

Oracle® Load Testing

ServerStats User's Guide

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Preface

Welcome to the Oracle Load Testing User's Guide. This guide explains how to get started using the features and options of Oracle Load Testing for load testing of Web-based applications.

Audience

This guide is intended for Web test engineers who will be conducting load and scalability testing of a Web site or application. The guide does require an understanding of software or Web application testing concepts. Test engineers using Oracle Load Testing should be familiar with Oracle Functional Testing Visual Scripts and the concepts of Web application testing, load testing, scalability testing, and reporting.

Prerequisites

Oracle Load Testing does not require any programming experience to develop load scenarios. However, test engineers performing distributed load testing in a network environment should be familiar with networking concepts and how to verify communication between workstations in a network.

Using This Guide

This guide is organized as follows:

[Chapter 1, "ServerStats"](#) provides an overview of the major features of the ServerStats component of Oracle Load Testing and explains how to configure data sources and metrics.

[Appendix A, "ServerStats Examples"](#) provides examples for creating various types of monitors.

[Appendix B, "ServerStats Metric Descriptions"](#) describes the default Oracle Load Testing ServerStats metrics.

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Related Documents

For more information, see the following documents in the Oracle Application Testing Suite documentation set:

- *Oracle Application Testing Suite Release Notes*
- *Oracle Application Testing Suite Installation Guide*
- *Oracle Application Testing Suite Getting Started Guide*
- *Oracle Functional Testing OpenScript User's Guide*
- *Oracle Functional Testing OpenScript Programmer's Reference*
- *Oracle Load Testing Load Testing User's Guide*
- *Oracle Load Testing Load Testing ServerStats Guide*
- *Oracle Test Manager Test Manager User's Guide*

Conventions

The following text conventions are used in this document:

Convention	Meaning
boldface	Boldface type indicates graphical user interface elements associated with an action, or terms defined in text or the glossary.
<i>italic</i>	Italic type indicates book titles, emphasis, or placeholder variables for which you supply particular values.
monospace	Monospace type indicates commands within a paragraph, URLs, code in examples, text that appears on the screen, or text that you enter.

ServerStats

ServerStats lets you monitor a variety of server-side application, database, system, and Web server statistics. You can configure ServerStats to display real-time performance statistics for the various hosts and services available from the server, such as percentage of CPU usage, memory usage, Web server statistics, etc.

The ServerStats configurations contain one or more configured monitors for monitoring performance of application infrastructure during a load test. Once saved, you can add monitors into the configuration and apply them to the system to be monitored.

The Metric Profiles and Metrics options on the ServerStats menu are used to create generic metric profiles and metrics that can be saved for use in multiple configurations. These generic definitions are available when you add a monitor to the configuration. Metric definitions monitor individual data points. Metric profiles monitor a group of data points.

Metric Profiles and Metrics are shipped with a default set of metrics. Additional metrics not included in the default metrics can be accessed by creating custom profiles or metrics.

Oracle Load Testing supports the following metric profiles:

Application Servers

- Oracle WebLogic Server

Databases

- Oracle
- SQL Server

Network Devices

- Cisco 3500 XL Series
- Cisco Catalyst 4000, 5000, 6000 Series
- Foundry Load Balancer
- Host-Resources-MIB
- MIB-II Network Device
- Netscreen Firewall

Systems

- AIX 4.3
- CPU

- Disk
- Host
- Linux
- Memory
- Net-SNMP)
- Network
- Solaris
- Solaris (multi-CPU)

WebServers

- Apache
- General
- IIS

Refer to Appendix B for a description of the metrics included with each profile.

Remote data collectors can be configured to run ServerStats monitors from remote locations.

This chapter describes how to use configuration files, add servers and systems as data sources, and select the counters to monitor.

1.1 Creating Monitors Overview

To create a ServerStats monitor, the following broad tasks must be completed:

- Configure the systems you want to monitor and the data collectors you are using either in the System Editor or directly from the ServerStats configuration.
- Create generic metric profiles and metrics if you want to use them in more than one configuration, otherwise metric profiles and metrics can be added directly from the configuration.
- Create and save a configuration.
- Add monitors to the configuration.

Refer to Appendix A for examples.

1.2 Using Configuration Files

ServerStats lets you maintain multiple configurations of servers, systems, and counters in different configuration files that can be selected on the Setup Autopilot tab to be run with a load test. Configuration files store a particular set of ServerStats settings for monitoring server performance under load. The files store the following:

- Configured data sources
- Selected counters from each data source
- Selected metric profiles and metrics
- Data source and counter properties

Configurations are listed in the ServerStats Configuration section of the Set Up Autopilot tab.

Note: ServerStats configurations are only initiated and run as part of a load test. If you need to add additional metrics during a load test, start a new session and compare data later using absolute time on the reports.

1.2.1 Creating a New Configuration File

To create a new configuration file:

1. Select **Configurations** from the **ServerStats** menu to open the Configurations options.
 - New** - displays the Add Configuration dialog box.
 - Edit** - displays Edit Configuration dialog box.
 - Delete** - deletes the selected configuration.
 - Test** - tests the selected configuration.
 - <configurations list>** - lists the defined configurations.
 - Name** - displays the name of the selected configuration.
 - Description** - displays the selected configuration's description.
 - Monitors** - lists the metrics included in this configuration.
 - **New** - displays the Add Monitor: Step 1 dialog box for adding a new monitor to the configuration.
 - **Edit** - displays the Edit Monitor dialog box.
 - **Delete** - deletes the selected metric.
 - **<monitors list>** - lists the metrics for the configuration.
2. Click **New** to open the Add New Configuration dialog box.
 - Name** - displays the name of the configuration. A configuration must be saved before you can add monitors.
 - Description** - displays the configuration description.
3. Enter a name and description for the configuration.
4. Click **Save**.
5. Click **New** to display the Add Monitor Step 1 of 3 dialog box. You can add the following types of monitors as described later in this chapter:
 - Data Source Monitors
 - Metric Profile Monitors
 - Metric Monitors
6. Once you add the monitor and click **Finish**, the Configurations dialog box is displayed. Click **Test** to make sure the monitors are configured correctly. Oracle Load Testing tries to start the monitors and collect data from the systems the monitors are configured against.
7. Click **Close** to exit the Configurations dialog box.

1.2.2 Editing Configurations

To edit a configuration:

1. Select **Configurations** from the **ServerStats** menu to open the Configurations options.
2. Select the configuration you want to change.
3. Click **Edit** above the list of configurations to display the Edit Configuration dialog box for changing the name and description of the configuration.
Name - displays the name of the configuration.
Description - displays the configuration description.
4. Click **New** in the Monitors pane to add a dedicated monitor, metric monitor, or metric profile monitor.
5. Click on an existing monitor and click **Edit** to display the Edit Monitor dialog box where you can change the server location, collection interval, or other properties associated with this monitor.
6. Click on an existing monitor and click **Delete** to remove the monitor from the configuration.
7. Click **Test** to make sure the monitor works. Oracle Load Testing tries to start the monitor and collect data from the system the monitor is configured against.
8. Click **Close** to exit the Configurations dialog box.

1.2.3 Deleting Configurations

To delete a configuration:

1. Select **Configurations** from the **ServerStats** menu to open the Configurations options.
2. Select the configurations that you want to delete and click **Delete**.
3. Click **Yes** to confirm the deletion.
4. Click **Close**.

1.3 Adding Data Source Monitors

You can add the following data source monitors:

COM+ - The ComPlus Monitor retrieves data for counters provided by ComPlus objects on Windows 2000 or later operating systems. The counters that are available are determined by the ComPlus applications that are installed on your system.

Database - You can set up a monitor that performs a database query for an individual machine.

Enterprise Manager - You can set up which Enterprise Manager metrics to view during or after a load session to drill down in Enterprise Manager from Oracle Load Testing. This data source configuration specifies the data used to create a URL request to Enterprise Manager for accessing Weblogic Domain Metrics, Weblogic JVM Metrics or Oracle databases.

IBM WebSphere PMI - WebSphere PMI is an easy way to confirm that a host is responding.

JMX - The JMX monitor lets you determine if a Java application is performing properly. The JMX monitor checks the specified JMX MBean Attribute values to confirm that the Java application is performing as expected. The JMX monitor also provides an easy way to confirm whether or not the JMX application is running.

Perfmon - A Perfmon monitor checks on the performance of a specific Perfmon metric on a single machine. The monitor must have appropriate privileges to access the Perfmon statistics on the monitored machine.

Ping - Ping is an easy way to confirm that a host is responding. The Ping monitor sends an echo request to a specified host and waits for a reply. The monitor returns the round trip time.

SNMP - An SNMP (Simple Network Management Protocol) monitor provides specific performance and configuration information on network devices, such as routers, or hosts, such as workstations or mainframes. To use this monitor, enable SNMP on the machine you intend to monitor. Also, be sure that the MIB data you plan on collecting is supported by the SNMP daemon on the monitored machine.

URL - A URL monitor lets you determine if a URL that is critical to your web site is functioning as it should. In addition, the URL monitor can be used to parse data from the Apache server status page using a regular expression.

Virtual Agent - You can set up Virtual Agent monitors to run an executable program from the command line of the system. You specify a Perl expression to return metrics from the command. Virtual Agent is an easy way to execute operating system or custom programs on a host and return specific metrics. The Virtual Agent used to be called Remote Agent.

Refer to Appendix B for examples.

1.3.1 Configuring for Monitoring Disk Performance

To monitor disk performance on a Windows machine, `Diskperf -yv` must be enabled on that machine. See "Using Diskperf" later in this chapter for more information.

1.3.2 Adding Monitors

To add data source monitors:

1. Select **Configurations** from the **ServerStats** menu to open the Configurations options.
2. Select the configuration to which you want to add a dedicated monitor and click **New** in the Monitors pane to display the Add Monitor Step 1 dialog box.

This dialog box is where you select the type of monitor you want to add. Expand the appropriate node and select the data source, metric, or metric profile that you want to add.

3. Expand the **Data Sources** node, select the data source for the type of monitor you want to add and click **Next**. The Add Monitor Step 2 dialog box is displayed.

Monitor

- **Type** - displays the type of data source monitor you are adding.

Monitored System - Displays information about the monitored system.

- **Name** - enter or select the system to sample. Oracle Load Testing Server is the system on which Oracle Load Testing is installed.
- **Host Name or IP** - displays the host name or IP address of the selected system.

- **Username** - displays the user name for the system.
- **Password** - displays the password for the system.
- **Domain Name** - displays the Domain Name for the system.
- **Add** - displays the Add Monitored System dialog box for specifying a new system to monitor.
- **Edit** - displays the Edit Monitored System dialog box for editing the selected system.
- **Monitored System Details** - displays details about the monitored system. The information displayed is based on the type of data source being used.

Data Collector

Note: Data Collector is not used with the Enterprise Manager data source. This section does not appear for Enterprise Manager monitors.

- **Name** - enter or select the data collector to use for sampling the system.
- **Host Name or IP** - displays the host name or IP address of the selected system.
- **Port** - displays the data collector port.
- **Username** - displays the user name for the data collector.
- **Password** - displays the password for the data collector.
- **Add** - displays the Add Data Collector dialog box for specifying a new data collector.
- **Edit** - displays the Edit Data Collector dialog box for editing the selected data collector.

Collection Interval

- **Collect data every** - Specifies, in seconds, how often samples are taken for this monitor.

IBM WebSphere PMI Properties for discovery

- **Document** - specify the URL to use as the root for the queries to identify counters. For example, wasPerfTool/servlet/perfservlet.

JMX Properties for discovery

- **Filter MBeans By** - select the server type by which you want to filter MBeans or select All Counters to return all supported MBeans.
 - **Discovery MBeans** - select the type of MBeans to discover or select All Counters to discover all types of MBeans.
4. Enter the Monitored System and Data Collector or click the down arrow to select from a list.
 5. Enter the collection interval.
 6. IBM WebSphere PMI requires additional information for discovery. Enter this data and click **Next**. The Add Monitor Step 3 dialog box is displayed.

This dialog box has different fields based on the type of data source selected. Refer to the following sections for a description of each.

Note: Counter discovery can be memory intensive. You may need to increase the memory available to the server if discovery is not successful. Refer to "Setting the Server Memory Size" later in this chapter.

7. For monitors that require them, enter a name for the monitor, and the monitor properties. These fields differ depending on the type of monitor. For those monitors for which discovery was performed, select the metrics you want to use and click **Add**.
8. Click **Finish**.
9. The Configurations dialog box is displayed. Click **Test** to make sure the monitor is configured correctly.
10. Click **Close** to exit the Configurations dialog box.

1.3.3 COM+ Configuration

This section describes the additional fields required for the COM+ data source monitor.

Monitor

- **Type** - displays the type of monitor you are adding.

Select Counters - select the counters you want to use and click **Add**.

Add - adds the selected counters to the Counters list.

Counters - displays the selected counters.

- **Object ID** - displays the object ID.
- **Object Name** - displays the object name.
- **Counter Name** - displays the counter's name.
- **Counter ID** - displays the counter's ID.

1.3.4 Database Configuration

This section describes the additional fields required for the Database data source monitor.

Name - enter a name for the monitor.

Type - displays the type of monitor you are adding.

Query - Enter a valid database statement. For example, you can enter the following Oracle SELECT statement:

```
select value from v$sysstat where statistic# = 1
```

If your database server supports returning a result set from a stored procedure you can call the procedure. For example, the following SQL Server stored procedure, present in the database, returns a result set (not an output parameter) showing the configured sample rate (samples/minute):

```
p_computeSampleRate
```

Report Type

- **Measure Query Time** - Select this option to see how long the query takes.
- **Read Result Set** - Select this option to match a value in the result.

Result Pattern - Enter the Perl expression for the value that should be returned for the specified query.

Sample Multiplier - enter the multiplier you want to be applied to the data that is collected. Setting the sample multiplier to 1 means that the data will be reported as is. If the metric measurement is expressed in kilobytes, setting the sample multiplier to 1024 translates it to bytes. If the metric measurement is expressed in milliseconds, setting the sample multiplier to .001 translates it to seconds.

Translation Type - Translation Type controls how a metric's data is displayed in Reports.

- **No Translation** - data is displayed as it is provided by the metric's data source.
- **Rate (minutes)** - data is presented as a number, per minute. For example, if the time interval between two samples was 10 minutes, and 50 errors were found, the Rate (minutes) would be five (5) errors per minute.

Note: Rate (minutes) translates data sources that return their values as an endlessly increasing counter. If the data source does not return data this way, use No Translation.

1.3.5 Enterprise Manager Configuration

This section describes the additional fields required for the Enterprise Manager data source monitor.

Monitor

- **Name** - displays the name monitored system you are adding.
- **Type** - displays the type of monitor you are adding.

Monitor Properties

- **Metric type** - (required) select a metric type.
 - **Weblogic Domain Metrics** - this type queries for Enterprise Manager Weblogic Domain Metrics by adding the `weblogic_domain` query string parameter to the base Enterprise Manager URL specified in the Enterprise Manager data source in Oracle Load Testing Monitored Systems.
 - **Weblogic JVM Metrics** - this type queries for Enterprise Manager Weblogic JVM Metrics by adding the `weblogic_j2eeserver` query string parameter to the base Enterprise Manager URL specified in the Enterprise Manager data source in Oracle Load Testing Monitored Systems.
 - **Oracle Database Metrics** - this type uses the Target to point to a specific database instance as a parameter to the base Enterprise Manager URL specified in the Enterprise Manager data source in Oracle Load Testing Monitored Systems. The URL links to the Enterprise Manager Database Historical Performance page.
- **Target** - (required) specifies the WebLogic domain, JVM, or database from which to gather metrics. For WebLogic domain or JVM, log into the Enterprise Manager instance and select the **Targets** tab, then select **Middleware**. Copy the Name string from the Enterprise Manager Middleware page to this field to specify the target. For Oracle Database Metrics, enter the instance of the database you wish to view.

- **Method Name** - (optional) specifies the Java method name string of a specific Java method into which to drill down. The available Method Names are dependent upon the target specified in the Enterprise Manager instance. Method names will need to be provided by the Enterprise Manager instance administrator. If specified, the `methodName` parameter is added to the base Enterprise Manager URL specified in the Enterprise Manager data source in Oracle Load Testing Monitored Systems. If omitted, the main page for the specified type of metric is shown.
- **Request Name** - (optional) specifies the named HTTP request string of a specific request to which to drill down. The available Request Names are dependent upon the target specified in the Enterprise Manager instance. Request names will need to be provided by the Enterprise Manager instance administrator. If specified, the `requestName` parameter is added to the base Enterprise Manager URL specified in the Enterprise Manager data source in Oracle Load Testing Monitored Systems. If omitted, the main page for the specified type of metric is shown.
- **Thread State** - (optional) select a Thread State type:
 - **Total** - the total wait time.
 - **IO Wait** - the amount of time spent waiting for disk access.
 - **Network Wait** - the amount of time spent waiting for network access.
 - **DB Wait** - the amount of time waiting for the database.
 - **CPU** - the amount of time waiting for CPU.
 - **Lock** - the amount of time threads are locked.

1.3.6 IBM WebSphere PMI Configuration

This section describes the additional fields required for the IBM WebSphere PMI data source monitor.

Monitor

- **Type** - displays the type of monitor you are adding.

Select Counters - select the counters you want to use and click **Add**.

Add - adds the selected counters to the Counters list.

Counters - displays the selected counters.

- **Server** - specifies the server instance.
- **Node** - specifies the host name in uppercase.
- **Counter** - specifies the metric to monitor.

1.3.7 JMX Configuration

This section describes the additional fields required for the JMX data source monitor.

Monitor

- **Type** - displays the type of monitor you are adding.

Select Counters - select the counters you want to use and click **Add**.

Add - adds the selected counters to the Counters list.

Counters - displays the selected counters.

- **MBean Name** - displays the fully qualified MBean name.

- **Attribute Name** - displays the MBean attribute name to request.

1.3.8 Perfmon (Windows Performance Monitor) Configuration

This section describes the additional fields required for the Perfmon (Windows Performance Monitor) data source monitor.

Performance object - select the object that you want to monitor.

All counters - selects all counters for the selected performance object. Click **Add** to add them to the Counters list.

Select counters from list - lets you select the counters you want to add for the selected performance object. Select the counter and click **Add** to add them to the Counters list.

All instances - selects all instances of the selected counter. Click **Add** to add them to the Counters list.

Select instance from list - lets you select the instances you want to add for the selected counter. Select the instance and click **Add** to add them to the Counters list.

Add - adds the selected counter to the Counters list.

Counters - lists the counters that will be included in the monitor.

- **Object** - specifies the performance object name.
- **Counter** - specifies the counter name.
- **Instance** - specifies the instance of the counter to monitor.

1.3.9 Ping Configuration

This section describes the additional fields required for the Ping data source monitor.

Name - enter a name for the monitor.

Type - displays the type of monitor you are adding.

Measurement - Specifies the metric to use for the Ping monitor. Select the metric to use: Average Round Trip Time (PingAvgRTT) or Percentage of Success (PingPercentSuccess).

Length - Specifies how many bytes should be included in each echo request packet.

Time to Live - Specifies the maximum number of router hops permitted. If the echo request takes more than the maximum number of hops, it is thrown away and the Ping attempt is treated as a failure.

Sample Multiplier - enter the multiplier you want to be applied to the data that is collected. Setting the sample multiplier to 1 means that the data will be reported as is. If the metric measurement is expressed in kilobytes, setting the sample multiplier to 1024 translates it to bytes. If the metric measurement is expressed in milliseconds, setting the sample multiplier to .001 translates it to seconds.

Translation Type - Translation Type controls how a metric's data is displayed in Reports.

- **No Translation** - data is displayed as it is provided by the metric's data source.
- **Rate (minutes)** - data is presented as a number, per minute. For example, if the time interval between two samples was 10 minutes, and 50 errors were found, the Rate (minutes) would be five (5) errors per minute.

Note: Rate (minutes) translates data sources that return their values as an endlessly increasing counter. If the data source does not return data this way, use No Translation.

1.3.10 SNMP Configuration

This section describes the additional fields required for the SNMP data source monitor.

Monitor

- **Type** - displays the type of monitor you are adding.
- **Validate against target machine** - when selected, the counters in the selected MIB files are validated against the target machine to verify the machine and data source are available, the login credentials are correct, and the monitor can connect to the counter.

Select OID

- **MIB File** - select the MIB file containing the OID that you want to monitor.
- **Upload File** - opens a dialog box for selecting the MIB file to upload.
- **OID list** - lists the OIDs in the selected MIB file. Select the OIDs you want to use and click **Add**.

Add - adds the selected counters to the Counters list.

Counters - displays the selected counters.

- **Name** - displays the counter's name.
- **Notes** - displays information about the counter.
- **OID** - displays the object ID.

1.3.11 URL Configuration

This section describes the additional fields required for the URL data source monitor.

Name - enter a name for the monitor.

Type - displays the type of monitor you are adding.

URL Usage - specifies whether to use the URL specified in the **System Homepage** field on the Add/Edit Monitored System dialog box.

- **Use System Homepage** - use the URL specified in the **System Homepage** field on the Add/Edit Monitored System dialog box.
- **Specify** - enables the URL field for specifying the URL of the page you want to monitor.

URL - Type the URL for the web page you want to check. The URL must be specified with the full protocol designation of http or https. For example:

<http://www.company.com>.

If you use Get as the HTTP Method (the default), simply include any additional parameters you want to include as part of the URL string, for example:

<http://search.yahoo.com/bin/search?p=electronics>

URL Method

- **POST** - the Post method, usually associated with a form, allows a much larger amount of information to be associated with the request.
- **GET** - include any additional query strings as part of the URL address.

Note: Some servers limit the length of URL and query strings to about 240 characters.

Post Data - If you select Post as the URL Method, you can add a series of name-value pairs. For example, a URL generated after completing a form may appear as follows:

```
POST http://www.company.com/cgi-bin/guestbook.pl
...(additional headers)
name=Harold&nickname=Harry
```

To reference this page, enter name=Harold&nickname=Harry in this field.

User Agent - you can specify a particular user agent when you monitor a URL. When you configure a User Agent, the browser and operating system you specify is added to the header of the URL request. This allows you to test pages designed for a specific browser URL confirm that a page designed for multiple browsers works appropriately for each of them.

Enable Cookies

- **False** - select this option if you want the URL test to prevent the use of cookies when accessing the page.
- **True** - select this option if you want to allow the URL monitor to support cookies as part of the URL request. A fresh cookie is retrieved each time the test is run.

Custom Cookie - type in a cookie value for the page you are monitoring. If you supply a particular value, remember that the cookie is saved and can become out of date. Refresh cookie requests are ignored.

Metric Type

- **Download Time** - returns the download time.
- **Download Size in Bytes** - returns the size of the file.
- **Result of Perl Expression** - specifies a Perl expression used to retrieve data.

Include image download times - calculates the URL availability and access time with retrieval of embedded images (such as .gif and .jpeg files and references within tags).

Include object download times - calculates URL availability and access time with retrieval of embedded objects (such as ActiveX objects and Java applets). Oracle Load Testing measures the time taken to retrieve data used by objects, but does not include the time needed to retrieve any executable file required in order to interpret the data. Content types other than HTML and images are also classified as objects.

Result of Perl Expression - enter the Perl expression to use if you have selected Result of Perl Expression as the metric type. For example, you could use the following Perl expression to extract requests per second from the Apache Server status page:

```
/([0-9]+\.[0-9]) requests\/sec/
```

Username - if the URL specified requires a name and password for access, enter the name in this field.

Password - if the URL specified requires a name and password for access, enter the password in this field.

Use HTTP Proxy - select **True** if your network makes use of a proxy server.

Proxy Host - specify the name or IP address of the proxy server.

Proxy Port - the port of the proxy server.

Proxy Username - the proxy server login user name.

Proxy Password - the proxy server login password.

Sample Multiplier - enter the multiplier you want to be applied to the data that is collected. Setting the sample multiplier to 1 means that the data will be reported as is. If the metric measurement is expressed in kilobytes, setting the sample multiplier to 1024 translates it to bytes. If the metric measurement is expressed in milliseconds, setting the sample multiplier to .001 translates it to seconds.

Translation Type - Translation Type controls how a metric's data is displayed in Reports.

- **No Translation** - data is displayed as it is provided by the metric's data source.
- **Rate (minutes)** - data is presented as a number, per minute. For example, if the time interval between two samples was 10 minutes, and 50 errors were found, the Rate (minutes) would be five (5) errors per minute.

Note: Rate (minutes) translates data sources that return their values as an endlessly increasing counter. If the data source does not return data this way, use No Translation.

1.3.12 Virtual Agent Configuration

This section describes the additional fields required for the Virtual Agent data source monitor.

Name - enter a name for the monitor.

Type - displays the type of monitor you are adding.

Description - enter a description of the virtual agent monitor.

Command Line - specifies the command to execute on the host machine.

Matching Regexp - specifies a Perl expression to use to report the data returned from the executable program.

Key of value in Regexp - specify the key of value to return from the Regular Expression specified in **Matching Regexp**. Key of value 0 returns the first match, 1 returns the 2nd match, etc. The match is of the Regular Expression inside the parenthesis (). For example, if the Command Line is `free -m` and the Matching Regexp is `/Mem: .+? (\d+) .+? (\d+) /`, a Key of Value 0 returns the value in the first `(\d+)` of the Regular Expression.

Instance Name - specify the instance name.

Sample Multiplier - enter the multiplier you want to be applied to the data that is collected. Setting the sample multiplier to 1 means that the data will be reported as is. If the metric measurement is expressed in kilobytes, setting the sample multiplier to 1024 translates it to bytes. If the metric measurement is expressed in milliseconds, setting the sample multiplier to .001 translates it to seconds.

Translation Type - Translation Type controls how a metric's data is displayed in Reports.

- **No Translation** - data is displayed as it is provided by the metric's data source.
- **Rate (minutes)** - data is presented as a number, per minute. For example, if the time interval between two samples was 10 minutes, and 50 errors were found, the Rate (minutes) would be five (5) errors per minute.

Note: Rate (minutes) translates data sources that return their values as an endlessly increasing counter. If the data source does not return data this way, use No Translation.

1.3.13 Setting the Server Memory Size

You may need to increase the server memory size for the Oracle Load Testing server if discovery fails. To change the server memory size:

1. Stop the Server.
2. In the `<install_dir>\agentmanager\bin\AgentManagerService.conf` file, edit the `wrapper.java.maxmemory` value to be at least 384.
3. Save the file.
4. Restart the server.

1.4 Using Metric Profiles to Create Monitors

Metric profiles are collections of metric definitions for monitoring general system types such as WebSphere, Oracle, etc. A profile can then be used to monitor a specific server when it is added to a ServerStats configuration.

1. Select **Configurations** from the **ServerStats** menu.
2. Select the configuration to which you want to add a Metric Profile monitor and click **New** in the Monitors pane to display the Add Monitor Step 1 dialog box.

This dialog box is where you select the type of monitor you want to add. Expand the appropriate node and select the data source, metric, or metric profile that you want to add.

3. Expand the **Metric Profiles** node, select the type of monitor you want to add and click **Next**. The Add Monitor Step 2 dialog box is displayed.

Monitor

- **Type** - displays the type of monitor you are adding.

Monitored System

- **Name** - enter or select the system to sample.
- **Host Name or IP** - displays the host name or IP address of the selected system.
- **Username** - displays the user name for the system.
- **Password** - displays the password for the system.
- **Domain Name** - displays the Domain Name for the system.
- **Add** - displays the Add Monitored System dialog box for specifying a new system to monitor.

- **Edit** - displays the Edit Monitored System dialog box for editing the selected system.
- **Monitored System Details** - displays details about the monitored system. The information displayed is based on the type of data source being used.

Data Collector

- **Name** - enter or select the data collector to use for sampling the system.
- **Host Name or IP** - displays the host name or IP address of the selected system.
- **Port** - displays the data collector port.
- **Username** - displays the user name for the data collector.
- **Password** - displays the password for the data collector.
- **Add** - displays the Add Data Collector dialog box for specifying a new data collector.
- **Edit** - displays the Edit Data Collector dialog box for editing the selected data collector.

Collection Interval

- **Collect data every** - Specifies, in seconds, how often samples are taken for this monitor.
4. Enter the Target System and Data Collector or click the down arrow to select from a list.
 5. Enter the collection interval and click **Next**. One of two possible Add Monitor Step 3 dialog boxes is displayed. If components require discovery, the following dialog box is displayed:

Monitored System

- **Name** - displays the monitored system's name.

Select System Components

- **Check All** - selects all listed system components.
 - **Uncheck All** - deselects all listed components.
 - **Discover** - performs discovery on the monitored system. The Confirm Remove Components dialog box is displayed if there are any components that can no longer be found. Click **OK** to remove them or **Cancel** to keep them.
 - **<component list>** - lists all known components. These can be components that were discovered or manually entered when the system was configured in the system editor.
6. Click **Discover** to discover components, then select the components that you want to monitor and click **Next**.
 7. The following dialog box is displayed as Add Monitor: Step 3 if components do not require discovery. It is displayed as Add Monitor: Step 4 if discovery was required.

Monitor - displays the monitor type and name.

Monitors - lists the monitors that are available. Deselect a monitor to disable it.

Discover Additional - finds more counters that are similar to the ones in the profile. This button is only available for Fujitsu Interstage SNMP and Hitachi Cosminexus profiles.

8. If you are using Fujitsu Interstage SNMP and have discovered additional counters, select the ones you want to use and click **Add**. Click **OK** when you are done.
9. The metrics in this profile are listed with a check box in front of each one. You can use all of these or a subset to monitor the selected system. Uncheck the box to disable the monitor.
10. Click **Finish**.
11. The Configurations dialog box is displayed. Click **Test** to make sure the monitor is configured correctly.
12. Click **Close** to exit the Configurations dialog box.

1.5 Using Metrics to Create Monitors

To create monitors using metrics:

1. Select **Configurations** from the **ServerStats** menu.
2. Select the configuration to which you want to add a Metric monitor and click **New** to display the Add Monitor Step 1 dialog box.

This dialog box is where you select the type of monitor you want to add. Expand the appropriate node and select the data source, metric, or metric profile that you want to add.

3. Expand the Metrics node, select the type of monitor you want to add and click **Next**. The Add Monitor Step 2 dialog box is displayed.

Monitor

- **Type** - displays the type of monitor you are adding.

Monitored System

- **Name** - enter or select the system to sample.
- **Host Name or IP** - displays the host name or IP address of the selected system.
- **Username** - displays the user name for the system.
- **Password** - displays the password for the system.
- **Domain Name** - displays the Domain Name for the system.
- **Add** - displays the Add Monitored System dialog box for specifying a new system to monitor.
- **Edit** - displays the Edit Monitored System dialog box for editing the selected system.
- **Monitored System Details** - displays details about the monitored system. The information displayed is based on the type of data source being used.

Data Collector

- **Name** - enter or select the data collector to use for sampling the system.
- **Host Name or IP** - displays the host name or IP address of the selected system.
- **Port** - displays the data collector port.
- **Username** - displays the user name for the data collector.
- **Password** - displays the password for the data collector.

- **Add** - displays the Add Data Collector dialog box for specifying a new data collector.
- **Edit** - displays the Edit Data Collector dialog box for editing the selected data collector.

Collection Interval

- **Collect data every** - Specifies, in seconds, how often samples are taken for this monitor.
4. Enter the Target System and Data Collector or click the down arrow to select from a list.
 5. Enter the collection interval and click **Next**. One of two possible Add Monitor Step 3 dialog boxes is displayed. If components require discovery, the following dialog box is displayed:

Monitored System

- **Name** - displays the monitored system's name.

Select System Components

- **Check All** - selects all listed system components.
 - **Uncheck All** - deselects all listed components.
 - **Discover** - performs discovery on the monitored system. The Confirm Remove Components dialog box is displayed if there are any components that can no longer be found. Click **OK** to remove them or **Cancel** to keep them.
 - **<component list>** - lists all known components. These can be components that were discovered or manually entered when the system was configured in the system editor.
6. Click **Discover** to discover components, then select the components that you want to monitor and click **Next**.
 7. The following dialog box is displayed as Add Monitor Step 3 if components do not require discovery. It is displayed as Add Monitor Step 4 if discovery was required.

Monitor - displays the type and name of the monitor.

Monitors - lists the monitors that are available. Deselect a monitor to disable it.
 8. The metric is listed with a check box. Uncheck the box to disable the monitor.
 9. Click **Finish**.
 10. The Configurations dialog box is displayed. Click **Test** to make sure the monitor is configured correctly.
 11. Click **Close** to exit the Configurations dialog box.

Note: To monitor disk performance on a Windows machine, Diskperf -yv must be enabled on that machine. See "Using Diskperf" for more information.

1.6 Editing Monitors In a Configuration

To edit a monitor in a configuration:

1. Select **Configurations** from the **ServerStats** menu.

2. Select the configuration you want to edit.
3. Select the monitor that you want to edit and click **Edit**. The Edit Monitor dialog box is displayed.

Monitor

- **Name** - displays the monitor name.
- **Data Source** - displays the data source used by the monitor.

Server Location

- **Target System** - Enter or select the system to sample.
- **Data Collector** - Enter or select the data collector to use for sampling the system.

Collection Interval

- **Collect data every** - Specifies, in seconds, how often samples are taken for this monitor.

Properties - lists the properties specific to this monitor.

Discover - discovers monitors of the same type. Displays the Discovery dialog box for selecting a monitor.

4. Make any changes.
5. Click **OK** when you are done.
6. Click **Close** to exit the Configurations dialog box.

1.7 Working With Metric Profiles

This section explains how to work with metric profiles.

1.7.1 Adding Metric Profiles

You can add a user defined metric profile that contains any combination of default and user defined metrics.

1. Select **Metric Profiles** from the **ServerStats** menu to open the Metric Profiles dialog box.

New - displays the Add Profile dialog box for adding a user defined metric profile.

Edit - displays Edit Profile dialog box. This option is only available for user defined metric profiles. Default profiles cannot be edited.

Clone - displays the Clone Profile dialog box for copying a default profile to create a user defined metric profile that can be edited.

Delete - deletes the selected user defined metric profile. Default profiles cannot be deleted.

Metric Profile List - lists the default profiles and user defined metric profiles.

Name - displays the profile name.

Description - displays the profile description.

Category - displays the category to which the profile belongs.

Monitors - displays the monitors in the profile. Click a monitor to view its details.

2. Click **New**. The Add Metric Profile dialog box is displayed.
 - Name** - the name of the profile.
 - Description** - the profile's description.
 - Category** - displays the category to which the profile belongs.
 - Metrics** - displays the list of available metrics.
 - Add** - adds the selected metric to the Selected Metrics list.
 - Selected Metrics** - lists the selected metrics. Click the "x" in front of a metric to delete it from the list.
 - Ok** - exits the dialog box and saves the profile.
 - Cancel** - exits the dialog box without saving the profile.
 - Test** - displays the Test Setup dialog box for setting test details.
3. Enter a name and description for the profile.
4. Add metrics by selecting them in the Metrics list and clicking **Add**.
5. To view a metric's details, select it in the **Selected Metrics** list.
6. Click the "x" in front a metric to delete it from the **Selected Metrics** list.
7. Click **Test** to test the metrics.
8. Click **OK** when you are done. Your new profile is listed in the User Defined category in the list of metric profiles.

1.7.2 Editing Metric Profiles

You can edit user defined metric profiles. Default profiles cannot be changed. Changing a metric profile does not change it in any configurations using the metric profile.

1. Select **Metric Profiles** from the **ServerStats** menu.
2. Select the user defined metric profile that you want to edit and click **Edit**. The Edit Metric Profile dialog box is displayed.
 - Name** - the name of the profile.
 - Description** - the profile's description.
 - Category** - displays the category to which the profile belongs.
 - Metrics** - displays the list of available metrics.
 - Add** - adds the selected metric to the Selected Metrics list.
 - Selected Metrics** - lists the selected metrics. Click the "x" in front of a metric to delete it from the list.
 - Ok** - exits the dialog box and saves the profile.
 - Cancel** - exits the dialog box without saving the profile.
 - Test** - displays the Test Setup dialog box for setting test details.
3. Add additional metrics by selecting them in the Metrics list and clicking **Add**.
4. Click the "x" in front of a metric to delete it from the list.
5. To view a metric's details, select it in the **Selected Metrics** list.

6. Click **Test** to test the metrics.
7. Click **OK** when you are done.

1.7.3 Cloning Metric Profiles

Cloning a profile lets you start with a default profile and create a user defined metric profile that you can customize for your needs by adding or deleting metrics.

1. Select **Metric Profiles** from the **ServerStats** menu.
2. Select the profile that you want to clone and click **Clone**. The Clone Metric Profile dialog box is displayed.

Name - the name of the profile.

Description - the profile's description.

Category - displays the category to which the profile belongs.

Metrics - displays the list of available metrics.

Add - adds the selected metric to the Selected Metrics list.

Selected Metrics - lists the selected metrics. Click the "x" in front of a metric to delete it from the list.

Ok - exits the dialog box and saves the profile.

Cancel - exits the dialog box without saving the profile.

Test - displays the Test Setup dialog box for setting test details.

3. Enter a name for the profile.
4. All of the metrics for the selected profile are automatically added to the **Selected Metrics** list. Click the "x" in front of a metric to delete it from the list.
5. Add additional metrics by selecting them in the Metrics list and clicking **Add**.
6. To view a metric's details, select it in the **Selected Metrics** list.
7. Click **Test** to test the metrics.
8. Click **OK** when you are done. Your new profile is listed in the User Defined category in the list of metric profiles.

1.7.4 Deleting Metric Profiles

Only user-defined metric profiles can be deleted. To delete a user-defined metric profile:

1. Select **Metric Profiles** from the **ServerStats** menu.
2. Select the user defined metric profile you want to delete and click **Delete**.
3. Click **Yes** when asked to confirm the deletion.

1.7.5 Viewing Metric Profiles

To view metric profiles:

1. Select **Metric Profiles** from the **ServerStats** menu.
2. Select the metric profile that you want to view. The monitors included in the profile are displayed in the right-hand pane.

3. Click a metric to display the View Metric dialog box.
4. Click **Close** when you are done.

1.7.6 Testing Metric Profiles

To test metric profiles:

1. Select **Metric Profiles** from the **ServerStats** menu.
2. Select the profile you want to test and click **Test**. The Test Setup Dialog box is displayed.

Profile

- **Name** - displays the name of the metric profile.

Monitored System

- **Name** - enter or select the system to sample.
- **Host Name or IP** - displays the host name or IP address of the selected system.
- **Username** - displays the user name for the system.
- **Password** - displays the password for the system.
- **Domain Name** - displays the Domain Name for the system.
- **Add** - displays the Add Monitored System dialog box for specifying a new system to monitor.
- **Edit** - displays the Edit Monitored System dialog box for editing the selected system.
- **Monitored System Details** - displays details about the monitored system. The information displayed is based on the type of data source being used.

Data Collector

- **Name** - enter or select the data collector to use for sampling the system.
- **Host Name or IP** - displays the host name or IP address of the selected system.
- **Port** - displays the data collector port.
- **Username** - displays the user name for the data collector.
- **Password** - displays the password for the data collector.
- **Add** - displays the Add Data Collector dialog box for specifying a new data collector.
- **Edit** - displays the Edit Data Collector dialog box for editing the selected data collector.

Collection Interval

- **Collect data every** - Specifies, in seconds, how often samples are taken for this monitor.
3. Enter the target system, data collector, and how often to collect data for the test. Some profiles may require additional information.
 4. Click **OK**. The Test dialog box is displayed showing the results of the test.

This dialog displays the test results. It has the following information for each counter:

Counter Definition - displays the counter definition.

Last Value - displays the last collected value.

Time Stamp - displays the time that the last action happened. This could be the time of the last sample, or the time an error was encountered.

Error - displays a description of the error, if applicable.

5. Click **Close** to exit the dialog box.
6. Click **Close** to exit Metric Profiles configuration.

1.8 Working With Metrics

This section explains how to work with metrics.

1.8.1 Adding Metrics

You can add metrics that can be used in any configuration. Metrics that you add are listed in the User Defined node of the Metrics tree. The Metrics dialog box has the following options:

New - displays the Add Metric dialog box for adding a user defined metric.

Edit - displays the Edit Metric dialog box. This option is only available for user defined metrics. Default metrics cannot be edited.

Clone - displays the Clone Metric dialog box for copying a default metric to create a user defined metric that can be edited.

Delete - deletes the selected user defined metric. Default metrics cannot be deleted.

Metrics List - lists user-defined metrics followed by the default metrics.

The right-hand pane displays the details about the selected metric and how it was configured.

The following sections explain how to add specific metric types:

1.8.1.1 Adding COM+ Metrics

To add a COM+ metric:

1. Select **Metrics** from the **ServerStats** menu.
2. Click **New**. The Add Metrics dialog box is displayed.
 - Metric type** - lists the available data sources.
 - Add** - displays the Add Metric dialog box for adding metrics.
 - Metrics** - lists the selected metrics. When you click Close, each metric will be listed in the User Defined node of the ServerStats dialog box.
3. Select **Com+** and click **Add**. The Add Metric dialog box is displayed.

Name - enter a name for the metric.

Description - enter a description of the metric.

Category - displays the type of metric.

Metric Properties

Note: With the exception of the **Sample Multiplier** field, all fields are filled in as a result of discovering counters.

- **Object Name** - enter the object name of the counter.
- **Object ID** - enter the object identifier.
- **Counter Name** - enter the counter name.
- **Counter ID** - enter the counter ID.
- **Sample Multiplier** - enter the multiplier you want to be applied to the data that is collected. Setting the sample multiplier to 1 means that the data will be reported as is. If the metric measurement is expressed in kilobytes, setting the sample multiplier to 1024 translates it to bytes. If the metric measurement is expressed in milliseconds, setting the sample multiplier to .001 translates it to seconds.
- **Translation Type**- Translation Type controls how a metric's data is displayed in Reports.
 - **No Translation** - data is displayed as it is provided by the metric's data source.
 - **Rate (minutes)** - data is presented as a number, per minute. For example, if the time interval between two samples was 10 minutes, and 50 errors were found, the Rate (minutes) would be five (5) errors per minute.

Note: Rate (minutes) translates data sources that return their values as an endlessly increasing counter. If the data source does not return data this way, use No Translation.

Discover Counters - displays the Setup Discovery dialog box for selecting the target system and data collector to use for discovery. A list of discovered metrics is displayed in the Discovery dialog box for selecting the metric to use.

4. Enter a name and description for the metric.
5. If you want to find metrics on a system, set **Is object discovery needed** to **Yes**, select the discovery type, and click **Discover Counters**, otherwise, go to step 8. The Setup Discovery dialog box is displayed.

Metric - displays the name of the data source.

Monitored System

- **Name** - enter or select the system to sample.
- **Host Name or IP** - displays the host name or IP of the selected system.
- **Username** - displays the user name for the system.
- **Password** - displays the password for the system.
- **Domain Name** - displays the Domain Name for the system.
- **Add** - displays the Add Monitored System dialog box for specifying a new system to monitor.
- **Edit** - displays the Edit Monitored System dialog box for editing the selected system.

Data Collector

- **Name** - enter or select the data collector to use for sampling the system.
 - **Host Name or IP** - displays the host name or IP address of the selected system.
 - **Port** - displays the data collector port.
 - **Username** - displays the user name for the data collector.
 - **Password** - displays the password for the data collector.
 - **Add** - displays the Add Data Collector dialog box for specifying a new data collector.
 - **Edit** - displays the Edit Data Collector dialog box for editing the selected data collector.
6. Enter the server location information and click **OK**. The Com+ Discovery dialog box is displayed.
Select Counters - select the counter you want to use.
Counters - displays details about the selected counter.
 7. Select the counters you want to use and click **OK**.
 8. If you do not need to discover metrics, enter the Metric properties and click **Finish**.
 9. You can then test the metric by clicking **Test** and specifying the test parameters.

1.8.1.2 Adding Database Metrics

To add a database metric:

1. Select **Metrics** from the **ServerStats** menu.
2. Click **New**. The Add Metrics dialog box is displayed.
Metric type - lists the available data sources.
Add - displays the Add Metric dialog box for adding metrics.
Metrics - lists the selected metrics. When you click Close, each metric will be listed in the User Defined node of the ServerStats dialog box.
3. Select **Database** and click **Add**. The Add Metric dialog box is displayed.
Name - enter a name for the metric.
Description - enter a description of the metric.
Category - displays the type of metric.

Metric Properties

- **Query** - Enter a valid database statement. For example, you can enter the following Oracle SELECT statement:

```
select value from v$sysstat where statistic# = 1
```

If your database server supports returning a result set from a stored procedure you can call the procedure. For example, the following SQL Server stored procedure, present in the database, returns a result set (not an output parameter) showing the configured sample rate (samples/minute):

```
p_computeSampleRate
```

- **Report Type**
 - **Measure Query Time?** - Select true to see how long the query takes. Select false to match a value in the result.
 - **Read Result Set?** - Select true to return a result set if your database supports it. Select false to return an output parameter.
- **Result Pattern** - enter the Perl expression for the value that should be returned for the specified query.
- **Sample Multiplier** - enter the multiplier you want to be applied to the data that is collected. Setting the sample multiplier to 1 means that the data will be reported as is. If the metric measurement is expressed in kilobytes, setting the sample multiplier to 1024 translates it to bytes. If the metric measurement is expressed in milliseconds, setting the sample multiplier to .001 translates it to seconds.
- **Translation Type** - Translation Type controls how a metric's data is displayed in Reports.
 - **No Translation** - data is displayed as it is provided by the metric's data source.
 - **Rate (minutes)** - data is presented as a number, per minute. For example, if the time interval between two samples was 10 minutes, and 50 errors were found, the Rate (minutes) would be five (5) errors per minute.

Note: Rate (minutes) translates data sources that return their values as an endlessly increasing counter. If the data source does not return data this way, use No Translation.

4. Enter a name and description for the metric.
5. Enter the Metric properties.
6. You can test the metric by clicking **Test** and specifying the test parameters.
7. Click **Finish**.

1.8.1.3 Adding Enterprise Manager Metrics

Enterprise Manager metrics specify the URL query string parameters to use for an Enterprise Manager instance when accessing Enterprise Manager Diagnostic metrics from the Oracle Load Testing reports. See [Appendix A.7, "Oracle Enterprise Manager Metric Profile"](#) for additional information.

Prerequisites

Before configuring Enterprise Manager metrics in Oracle Load Testing ServerStats, be sure the following prerequisites have been completed.

1. You have an Enterprise Manager Grid Control 11.1 instance set up and available to be accessed.
2. You have AD4J manager configured for the Enterprise Manager Grid Control 11.1 instance.
3. You have AD4J agent on the targets where the application under test will be running.

4. For WebLogic Domain Metrics or WebLogic JVM Metrics, you have the name of the "target" or "targets" of Enterprise Manager/AD4J deployment (the Web application being load tested and managed/monitored by Enterprise Manager).

Note: See the Enterprise Manager and AD4J documentation for details about setting up and configuring Enterprise Manager and AD4J or contact the Enterprise Manager instance administrator.

5. For Oracle Database Metrics, you must have the name of the instance of the database you wish to view.

Additional Oracle Load Testing Steps

In addition to the Prerequisites required of the Enterprise Manager/AD4J instance, the following additional general steps are required to use the Enterprise Manager data source in Oracle Load Testing:

1. Define a "Monitored System" in Oracle Load Testing and specify the base URL of the Enterprise Manager instance from which to retrieve Weblogic Domain Metrics, Weblogic JVM Metrics, or Oracle Database Metrics. See the *Oracle Load Testing User's Guide* for information about defining monitored systems.
2. Add a new ServerStats metric or metrics specifying the target or targets setup in the Enterprise Manager instance (the string from the Name column of the Middleware section of the Targets tab of the Enterprise Manager instance for Weblogic Domain or JVM metrics or the name of the database instance to view on the Enterprise Manager Database Historical Performance page for Oracle Database metrics).
3. Create a new ServerStats configuration or configurations and include the Enterprise Manager metric or metrics and select the Enterprise Manager data source "Monitored System".
4. Once you have defined a "Monitored System, created the ServerStats metric, and created a ServerStats configuration, build a Scenario in Oracle Load Testing with the script or scripts to playback against the Web application-under-test being monitored by the Enterprise Manager instance.
5. On the **Set up Autopilot** tab, select the ServerStats configuration you defined for the Enterprise Manager "Monitored System" in the **ServerStats Configuration** section.
6. Start the a load test against the application-under-test.
7. At the conclusion of the load test (or during the load test), click the **Create Reports** tab and select the session you started in the Autopilot tab.
8. Expand the **Available Data Series** and the **Enterprise Manager Diagnostics** reports-counters tree.

Note: Sessions with Oracle DB Metrics and Enterprise Manager URL that were run using an Oracle Load Testing version prior to version 9.30 will not automatically show the links for ADDM & AWR reports. To show the ADDM & AWR links under Enterprise Manager Diagnostics, generate the ADDM & AWR reports using the Reports sub-tab of the Create Reports tab.

9. Double-click the metrics below the **Enterprise Manager Diagnostics** in the reports-counters tree to launch an external browser window and open the Enterprise Manager login screen.
10. After you log into the Enterprise Manager instance, the page is redirected to the diagnostics page inside of Enterprise Manager specified by the combination of the base URL and the parameters specified in the Oracle Load Testing ServerStats metric. The page shows the data for the filtered time (start time and end time = Epoch time), as follows:
 - If the session is ended, from start time to end time.
 - If the session is still running, from start time to the current time.

Additional Oracle Database Metrics Notes

At the beginning and end of each load session to which one or more Oracle database metrics are attached, Oracle Load Testing takes a database "snapshot". The second snapshot is used to create a "baseline" which saves the database diagnostic information between the two snapshots. The snapshot and baseline IDs are stored with the Oracle Load Testing session information. This allows links to Enterprise Manager to display useful data past the regular data retention of the target database.

For load sessions to which one or more Oracle database metrics are attached, the **View Run Graphs** and **Create Reports** tab includes Database Diagnostics graphs.

An "Enterprise Manager Diagnostics" node is also added to the session tree with the database monitor. Double-clicking this monitor opens a new browser for Enterprise Manager, displaying (after login) the database drilldown for the database selected.

To add Enterprise Manager metrics:

1. Select **Metrics** from the **ServerStats** menu.
2. Click **New**. The Add Metrics dialog box is displayed.
 - Metric type** - lists the available data sources.
 - Add** - displays the Add Metric dialog box for adding metrics.
 - Metrics** - lists the selected metrics. When you click Close, each metric will be listed in the User Defined node of the ServerStats dialog box.
3. Select **Enterprise Manager** and click **Add**. The Add Metric dialog box is displayed.
 - Name** - enter a name for the metric.
 - Description** - enter a description of the metric.
 - Category** - displays the type of metric.

Metric Properties

- **Metric type** - (required) select a metric type.
 - **Weblogic Domain Metrics** - this type queries for Enterprise Manager Weblogic Domain Metrics by adding the `weblogic_domain` query string parameter to the base Enterprise Manager URL specified in the Enterprise Manager data source in Oracle Load Testing Monitored Systems.
 - **Weblogic JVM Metrics** - this type queries for Enterprise Manager Weblogic JVM Metrics by adding the `weblogic_j2eeserver` query string parameter to the base Enterprise Manager URL specified in the Enterprise Manager data source in Oracle Load Testing Monitored Systems.

- **Oracle Database Metrics** - this type uses the Target to point to a specific database instance as a parameter to the base Enterprise Manager URL specified in the Enterprise Manager data source in Oracle Load Testing Monitored Systems. The URL links to the Enterprise Manager Database Historical Performance page.
 - **Target** - (required) specifies the WebLogic domain or JVM or Oracle Database from which to gather metrics. For Domain or JVM metrics, log into the Enterprise Manager instance and select the **Targets** tab, then select **Middleware**. Copy the Name string from the Enterprise Manager Middleware page to this field to specify the target. For Oracle Database Metrics, enter the instance of the database you wish to view.
 - **Method Name** - (optional) specifies the Java method name string of a specific Java method into which to drill down. The available Method Names are dependent upon the target specified in the Enterprise Manager instance. Method names will need to be provided by the Enterprise Manager instance administrator. If specified, the `methodName` parameter is added to the base Enterprise Manager URL specified in the Enterprise Manager data source in Oracle Load Testing Monitored Systems. If omitted, the main page for the specified type of metric is shown.
 - **Request Name** - (optional) specifies the named HTTP request string of a specific request to which to drill down. The available Request Names are dependent upon the target specified in the Enterprise Manager instance. Request names will need to be provided by the Enterprise Manager instance administrator. If specified, the `requestName` parameter is added to the base Enterprise Manager URL specified in the Enterprise Manager data source in Oracle Load Testing Monitored Systems. If omitted, the main page for the specified type of metric is shown.
 - **Thread State** - (optional) select a Thread State type:
 - **Total** - the total wait time.
 - **IO Wait** - the amount of time spent waiting for disk access.
 - **Network Wait** - the amount of time spent waiting for network access.
 - **DB Wait** - the amount of time waiting for the database.
 - **CPU** - the amount of time waiting for CPU.
 - **Lock** - the amount of time threads are locked.
4. Enter a name and description for the metric.
 5. Enter the Metric properties.
 6. You can test the metric by clicking **Test** and specifying the test parameters.
 7. Click **Finish**.

1.8.1.4 Adding IBM WebSphere PMI Metrics

To add an IBM WebSphere metric:

1. Select **Metrics** from the **ServerStats** menu.
2. Click **New**. The Add Metrics dialog box is displayed.

Metric type - lists the available data sources.

Add - displays the Add Metric dialog box for adding metrics.

Metrics - lists the selected metrics. When you click Close, each metric will be listed in the User Defined node of the ServerStats dialog box.

3. Select **IBM WebSphere PMI** and click **Add**. The Add Metric dialog box is displayed.

Name - enter a name for the metric.

Description - enter a description of the metric.

Category - displays the type of metric.

Metric Properties

- **Document** - specify the URL to use as the root for the queries to identify counters. For example, wasPerfTool/servlet/perfservlet.
- **Server**- specify the server instance that you want to talk to.
- **Node** - specify the hostname in uppercase.
- **Counter** - specify the metric to monitor.
- **Sample Multiplier** - enter the multiplier you want to be applied to the data that is collected. Setting the sample multiplier to 1 means that the data will be reported as is. If the metric measurement is expressed in kilobytes, setting the sample multiplier to 1024 translates it to bytes. If the metric measurement is expressed in milliseconds, setting the sample multiplier to .001 translates it to seconds.
- **Translation Type** - Translation Type controls how a metric's data is displayed in Reports.
 - **No Translation** - data is displayed as it is provided by the metric's data source.
 - **Rate (minutes)** - data is presented as a number, per minute. For example, if the time interval between two samples was 10 minutes, and 50 errors were found, the Rate (minutes) would be five (5) errors per minute.

Note: Rate (minutes) translates data sources that return their values as an endlessly increasing counter. If the data source does not return data this way, use No Translation.

4. Enter a name and description for the metric.
5. Enter the Metric properties and click **Discover Counters**. The Setup Discovery dialog box is displayed.

Metric - displays the type of the data source.

Monitored System

- **Name** - enter or select the system to sample.
- **Host Name or IP** - displays the host name or IP address of the selected system.
- **Username** - displays the user name for the system.
- **Password** - displays the password for the system.
- **Domain Name** - displays the Domain Name for the system.
- **Add** - displays the Add Monitored System dialog box for specifying a new system to monitor.

- **Edit** - displays the Edit Monitored System dialog box for editing the selected system.
- **IBM WebSphere PMI** - displays details about the monitored system. The information displayed is based on the type of data source being used.

Data Collector

- **Name** - enter or select the data collector to use for sampling the system.
- **Host Name or IP** - displays the host name or IP address of the selected system.
- **Port** - displays the data collector port.
- **Username** - displays the user name for the data collector.
- **Password** - displays the password for the data collector.
- **Add** - displays the Add Data Collector dialog box for specifying a new data collector.
- **Edit** - displays the Edit Data Collector dialog box for editing the selected data collector.

Properties for discovery

- **Document** - enter the URL to use as the root for the queries to identify counters.
6. Enter the server location information and properties for discovery and click **OK**. The WebSphere Discovery dialog box is displayed.
 7. Select the counters you want to use and click **OK**.
 8. You can test the metric by clicking **Test** and specifying the test parameters.
 9. Click **Finish**.

1.8.1.5 Adding JMX Metrics

To add a JMX metric:

1. Select **Metrics** from the **ServerStats** menu.
2. Click **New**. The Add Metrics dialog box is displayed.
 - Metric type** - lists the available data sources.
 - Add** - displays the Add Metric dialog box for adding metrics.
 - Metrics** - lists the selected metrics. When you click Close, each metric will be listed in the User Defined node of the ServerStats dialog box.
3. Select **JMX** and click **Add**. The Add Metric dialog box is displayed.
 - Name** - enter a name for the metric.
 - Description** - enter a description of the metric.
 - Category** - displays the type of metric.

Metric Properties

 - **MBean Name** - specify the fully qualified MBean name.
 - **Attribute Name** - specify the MBean attribute name.
 - **Sub Attribute Name** - specify the MBean sub attribute name.
 - **Description** - enter a description of the metric.

- **Filter MBeans By** - select the server type by which you want to filter MBeans or select All Counters to return all supported MBeans.
- **Discovery MBeans** - select the type of MBeans to discover or select All Counters to discover all types of MBeans.
- **Sample Multiplier** - enter the multiplier you want to be applied to the data that is collected. Setting the sample multiplier to 1 means that the data will be reported as is. If the metric measurement is expressed in kilobytes, setting the sample multiplier to 1024 translates it to bytes. If the metric measurement is expressed in milliseconds, setting the sample multiplier to .001 translates it to seconds.
- **Translation Type** - Translation Type controls how a metric's data is displayed in Reports.
 - **No Translation** - data is displayed as it is provided by the metric's data source.
 - **Rate (minutes)** - data is presented as a number, per minute. For example, if the time interval between two samples was 10 minutes, and 50 errors were found, the Rate (minutes) would be five (5) errors per minute.

Note: Rate (minutes) translates data sources that return their values as an endlessly increasing counter. If the data source does not return data this way, use No Translation.

4. Enter a name and description for the metric.
5. Enter the metric properties and click **Discover Counters**, otherwise go to step 8. The Setup Discovery dialog box is displayed.

Metric - displays the name of the data source.

Monitored System

- **Name** - enter or select the system to sample.
- **Host Name or IP** - displays the host name or IP address of the selected system.
- **Username** - displays the user name for the system.
- **Password** - displays the password for the system.
- **Domain Name** - displays the Domain Name for the system.
- **Add** - displays the Add Monitored System dialog box for specifying a new system to monitor.
- **Edit** - displays the Edit Monitored System dialog box for editing the selected system.
- **JMX** - displays details about the monitored system. The information displayed is based on the type of data source being used.

Data Collector

- **Name** - enter or select the data collector to use for sampling the system.
- **Host Name or IP** - displays the host name or IP address of the selected system.
- **Port** - displays the data collector port.
- **Username** - displays the user name for the data collector.

- **Password** - displays the password for the data collector.
 - **Add** - displays the Add Data Collector dialog box for specifying a new data collector.
 - **Edit** - displays the Edit Data Collector dialog box for editing the selected data collector.
6. Enter the server location information and properties for discovery and click **OK**. The JMX Discovery dialog box is displayed.
 7. Select the counters you want to use and click **OK**.
 8. If you do not need to discover metrics, enter the Metric properties and click **Finish**.
 9. You can then test the metric by clicking **Test** and specifying the test parameters.

1.8.1.6 Adding Perfmon (Windows Performance Monitor) Metrics

To add a Perfmon metric:

1. Select **Metrics** from the **ServerStats** menu.
2. Click **New**. The Add Metrics dialog box is displayed.
 - Metric type** - lists the available data sources.
 - Add** - displays the Add Metric dialog box for adding metrics.
 - Metrics** - lists the selected metrics. When you click Close, each metric will be listed in the User Defined node of the ServerStats dialog box.
3. Select **Windows Performance Monitor (Perfmon)** and click **Add**. The Add Metric dialog box is displayed.
 - Name** - enter a name for the metric.
 - Description** - enter a description of the metric.
 - Category** - displays the type of metric.
 - Metric discovery**
 - **Is system discovery needed?** - select Yes when you want to discover metrics.
 - **System component to discover** - select the type of discovery.
 - Discover Counters** - displays the Setup Discovery dialog box for selecting the target system and data collector to use for discovery. A list of discovered metrics is displayed in the Discovery dialog box for selecting the metric to use.
 - Metric Properties**
 - **Counter Name** - specify the counter name. For example, % Processor Time. You must enter the counter name exactly as it is displayed in the Perfmon editor. Be careful to check for spaces and case in the Counter name.
 - **Instance Name** - if the metric has an instance associated with it, specify it here.
 - **Object Name** - specify the object name. For example, Processor or Memory. You must enter the object name exactly as it is displayed in the Perfmon editor. Be careful to check for spaces and case in the Object name.
 - **Sample Multiplier** - enter the multiplier you want to be applied to the data that is collected. Setting the sample multiplier to 1 means that the data will be reported as is. If the metric measurement is expressed in kilobytes, setting the sample multiplier to 1024 translates it to bytes. If the metric measurement is

expressed in milliseconds, setting the sample multiplier to .001 translates it to seconds.

- **Translation Type** - Translation Type controls how a metric's data is displayed in Reports.
 - **No Translation** - data is displayed as it is provided by the metric's data source.
 - **Rate (minutes)** - data is presented as a number, per minute. For example, if the time interval between two samples was 10 minutes, and 50 errors were found, the Rate (minutes) would be five (5) errors per minute.

Note: Rate (minutes) translates data sources that return their values as an endlessly increasing counter. If the data source does not return data this way, use No Translation.

4. Enter a name and description for the metric.
5. If you want to find metrics on a system, set **Is system discovery needed** to **Yes**, select the discovery type, and click **Discover Counters**, otherwise, go to step 8. The Setup Discovery dialog box is displayed.

Metric - displays the name of the data source.

Monitored System

- **Name** - enter or select the system to sample.
- **Host Name or IP** - displays the host name or IP address of the selected system.
- **Username** - displays the user name for the system.
- **Password** - displays the password for the system.
- **Domain Name** - displays the Domain Name for the system.
- **Add** - displays the Add Monitored System dialog box for specifying a new system to monitor.
- **Edit** - displays the Edit Monitored System dialog box for editing the selected system.
- **Monitored System Details** - displays details about the monitored system. The information displayed is based on the type of data source being used.

Data Collector

- **Name** - enter or select the data collector to use for sampling the system.
- **Host Name or IP** - displays the host name or IP address of the selected system.
- **Port** - displays the data collector port.
- **Username** - displays the user name for the data collector.
- **Password** - displays the password for the data collector.
- **Add** - displays the Add Data Collector dialog box for specifying a new data collector.
- **Edit** - displays the Edit Data Collector dialog box for editing the selected data collector.

6. Enter the server location information and properties for discovery and click **OK**. The Perfmon Discovery dialog box is displayed.

Performance object - select the performance object you want to monitor.

<counter list> - lists the counters associated with the selected performance object. Select the counter.

<instance list> - lists the instances associated with the selected counter object. Select the instance.

Counters - displays the selected counters.

7. Select the counters you want to use and click **OK**.
8. If you do not need to discover metrics, enter the Metric properties and click **Finish**.
9. You can then test the metric by clicking **Test** and specifying the test parameters.

Note: To monitor disk performance on a Windows machine, Diskperf -yv must be enabled on that machine. See "Using Diskperf" for more information.

1.8.1.7 Adding Ping Metrics

To add a Ping metric:

1. Select **Metrics** from the **ServerStats** menu.
2. Click **New**. The Add Metrics dialog box is displayed.

Metric type - lists the available data sources.

Add - displays the Add Metric dialog box for adding metrics.

Metrics - lists the selected metrics. When you click **Close**, each metric will be listed in the User Defined node of the ServerStats dialog box.
3. Select **Ping** and click **Next**. The Add Metric Step 2 of 2 dialog box is displayed.

Name - enter a name for the metric.

Description - enter a description of the metric.

Category - displays the type of metric.

Metric Properties

- **Measurement** - Specifies the metric to use for the Ping monitor. Select the metric to use: Average Round Trip Time (PingAvgRTT) or Percentage of Success (PingPercentSuccess).
- **Length** - specify how many bytes should be included in each echo request packet.
- **Time to Live** - Specifies the maximum number of router hops permitted. If the echo request takes more than the maximum number of hops, it is thrown away and the Ping attempt is treated as a failure.
- **Sample Multiplier** - enter the multiplier you want to be applied to the data that is collected. Setting the sample multiplier to 1 means that the data will be reported as is. If the metric measurement is expressed in kilobytes, setting the sample multiplier to 1024 translates it to bytes. If the metric measurement is

expressed in milliseconds, setting the sample multiplier to .001 translates it to seconds.

- **Translation Type** - Translation Type controls how a metric's data is displayed in Reports.
 - **No Translation** - data is displayed as it is provided by the metric's data source.
 - **Rate (minutes)** - data is presented as a number, per minute. For example, if the time interval between two samples was 10 minutes, and 50 errors were found, the Rate (minutes) would be five (5) errors per minute.

Note: Rate (minutes) translates data sources that return their values as an endlessly increasing counter. If the data source does not return data this way, use No Translation.

4. Enter a name and description for the metric.
5. Enter the Metric properties.
6. You can test the metric by clicking **Test** and specifying the test parameters.
7. Click **Finish**.

1.8.1.8 Adding SNMP Metrics

To add an SNMP metric:

1. Select **Metrics** from the **ServerStats** menu.
2. Click **New**. The Add Metrics dialog box is displayed.

Metric type - lists the available data sources.

Add - displays the Add Metric dialog box for adding metrics.

Metrics - lists the selected metrics. When you click **Close**, each metric will be listed in the User Defined node of the ServerStats dialog box.

3. Select **SNMP** and click **Add**. The Add Metric dialog box is displayed.

Name - enter a name for the metric.

Description - enter a description of the metric.

Category - displays the type of metric.

Metric discovery

- **Is system discovery needed?** - select Yes when you want to discover metrics.
- **System component to discover** - select the type of discovery.

Metric Properties

- **Name** - enter the metric name.
- **Object ID** - enter the object ID to retrieve.
- **Second OID for ratio** - enter the second object ID to retrieve if you are using a ratio. This OID is the divisor. For example, if you want to calculate the percentage of disk space available, you must divide the amount of space used by the total amount available.
- **Type of Lookup** - select the type of lookup you want to do.

- **Search for string** - Enter the string to search for in the OID column that you specify below. This setting applies only if TableGet is selected.
- **In OID column** - Enter the column to search in for the string you specified above. This setting applies only if TableGet is selected.
- **Datatype of result** - select the datatype of the result.
- **Datatype of OID** - select the datatype of the first OID.
- **Datatype of second OID** - select the datatype of the second OID.
- **Sample Multiplier** - enter the multiplier you want to be applied to the data that is collected. Setting the sample multiplier to 1 means that the data will be reported as is. If the metric measurement is expressed in kilobytes, setting the sample multiplier to 1024 translates it to bytes. If the metric measurement is expressed in milliseconds, setting the sample multiplier to .001 translates it to seconds.
- **Translation Type** - Translation Type controls how a metric's data is displayed in Reports.
 - **No Translation** - data is displayed as it is provided by the metric's data source.
 - **Rate (minutes)** - data is presented as a number, per minute. For example, if the time interval between two samples was 10 minutes, and 50 errors were found, the Rate (minutes) would be five (5) errors per minute.

Note: Rate (minutes) translates data sources that return their values as an endlessly increasing counter. If the data source does not return data this way, use No Translation.

Discover Counters - displays the Setup Discovery dialog box for selecting the target system and data collector to use for discovery. A list of discovered metrics is displayed in the Discovery dialog box for selecting the metric to use.

4. Enter a name and description for the metric.
5. If you want to find metrics on a system, set **Is system discovery needed** to **Yes**, select the discovery type, and click **Discover Counters**, otherwise, go to step 8. The Setup Discovery dialog box is displayed.

Metric - displays the name of the data source.

Monitored System

- **Name** - enter or select the system to sample.
- **Host Name or IP** - displays the host name or IP address of the selected system.
- **Username** - displays the user name for the system.
- **Password** - displays the password for the system.
- **Domain Name** - displays the Domain Name for the system.
- **Add** - displays the Add Monitored System dialog box for specifying a new system to monitor.
- **Edit** - displays the Edit Monitored System dialog box for editing the selected system.

- **Monitored System Details** - displays details about the monitored system. The information displayed is based on the type of data source being used.

Data Collector

- **Name** - enter or select the data collector to use for sampling the system.
 - **Host Name or IP** - displays the host name or IP address of the selected system.
 - **Port** - displays the data collector port.
 - **Username** - displays the user name for the data collector.
 - **Password** - displays the password for the data collector.
 - **Add** - displays the Add Data Collector dialog box for specifying a new data collector.
 - **Edit** - displays the Edit Data Collector dialog box for editing the selected data collector.
6. Enter the server location information and properties for discovery and click **OK**. The SNMP Discovery dialog box is displayed.

Select OID

Validate against target machine - applies the SNMP metrics in the selected MIB file to the selected system.

MIB File - select the MIB file to use.

Upload File - displays the Upload File dialog box for uploading a mib file to the server.

Counters - displays information about the selected counters.

7. Select the counters you want to use and click **OK**.
8. If you do not need to discover metrics, enter the Metric properties and click **Finish**.
9. You can then test the metric by clicking **Test** and specifying the test parameters.

1.8.1.9 Adding URL Metrics

To add a URL metric:

1. Select **Metrics** from the **ServerStats** menu.
2. Click **New**. The Add Metrics dialog box is displayed.
 - Metric type** - lists the available data sources.
 - Add** - displays the Add Metric dialog box for adding metrics.
 - Metrics** - lists the selected metrics. When you click **Close**, each metric will be listed in the User Defined node of the ServerStats dialog box.
3. Select **URL** and click **Add**. The Add Metric dialog box is displayed.
 - Name** - enter a name for the metric.
 - Description** - enter a description of the metric.
 - Category** - displays the type of metric.

Metric Properties

- **URL Usage**

- **Specify** - select this option if you want to specify a URL. Enter the URL in the URL field.
- **Use System Homepage** - (default) select this option to automatically use the home page defined for the system.
- **URL** - If **URL Usage** is set to **Specify**, type the URL for the web page you want to check. The URL must be specified with the full protocol designation of http or https. For example: `http://www.company.com`.

If you use Get as the HTTP Method (the default), simply include any additional parameters you want to include as part of the URL string, for example:

<http://search.yahoo.com/bin/search?p=electronics>

- **URL Method**
 - **POST** - the Post method, usually associated with a form, allows a much larger amount of information to be associated with the request.
 - **GET** - include any additional query strings as part of the URL address.

Note: Some servers limit the length of URL and query strings to about 240 characters.

- **Post Data** - If you select Post as the URL Method, you can add a series of name-value pairs. For example, a URL generated after completing a form may appear as follows:

```
POST http://www.company.com/cgi-bin/guestbook.pl
... (additional headers)
name=Harold&nickname=Harry
```

To reference this page, enter `name=Harold&nickname=Harry` in this field.

- **User Agent** - you can specify a particular user agent when you monitor a URL. When you configure a User Agent, the browser and operating system you specify is added to the header of the URL request. This allows you to test pages designed for a specific browser URL and confirm that a page designed for multiple browsers works appropriately for each of them.
- **Enable Cookies**
 - **False** - select this option if you want the URL test to prevent the use of cookies when accessing the page.
 - **True** - select this option if you want to allow the URL monitor to support cookies as part of the URL request. A fresh cookie is retrieved each time the test is run.
- **Custom Cookie** - type in a cookie value for the page you are monitoring. If you supply a particular value, remember that the cookie is saved and can become out of date. Refresh cookie requests are ignored.
- **Metric Type**
 - **Download Time** - returns the download time.
 - **Download Size in Bytes** - returns the size of the file.
 - **Result of Perl Expression** - specifies a Perl Expression used to retrieve the file size.

Types other than HTML and images are also classified as objects.

- **Include image download times** - calculates the URL availability and access time with retrieval of embedded images (such as .gif and .jpeg files and references within tags).
- **Include object download times** - calculates URL availability and access time with retrieval of embedded objects (such as ActiveX objects and Java applets). Oracle Load Testing measures the time taken to retrieve data used by objects, but does not include the time needed to retrieve any executable file required in order to interpret the data.
- **Result of Perl Expression** - enter the Perl expression to use if you have selected Result of Perl Expression as the metric type.
- **Username** - if the URL specified requires a name and password for access, enter the name in this field.
- **Password** - if the URL specified requires a name and password for access, enter the password in this field.
- **Enable Proxy**- select this checkbox if your network makes use of a proxy server.
- **Proxy Host** - specify the name or IP address of the proxy server.
- **Proxy Port** - the port of the proxy server.
- **Proxy Username** - the proxy server login user name.
- **Proxy Password** - the proxy server login password.
- **Sample Multiplier** - enter the multiplier you want to be applied to the data that is collected. Setting the sample multiplier to 1 means that the data will be reported as is. If the metric measurement is expressed in kilobytes, setting the sample multiplier to 1024 translates it to bytes. If the metric measurement is expressed in milliseconds, setting the sample multiplier to .001 translates it to seconds.
- **Translation Type** - Translation Type controls how a metric's data is displayed in Reports.
 - **No Translation** - data is displayed as it is provided by the metric's data source.
 - **Rate (minutes)** - data is presented as a number, per minute. For example, if the time interval between two samples was 10 minutes, and 50 errors were found, the Rate (minutes) would be five (5) errors per minute.

Note: Rate (minutes) translates data sources that return their values as an endlessly increasing counter. If the data source does not return data this way, use No Translation.

4. Enter a name and description for the metric.
5. Enter the Metric properties.
6. You can test the metric by clicking **Test** and specifying the test parameters.
7. Click **Finish**.

1.8.1.10 Adding Virtual Agent Metrics

To add a Virtual Agent metric:

1. Select **Metrics** from the **ServerStats** menu.
2. Click **New**. The Add Metrics dialog box is displayed.

Metric type - lists the available data sources.

Add - displays the Add Metric dialog box for adding metrics.

Metrics - lists the selected metrics. When you click **Close**, each metric will be listed in the User Defined node of the ServerStats dialog box.

3. Select **Virtual Agent** and click **Add**. The Add Metric dialog box is displayed.

Name - enter a name for the metric.

Description - enter a description of the metric.

Category - displays the type of metric.

Metric discovery

- **Is system discovery needed?** - select **Yes** when you want to discover metrics.
- **System component to discover** - select the type of discovery.

Metric Properties

- **Description** - enter a description.
- **Command Line** - specifies the command to execute on the host machine.
- **Matching Regexp** - specifies a Perl expression to use to report the data returned from the executable program.
- **Key of value in Regexp** - specify the key of value to return from the Regular Expression specified in **Matching Regexp**. Key of value 0 returns the first match, 1 returns the 2nd match, etc. The match is of the Regular Expression inside the parenthesis (). For example, if the Command Line is `free -m` and the Matching Regexp is `/Mem: .+? (\d+) .+? (\d+) /`, a Key of Value 0 returns the value in the first `(\d+)` of the Regular Expression.
- **Instance Name** - specify the instance name.
- **Sample Multiplier** - enter the multiplier you want to be applied to the data that is collected. Setting the sample multiplier to 1 means that the data will be reported as is. If the metric measurement is expressed in kilobytes, setting the sample multiplier to 1024 translates it to bytes. If the metric measurement is expressed in milliseconds, setting the sample multiplier to .001 translates it to seconds.
- **Translation Type** - Translation Type controls how a metric's data is displayed in Reports.
 - **No Translation** - data is displayed as it is provided by the metric's data source.
 - **Rate (minutes)** - data is presented as a number, per minute. For example, if the time interval between two samples was 10 minutes, and 50 errors were found, the Rate (minutes) would be five (5) errors per minute.

Note: Rate (minutes) translates data sources that return their values as an endlessly increasing counter. If the data source does not return data this way, use No Translation.

4. Enter a name and description for the metric.
5. Enter the Metric properties.
6. You can test the metric by clicking **Test** and specifying the test parameters.
7. Click **Finish**.

1.8.1.11 Adding Other SNMP Metrics

You can add other SNMP metrics if you have the Object ID for the metric or if you have uploaded a device vendor MIB file to Oracle Load Testing.

To add other SNMP metrics:

1. Select **Metrics** from the **ServerStats** menu.
2. Select **New**. The Add Metric dialog box is displayed.
3. Select SNMP and click **Add**.
4. Enter the name and Object ID of the metric. If you uploaded a MIB file, skip to Discover Counters.
5. Enter any additional information if necessary.
6. Click Discover Counters.
7. Click **OK**.
8. Click **OK**.
9. Select the MIB file.
10. Select a counter and click **Add** for each counter you wish to add.
11. Click **OK** and **Close** as necessary to exit. The Metric is added to the User Defined metrics tree. See [Section 1.8.1.8, "Adding SNMP Metrics"](#) for additional information.

1.8.1.12 Uploading MIB Files

You can upload MIB files obtained from a device vendor to Oracle Load Testing Application Server.

To upload MIB files:

1. Select **Upload File** from the **Tools** menu.
2. Select SNMP MIB File as the file type.
3. Click **Browse** then select the file and click **Open**.
4. Click **Upload**.
5. Define the metrics you wish to use. See [Section 1.8.1.11, "Adding Other SNMP Metrics"](#) for additional information.

1.8.2 Editing Metrics

Only user-defined metrics can be edited. Default metrics cannot be changed. Changing a metric changes it in any configuration that uses it.

To edit user-defined metrics:

1. Select **Metrics** from the **ServerStats** menu.
2. Select the user defined metric you want to edit and click **Edit**. The Edit Metric dialog is displayed showing the properties pertinent to the selected metric.
3. Make any necessary changes.
4. You can test the metric by clicking **Test** and specifying the test parameters.
5. Click **OK**.

1.8.3 Cloning Metrics

When you clone a default metric you create a user defined metric that can be edited, saved, and used in configurations.

To clone a metric:

1. Select **Metrics** from the **ServerStats** menu.
2. Select the metric you want to clone and click **Clone**. The Clone Metric dialog box is displayed. This dialog box displays name and description details about the metric as well as metric discovery and property information when applicable.
3. Make any changes and click **OK**. The metric is listed in the user defined node of the metric tree.

1.8.4 Deleting Metrics

User defined metrics can be deleted. Default metrics cannot be deleted.

To delete a metric:

1. Select **Metrics** from the **ServerStats** menu.
2. Select the user defined metric that you want to delete and click **Delete**.
3. Click **Yes** when asked to confirm the deletion.

1.8.5 Testing Metrics

To test a metric:

1. Select **Metrics** from the **ServerStats** menu.
2. Select the metric you want to test and click **Test**. The Test Setup dialog box is displayed for configuring how you want to test the metric.

Metric Test Setup

- **Name** - displays the name of the metric profile.

Monitored System

- **Name** - enter or select the system to sample.
- **Host Name or IP** - displays the host name or IP address of the selected system.
- **Username** - displays the user name for the system.

- **Password** - displays the password for the system.
- **Domain Name** - displays the Domain Name for the system.
- **Add** - displays the Add Monitored System dialog box for specifying a new system to monitor.
- **Edit** - displays the Edit Monitored System dialog box for editing the selected system.
- **Monitored System Details** - displays details about the monitored system. The information displayed is based on the type of data source being used.

Data Collector

- **Name** - enter or select the data collector to use for sampling the system.
- **Host Name or IP** - displays the host name or IP address of the selected system.
- **Port** - displays the data collector port.
- **Username** - displays the user name for the data collector.
- **Password** - displays the password for the data collector.
- **Add** - displays the Add Data Collector dialog box for specifying a new data collector.
- **Edit** - displays the Edit Data Collector dialog box for editing the selected data collector.

Collection Interval

- **Collect data every** - Specifies, in seconds, how often samples are taken for this monitor.
3. Enter the server location and collection interval information and click **OK**. The Test dialog box is displayed.

This dialog displays the test results. It has the following information for each counter:

Counter Definition - displays the counter definition.

Last Value - displays the last collected value.

Time Stamp - displays the time that the last action happened. This could be the time of the last sample, or the time an error was encountered.

Error - displays a description of the error, if applicable.

4. Click **Close** to exit the Test dialog box.
5. Click **Close** to exit Metrics configuration.

1.8.6 Viewing Metrics

You can view metric descriptions and configuration details from both the Metric Profiles dialog box and the Metrics dialog box.

To view metrics from the Metric Profiles dialog box:

1. Select **Metrics Profiles** from the **ServerStats** menu.
2. Open the metric profile containing the metric that you want to view.
3. Select the metric from the right-hand pane.

Name - displays the metric name.

Description - displays the metric's description.

Category - displays the metric's category.

Data Source - displays the metric's data source.

Metric properties - displays the properties particular to this metric and how they are configured. Refer to the appropriate section under "Adding Metrics" for property descriptions.

Metric Discovery - displays whether the object needs to be discovered and the object type to discover.

4. Click **Close** to exist the View Metric dialog box.

To view metrics from the Metrics dialog box:

1. Select **Metrics** from the **ServerStats** menu.
2. Select the metric you want to view. The details about the metric and how it was configured are displayed in the right-hand pane.
3. Click **Close** to exit the Metrics configuration.

1.9 Viewing ServerStats Status

You can view the status of ServerStats during a running session. To view ServerStats status:

1. Select **ServerStats Display** from the **ServerStats** menu to display the ServerStats Display dialog box.

This dialog box displays the status of ServerStats for a running test.

Counter Definition - displays the counter description.

Last Value - displays the last sampled value.

Time Stamp - displays when the last value was sampled.

Error - displays an error message if one has been encountered.

2. Click **Close** when you are done.

1.10 Using Diskperf

Diskperf is a command that enables the Windows Perfmon counter that measures computer disk performance.

You will probably have to enable Diskperf on Windows 2000 machines when you have monitors that use Perfmon. These counters are typically enabled by default on a Windows NT machine, but disabled by default on a Windows 2000 machine.

To execute the Diskperf command:

1. Log on with administrative rights to the NT or Windows 2000 machine whose disk performance you want to monitor.
2. At the command line, type one of the following:

Non-RAID or hardware RAID PCs: `diskperf -y`

Software RAID PCs: `diskperf -y e`

Windows 2000 PCs: `diskperf -yv`

Note: The complete list of options for either system can be found by running `diskperf -?`

3. Press Enter.
4. Restart the computer.

ServerStats Examples

This appendix provides examples for creating various types of monitors. In these examples, monitored systems are configured while configuring the monitors. You could configure the monitored systems in advance using the System Manager by selecting **Systems** from the **Manage** menu. The examples also use the Oracle Load Testing Server system as the data collector in all examples. You could configure remote data collectors to use either during configuration or in advance using the System Manager.

A.1 Windows Metric Profile

This example explains how to create a Windows metric profile monitor.

1. Select **Configurations** from the **ServerStats** menu.
2. Click **New**.
3. Enter a name and description for the profile and click **Save**.
4. Click **New** in the Monitors section.
5. Expand the Metric Profiles node.
6. Expand the Systems node and select **Windows**.
7. Click **Next**.
8. Select the system you want to monitor or click **Add** to add it.
9. Enter the name of the system and its host name or IP address.
10. If the system does not have a data collector running on it, enter the domain name, username, and password for logging on to the monitored system.
11. Click **Test** to see whether Oracle Load Testing can access the system.
12. Click **OK**.
13. Click **OK**.
14. Click **Next**.

The Add Monitor: Step 3 dialog box lists components that have been previously discovered or that were manually entered in the Systems Manager.

15. Click **Discover**. The Discovery setup dialog box is displayed showing any previously configured data.
16. Make any changes and click **OK**. Oracle Load Testing goes through the discovery process to find the components available on this system. The Discovery Status dialog box is displayed.

17. Click **OK** when the message Discovery Done is displayed.
18. Select the components that you want to monitor and click **Next**.
19. Deselect any metrics that you do not want to use.
20. Click **Test** to verify that the results returned are the correct data values for the statistics and that no errors are returned.
21. Click **Stop** then click **Close**.
22. Click **Finish**. The Configurations dialog box is displayed.
23. Click **New** to add additional monitors.
24. Click **Close** to exit the Configurations dialog box.

A.2 Virtual Agent for Solaris Metric Profile

This example explains how to create a Virtual Agent for Solaris metric profile monitor.

Note: Plink must be installed in the datacollector\bin directory on the machine on which you are running the Data Collector. This is only required if you intend to use the SSH connection method.

1. Select **Configurations** from the **ServerStats** menu.
2. Click **New**.
3. Enter a name and description for the profile and click **Save**.
4. Click **New** in the Monitors section.
5. Expand the Metric Profiles node.
6. Expand the Systems node and select **Virtual Agent - Solaris**.
7. Click **Next**.
8. Select the system you want to monitor or click **Add** to add it.
9. Enter the name of the system and its host name or IP address.
10. If you are using telnet or Localhost, enter the remote username and password for logging on to the system.
11. Enter the command prompt. For the root user, the default is #. For other users that have not configured a custom prompt, the default is \$.
12. Click **Test** to see whether Oracle Load Testing can access the system.
13. Click **OK**.
14. Click **OK**.
15. Click **Next**.
16. Click **Discover**. The Discovery Setup dialog box is displayed.
17. Click **OK**. Oracle Load Testing goes through the discovery process to find the components that are available on this system. The Discovery Status dialog box is displayed.
18. Click **OK** when Discovery Done is displayed.
19. Select the components that you want to monitor and click **Next**.

20. Deselect any metrics that you do not want to use.
21. Click **Test** to verify that the results returned are the correct data values for the statistics and that no errors are returned.
22. Click **Stop** then click **Close**.
23. Click **Finish**. The Configurations dialog box is displayed.
24. Click **New** to add additional monitors.
25. Click **Close** to exit the Configurations dialog box.

A.3 Virtual Agent for Linux Metric Profile

This example explains how to create a Virtual Agent for Linux metric profile monitor.

Note: Plink must be installed in the `datacollector\bin` directory on the machine on which you are running the Data Collector. This is only required if you intend to use the SSH connection method.

1. Select **Configurations** from the **ServerStats** menu.
2. Click **New**.
3. Enter a name and description for the profile and click **Save**.
4. Click **New** in the Monitors section.
5. Expand the Metric Profiles node.
6. Expand the Systems node and select **Virtual Agent - Linux**.
7. Click **Next**.
8. Select the system you want to monitor or click **Add** to add it.
9. Enter the name of the system and its host name or IP address.
10. If you are using telnet or Localhost, enter the remote username and password for logging on to the system.
11. Enter the command prompt. For the root user, the default is `#`. For other users that have not configured a custom prompt, the default is `$`.
12. Click **Test** to see whether Oracle Load Testing can access the system.
13. Click **OK**.
14. Click **OK**.
15. Click **Next**.
16. Click **Discover**. The Discovery Setup Dialog Box is displayed.
17. Click **OK**. Oracle Load Testing goes through the discovery process to find the components that are available on this system. The Discovery Status dialog box is displayed.
18. Click **OK** when Discovery Done is displayed.
19. Select the components that you want to monitor and click **Next**.
20. Deselect any metrics that you do not want to use.

21. Click **Test** to verify that the results returned are the correct data values for the statistics and that no errors are returned.
22. Click **Stop** then click **Close**.
23. Click **Finish**. The Configurations dialog box is displayed.
24. Click **New** to add additional monitors.
25. Click **Close** to exit the Configurations dialog box.

A.4 Virtual Agent for AIX Metric Profile

This example explains how to create a Virtual Agent for AIX metric profile monitor.

Note: Plink must be installed in the datacollector\bin directory on the machine on which you are running the Data Collector. This is only required if you intend to use the SSH connection method.

1. Select **Configurations** from the **ServerStats** menu.
2. Click **New**.
3. Enter a name and description for the profile and click **Save**.
4. Click **New** in the Monitors section.
5. Expand the Metric Profiles node.
6. Expand the Systems node and select **Virtual Agent - AIX 4.3**.
7. Click **Next**.
8. Select the system you want to monitor or click **Add** to add it.
9. Enter the name of the system and its host name or IP address.
10. Enter the remote username and password for logging on to the system.
11. Enter the command prompt. For the root user, the default is #. For other users that have not configured a custom prompt, the default is \$.
12. Click **Test** to see whether Oracle Load Testing can access the system.
13. Click **OK**.
14. Click **OK**.
15. Click **Next**.
16. Click **Discover**. The Discovery Setup Dialog Box is displayed.
17. Click **OK**. Oracle Load Testing goes through the discovery process to find the components that are available on this system. The Discovery Status dialog box is displayed.
18. Click **OK** when Discovery Done is displayed.
19. Select the components you want to monitor and click **Next**.
20. Deselect any metrics that you do not want to use.
21. Click **Test** to verify that the results returned are the correct data values for the statistics and that no errors are returned.
22. Click **Stop** then click **Close**.

23. Click **Finish**. The Configurations dialog box is displayed.
24. Click **New** to add additional monitors.
25. Click **Close** to exit the Configurations dialog box.

A.5 Perfmon Data Source

This example explains how to create a Perfmon data source.

1. Select **Tools** from the **ServerStats** menu.
2. Click **New**.
3. Enter a name and description for the profile and click **Save**.
4. Click **New** in the Monitors section.
5. Expand the Data Sources node and select **Perfmon (Windows Performance Monitor)**.
6. Click **Next**.
7. Select the system you want to monitor or click **Add** to add it.
8. Enter the name of the system and its host name or IP address.
9. If the system you are monitoring does not have a data collector running on it, enter the domain name, username, and password for logging on to the system.
10. Click **Test** to see whether Oracle Load Testing can access the system.
11. Click **OK**.
12. Click **OK**.
13. Click **Next**. Oracle Load Testing goes through the discovery process to find the metrics available on this system.
14. Select the performance object you want to monitor.
15. Select the counters you want to monitor and click **Add**.
16. Click **Test** to verify that the results returned are the correct data values for the statistics and that no errors are returned.
17. Click **Stop** then click **Close**.
18. Click **Finish**. The Configurations dialog box is displayed.
19. Click **New** to add additional monitors.
20. Click **Close** to exit the Configurations dialog box.

A.6 Oracle Database Metric Profile

This example explains how to create an Oracle Database metric profile.

1. Select **Configurations** from the **ServerStats** menu.
2. Click **New**.
3. Enter a name and description for the profile and click **Save**.
4. Click **New** in the Monitors section.
5. Expand the Metric Profiles node.
6. Expand the Databases node and select **Oracle**.

7. Click **Next**.
8. Select the system you want to monitor or click **Add** to add it.
9. Enter the name of the system and its host name or IP address.
10. Select the type of driver you are using. The connect string is automatically generated for all types except custom.
11. Specify the host name.
12. Specify the SQL server named instance that you want to use. If nothing is specified, Oracle Load Testing uses the default instance as set up on your server. Refer to your database administrator for details.
13. Change the default port if necessary.
14. For the Inet Sprinta driver for SQL Server, provide the database name. For the Oracle Thin JDBC driver, provide the database or server ID.
15. Enter the remote username and password for logging on to the system.
16. Click **Test** to see whether Oracle Load Testing can access the system.
17. Click **OK**.
18. Click **OK**.
19. Click **Next**.
20. The Add Monitor: Step 3 dialog box lists components that have been previously discovered or that were manually entered in the Systems Manager.
21. Click **Discover**. The Discovery setup dialog box is displayed showing any previously configured data.
22. Make any changes and click **OK**. Oracle Load Testing goes through the discovery process to find the metrics available on this system. The Discovery Status dialog box is displayed.
23. Click **OK** when the message Discovery Done is displayed.
The Add Monitor Step 3 dialog box is displayed showing the discovered components.
24. Select the components that you want to monitor and click **Next**.
25. Deselect any metrics that you do not want to use.
26. Click **Test** to verify that the results returned are the correct data values for the statistics and that no errors are returned.
27. Click **Stop** then click **Close**.
28. Click **Finish**. The Configurations dialog box is displayed.
29. Click **New** to add additional monitors.
30. Click **Close** to exit the Configurations dialog box.

A.7 Oracle Enterprise Manager Metric Profile

This example explains how to create an Oracle Enterprise Manager metric profile. To monitor an Enterprise Manager instance, you need to specify the base URL of the Enterprise manager instance as a monitored system.

To specify the URL of Enterprise Manger instance to monitor:

1. Select **Systems** from the **Manage** menu.
2. Select **Monitored Systems** and click **New** on the toolbar.
3. Enter a name and description for the Enterprise Manager system.
4. Expand the **Data Sources** node and select **Enterprise Manager**.
5. Enter the URL of the Enterprise Manager instance. For example:

```
https://em.us.oracle.com:1234/em/
```

The URL must refer to an Enterprise Manager instance version 11gR1 or later with all of the appropriate diagnostic packs installed. Refer to the Enterprise Manager documentation set for information on configuring the Enterprise Manager instance.

6. Click **OK**. The Oracle Load Testing ServerStats validates system availability.
7. Click **Close** to close the Systems Manager.

To configure the Enterprise Manager data source:

1. Select **Configurations** from the **ServerStats** menu.
2. Click **New**.
3. Enter a name and description for the profile and click **Save**.
4. Click **New** in the Monitors section.
5. Expand the Data Sources node and select **Enterprise Manager**.
6. Click **Next**.
7. Select the system you want to monitor (the Monitored System that specifies the base URL of the Enterprise Manager instance) or click **Add** to add a new system.
8. Click **Next**.
9. Select the Metric Type. See [Section 1.8.1.3, "Adding Enterprise Manager Metrics"](#) for additional information about prerequisites and descriptions of the parameters.
 - For Weblogic JVM and Weblogic Domain Metrics, enter the Target, Method Name, Request Name, and select the Thread State.
 - For Oracle Database Metrics, enter the Target to point to as a specific database instance.
10. Click **Finish**. The Configurations dialog box is displayed.
11. Click **New** to add additional monitors.
12. Click **Close** to exit the Configurations dialog box.

A.8 WebServer IIS Metric Profile

This example explains how to create a WebServer IIS metric profile.

1. Select **Configurations** from the **ServerStats** menu.
2. Click **New**.
3. Enter a name and description for the profile and click **Save**.
4. Click **New** in the Monitors section.
5. Expand the Metric Profiles node.

6. Expand the WebServers node and select **Microsoft IIS**.
7. Click **Next**.
8. Select the system you want to monitor or click **Add** to add it.
9. Enter the name of the system and its host name or IP address.
10. Enter the remote username and password for logging on to the system.
11. Click **Test** to see whether Oracle Load Testing can access the system.
12. Click **OK**.
13. Click **OK**.
14. Click **Next**. Oracle Load Testing goes through the discovery process to find the metrics available on this system.
15. Deselect any metrics that you do not want to use.
16. Click **Test** to verify that the results returned are the correct data values for the statistics and that no errors are returned.
17. Click **Stop** then click **Close**.
18. Click **Finish**. The Configurations dialog box is displayed.
19. Click **New** to add additional monitors.
20. Click **Close** to exit the Configuration dialog box.

A.9 URL Monitor for Apache Web Server

This example explains how to create a URL monitor for Apache Web Server.

Apache provides performance data via the Apache Server status web page. You can create a URL monitor that requests this page and parses data from it using a regular expression. The following examples shows sample data as returned from Apache:

```
Current Time: Monday, 08-May-2006 14:55:26 PDT
Restart Time: Tuesday, 02-May-2006 10:24:02 PDT
Parent Server Generation: 9
Server uptime: 6 days 4 hours 31 minutes 24 seconds
Total accesses: 29000810 - Total Traffic: 693.7 GB
CPU Usage: u209.367 s369.148 cu0 cs0 - .108% CPU load
54.2 requests/sec - 1.3 MB/second - 25.1 kB/request
105 requests currently being processed, 151 idle workers
K K C _ K _ K K C K _ _ K _ K _ K _ C _ C _ _ K _ K _ K K K _ K _
K K K K _ _ C K _ _ K _ _ K K _ K _ K _ K _ K _ K K _ K K W _ K K K _
K _ C _ K K _ K _ K _ K K _ W K K _ _ W K _ C _ K K _ K W K _ _ K _ K C K _ _ K _ K _ W K _ C C _ _ K _
.....
```

This example shows how to retrieve requests/per second as found in row seven in the above example. You can view sample data using the URL:

<http://www.apache.org/server-status?refreshed=N>

1. Select **Configurations** from the **ServerStats** menu.
2. Click **New**.
3. Enter a name and description for the profile and click **Save**.
4. Click **New** in the Monitors section.
5. Expand the Data Sources node.

6. Select **URL**.
7. Click **Next**.
8. Click **Next**. Oracle Load Testing displays the Add Monitor: Step 3 dialog box.
9. Select **Specify** in the **URL usage** field and enter:
<http://www.apache.org/server-status?refreshed=N>
in the **URL** field.
10. Select **Result of Perl Expression** as the metric type.
11. Enter `/([0-9]+\.[0-9]) requests/sec/` in the **Perl Expression** field.
12. Click **Test** to verify that the results returned are the correct data values for the statistics and that no errors are returned.
13. Click **Stop** then click **Close**.
14. Click **Finish**. The Configurations dialog box is displayed.
15. Click **New** to add additional monitors.
16. Click **Close** to exist the Configurations dialog box.

A.10 JMX Data Source

This example explains how to create a JMX data source.

This example can be used for retrieving metrics from application servers offering performance counters via JMX. For example, WebLogic, WebSphere, and other supported servers.

A data collector can only monitor one type of JMX monitor at a time. To monitor more than one type of JMX monitor at the same time, you must use a separate data collector for each. All JMX monitors require some set up. Following are the broad steps followed by the specific procedures:

WebLogic 9.0

1. Copy configuration jar files to the data collector machines

WebSphere 6.0, 5.1, 5.0

1. Copy configuration jar files to the data collector machines
2. Update the properties file

WebSphere 6.1, 7.0

1. Copy configuration jar files to the data collector machines
2. Copy keystore/trust store files

The following are the default values for the monitored system:

Port: 8880 (default)

Username: admin (check with the JMX system administrator for changes to the username)

Password: password (check with the JMX system administrator for changes to the password)

Trust Store File: C:\keys\DummyClientTrustFile.jks

Trust Store Password: WebAS

Key Store File: C:\keys\DummyClientKeyFile.jks

Key Store Password: WebAS

WebLogic 8.0, 8.1

1. Copy configuration jar files to the data collector machines
2. Create jar files
3. For WebLogic 8.1, update the properties file

A.10.1 Copying the JMX Server Installation Jar Files

Before these server types can be used, the JMX agent needs one or more specific configuration jar files to be copied from the JMX server installation to the <installdir>\DataCollector\classes directory on all machines that will be used as data collectors for sampling from that server. The default <installdir> is C:\OracleATS. The file(s) can be obtained from your application server installation and copied to the appropriate directory as listed in the following table.

Note: Versions prior to 9.20 included the version number in the directory names for the Jar files. If you are upgrading from a previous version of Oracle Application Testing Suite and have JMX monitors configured, you will need to move the Jar files to the directories specified below. If the Jar files are in the previous version locations, you may receive an error message similar to the following message:
 Error loading websphereXX JMX classes--check classpath setting in data collectors OSDC.properties.

Application Name	Files to Copy	Default Directory
Redhat JBoss 4.x	jbossall-client.jar	<installdir>\DataCollector\classes\jboss
Redhat JBoss 5.x	all *.jar files under <JBoss5 install dir>/jboss-as/client/	<installdir>\DataCollector\classes\jboss
Redhat JBoss 6.x	all *.jar files under <JBoss6 install dir>/client/	<installdir>\DataCollector\classes\jboss Execute C:\<JBoss6 install dir>\bin\run.bat -b hostname.com, to start the JBoss server (hostname.com is the FQDN of your machine). Note the -b argument above. JBoss server does not know which hostname to bind (i.e localhost or hostname or hostname.domain) so it must be specified as described above.
Oracle WebLogic 9.0	weblogic.jar, webservices.jar	<installdir>\DataCollector\classes\weblogic
Oracle WebLogic 9.1	weblogic.jar, webservices.jar	<installdir>\DataCollector\classes\weblogic

Application Name	Files to Copy	Default Directory
Oracle WebLogic 10.x	wlfullclient.jar (This file must be created using the WebLogic JarBuilder tool. On the WebLogic sever, switch to server/lib and use the command java -jar wljarbuilder.jar to create wlfullclient.jar in the server/lib directory, then copy the file.)	<installdir>\DataCollector\classes\weblogic
IBM WebSphere 6.0	admin.jar, bootstrap.jar, bsf.jar, classloader.jar, client.jar, commons-el.jar, configmanager.jar, db2j.jar, deployutils.jar, emf.jar, ffdc.jar, filetransfer.jar, ibmcertpathprovider.jar, ibmjceprovider.jar, ibmjsse.jar, idl.jar, iwsorb.jar, j2ee.jar, jacl.jar, js.jar, jspcore.jar, jspruntime.jar, jsptranslation.jar, jspvisitor.jar, mail-impl.jar, mail.jar, management.jar, pluginconfig.jar, ras.jar, runtime.jar, runtimefw.jar, sas.jar, security.jar, soap.jar, tcljava.jar, uddi4j.jar, utils.jar, validationmgr.jar, wasjmx.jar, wasproduct.jar, wccm_base.jar, webcontainer.jar, webservices.jar, wjmxapp.jar, wlmserver.jar, workspace.jar, wsdl4j.jar, wsexception.jar, wsprofile.jar, wssec.jar	<installdir>\DataCollector\classes\websphere
IBM WebSphere 6.1, 7.0	Both versions java\jre\lib*.jar java\jre\lib\ext*.jar WebSphere 6.1 runtimes\com.ibm.ws.admin.client_6.1.0.jar plugins\com.ibm.ws.security.crypto_6.1.0.jar WebSphere 7.0 runtimes\com.ibm.ws.admin.client_7.0.0.jar plugins\com.ibm.ws.security.crypto.jar Trust Files DummyClientKeyFile.jks DummyClientTrustFile.jks	<installdir>\DataCollector\classes\websphere

A.10.2 Creating the Monitor

To create the monitor:

1. Select **Configurations** from the **ServerStats** menu.
2. Click **New**.
3. Enter a name and description for the profile and click **Save**.

4. Click **New** in the Monitors section.
5. Expand the Data Sources node.
6. Select **JMX**.
7. Click **Next**.
8. Select the system you want to monitor or click **Add** to add it.
9. Enter the name of the system and its host name or IP address.
10. Select the server type.
11. Enter the username and password if needed.
12. Enter Trust Store and Key Store File information if needed.
13. Click **Test** to see whether Oracle Load Testing can access the system.
14. Click **OK**.
15. Click **OK**.
16. Click **Next**. Oracle Load Testing goes through the discovery process to find the metrics available on this system.
17. Select the counters that you want to use and click **Add**.
18. Click **Test** to verify that the results returned are the correct data values for the statistics and that no errors are returned.
19. Click **Stop** then click **Close**.
20. Click **Finish**. The Configurations dialog box is displayed.
21. Click **New** to add additional monitors.
22. Click **Close** to exit the Configurations dialog box.

A.11 JMX Metric Profile

This example explains how to create a JMX metric profile.

This example can be used for applying the JMX-based application servers. Default profiles are included, however, you can create additional profiles after creating JMX metrics as described in the "Adding JMX Metrics" section of Chapter 1.

1. Select **Configurations** from the **ServerStats** menu.
2. Click **New**.
3. Enter a name and description for the profile and click **Save**.
4. Click **New** in the Monitors section.
5. Expand the Metric Profiles node.
6. Expand the Application Servers node and select the profile.
7. Click **Next**.
8. Select the system you want to monitor or click **Add** to add it.
9. Enter the name of the system and its host name or IP address.
10. Click **Test** to see whether Oracle Load Testing can access the system.
11. Click **OK**.

12. Click **OK**.
13. Click **Next**. Oracle Load Testing goes through the discovery process to find the metrics available on this system.
14. Deselect any metrics that you do not want to use.
15. Click **Test** to verify that the results returned are the correct data values for the statistics and that no errors are returned.
16. Click **Close**.
17. Click **Finish**. The Configurations dialog box is displayed.
18. Click **New** to add additional monitors.
19. Click **Close** to exit the Configurations dialog box.

A.12 WebLogic Server Metric Profile

This example explains how to create a WebLogic Server metric profile.

SNMP must be enabled on the system you are monitoring. Also, be sure that the MIB data you plan on collecting is supported by the SNMP daemon on the monitored machine. Refer to your system administrator for more information.

1. Select **Configurations** from the **ServerStats** menu.
2. Click **New**.
3. Enter a name and description for the profile and click **Save**.
4. Click **New** in the Monitors section.
5. Expand the Metric Profiles node.
6. Expand the Application Servers node and select BEA WebLogic Server 5.x.
7. Click **Next**.
8. Select the system you want to monitor or click **Add** to add it.
9. Enter the name of the system and its host name or IP address.
10. Click **Test** to see whether Oracle Load Testing can access the system.
11. Click **OK**.
12. Click **OK**.
13. Click **Next**. Oracle Load Testing goes through the discovery process to find the metrics available on this system.
14. Deselect any metrics that you do not want to use.
15. Click **Test** to verify that the results returned are the correct data values for the statistics and that no errors are returned.
16. Click **Stop** then click **Close**.
17. Click **Finish**. The Configurations dialog box is displayed.
18. Click **New** to add additional monitors.
19. Click **Close** to exit the Configurations dialog box.

ServerStats Metric Descriptions

This appendix describes the default Oracle Load Testing ServerStats metrics. Use the Perfmon data source to add metrics that are not listed.

B.1 AIX 4.3 Virtual Agent

File System Free Space - Total free space on the mounted directory (from df -k).

File System Percent Used - The directory space in use (from df -k).

File System Size - The total size of the mounted directory (from df -k).

vmstat cpu(id) - CPU Idle Time - CPU Idle Time (from vmstat cpu(id) value).

vmstat kthr(b) - Number of kernel threads placed in wait queue (awaiting resource, awaiting input/output).

vmstat kthr(r) - Number of kernel threads placed in run queue.

vmstat memory(avm) - Active virtual pages.

vmstat memory(free) - Size of the free list.

B.2 Apache Web Server

Busy Servers - The busy servers.

Bytes/Request - The number of bytes per request.

Bytes/sec - The number of bytes per second.

Idle Servers - The idle servers.

Requests/Second - The number of page requests per second.

Server Uptime - The server up time in days.

B.3 Cisco Network Devices

1 Minute CPU Utilization - SNMP: The overall CPU utilization for the last 1 minute period (cpmCPUTotal1min).

Chassis Temperature Alarm (1=No Alarm) - SNMP: Chassis temperature alarm status (chassisTempAlarm). 1=off, 2=on, 3=critical.

Current Bandwidth Usage - The current bandwidth in megabits per second on 3500 XL series switches.

Layer 3 Packet Throughput - SNMP: Number of packets per minute switched at Layer 3 by this engine (cseL3SwitchedTotalPkts).

Peak Bandwidth Usage - The most recent entry in the peak bandwidth table.

Power Supply 1 Status (2=OK) - SNMP: Status of power supply number 1 (chassisPs1Status). 2=ok, 3=minor fault, 4=major fault.

Power Supply 2 Status (2=OK) - SNMP: Status of power supply number 2 (chassisPs2Status). 2=ok, 3=minor fault, 4=major fault.

Traffic Utilization, Peak - SNMP: Peak traffic meter value since the last time port counters were cleared or the system started (sysTrafficPeak).

Traffic Utilization - SNMP: Traffic meter value for the previous polling interval (sysTraffic).

B.4 CPU

CPU: % Busy Time - Percentage of time that the processor is non-idle.

CPU: Interrupt Rate - Number of interrupts received per second by the processor. If very high, may indicate failing hardware or bad drivers.

CPUs: % Busy Time - Average percentage of time that all processors are non-idle.

B.5 Disk

% Busy Time - Percentage of time disk is busy. If high, possible disk bottleneck or low memory.

% Space Available - Percentage of disk space available. If low, applications may fail to save and retrieve data on disk.

Queue Length - Average disk queue length. If high, possible disk bottleneck or low memory.

Space Available - Free disk space in megabytes. If low, applications may fail to save and retrieve data on disk.

B.6 Foundry Load Balancer

CPU Util - The SNMP Foundry CPU util.

Fan 1 - The fan 1 status for SI/FIWG.

Fan 2 - The fan 2 status for SI/FIWG.

Power Supply 2 - The power supply 2 status for SI/FIWG.

host.ping.ms.name: Ping for the Average Round Trip Time.

B.7 General Web Server

IP Throughput - IP traffic through a host in bytes per second.

Ping - Measures response time for an ICMP echo request to determine system availability over the network.

Home Page Response Time - The number of seconds required to download the server home page.

B.8 Host

Ping (ms) - The response time for an ICMP echo request to determine system availability over the network.

Ping (percent) - Measures percentage of success for several ICMP echo requests to determine system availability over the network.

Ping (sec) - Measures response time for an ICMP echo request to determine system availability over the network.

B.9 Host Resources MIB

% Disk Space Used - SNMP: Percentage of disk space used (hrStorageUsed/hrStorageSize).

% Memory Used - SNMP: Percentage of memory used (hrStorageUsed/hrStorageSize).

% Swap Space Used - SNMP: Percentage of swap space used (hrStorageUsed/hrStorageSize).

Process CPU Time - SNMP: Number of seconds of the total system's CPU resources consumed by this process per minute (hrSWRunPerfCPU).

Process Memory Used - SNMP: Kilobytes of real system memory allocated to this process (hrSWRunPerfMem).

System Processes - SNMP: The number of process contexts currently loaded or running on this system (hrSystemProcesses).

B.10 IIS Web Server

ASP Queue Length - Number of ASP requests waiting for service from the queue.

Rejected Request Rate - Number of requests rejected due to bandwidth throttling per minute.

Home Page Response Time - Seconds required to download the server home page.

B.11 Linux Virtual Agent

% Disk Space Used - How much of the file system's total capacity has been used (from df -kP).

Disk Size - The Disk Size (from df -kP).

Disk Space Available - Total amount of available disk space (from df -kP).

Disk Space in Use - Total amount of disk space in use (from df -k).

vmstat cpu(id) - CPU Idle Time - CPU Idle Time.

vmstat cpu(sy) - CPU System Time - CPU System Time.

vmstat cpu(us) - CPU User Time - CPU User Time.

vmstat memory(free) - Free Memory - Free Memory.

B.12 Memory

% Committed Bytes In Use - Percentage of available virtual memory in use. If high, may indicate low memory and slow system response.

% MDL Read Cache Hits - Percentage of memory descriptor list (MDL) read requests that hit the cache.

% Paging File In Use - Percentage of virtual memory paging file in use. If high, may indicate low memory or poor paging file configuration.

Committed Kbytes - Virtual memory kilobytes committed, i.e. really used, not just reserved. Committed memory should be less than physical RAM.

Free Kbytes - Virtual memory kilobytes available. If low, may indicate low memory and slow system response.

Page Faults Per Second - Soft and hard paging; virtual memory pages read from non-Working Set memory or from disk. Look also at Pages Per Second.

Pages Per Second - Hard paging; virtual memory pages read to/from disk per second. If high, may indicate memory shortage.

B.13 MIB-II Network Devices

icmpOutDestUnreachs Per Minute - SNMP: ICMP Destination Unreachable messages sent per minute. May indicate nonexistent address or hardware out of service.

icmpOutSrcQuenchs Per Minute - SNMP: ICMP Source Quench messages sent per minute. Indicates datagrams are arriving too quickly for the host to process.

icmpOutTimeExcds Per Minute - SNMP: ICMP Time Exceeded messages sent per minute. Indicates inability of datagrams to reach their destination.

ifInDiscards Per Minute - SNMP: Network input packets discarded per minute. Dropped packets may indicate a network hardware or congestion problem.

ifInErrors Per Minute - SNMP: Network input errors per minute. Errors may indicate a network hardware problem.

ifInNUcastPkts Per Minute - SNMP: Network non-unicast input packets per minute.

ifInOctets Per Minute - SNMP: The total number of octets received on the interface per minute, including framing characters.

ifInUcastPkts Per Minute - SNMP: Network unicast input packets per minute.

ifOutDiscards Per Minute - SNMP: Network output packets discarded per minute. Dropped packets may indicate a network hardware or congestion problem.

ifOutErrors Per Minute - SNMP: Network output errors per minute. Errors may indicate a network hardware problem.

ifOutNUcastPkts Per Minute - SNMP: Network output non-unicast packets per minute.

ifOutOctets Per Minute - SNMP: The total number of octets sent out the interface per minute, including framing characters.

ifOutUcastPkts Per Minute - SNMP: Network output unicast packets per minute.

ipInAddrErrors Per Minute - SNMP: IP input datagrams discarded per minute because their IP destination was not this machine.

ipInHdrErrors Per Minute - SNMP: IP input datagrams discarded per minute due to errors in their IP headers.

System Uptime - SNMP: The time in days since the network management portion of the system was last re-initialized (sysUpTime).

tcpOutRsts Per Minute - SNMP: TCP resets sent per minute. Resets indicate incoming connections to invalid ports were refused.

tcpOutSegs Per Minute - SNMP: TCP segments sent per minute. A measure of total TCP activity.

tcpRetransSegs Per Minute - SNMP: TCP segments retransmitted per minute. Retransmissions may indicate a network hardware problem.

B.14 Net-SNMP

% Disk Space Used - SNMP: Percentage of space used on disk (dskPercent).

% Real Memory Available - SNMP: Percentage of real/physical memory space available on the host (memAvailReal/memTotalReal).

% Swap Space Available - SNMP: Percentage of virtual memory swap space available (memAvailSwap/memTotalSwap).

1 Minute Load Average - SNMP: 1 minute load average (laLoad.1).

15 Minute Load Average - SNMP: 15 minute load average (laLoad.3).

5 Min Load Avg Flag - OK (0) or Error (1) - SNMP: Error flag set to 1 when 5 minute load average exceeds threshold defined in snmpd.conf file. Set to 0 otherwise.

5 Minute Load Average - SNMP: 5 minute load average (laLoad.2).

B.15 Netscreen Firewall

Average CPU Usage - average CPU utilization.

CPU Usage in Last 5 Minutes - The CPU utilization in the last five minutes.

Incoming Packets - The incoming packet number through an interface.

Interface Availability - Determines whether an interface is active.

Memory Allocated - The memory allocated.

Memory Available - The memory still available.

Outgoing Packets - The outgoing packet number through an interface.

B.16 Network

Packets Received Per Second - The rate at which packets are received on the network interface.

Packets Sent Per Second - The rate at which packets are sent out on the network interface.

B.17 Oracle Database

Average active session - The average active sessions at a point in time. It is the number of sessions that are either working or waiting. It is the average session load in seconds per second.

Average active sessions on CPU - The average active sessions on at a point in time. It is the number of sessions that are using CPU.

CPU parse time usage - Used to identify how much time is spent parsing by the CPU. It is the Total CPU time used for parsing (hard and soft) in 10s of milliseconds. See the Oracle Database *Performance Tuning Guide* for additional information about 'parse time cpu'.

CPU recursive usage - Used to identify the total CPU time used by non-user calls (recursive calls). See the Statistics Descriptions in the Oracle Database *Reference* for additional information.

Physical IO per second - Rate of read/write requests on database blocks for all instance activity including application, backup and recovery, and other utilities.

Physical IO requests total - Number of write requests which wrote one or more database blocks from all instance activity including application activity, backup and recovery, and other utilities.

PGA (MB) - The Program Global Area (PGA) is a memory region containing data and control information for a single process (server or background). One PGA is allocated for each server process; the PGA is exclusive to that server process and is read and written only by Oracle code acting on behalf of that process. A PGA is allocated by Oracle when a user connects to an Oracle database and a session is created.

SGA (MB) - The System Global Area (SGA) is an area where data and program caches are shared among database users. It is made up of the database buffer cache, shared pool, and redo log buffer.

Total Global Area - The total of PGA(MB and SGA(MB).

User calls per second - The number of logins, parses, or execute calls per second.

User login rates per second - The number of user logins taking place in one second.

User Transaction Commit Rate - The number of database transactions per second. When a user commits a transaction, the redo generated that reflects the changes made to database blocks must be written to disk. Commits often represent the closest thing to a user transaction rate.

B.18 Solaris Virtual Agent

% Disk Space Used - How much of the file system's total capacity has been used (from df -k)

Disk Size - The Disk Size (from df -k).

Disk Space Available - Total amount of available disk space (from df -k).

Disk Space in Use - Total amount of disk space in use (from df -k).

vmstat cpu(id) - CPU Idle Time - CPU Idle Time.

vmstat cpu(sy) - CPU System Time - CPU System Time.

vmstat cpu(us) - CPU User Time - CPU User Time.

vmstat memory(free) - Free Memory - Free Memory.

B.19 Solaris (multi-CPU)

vmstat cpu(id) - CPU Idle Time - CPU Idle Time.

vmstat cpu(sy) - CPU System Time - CPU System Time.

vmstat cpu(us) - CPU User Time - CPU User Time.

B.20 SQL Server Databases

% Log Space Used - Percentage of transaction log space used. If the log becomes full, database transactions and recovery may fail.

Availability - Measures response time for a simple database query to verify SQL Server availability.

Average Latch Wait Time - Average time a SQL Server thread has to wait for a latch. If high, may indicate contention problem and slow response.

Average Lock Wait Time - Average time a SQL Server thread has to wait for a lock. If high, may indicate contention problem and slow response.

Batch Requests Rate - The number of SQL batch requests on the server.

Buffer cache hit ratio - Percentage of requests that hit the buffer cache. If low, may indicate poor database tuning and slow response.

Cache Hit Ratio (Ad Hoc Plans) - Percentage of ad hoc plans that hit the cache. If low, may indicate poor database tuning and slow response.

Cache Hit Ratio (Prepared Plans) - Percentage of prepared plans that hit the cache. If low, may indicate poor database tuning and slow response.

Checkpoint Pages Per Second - The number of pages flushed by Checkpoint or other operations that require all dirty pages to be flushed.

Data File Size - The cumulative size of all the files in the database.

Log File Size - The cumulative size of all the log files in the database.

Log Flushes per Second - The number of log flushes.

Number of Lock Blocks - The current number of lock blocks that are in use on the server.

Page Reads per Second - The number of database page reads issued.

Page Writes per Second - The number of database page writes issued.

Pages Read Ahead per Second - The number of pages read ahead in anticipation of its use.

Procedure Plans Cache Hit Ratio - The ratio between cache hits and lookups for procedure plans.

SQL Compilations per Second - The number of SQL compilations.

SQL Re-compilations per Second - The number of SQL re-compiles.

Total Server Memory - The total amount of dynamic memory the server is using for the dynamic SQL cache.

Transaction Rate - Number of database transactions per second. A measure of total database activity.

User Connections - Number of user connections.

B.21 WebLogic

Server Heap Utilization - SNMP: Percentage of heap used (serverHeapUsedPct).

Server Queue - SNMP: Current length of the execute queue (serverQueueLength).

Server State (1=Up, 2=Down) - SNMP: State of the WebLogic server (serverState).
1=up, 2=down.

Server Throughput - SNMP: Throughput of the execute queue in requests per second (serverQueueThroughput).

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