Oracle® Enterprise Manager

System Monitoring Plug-in Installation Guide for Apache Tomcat

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Oracle Enterprise Manager System Monitoring Plug-in Installation Guide for Apache Tomcat, 13c Release 4

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Preface

This document provides installation instructions and configuration information for the Non-Oracle Middleware plug-in for Apache Tomcat.

Audience

This document is intended systems and database administrators tasked with monitoring Apache Tomcat through Enterprise Manager Cloud Control.

Documentation Accessibility

For information about Oracle's commitment to accessibility, visit the Oracle Accessibility Program website at `http://www.oracle.com/pls/topic/lookup?ctx=acc&id=docacc`.

Access to Oracle Support

Oracle customers that have purchased support have access to electronic support through My Oracle Support. For information, visit `http://www.oracle.com/pls/topic/lookup?ctx=acc&id=info` or visit `http://www.oracle.com/pls/topic/lookup?ctx=acc&id=trs` if you are hearing impaired.

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.
italic	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.

What's Changed

This table provides a brief overview of the document changes for the latest publication of the *Oracle Enterprise Manager System Monitoring Plug-in Installation Guide for Apache Tomcat*:

Part Number	Change Summary
E73485-01	Updated for Enterprise Manager Cloud Control 13*c* Release 13.2.1.0.

1

Apache Tomcat Plug-in Overview and Prerequisites

This chapter provides an overview description of the Oracle system monitoring plug-in for Apache Tomcat and summarizes the prerequisites required before configuration. The following topics are provided:

- About Apache Tomcat
- Supported Versions
- Apache Tomcat Plug-in Prerequisites
- Downloading the Apache Tomcat Plug-in
- Deploying the Plug-in
- Upgrading the Plug-in
- Undeploying the Plug-in

About Apache Tomcat

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 Non-Oracle Middleware plug-in for Apache Tomcat extends Oracle Enterprise Manager Cloud Control 13*c* to add support for managing it.

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

Supported Versions

This plug-in supports the following versions of products:

- Enterprise Manager Cloud Control 13*c* and higher (Oracle Management Service and Oracle Management Agent).
- Apache Tomcat 8.x and later.
- Apache Tomcat 7.x and earlier.

Apache Tomcat Plug-in Prerequisites

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

1. Apache Tomcat is installed.
2. 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:

https://docs.oracle.com/javase/8/docs/technotes/guides/management/index.html

3. Enterprise Manager Cloud Control 13*c* Release 13.1.0.1.0 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.

4. 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
```

Downloading the Apache Tomcat Plug-in

You can download plug-ins in online or offline mode. *Online mode* refers to an environment where you have Internet connectivity, and can download the plug-in directly through Enterprise Manager from My Oracle Support. *Offline mode* refers to an environment where you do not have Internet connectivity, or where the plug-in is not available from My Oracle Support.

See the *Managing Plug-ins* chapter in the *Oracle Enterprise Manager Cloud Control Administrator's Guide* for details on downloading the plug-in in either mode.

Deploying the Plug-in

You can deploy the plug-in to an Oracle Management Service instance using the Enterprise Manager Cloud Control console, or using the EM Command Line Interface (EMCLI). While the console enables you to deploy one plug-in at a time, the command line interface mode enables you to deploy multiple plug-ins at a time, thus saving plug-in deployment time and downtime, if applicable.

See the *Managing Plug-ins* chapter in the *Oracle Enterprise Manager Cloud Control Administrator's Guide* for instructions on deploying the plug-in:

Upgrading the Plug-in

The Self Update feature allows you to expand Enterprise Manager's capabilities by updating Enterprise Manager components whenever new or updated features become available. Updated plug-ins are made available via the Enterprise Manager Store, an external site that is periodically checked by Enterprise Manager Cloud Control to obtain information about updates ready for download. See the *Updating Cloud Control* chapter in the *Oracle Enterprise Manager Cloud Control Administrator's Guide* for steps to update the plug-in.

Undeploying the Plug-in

See the *Managing Plug-ins* chapter in the *Oracle Enterprise Manager Cloud Control Administrator's Guide* for steps to undeploy the plug-in.

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Discovering Apache Tomcat Target

This chapter describes how to discover your Apache Tomcat target with Enterprise Manager Cloud Control.
The following topics are provided:

- Discovering Apache Tomcat Targets
- Verifying and Validating the Plug-in

Discovering Apache Tomcat Targets

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.

3
Metrics, Reports, and Alerts Provided

This chapter provides a summary and description of the metrics, reports, and alerts provided by the system monitoring plug-in for Apache Tomcat through Enterprise Manager Cloud Control.

The following topics are provided:

- Metrics Collected
- Reports
- Alerts

Metrics Collected

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 an alert 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.

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