing the scenario and changing the default settings, refer to the *Mercury LoadRunner Tutorial*, Lesson 7, "Creating a Load Testing Scenario."

Running the Scenario with the Controller

Now that you have designed the load test scenario you are ready to run the test and observe how your application performs under load. Before you start running the test you should familiarize yourself with the Controller window's Run tab view. The Run tab is the control center from which the test is managed and monitored.

Click the **Run** tab to open the Run view.

The screenshot shows the Mercury LoadRunner Controller interface in the Run tab. The window title is "Mercury LoadRunner Controller - Scenario1 - [Run]". The menu bar includes File, View, Scenario, Monitors, Results, Diagnostics, Tools, and Help. The toolbar contains various icons for scenario management.

Scenario Groups: A table showing the status of scenario groups. The table has columns for Group Name, Pending, Init, Ready, Run, Pending, Passed, Failed, Error, and Actual Exit. The first group is "travel_agent" with 2 users in the Run state.

Scenario Status: A summary panel showing the current status of the scenario. It indicates "Running" and shows 6 Running Vusers, Elapsed Time of 00:01:18, Hits/Second, Passed Transactions, Failed Transactions, and Errors.

Available Graphs Tree: A list of available graphs for monitoring, including Web Resource Graphs, Hits per Second, Throughput, HTTP Responses per Second, Pages Downloaded per Second, Windows Resources, and LINUX Resources.

Graph Viewing area: Four line graphs showing performance metrics over time. The graphs are: Running Vusers - whole scenario, Trans Response Time - whole scenario, Hits per Second - whole scenario, and Windows Resources - Last 60 sec.

Graph Legend: A table providing details for the graphs. The table has columns for Color, Scale, Measurement, Machine, Max, Min, Avg, Std, and Last.

Color	Scale	Measurement	Machine	Max	Min	Avg	Std	Last
Yellow	1	% Processor Time (Processor_Total)	iar	83.165	2.667	28.375	31.962	13.333
Blue	0.1	File Data Operations/sec (System)		382	4.659	154.644	237.051	22.650
Light Blue	10	Processor Queue Length (System)		0	4.000	4.333	0.471	4.000
Brown	0.01	Page Faults/sec (Memory)		484	22.957	838.759	1406.849	23.983
Orange	10	% Disk Time (PhysicalDisk_Total)		0.442	0.190	2.609	3.393	0.493

The bottom of the window shows the "Run" tab selected, along with buttons for "Diagnostics for J2EE/.NET", "IP Spooler", and "Auto Collate Results".

The Run view contains five main sections:

Scenario Groups: In the upper-left pane, you can view the status of Vusers in the scenario groups. You use the buttons to the right of this pane to start, stop, and reset the scenario, view individual Vuser status, and to increase the load on the application during a scenario by manually adding more Vusers.

Scenario Status: In the upper-right pane, you can view a summary of the load test, including the number of running Vusers and the status of each Vuser action.

Available Graphs Tree: In the middle-left pane, you can see a list of the LoadRunner graphs. To open a graph, select a graph in the tree, and drag it into the graph viewing area.

Graph Viewing Area: In the middle-right pane, you can customize the display to view between one and eight graphs (**View > View Graphs**).

Graph Legend: In the lower pane, you can view data from the selected graph. Selecting a row highlights the corresponding line in the graph, and vice versa.

How do I run a load test scenario?

In this section, you will start the scenario.

1 Start the scenario

Click the **Start Scenario** button or choose **Start > Scenario** to begin running the test.



The Controller begins running the scenario. The scenario runs for about 5 minutes.

2 Monitor performance with the controller's online graphs.

While the test is running you can see how the application performs in real time and where potential bottlenecks exist using LoadRunner's suite of integrated monitors. You can view performance data collected by the monitors on the Controller's online graphs. The online graphs are displayed in the Run tab's graph viewing area. The following graphs are displayed by default:

Running Vusers - Whole Scenario graph displays the number of Vusers running at a given time.

Transaction Response Time - Whole Scenario graph shows the amount of time it takes for each transaction to be completed.

Hits per Second - Whole Scenario graph displays the number of hits (HTTP requests) made to the Web server by Vusers during each second of the scenario run.

Windows Resources graph displays the Windows resources measured during a scenario. (For purposes of this Quick Start, this graph has not been configured)

For more information about monitoring performance during the scenario refer to the *Mercury LoadRunner Tutorial*, Lesson 8, “Running the Load Test.”

Analyzing Scenario Results

Now that you have completed your scenario run, you use LoadRunner Analysis to analyze the performance data generated during the run. LoadRunner Analysis gathers the performance data into detailed graphs and reports. Using these graphs and reports, you can easily pinpoint and identify the bottlenecks in your application, and determine what changes need to be made to your system to improve its performance.

For the purpose of this Quick Start, a sample analysis session is provided, which is based on a scenario similar to the one you ran.

How do I start my analysis session?

- 1 Choose **Tools > Analysis** from the Controller menu or choose **Start > Programs > Mercury LoadRunner > Applications > Analysis** to open LoadRunner Analysis.
- 2 In the Analysis window, choose **File > Open**. The Open Existing Analysis Session File dialog box opens.
- 3 From the *<LoadRunner Installation>\Tutorial* folder, select **analysis_session** and click **Open**. Analysis opens the session file in the Analysis window.

Did I reach my goals?

LoadRunner Analysis opens displaying the Summary Report. The Summary report provides general information about the scenario run. In the **Statistics Summary** of the report, you can see how many users ran in the test and view other statistics such as the total/average throughput, and the total/average hits. The **Transaction Summary** of the report lists a summary of the behavior of each transaction.

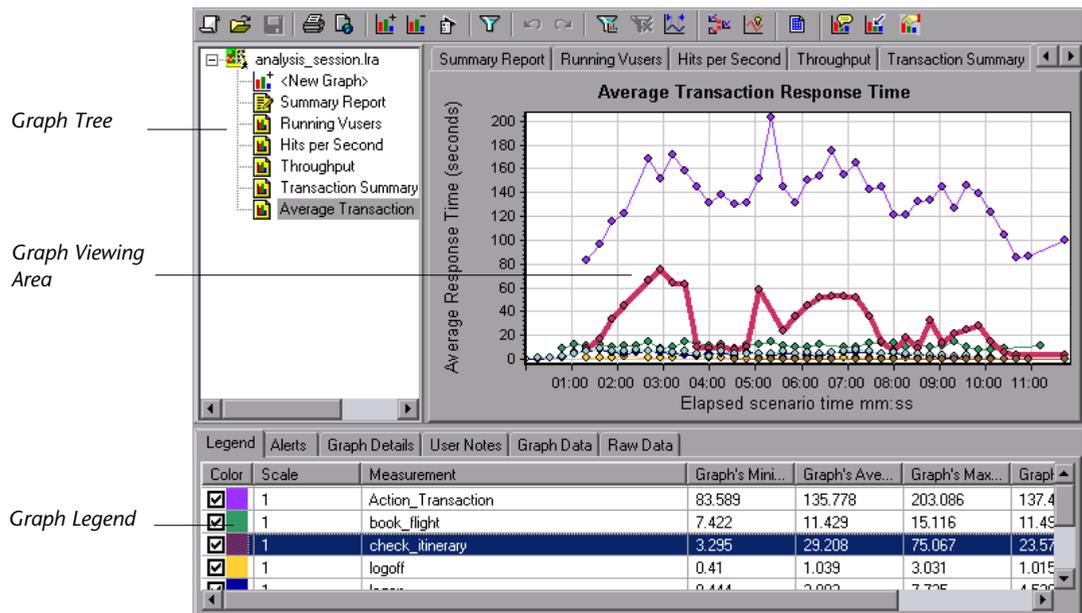
How can I view the graphs?

The *graph tree* in the left pane of the Analysis window shows the graphs that are open for viewing. From the graph tree, you can choose to open new graphs or remove graphs that you no longer want to view. The graphs are displayed in the *graph viewing area* in the right pane of the Analysis window. You can view data from the selected graphs in the *graph legend* in the lower pane of the window.

Average Transaction Response Time

Using the Average Transaction Response Time graph, you can view the behavior of the problematic transactions during each second of the scenario run. In this section, you will view the behavior of the **check_itinerary** transaction.

- 1 Click on **Average Transaction Response Time** in the graph tree. The Average Transaction Response Time graph opens in the graph viewing area
- 2 In the legend, click **check_itinerary**. The **check_itinerary** transaction is highlighted in the graph and in the legend below the graph.



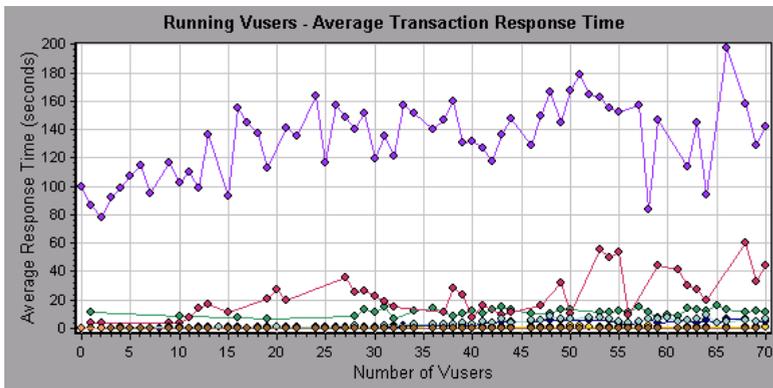
Notice how the average response time of the **check_itinerary** transaction fluctuates greatly compared to the other transactions at the bottom of the graph, which follow a more or less stable average response time.

How can I compare data from different graphs?

You can join two graphs together to see the effect of the one graph's data upon the other graph's data. This is called *correlating two graphs*. For example, you can correlate the Running Vusers graph with the Average Transaction Response Time graph to see the effect of a large number of Vusers on the average response time of the transactions.

- 1 Click **Running Vusers** in the Graph Tree to view the Running Vusers graph.
- 2 Right-click the Running Vusers graph and choose **Merge Graphs**.
- 3 From the **Select graph to merge with** list, choose **Average Transaction Response Time**.
- 4 In the **Select type of merge** area, select **Correlate**, and click **OK**.

The Running Vusers and Average Transaction Response Time graphs are now represented by one graph, that opens in the graph viewing area.



Another Analysis tool, *Auto Correlate*, merges all graphs containing data that could have had an effect on a given transaction. Correlations of the transaction with each element are displayed, allowing you to deduce which elements had the greatest effect on the given transaction.

How can I sort graph data?

You can filter graph data to show fewer transactions for a specific segment of the scenario and you can sort graph data to show the data in more relevant ways. For example, you can filter the Average Transaction Response Time graph to display only the **check_itinerary** transaction.

- 1** Click on **Average Transaction Response Time** in the graph tree to open the graph.
- 2** Right-click the graph, and choose **Set Filter/Group by**.
- 3** In the **Transaction Name** value box, select **check_itinerary** and click **OK**.

The filtered graph displays only the **check_itinerary** transaction and hides all the other transactions.

How can I publish my findings?

You can publish the findings from your analysis session in an HTML or Microsoft Word report. The HTML report can be opened and viewed in any browser. The Word report is more comprehensive than the HTML report, since you can include general information about the scenario and format the report to include your company's name and logo, and the author's details.

For more information about LoadRunner Analysis, refer to the *Mercury LoadRunner Tutorial*, Lesson 10, "Analyzing Your Scenario."

Appendix: Using Web (Click and Script)

Web (Click and Script) is Mercury's new technology for creating Web scripts for load testing scenarios. The advantages of using Web (Click and Script) are:

- ▶ Web (Click and Script) scripts intuitively represent your actions in the Web interface. By viewing the recorded functions generated on a GUI-level, you can determine the user's exact actions during the recording session. For example, the **web_list** function is generated when a user selects an item from a list.
- ▶ Web (Click and Script) Vusers support non-HTML code (Javascript).
- ▶ Web (Click and Script) Vusers do not require correlations, and therefore there is no need to define rules or perform a manual correlation after the recording.
- ▶ You can export information about the script and the events that were recorded to a Microsoft Word document, and view your business processes in a report.

How do I record a business process using Web (Click and Script)?

1 Open Vugen.

In the Load Testing tab, click **Create/Edit Scripts**. VuGen's Start Page opens. The procedure for recording this type of Vuser is identical to the procedure described in "Creating the Script with VuGen" on page 3.

2 Create a blank Web Script.

Click **New Vuser Script** in the **Scripts** tab in the VuGen Start Page. The New Virtual User dialog box opens, showing the screen for a New Single Protocol Script.

Under the Category type, **Popular Protocols**, select **Web (Click and Script)**, and click **OK** to create a blank Web script.

Continue to record the script as described in "How do I record a business process to create a script?" on page 6.

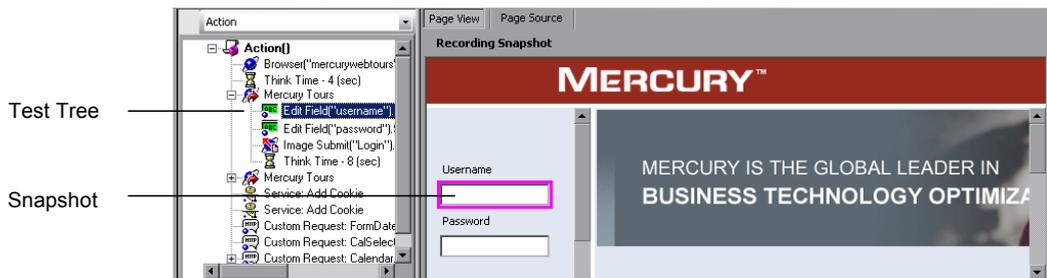
Where will I see the new features of a Web (Click and Script) Vuser script?

Web (Click and Script) features appear both in the tree and script views.

Tree View



To view the script in Tree view choose **View > Tree View**, or click the **Tree** button on the toolbar. For each step you performed during recording, VuGen displays an icon and a title in the test tree.



In the tree, you see the actions of the user as script steps. Each parent node represents a Web page, and all the actions performed on that page are grouped under this node. The page's node can be expanded or collapsed to show or hide these actions.

When you select an action node, the snapshot displays the page where the action was being executed, and highlights, with a pink border, the object on which this action was being performed. For example, in the image above, the snapshot was recorded when the user entered data in the **Username** box. Note that the Username box is highlighted, and is empty.

Script View



Script view is a text-based view that lists the actions that make up the business process. To view the script in Script view choose **View > Script View**, or click the **Script** button on the toolbar.

GUI-level script functions intuitively represent your actions in the Web interface. For example, a VuGen generates a **web_edit_field** function when you enter data in an editable box, and a **web_button** function when you click a button to submit data (or **web_image_submit** if the button is an image).

In the script you recorded, you entered jojo into the **username** box, and a password (which is encrypted) into the **password** box. You then submitted the data by clicking the **Login** button.

In Web (Click a Script) scripts, the **DESCRIPTION** section of each function defines the UI object where the action was recorded. Your entries are displayed in the **ACTION** section of each function.

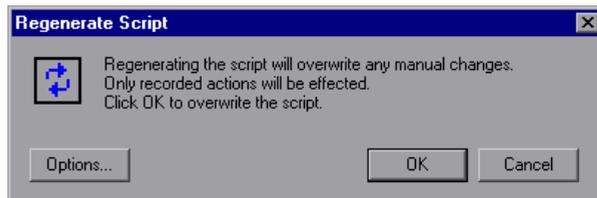
```
web_edit_field("username",
  "Snapshot=t1.inf",
  DESCRIPTION,
  "Type=text",
  "Name=username",
  "FrameName=navbar",
  ACTION,
  "SetValue=jojo",
  LAST);
web_edit_field("password",
  "Snapshot=t2.inf",
  DESCRIPTION,
  "Type=password",
  "Name=password",
  "FrameName=navbar",
  ACTION,
  "SetEncryptedValue=44016ce87afe9552",
  LAST);
web_image_submit("Login",
  "Snapshot=t3.inf",
  DESCRIPTION,
  "Alt=Login",
  "Name=login",
  "FrameName=navbar",
  ACTION,
  "ClickCoordinates=75,6",
  LAST);
```

How do I convert my Web (Click and Script) script to Web (HTTP/HTML) recording mode?

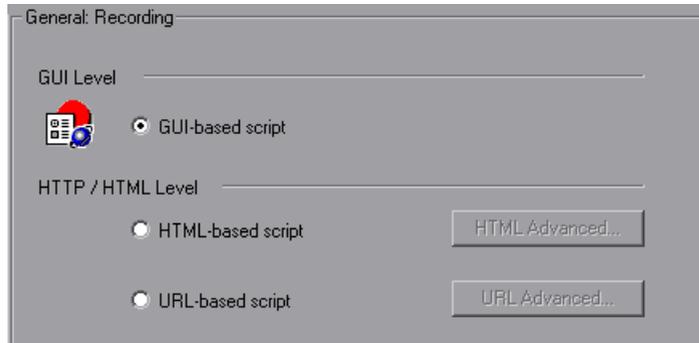
After you have recorded a Web (Click and Script) script, it may not support a particular environment, or you may need it to be more scalable. Instead of re-recording the script, you can convert the script to HTTP/HTML recording mode.

To convert the script to HTTP/HTML recording mode:

- 1 Choose **Tools > Regenerate Script**. Note that regenerating the script overwrites any manual changes.



- 2 Click **Options** to open the Regenerate Options dialog box.
- 3 Select the **General:Recording** node, and select an HTTP/HTML level.



To convert the script back to GUI level, select **GUI-based script**.

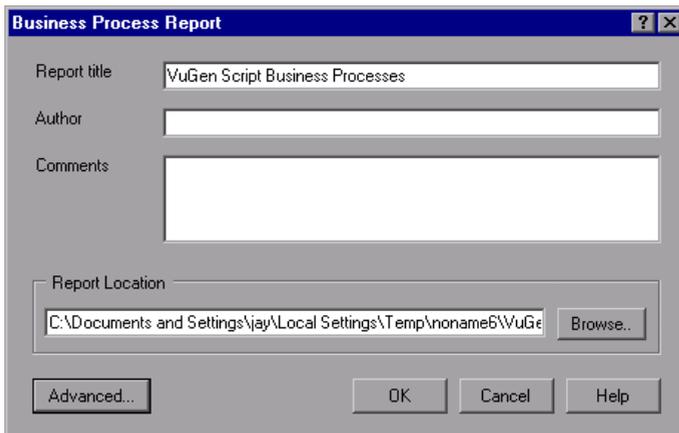
- 4 Click **OK** in the Regenerate Options dialog box, and again in the Regenerate Script dialog box.

How can I summarize my business processes?

At the final stage of script creation, you can create a report that describes your business process. VuGen exports the script information to a Microsoft Word document. You can use a pre-defined template or one provided with VuGen, to create reports containing summary information about your test run.

To create a Business Process report:

- 1 Choose **File > Create Business Process Report**. The Business Process Report dialog box opens.



- 2 Specify a title in the **Report title** box, and enter any remarks in the **Comment** box.
- 3 Accept the default report location and file name, or browse for the desired path. The default location is that of the saved script, and the default report name is **VuGen Script Business Process.doc**.
- 4 You can specify the report's content by clicking **Advanced** and selecting the content type to include.
- 5 Click **OK**. VuGen generates and displays the report.