



An Oracle White Paper
October 2011

Oracle Enterprise Manager 12c Grid Control Integration Guide

OEG Gateway 11.1.1.6.0
Software

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1. Introduction

This guide describes how to monitor the Gateway using the Oracle Enterprise Manager (OEM) Grid Control. The Gateway is bundled with an OEM plugin that polls a Gateway for its status and renders the result in OEM. This plugin has been tested and confirmed to work with OEM 12g BETA.

This guide describes the following:

1. The Gateway's OEM plugin is uploaded, and deployed into OEM.
2. The following Gateway status is displayed in OEM:
 - Gateway uptime, memory, and CPU usage
 - Web Service usage
 - Client usage (when the client is an authenticated subject)

You can register multiple Gateways to be monitored in OEM.

Setup Used in this Guide

The following product versions are used in this guide:

- OEG Gateway 11.1.1.6.0 or higher
- Oracle Enterprise Manager 12g BETA

2. Adding the Gateway OEM Plugin to OEM

This section explains how to add the Gateway metrics plugin to your OEM installation. The Gateway OEM plugin is supplied with the Gateway installation in the following location:

```
<GATEWAY_INSTALL_PATH>/system/conf/oracle-em/  
gateway-oracle-em-plugin.jar
```

Prerequisite before Adding the Plugin

Before adding the plugin, you must make sure that your OEM Software Library is configured. If you have not already configured the Software Library, perform the following steps:

1. Create a directory on the host running OEM.
2. Select **Setup** → **Provisioning and Patching** → **Software Library**.
3. Add a new **OMS Shared Filesystem**, and specify the newly created directory.

Add the Plugin

To add the plugin to OEM, perform the following steps:

1. Log into the server where OEM is installed using SSH.
2. Copy the `12.1.0.1.1_vordel.gateway.mtrc_2000_0.opar` file to the `/tmp` folder on the same server.
3. Enter the `emcli login` command:

```
<OEM_HOME>/oms/bin/emcli login -username=sysman  
-password=<password>
```
4. Enter the `emcli import_update` command:

```
<OEM_HOME>/oms/bin/emcli import_update  
-file=/tmp/12.1.0.1.1_vordel.gateway.mtrc_2000_0.opar -omslocal
```
5. The command should complete with the following diagnostic message:

```
Processing update: Plugin - Oracle Enterprise Manager Plugin to  
define target type Gateway Metrics Service
```

```
Operation completed successfully. Update has been uploaded to  
Enterprise Manager. Please use the Self Update Home to manage this  
update.
```

Deploy the Plugin to the Management Server and Agent

Perform the following steps:

1. Go to the OEM web interface at:

`https://<OEM_HOST>:<OEM_PORT>/em`

2. Log in.
3. Click the **Setup** menu at the top, and choose **Extensibility** → **Plugins**.
4. Locate **Gateway Metrics Plugin** in the table, and select it.
5. Deploy the plugin on the Management Server by clicking **Deploy On** → **Management Servers** in the table header.
6. Follow the steps in the wizard. In one of the steps, you must enter the password of the `sys` user of the database that you used to setup OEM.
7. Deploy the plugin on the Agent by clicking **Deploy On** → **Management Agent**, and follow the steps in the wizard. When the deployment process is complete, you have successfully deployed the Gateway Metrics Plugin to OEM.

Select the Target Configuration

Perform the following steps:

1. When the plugin has been deployed to the agent, you must add it as a target. Click the **Targets** tab at the top of the page.
2. Click **Add target** → **Add Targets Manually**.
3. On the new page, select **Add Non-Host Targets by Specifying Target Monitoring Properties**.
4. Select `Gateway Metrics Service` from the **Target Type** drop-down list.
5. Select the Monitoring Agent where you want to create the target by clicking the magnifying glass icon.
6. Click the **Add Manually** button, and the **Add Gateway Metrics Service** screen is displayed enabling you to configure the plugin.

Configure the Plugin to Connect to the Gateway

The plugin must now be configured to connect to the Gateway. Perform the following steps:

1. Enter a Target Name.
2. Enter the connection details of the Gateway. Screenshot 1 shows an example screen:

Add Gateway Metrics Service

Add a target to be monitored by Enterprise Manager by specifying target monitoring properties.

Target Name

Target Type Gateway Metrics Service

Agent `https://oracle-em11g.qa.vordel.com:3872/emd/main/`

Port

Username

Password

Hostname

Screenshot 1: Gateway Target Configuration in OEM

Table 1 describes each target configuration setting:

| Entry | Description |
|----------|--|
| Hostname | IP address or fully qualified domain name of the host on which the Gateway is running. |
| Port | The port number of the management interface of the Gateway. In a default installation, this is 8090. |
| Username | The administrator of the Gateway's user name. In a default installation, this is <code>admin</code> . |
| Password | The password corresponding to the username. In a default installation, this is <code>changeme</code> . |

Table 1: Target Configuration Settings

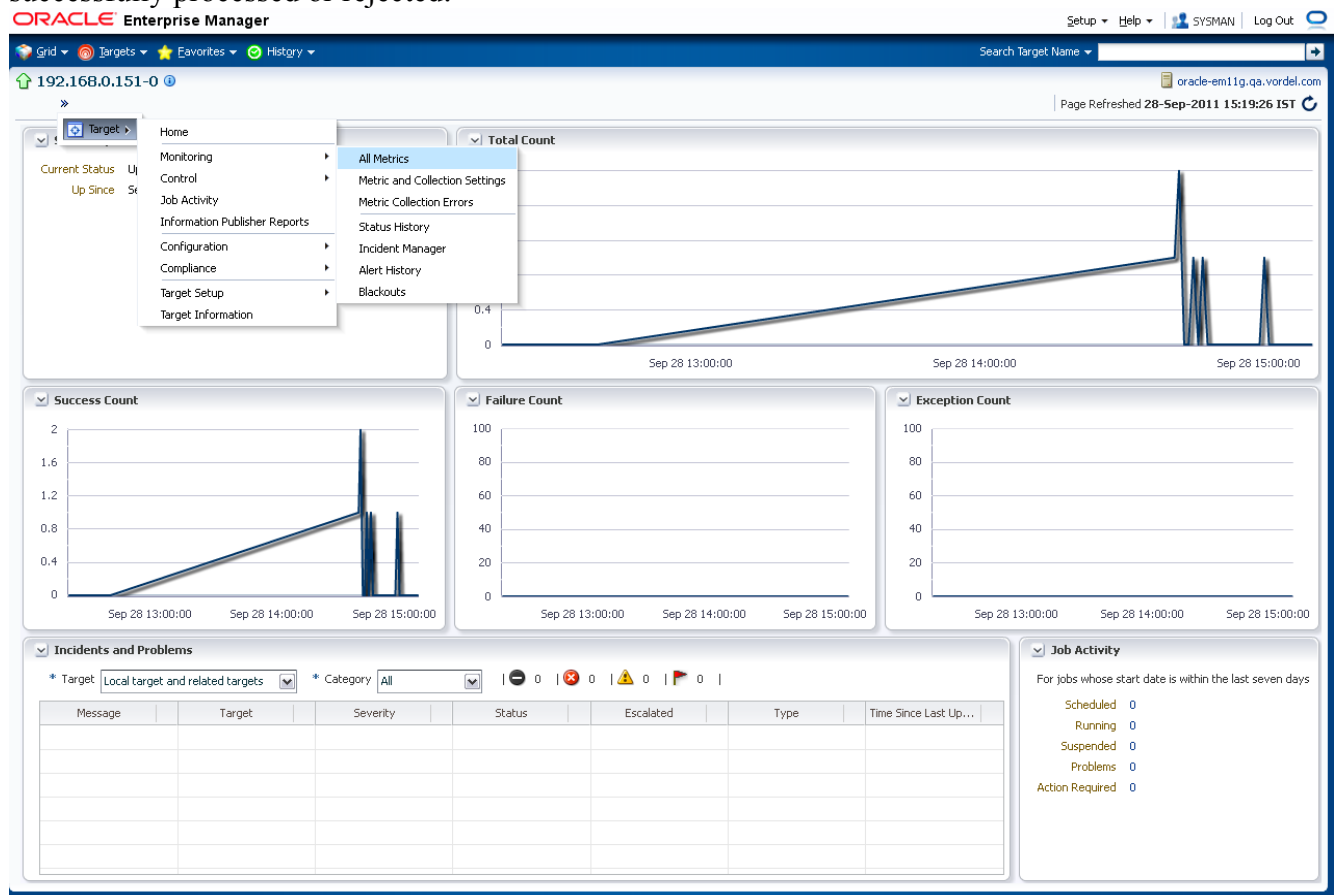
3. You can repeat this process if multiple targets need to be monitored. Repeat the steps in Section 2.3, Select the Target Configuration, and configure the plugin as described.
4. Click **OK** when the configuration is complete.
5. At this point, the Gateway target should be listed in OEM. Click the Gateway target to view the status gathered by OEM.

3. Examples of Monitoring a Gateway in OEM

This section shows some example screenshots of monitoring a Gateway in OEM 12g BETA.

Gateway Home Page

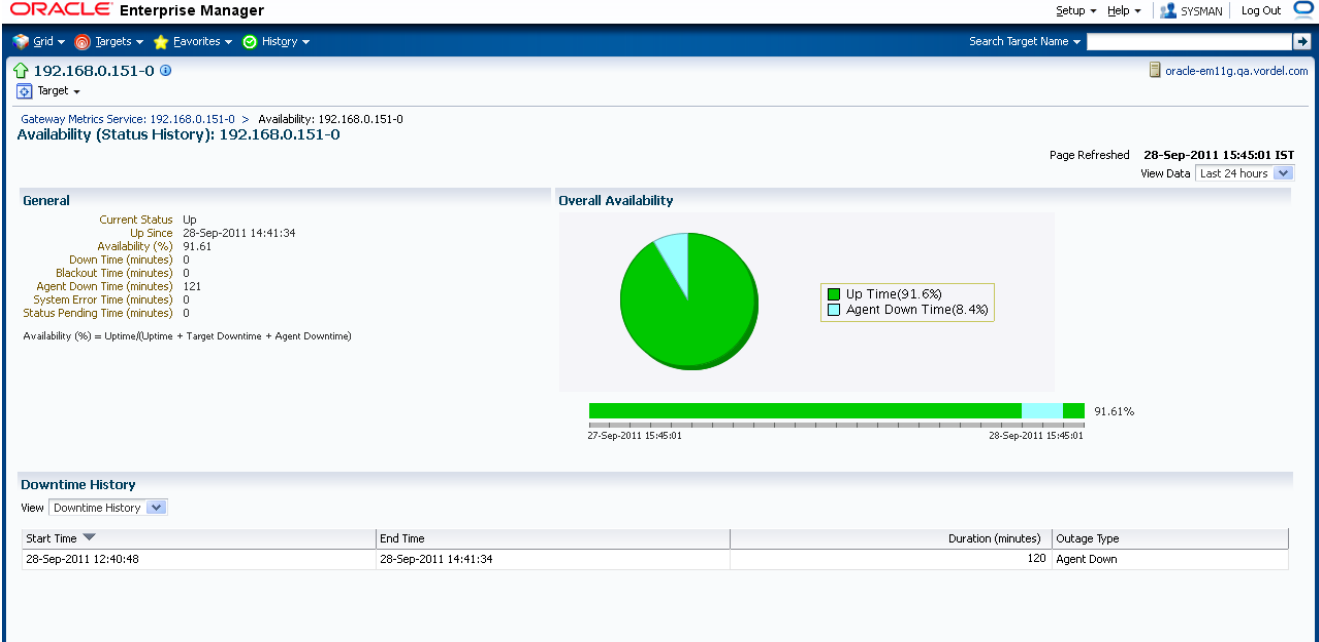
The home page of the monitored Gateway is displayed in Screenshot 2. This page shows the uptime of the Gateway and the number of messages that have been successfully processed or rejected:



Screenshot 2: Gateway Home Page in OEM

Availability

From the home page clicking **Target** → **Monitoring** → **Status History** displays the availability percentage count each time the Gateway is polled by the plugin.



Screenshot 3: Gateway Availability Chart

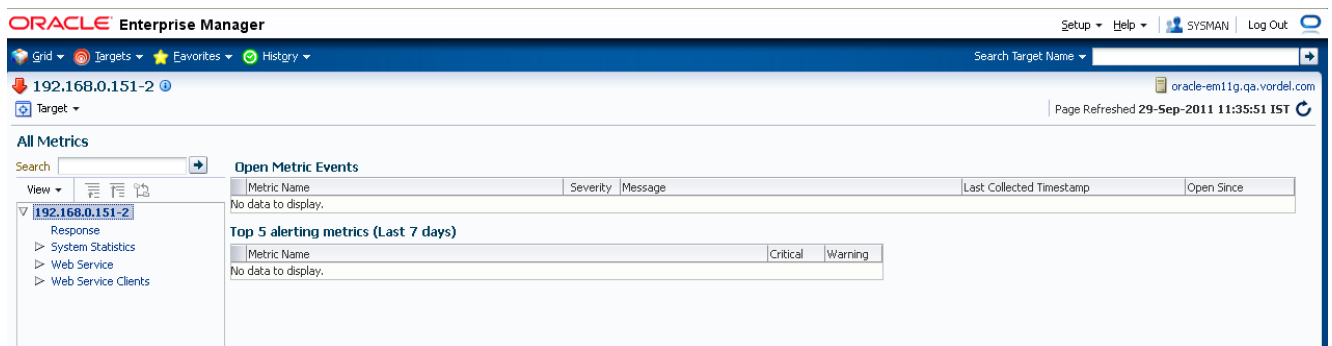
4. Viewing the Metrics Collected

To view the metrics collected from the Gateway, click **Target** → **Monitoring** → **All Metrics** at the top of the page.

The following data is monitored for the Gateway:

- **Response**—availability of the Gateway
- **System Statistics**—CPU usage, uptime, memory, and message counts
- **Web Service**—Usage per web service
- **Web Service Clients**—Client usage per web service

Screenshot 4 shows the summary of the metrics collected:



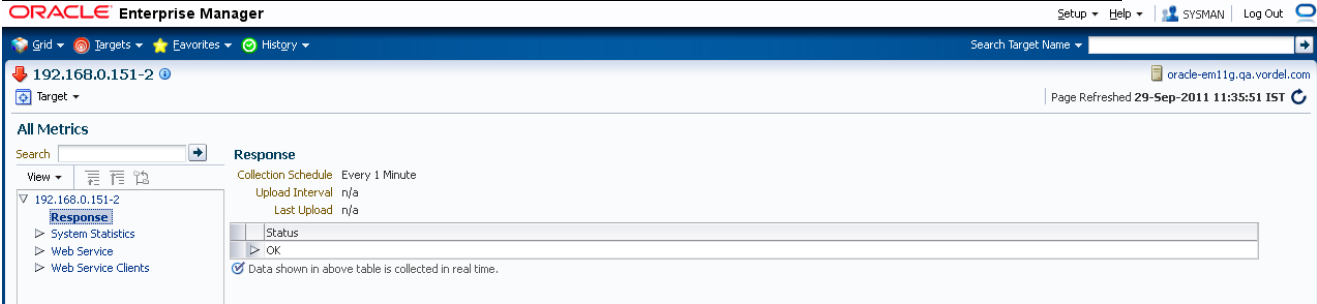
Screenshot 4: All Metrics Collected

Response

The **Response** can be successful or not. The plugin polls the Gateway service to check its availability at each collection point. A chart is available from the home page to show the current and historical availability of the Gateway.

| Name | Description |
|----------|--|
| Response | The availability of the Gateway is either true or false. |

Table 2: Response Metric



Screenshot 5: Response Metric Displayed

System Statistics

Clicking **System Statistics** displays the general metrics for the Gateway. For each target, there is a count maintained of Total, Successes, Failures and Exceptions.

| Name | Description |
|-----------------|---|
| CPU Usage | CPU usage of the Gateway system |
| Exception Count | Count of Exception messages |
| Failure Count | Count of Failure messages |
| Memory Free | Amount of free memory on the Gateway system |
| Success Count | Count of Successful messages |
| Total Count | Count of All messages processed through the Gateway |
| Uptime | Uptime of the Gateway process |

Table 3: System Statistics Metrics

The screenshot displays the Oracle Enterprise Manager interface for a target named '192.168.0.151-0'. The 'System Statistics' section is active, showing a table of metrics. The table has three columns: 'Metric', 'Thresholds', and 'Real Time Value'. The metrics and their values are as follows:

| Metric | Thresholds | Real Time Value |
|-----------------|----------------|-----------------|
| Cpu Used | Not Applicable | 30 |
| Exception Count | Not Applicable | 0 |
| Failure Count | Not Applicable | 0 |
| Memory Free | Not Applicable | 900516 |
| Success Count | Not Applicable | 0 |
| Total Count | Not Applicable | 0 |
| Uptime | Not Applicable | 89445 |

Additional information shown in the interface includes: Collection Schedule: Every 1 Minute; Upload Interval: Every Collection; Last Upload: 28-Sep-2011 15:41:11 IST. A note at the bottom states: 'Data shown in above table is collected in real time.'

Screenshot 6: System Statistics Metrics Displayed

Message Counters

The message counters are described as follows:

- A *Success Count* is where a filter in a policy processes a message and informs the Gateway to proceed filtering the message along the default route in the circuit.
- A *Failure Count* is where the filter decides to inform the Gateway to route the message along the alternative route (failure path).

- An *Exception Count*– if a filter aborts, the exception count increases. A filter aborts if it hits an abnormality in its processing (for example, if an LDAP directory is down).
- The *Total Count* is the combination of success, failures, and exceptions.

Web Service

Clicking **Web Service** displays a list of web service processes in the Gateway. For each web service listed, the associated metrics are displayed in the same row. Clicking the number in a particular column displays a graph of historical data for that metric and service.

| Name | Description |
|-----------------|--|
| Exception Count | Count of Exception messages |
| Failure Count | Count of Failure messages |
| Success Count | Count of Successful messages |
| Total Count | Totals of the Exception, Failure, and Success Counts |

Table 4: Web Service Metrics

The screenshot shows the Oracle Enterprise Manager interface for target 192.168.0.151-0. The 'Web Service' section is active, showing a table of metrics. The table has columns for 'Web Service', 'Exception Count', 'Failure Count', 'Success Count', and 'Total Count'. The data is as follows:

| Web Service | Exception Count | Failure Count | Success Count | Total Count |
|----------------|-----------------|---------------|---------------|-------------|
| > Info | 0 | 0 | 0 | 0 |
| > USZip | 0 | 0 | 0 | 0 |
| > GeoIPService | 0 | 0 | 0 | 0 |

Additional details from the screenshot include: Collection Schedule: Every 1 Minute; Upload Interval: Every Collection; Last Upload: 28-Sep-2011 16:11:35 IST. A note indicates that data shown in the table is collected in real time.

Screenshot 7: Web Service Metrics Displayed

Web Service Client

Statistics for authenticated clients that connect to a Web Service are stored in the **Web Service Clients** metrics. Clicking the number in a particular column displays a graph of data for that metric with the Client Web Service usage. The names are delimited by a hyphen (-), the first part is the Web Service name, and the second part is the authenticated client's subject name.

| Name | Description |
|-----------------|---|
| Exception Count | Count of Exception messages |
| Failure Count | Count of Failure messages |
| Success Count | Count of Successful messages |
| Total Count | Totals of the Exception, Failure and Success Counts |

Table 5: Web Service Clients Metrics

Click the **Web Service Clients** link to view summary statistics for the last collection period:

The screenshot shows the Oracle Enterprise Manager interface. The main content area displays the 'Web Service Clients' metrics summary for the target 192.168.0.151-0. The summary includes the following information:

- Collection Schedule: Every 1 Minute
- Upload Interval: Every Collection
- Last Upload: 28-Sep-2011 16:10:44 IST

| Client | Exception Count | Failure Count | Success Count | Total Count |
|---------------------------|-----------------|---------------|---------------|-------------|
| > GeoIPService - client-0 | 0 | 0 | 0 | 0 |
| > Info - client-49 | 0 | 0 | 0 | 0 |
| > Info - client-151 | 0 | 0 | 0 | 0 |
| > USZip - client-49 | 0 | 0 | 0 | 0 |
| > GeoIPService - client-0 | 0 | 0 | 0 | 0 |
| > USZip - client-151 | 0 | 0 | 0 | 0 |
| > Info - client99 | 0 | 0 | 0 | 0 |

Data shown in above table is collected in real time.

Screenshot 8: Web Service Clients Metrics Summary

Appendix A. Format of Gateway Metric Data

A request to the OEG Gateway on the URL <http://localhost:8090/metrics> retrieves XML content that describes the metric targets present in the service at the time of the request. The following XML fragment is a sample of this metric data:

```
<data>
<system uptime="337795" cpuUsed="4" memoryFree="1633676" numMessagesProcessed="38753" monitoringEnabled="true" messageMonitoringEnabled="false" metricsStoringEnabled="true" metricsStoreError="0" metricsStoreFatalError="0" serverTitle="VordelGateway" serverHost="Colmmonk-laptop" processSignature="Colmmonk-laptop:VordelGateway"/>
<statTarget target="System overview" type="StatTarget" id="1" uptime="337802" successes="34141" failures="4562" exceptions="50" numClients="6" numAlerts="0" numSLABreaches="0"/>
<statTargetClass target="Remote hosts" type="Container" id="2" classId="2" uptime="0">
<statTarget target="www.webservicesmart.com:80" type="StatTarget" id="6" uptime="337799" numInConnections="0" numOutConnections="0" numTransactions="0" volumeBytesIn="0" volumeBytesOut="0" respStatRange1="0" respStatRange2="0" respStatRange3="0" respStatRange4="0" respStatRange5="0" respTimeRange1="0" respTimeRange2="0" respTimeRange3="0" respTimeRange4="0" respTimeRange5="0" respTimeRange6="0" respTimeRange7="0" respTimeRange8="0" respTimeRange9="0" respTimeRange10="0" numReportedDowns="0" numReportedUps="0"/>
<statTarget target="footballpool.dataaccess.eu:80" type="StatTarget" id="7" uptime="337799" numInConnections="0" numOutConnections="0" numTransactions="29616" volumeBytesIn="737593366" volumeBytesOut="16619543" respStatRange1="0" respStatRange2="29616" respStatRange3="0" respStatRange4="0" respStatRange5="0" respTimeRange1="44" respTimeRange2="1071" respTimeRange3="3222" respTimeRange4="522" respTimeRange5="5" respTimeRange6="1" respTimeRange7="2" respTimeRange8="0" respTimeRange9="0" respTimeRange10="24749" numReportedDowns="0" numReportedUps="0"/>
<statTarget target="www.restfulwebservices.net:80" type="StatTarget" id="8" uptime="337799" numInConnections="0" numOutConnections="0" numTransactions="0" volumeBytesIn="0" volumeBytesOut="0" respStatRange1="0" respStatRange2="0" respStatRange3="0" respStatRange4="0" respStatRange5="0" respTimeRange1="0" respTimeRange2="0" respTimeRange3="0" respTimeRange4="0" respTimeRange5="0" respTimeRange6="0" respTimeRange7="0" respTimeRange8="0" respTimeRange9="0" respTimeRange10="0" numReportedDowns="0" numReportedUps="0"/>
</statTargetClass>
<statTargetClass target="Messaging system" type="Container" id="3" classId="6" uptime="0"/>
<statTargetClass target="Web Service Statistics Container" type="Container" id="4" classId="10" uptime="0">
<statTarget target="Info" type="StatTarget" id="41" uptime="274351" numMessages="15979" successes="14794" failures="1141" exceptions="44">
<statTarget target="client-151" type="StatTarget" id="42" uptime="274351" numMessages="7934" successes="7347" failures="566" exceptions="21"/>
<statTarget target="client99" type="StatTarget" id="43" uptime="274349" numMessages="7935" successes="7345" failures="567" exceptions="23"/>
<statTarget target="client-49" type="StatTarget" id="48" uptime="272224" numMessages="110" successes="102" failures="8" exceptions="0"/>
</statTarget>
<statTarget target="GeoIPService" type="StatTarget" id="44" uptime="274308" numMessages="573" successes="0" failures="573" exceptions="0">
<statTarget target="client-151" type="StatTarget" id="45" uptime="274308" numMessages="566" successes="0" failures="566" exceptions="0"/>
<statTarget target="client-49" type="StatTarget" id="49" uptime="272128" numMessages="7" successes="0" failures="7" exceptions="0"/>
</statTarget>
<statTarget target="USZip" type="StatTarget" id="46" uptime="274307" numMessages="573" successes="0" failures="573" exceptions="0">
<statTarget target="client-151" type="StatTarget" id="47" uptime="274307" numMessages="566" successes="0" failures="566" exceptions="0"/>
<statTarget target="client-49" type="StatTarget" id="50" uptime="272123" numMessages="7" successes="0" failures="7" exceptions="0"/>
</statTarget>
</statTargetClass>
<statTargetClass target="Client Statistics Container" type="Container" id="5" classId="12" uptime="0"/>
```

```
<statTarget target="AccumulativeWebServiceCount" type="StatTarget" id="39" uptime="274351" numMessages="17125"/>
<statTarget target="AccumulativeClientsCount" type="StatTarget" id="40" uptime="274351" numMessages="0"/>
<sttvc>20-50</sttvc>
</data>
```

Each `statTarget` element represents a potential source of metric data. The `id` attribute associated with this element identifies the target so that metrics associated with that particular target can be retrieved.

To retrieve metrics for a particular target of interest, append a query string that specifies the target to the URL. For example,

<http://localhost:8090/metrics?target=7> retrieves metric data for the metric target associated with the `statTarget` for which the `id` attribute value is 7.

The following XML sample demonstrates the format of the data returned. This data is inserted near the end of the original XML reply. The `stat` element is repeated a number of times for sequential timestamps.

```
<total time="1143" successes="0" failures="0" exceptions="0" />
<stat twl="5" timestamp="1231431545" successes="0" failures="0" exceptions="0" />
```

The `total` element provides metric data for the target from the time that it was instantiated. The `time` attribute specifies the time in seconds since the target was created.



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May 2011
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