

# **Oracle® Tuxedo Systems and Application Monitor (TSAM)**

Deployment Guide

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**ORACLE®**

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# ORACLE TSAM Deployment Guide

This topic contains the following sections:

- [Deploying Oracle TSAM Agent](#)
- [Deploying Oracle TSAM Manager](#)

## Deploying Oracle TSAM Agent

The Local Monitor Server (LMS) is a Tuxedo system server provided by the Oracle TSAM Agent.

To properly deploy the Oracle TSAM Agent, you must add the LMS to each Tuxedo machine section of the UBBCONFIG file. [Listing 1](#) shows an example of how to add the LMS to the UBBCONFIG file.

### Listing 1 LMS Added to UBBCONFIG File

---

```
...
*MACHINES
MACHINEA
...
*GROUPS
...
LMSGRP LMID=MACHINEA
...
```

```
*SERVERS
LMS SVRGRP=LMSGRP SRVID=1 MINDISPATCHTHREADS=1 MAXDISPATCHTHREADS=5
CLOPT="-A -- -l tsamweb.abc.com:8080/tsam/dataserver"
...
```

---

LMS is multi-threaded so that you can configure the service dispatching thread number based on the Tuxedo application work load. The “-1” option specifies the Oracle TSAM Data Server address which is configured in the Oracle TSAM Manager. For more LMS information, see the [Oracle TSAM Reference Guide](#). The Oracle TSAM Data Server uses the same port number as the Oracle TSAM Manager Console.

**Note:** LMS can also be added to a running Tuxedo application using TMIB.

## Deploying Oracle TSAM Manager

- [Overview](#)
- [Quick Start](#)
- [Oracle TSAM Environment Parameters](#)
- [Deploying Oracle TSAM Databases](#)
- [Deploying Oracle TSAM on Apache Tomcat Server](#)
- [Deploying Oracle TSAM on Oracle WebLogic Server](#)
- [Deploying Oracle TSAM on Oracle OC4J](#)

### Overview

The Oracle TSAM Manager functions as a Web application in a Servlet/JSP container. It uses DBMS (Database Management System) to store persistent Tuxedo performance and monitoring data.

You must deploy Oracle TSAM database before using Oracle TSAM Manager. If you select installing the bundled Apache Tomcat Server, Oracle TSAM Manager will be deployed on it automatically; otherwise you need to deploy Oracle TSAM Manager on a supported Web container manually.

Some of the deployment steps require you to edit the `web.xml` file located at `WEB-INF` directory in the `tsam.war` package. You need to unpack `tsam.war` using `jar` tool, edit `WEB-INF/web.xml`, repack to a war package, then deploy the war package to a supported Web container.

## Quick Start

If you run Oracle TSAM Manager with the bundled Apache Tomcat, you can start and shut down Oracle TSAM Manager using the following steps:

### 1. Start Oracle TSAM Manager

#### UNIX:

- a. `cd <TSAMDIR>`
- b. `./tsam.env`
- c. `cd <TSAMDIR>/bin`
- d. `./startup.sh`

#### Windows:

- a. `cd <TSAMDIR>\bin`
- b. `startup.cmd`

### 2. Shut down Oracle TSAM Manager

#### UNIX:

- a. `cd <TSAMDIR>/bin`
- b. `./shutdown.sh`

#### Windows:

- a. `cd <TSAMDIR>\bin`
- b. `shutdown.cmd`

## Oracle TSAM Environment Parameters

[Table 1](#) lists the Oracle TSAM environment parameters.

**Table 1 Oracle TSAM Environment Parameters**

<b>Name</b>	<b>Description</b>
TSAMDIR	The Oracle TSAM installed directory.
JAVA_HOME or JRE_HOME	JRE or JDK directory installed. Oracle TSAM installs a JRE by default.
JAVA_OPTS	Set recommended JVM memory. Minimum: 512M; maximum: 1024M.
CATALINA_HOME	Apache Tomcat installed directory (optional)

The Oracle TSAM environment parameters are configured automatically by the Oracle TSAM Manager installer. On UNIX platforms, the Oracle TSAM environment parameters are located in the `tsam.env` file; on Windows platforms, they are located in the `startup.cmd` file.

## Deploying Oracle TSAM Databases

Oracle TSAM Manager provides deployment scripts for the following DBMS:

- [Oracle Database](#)
- [Apache Derby Database](#)

### Oracle Database

To successfully deploy an Oracle database, you must do the following steps:

1. [Create an Oracle Database](#)
2. [Configure Oracle TSAM Manager for Oracle DBMS](#)

#### Create an Oracle Database

An SQL script, `sql/createdb_oracle.sql`, is provided to create an Oracle TSAM Manager database for Oracle.



**Notes:** Before using this script, you must have already installed and configured an Oracle database.

## Configure Oracle TSAM Manager for Oracle DBMS

[Table 2](#) lists the Oracle TSAM Manager configuration file parameters you need to edit to configure an Oracle database:

**Note:** The Oracle TSAM Manager configuration file is located at:

```
tsam/WEB-INF/web.xml.
```

**Table 2 Oracle TSAM Manager Database Configuration Parameters**

Parameter	Description
<code>tsam.jdbc.url</code>	JDBC connection string for TSAM Manager database. For example: <code>jdbc:oracle:thin:@localhost:1521:orcl</code>
<code>tsam.jdbc.userName</code>	Oracle TSAM Manager database connection user name.
<code>tsam.jdbc.password</code>	Oracle TSAM Manager database connection password.
<code>tsam.jdbc.className</code>	JDBC driver class name.

## Apache Derby Database

To successfully deploy a Apache Derby database, you must do the following steps:

1. [Create Oracle TSAM Manager Database](#)
2. [Configure the Oracle TSAM Manager for an Apache Derby](#)

### Create Oracle TSAM Manager Database

A pre-built Apache Derby database instance is provided; however, you can also create one using the provided SQL script `sql/createdb.sql`. The following example creates a Oracle TSAM Manager database using the Apache Derby `ij` utility:

```
ij version 10.2
ij> connect 'jdbc:derby://localhost/tmonitordb;create=true';
ij> run 'createdb.sql';
```

## Configure the Oracle TSAM Manager for an Apache Derby

[Table 3](#) lists the Oracle TSAM Manager configuration file parameters you need to edit to configure an Apache Derby database:

**Note:** The Oracle TSAM Manager configuration file is located at:

```
tsam/WEB-INF/web.xml .
```

**Table 3 Oracle TSAM Manager Database Configuration Parameters**

Parameter	Description
tsam.jdbc.url	JDBC connection string for Oracle TSAM Manager database. For example: jdbc:derby://localhost:1527/tmonitordb
tsam.jdbc.userName	Oracle TSAM Manager database connection user name.
tsam.jdbc.password	Oracle TSAM Manager database connection password.
tsam.jdbc.className	JDBC driver class name.

## Deploying Oracle TSAM on Apache Tomcat Server

Apache Tomcat can be automatically installed and configured when Oracle TSAM Manager is installed. Configuration parameters for Apache Tomcat are located in the following files:

- <TSAMDIR>/apache-tomcat-5.5.17/conf/server.xml
- <TSAMDIR>/apache-tomcat-5.5.17/conf/web.xml

You can directly run Oracle TSAM Manager without changing any Apache Tomcat configuration parameters.

If required, you can change the default for the following parameters:

- [Configure Apache Tomcat Listening Port](#)
- [Configure Session Timeout](#)
- [Configure HTTP KeepAlive](#)
- [Configure POST Maximum Byte Size](#)
- [Configure Maximum Thread Simultaneous Processing](#)
- [Configure Maximum Incoming Connection Requests](#)

## Configure Apache Tomcat Listening Port

The default Apache Tomcat port number is 8080. You can change the default based on your environment. The port is defined in `<TSAMDIR>/apache-tomcat-5.5.17/conf/server.xml` file. For example, you could change to port 9090 by doing the following:

```
<!-- Define a non-SSL HTTP/1.1 Connector on port 8080 -->
    <Connector port="9090" acceptCount="100" connectionTimeout="20000"
        disableUploadTimeout="true" enableLookups="false" maxHttpHeaderSize="8192"
        maxSpareThreads="75" maxThreads="150" minSpareThreads="25"
        redirectPort="8443" />
```

The Oracle TSAM Manager console and data server URLs depend on the Apache Tomcat port setting. The following example assumes the default port “8080” used:

- Oracle TSAM Manager console URL

`http://host:8080/tsam`

- Oracle TSAM Manager data server URL

`http://host:8080/tsam/dataserver`

The “host” is the full domain name or IP address where the Oracle TSAM Manager is installed. The Oracle TSAM Agent LMS must be set correctly using the Oracle TSAM Manager data server URL.

## Configure Session Timeout

The session timeout can be configured by modifying the `<session-config>` element in `<TSAMDIR>/apache-tomcat-5.5.17/conf/web.xml` file. For example, the following configuration invalidates an inactive session after 30 minutes.

```
<session-config>
<session-timeout>30</session-timeout>
</session-config>
```

## Configure HTTP KeepAlive

This is the maximum number of HTTP requests that can be pipelined until the connection is closed by the server. Apache Tomcat provides an attribute `maxKeepAliveRequests` in the `<TSAMDIR>/apache-tomcat-5.5.17/conf/server.xml` file for custom control. Setting this attribute to 1 disables HTTP/1.0 keep-alive, as well as HTTP/1.1 keep-alive and pipelining. Setting this to -1 allows an unlimited pipeline amount or keep-alive HTTP requests. If not specified, this attribute is set to 100.

For example:

```
<Connector port="8080" ... maxKeepAliveRequests="-1"/>
```

## Configure POST Maximum Byte Size

You must configure the maximum size in bytes of the POST, `maxPostSize`, that is handled by the container FORM URL parameter parsing. The limit can be disabled by setting this attribute to a value less than or equal to 0. If not specified, this attribute is set to 2097152 (2 megabytes). `maxPostSize` is modified in the `<TSAMDIR>/apache-tomcat-5.5.17/conf/server.xml` file.

For example:

```
<!-- Define a non-SSL HTTP/1.1 Connector on port 8080 -->
    <Connector maxPostSize="0" acceptCount="100" connectionTimeout="20000"
    disableUploadTimeout="true" enableLookups="false" maxHttpHeaderSize="8192"
    maxSpareThreads="75" maxThreads="150" minSpareThreads="25" port="8080"
    redirectPort="8443"/>
```

If Oracle TSAM has huge amount of monitoring data in the database, and `maxPostSize` is not adequate, an exception message, “`javax.servlet.ServletException: Post too large`”, is given when any operations fail.

**Note:** It is recommended that `maxPostSize` is set to 0.

## Configure Maximum Thread Simultaneous Processing

This is the maximum number of request processing threads created by Apache Tomcat, `maxThreads`, which determines the maximum number of simultaneous requests that can be

handled by Apache Tomcat. If not specified, this attribute is set to 200. `maxThreads` is modified in the Apache Tomcat `server.xml` file. Oracle TSAM keeps a thread-level JDBC connection if the thread has database access. When you configure this attribute, you need to consider the DBMS capability.

## Configure Maximum Incoming Connection Requests

This is the maximum queue length, `acceptCount`, for incoming connection requests when all possible request processing threads in Apache Tomcat are in use. Any requests received when the queue is full are refused. The default value is 100. Setting `acceptCount` to a larger number allows the Apache Tomcat queue to accept more HTTP requests if Apache Tomcat is busy. `acceptCount` is modified in the Apache Tomcat `server.xml` file.

The following is a `maxPostSize`, `maxThreads`, `acceptCount` example:

```
<!-- Define a non-SSL HTTP/1.1 Connector on port 8080 -->
<Connector maxPostSize="0" acceptCount="1000" connectionTimeout="20000"
disableUploadTimeout="true" enableLookups="false" maxHttpHeaderSize="8192"
maxSpareThreads="75" maxThreads="130" minSpareThreads="25" port="8080"
redirectPort="8443"/>
```

For more information, see the [Apache Tomcat Web site](#).

## Deploying Oracle TSAM on Oracle WebLogic Server

After installing Oracle WebLogic Server, do the following steps to deploy Oracle TSAM:

1. Start your WebLogic Domain and launch Oracle WebLogic Server Administration Console using the following URL: `http://localhost:7001/console`.
2. In the Change Center of the Administration Console, click Lock & Edit, if you have not already done so.
3. In the left pane of the Administration Console, select Deployments.
4. In the right pane, click Install.
5. In the Install Application Assistant, locate the `tsam.war` file in the `$TSAMDIR` directory.
6. Click Next.
7. Choose the installation targeting style as an application.
8. Click Next.

9. Select the servers and/or clusters where you want to deploy the `tsam.war` file.
10. Click Next.
11. Optionally update additional deployment settings. These settings include:
  - The deployed name of the application or module.
  - The security model that is applied to the application or module.
  - How the source files are made available to all targeted Managed Servers and clusters.

Typically, the default values are adequate.

12. Click Next.
13. Review the configuration settings you have specified, and click Finish to complete the installation.

At the Settings for TSAM page, you can modify specific settings for TSAM at Configuration - > General. For example, Session Timeout (in seconds).
14. If you chose to immediately go to the deployment configuration screen, click the tabs to set additional TSAM configuration settings. If you chose to change this information later, you are returned to the Deployments table, which now includes the TSAM installation.
15. To activate these changes, in the Change Center of the Administration Console, click Activate Changes.

**Note:** It is recommended that you restart your domain to launch TSAM.

You can directly run the Oracle TSAM Manager without changing any Oracle WebLogic configuration parameters.

If required, you can change the default for the following parameters:

- [Configure Oracle WebLogic Listening Port](#)
- [Configure Session Timeout](#)
- [Configure HTTP KeepAlive](#)
- [Configure POST Maximum Byte Size](#)
- [Configure Maximum Thread Simultaneous Processing](#)
- [Configure Maximum Incoming Connection Requests](#)

## **Configure Oracle WebLogic Listening Port**

The default Oracle WebLogic Server Listening port number is 7001. To change the default Listening Port, do the following steps:

1. Launch Oracle WebLogic Server Administration Console using the following URL:  
`http://localhost:7001/console.`
2. In the Change Center of the Administration Console, click Lock & Edit, if you have not already done so.
3. In the left pane of the Administration Console, click the Servers under Environment.
4. Click the Server, e.g., exampleServer, which your TSAM deployed.
5. Change default Listen Port at tab of Configuration -> General.
6. To activate these changes, in the Change Center of the Administration Console, click Activate Changes.

## **Configure Session Timeout**

To configure Session Timeout, do the following steps:

1. Launch Oracle WebLogic Server Administration Console using the following URL:  
`http://localhost:7001/console.`
2. In the Change Center of the Administration Console, click Lock & Edit, if you have not already done so.
3. In the left pane of the Administration Console, click Deployments
4. Click TSAM application deployed.
5. Change Session Timeout at tab of Configuration -> General.
6. To activate these changes, in the Change Center of the Administration Console, click Activate Changes.

## **Configure HTTP KeepAlive**

To enable and disable HTTP KeepAlive, do the following steps:

1. Launch Oracle WebLogic Server Administration Console using the following URL:  
`http://localhost:7001/console.`

2. In the Change Center of the Administration Console, click Lock & Edit, if you have not already done so.
3. In the left pane of the Administration Console, click the Servers under Environment.
4. Click the Server, e.g., exampleServer, which your TSAM deployed.
5. Enable or disable HTTP KeepAlive by selecting Protocols -> HTTP.
6. To activate these changes, in the Change Center of the Administration Console, click Activate Changes.

### Configure POST Maximum Byte Size

To set the maximum size in bytes of the POST unlimited, do the following steps:

1. Launch Oracle WebLogic Server Administration Console using the following URL:  
`http://localhost:7001/console`.
2. In the Change Center of the Administration Console, click Lock & Edit, if you have not already done so.
3. In the left pane of the Administration Console, click the Servers under Environment.
4. Click the Server, e.g., exampleServer, which your TSAM deployed.
5. Change Max Post Size at tab of Protocols -> HTTP.  
Note: Set Max Post Size less than 0, which indicates an unlimited size.
6. To activate these changes, in the Change Center of the Administration Console, click Activate Changes.

### Configure Maximum Thread Simultaneous Processing

Maximum Thread Simultaneous Processing is mapped into Maximum Threads Constraint at WebLogic Server. To configure Maximum Threads Constraint, do the following steps:

1. Launch Oracle WebLogic Server Administration Console using the following URL:  
`http://<hostname>:<port>/console`, where <hostname> is the host name of the machine running WebLogic Server, and <port> is the port number that WebLogic Server listens for requests (7001 by default).
2. In the Change Center of the Administration Console, click **Lock & Edit**, if you have not already done so.
3. In the left pane of the Administration Console, click **Work Managers** under Environment.



4. Click the Work Manager whose "Targets" includes the WebLogic Server where TSAM Manager web application is deployed. If no such work manager exists (usually called "WebLogic.wsee.mdb.DispatchPolicy"), create a new Work Manager and assign it to the right server.
5. Change **Maximum Threads Constraint** at tab of Configuration, if no constraint is configured, click **New** to create one.
6. To activate these changes, in the Change Center of the Administration Console, click **Activate Changes**.

### Configure Maximum Incoming Connection Requests

Maximum Incoming Connection Requests is mapped into Capacity Constraint at WebLogic Server. To configure Capacity Constraint, do the following steps:

1. Launch Oracle WebLogic Server Administration Console using the following URL:  
`http://<hostname>:<port>/console`, where `<hostname>` is the host name of the machine running WebLogic Server, and `<port>` is the port number that WebLogic Server listens for requests (7001 by default).
2. In the Change Center of the Administration Console, click **Lock & Edit**, if you have not already done so.
3. In the left pane of the Administration Console, click **Work Managers** under Environment.
4. Click the Work Manager whose "Targets" includes the WebLogic Server where TSAM Manager web application is deployed. If no such work manager exists (usually called "WebLogic.wsee.mdb.DispatchPolicy"), create a new Work Manager and assign it to the right server.
5. Change **Capacity Constraint** at tab of Configuration, if no constraint is configured, click **New** to create one.
6. To activate these changes, in the Change Center of the Administration Console, click **Activate Changes**.

**Note:** If you do not see **Lock & Edit** in the Change Center of the Administration Console, that means that WebLogic Server Configuration editing is enabled. Then click Preferences link, uncheck Automatically Acquire Lock and Activate Changes checkbox, then click save button. Now you will see two buttons, Lock & Edit, Release Configuration in the Change Center of the Administration Console.

For more information, see the [Oracle WebLogic Web site](#).

## Deploying Oracle TSAM on Oracle OC4J

After installing Oracle OC4J, do the following steps to deploy Oracle TSAM:

1. Start your OC4J server and launch OC4J control console using the following URL:  
`http://localhost:8888/em.`
2. Click the tab Applications and click the button Deploy.
3. In the page Deploy:Select Archive, locate the `tsam.war` file in the `$TSAMDIR` directory.
4. Click Next.
5. Set up the application attributes Application Name and Context Root.
6. Click Next.
7. Optionally update additional deployment settings. Typically, the default values are adequate.
8. Click Deploy.

You can directly run the Oracle TSAM Manager without changing any Oracle OC4J configuration parameters.

If required, you can change the default for the following parameters:

- [Configure Oracle OC4J Listening Port](#)
- [Configure Session Timeout](#)
- [Configure HTTP KeepAlive](#)
- [Configure Maximum Thread Simultaneous Processing](#)
- [Configure Maximum Incoming Connection Requests](#)

### Configure Oracle OC4J Listening Port

The default Oracle OC4J Listening port number is 8888. To change the default Listening Port, modify the configuration file `<OC4J_HOME>/j2ee/home/config/default-web-site.xml` accordingly.

### Configure Session Timeout

The default servlet session timeout for OC4J is 20 minutes. To change the default value, modify file `/WEB-INF/web.xml` in `tsam.war`. Find the following lines or add them if they don't exist:

```
<session-config>
  <session-timeout>20</session-timeout>
</session-config>
```

Change the value accordingly.

### Configure HTTP KeepAlive

The default value is 100. Oracle HTTP Server uses directives in `httpd.conf` to configure the value (not applicable for standalone OC4J).

### Configure Maximum Thread Simultaneous Processing

Modify the configuration file `<OC4J_HOME>/j2ee/home/config/server.xml`. Find the following lines or add them if they don't exist:

```
<global-thread-pool min="100" max="100" queue="200"
keepAlive="700000" cx-min="100" cx-max="100" cx-queue="200"
cx-keepAlive="700000" debug="true"/>
```

Change the value accordingly.

### Configure Maximum Incoming Connection Requests

Modify the configuration file `<OC4J_HOME>/j2ee/home/config/server.xml`. Find the following lines or add them if they don't exist:

```
<max-http-connections max-connections-queue-timeout="120"
socket-backlog="50" value="100"/>
```

Change the attributes accordingly.

For more information, see the [Oracle OC4J Web site](#).

