

Oracle® Enterprise Manager

System Monitoring Plug-in Installation Guide for Apache Tomcat

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This document is the installation guide for the System Monitoring Plug-In for Non-Oracle Middleware for Apache Tomcat. You can find the following information in this document:

- A brief description of the System Monitoring Plug-In for Non-Oracle Middleware for Apache Tomcat
- Apache Tomcat versions and Enterprise Manager versions that the plug-in supports
- Prerequisites for installing the plug-in
- Step-by-step instructions to download, install, upgrade, and undeploy the plug-in
- Instructions to add Apache Tomcat application servers for monitoring

Description

Apache Tomcat is an open source application server that implements the Java Servlet and Java Server Pages (JSP) specifications, providing an environment for Java code to run in. The System Monitoring Plug-In for Non-Oracle Middleware for Apache Tomcat extends Oracle Enterprise Manager Cloud Control 12c to add support for managing it.

Management Features

By deploying the plug-in within your Cloud Control environment, you can use management features, such as availability and performance metrics, reports, and alerts.

Metrics

Metrics are units of measurement used to determine the health of a target. To find a complete list of all the metrics for a target, click **All Metrics** in the *Related Links* section of the target home page. From the All Metrics page, you can view all the metric categories for the target and then drill down to any particular metric for additional information.

After adding the target to Enterprise Manager, you can then customize the monitoring configuration of the target; for instance, you can modify metric threshold values, change metric collection schedules, and disable collection for some metrics.

Reports

Several predefined, performance-based reports are provided for Apache Tomcat. Such reports include:

- Apache Tomcat Load - Charts of total load on all global request processors
- All Applications Load - Applications load charts at server level
- Apache Tomcat Thread Pools - Thread pools active threads and total thread charts
- Datasources - Datasources active connections and idle connections charts
- Global Request Processors Load And Performance - Global request processor load and performance charts
- Memory Utilization - Resource utilization charts
- Top 10 Applications Based On Total Sessions - Top 10 applications based on sessions created during the last 24 hours
- Top 10 Servlets Based On Total Requests - Top 10 servlets by number of requests on each servlet during the last 24 hours

Additionally, custom reports can also be generated based on data stored in the Management Repository.

Alerts

You can configure Enterprise Manager to send alerts notifying you of problems with the target. To receive alerts on the console, specify warning and/or critical threshold levels for those metrics of importance to you.

To edit a threshold:

1. Choose **Metric and Policy Settings** on any target home page.
2. From the Metric Thresholds page, you can either modify warning and/or critical thresholds directly from the table.

Alternatively, click the **Edit** icon (pencil) to access the Edit Advanced Settings page.

An alert is triggered when one of the following conditions is true:

- A metric threshold is reached
- The availability of a monitored service changes
- A metric-specific condition occurs

Versions Supported

This plug-in supports the following versions of products:

- Enterprise Manager Cloud Control 12c Release 1 or higher (*Oracle Management Service and Oracle Management Agent*)
- Apache Tomcat 7.x and earlier.

Prerequisites

The following prerequisites must be met before you can deploy the plug-in:

- Apache Tomcat is installed.
- Apache Tomcat is running on JDK 1.5. Therefore, remote JMX monitoring must be enabled when you start Apache Tomcat.

You can enable JMX by adding `-Dcom.sun.management.jmxremote.port` to the following startup scripts:

For UNIX and Linux:

```
catalina.sh
```

For Microsoft Windows:

```
catalina.bat
```

For more information about remote monitoring and management, refer to the following link:

<http://download.oracle.com/javase/1.5.0/docs/guide/management/agent.html>

- The following are installed:

Enterprise Manager Cloud Control 12c Release 1 or higher (Oracle Management Service and Oracle Management Agent) is installed.

You can install the Management Agent on the same computer as Apache Tomcat (referred to as local Agent monitoring) or on a different computer (referred to as remote Agent monitoring). The way you configure the local or remote Management Agent is the same.

If you are using a remote Management Agent, then ensure that the Management Agent has access to the computer on which Apache Tomcat instance is running and the JMX port on which it is listening.

- For monitoring an Apache Tomcat target, do not use a Management Agent that is already monitoring one of the following:
 - Oracle WebLogic Managed Server
 - IBM WebSphere Application Server
 - JBoss Application Server

This is because different target types use different JMX versions, which could lead to metric collection errors for Apache Tomcat.

The following is an example of such a metric collection error for Apache Tomcat:

```
oracle.sysman.emSDK.emd.fetchlet.FetchletException:
oracle.sysman.emSDK.emd.fetchlet.FetchletException:
java.lang.SecurityException: sealing violation: package javax.management is
sealed
```

Deploying the Plug-in

See the *Plug-in Manager* chapter in the *Oracle Enterprise Manager Cloud Control Administrator's Guide* for steps to deploy the plug-in:

http://docs.oracle.com/cd/E24628_01/doc.121/e24473/plugin_mgr.htm

Adding Instances for Monitoring

After successfully deploying the plug-in, follow these steps to add the plug-in target to Cloud Control for central monitoring and management:

1. Log in to Enterprise Manager Cloud Control.
2. Click **Setup**, then **Add Targets**, and finally **Add Targets Manually**.
3. Select **Add Non-Host Targets by Specifying Target Monitoring Properties**. From the Target Type drop-down, select the **Apache Tomcat** target type. Click **Add Manually**.
4. On the Add Apache Tomcat page, provide the following information for the properties:
 - **Host** — Host of the Apache Tomcat instance. This property is always required.
 - **JMX Port Number** — Remote JMX port. This property is always required.
 - **JMX User Name** — Required when authentication is enabled for JMX.
 - **JMX Password** — Required when authentication is enabled for JMX.
 - **Communication Protocol** — Communication protocol used by remote JMX client. Do not change the default value specified unless the remote JMX implementation has changed.
 - **Service Name** — JMX service name. Do not change the default value specified unless the remote JMX implementation has changed.
 - **SSL Trust Store** — Required when SSL is enabled for Apache Tomcat.
 - **SSL Trust Store JMX Password** — Required when SSL is enabled for Apache Tomcat.
 - **Apache Tomcat Version** — Version of Apache Tomcat (for example, 7.0, 6.0, 5.5.23, etc.). This property is always required and is used to determine the specific performance metrics to be monitored and/or collected.

Note: You must not change the default values of Communication Protocol and Service Name unless the remote JMX implementation has changed.

After deploying and configuring the plug-in to monitor one or more targets in the environment, you can customize the monitoring settings of the plug-in. This alters the collection intervals and threshold settings of the metrics to meet specific needs of your environment. If you decide to disable one or more metric collections, this could impact the reports that the metric is a part of.

Verifying and Validating the Plug-in

After waiting for a few minutes for the plug-in to start collecting data, use the following steps to verify and validate that Cloud Control is properly monitoring the plug-in target:

1. On the Agent home page, from the **Monitored Targets** table, click the Apache Tomcat target link.

The Apache Tomcat home page appears.

2. Verify that no metric collection errors are reported in the Alerts section.
3. Ensure that reports can be seen and no errors are reported by selecting the **Reports** property page.

Undeploying the Plug-in

To undeploy the Apache Tomcat plug-in:

1. Log in to Enterprise Manager Cloud Control.
2. Click **Setup**, then **Extensibility**, and finally **Plug-ins**.
3. Select the Apache Tomcat Plug-in target and click **Undeploy From**. Select either **Management Servers** or **Management Agent**.
4. Confirm the plug-in removal. Enterprise Manager notifies the connected and relevant Enterprise Manager users and begins the de-configuration process.

For more information about plug-ins, see the *Plug-in Manager* chapter in the *Oracle Enterprise Manager Cloud Control Administrator's Guide*:

http://docs.oracle.com/cd/E24628_01/doc.121/e24473/plugin_mgr.htm

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