



# TIBCO® MDM

## Custom Installation

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# Custom Guide Specific to your Installation Requirements

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Select the combination to install TIBCO MDM based on your system requirements and follow the instructions. Some topics are common for all databases and application servers. Scan the information relevant to your installation combination.

**i** **Note:** The following list is a commonly used installation combinations. If your combination does not match, see TIBCO® MDM *Installation and Configuration*.

- [JBossWildFly and PostgreSQL](#)
- [JBossWildFly, Oracle, and EMS](#)
- [JBossWildFly, SQL Server, and EMS](#)
- [WebLogic, Oracle, and EMS](#)
- [WebLogic, Oracle, EMS, and Apache Web Server](#)
- [WebSphere, Oracle, and EMS](#)
- [WebSphere, Oracle, EMS, and IBM HTTP](#)

## JBossWildFly and PostgreSQL

Follow the instructions to install TIBCO MDM on JBoss WildFly application server and PostgreSQL database:

1. [Installation Overview](#)
  - a. [Prerequisites for Installation](#)
  - b. [Additional Software Components](#)
  - c. [Third Party Libraries](#)
  - d. [Hardware Configuration](#)

- e. [Environment Variables](#)
- 2. [Simple Installation with PostgreSQL](#)
  - a. [Installing TIBCO MDM \(Simple Installation\)](#)
  - b. [Performing Postinstallation Tasks for Simple Installation](#)
  - c. [Troubleshooting with Simple Installation](#)

## Installation Overview

Download TIBCO MDM from the [TIBCO eDelivery](#) website . To login, you need user name and password. If you have not received a user name and password, contact TIBCO Technical Support. After you download TIBCO MDM, install it using the installer provided.

### Default Installation Directory

- **Microsoft Windows** The default installation location is  $TIBCO\_HOME$  where all TIBCO products are installed. Typically,  $TIBCO\_HOME$  is at `c:\tibco`.
- **UNIX** The default installation directory depends on who performs the installation:
  - For root users, the default installation directory is `/opt/tibco`.
  - For non-root users, the default installation directory is `/myhome/tibco`, where *myhome* is the home directory of the user.

### Installer Disk Space Requirements in Temporary Area

- **Microsoft Windows Platforms** The entire package is extracted into a temp folder (minimum requirements 40 GB and 4 GB RAM), typically `SystemDrive:\Temp` or `SystemDrive:\Documents and Settings\user_name\Local Settings\Temp`.
- **UNIX Platforms** The installer launcher first extracts a Java Virtual Machine (JVM) in a temporary directory (minimum requirements 40 GB and 4 GB RAM) and uses this JVM to launch itself. The size of the extracted JVM differs from platform to platform. You can select the temporary area using the following option when starting the installer: `install_package_name.sh -is:tempdir /temp_area`

## Prerequisites for Installation

Before you start the TIBCO MDM installation, ensure that your system meets all of the requirements.

### Prerequisites

Software Component	Description
JDK	<p>TIBCO MDM is certified with Oracle Java and AdoptOpenJDK.</p> <ul style="list-style-type: none"> <li>TIBCO MDM bundles Oracle Java with the installer. The bundled Oracle Java is located under TIBCO MDM installation home (<i>TIBCO_HOME</i>\tibcojre64\11). You do not need to download Java from the Oracle download site. If any updates to Java 11, TIBCO MDM continues to ship through the hotfix installers.</li> <li>To install AdoptOpenJDK, download the executable file from the <a href="#">AdoptOpenJDK</a> site and install it at the appropriate location.</li> </ul> <p>Ensure that the <i>JAVA_HOME</i> environment variable has been set correctly.</p> <ul style="list-style-type: none"> <li>For the JBossEAP, JBoss WildFly, and WebLogic application servers, TIBCO MDM supports Java 11.</li> <li>For WebSphere application server, TIBCO MDM supports Java 1.8.</li> </ul> <p>Consult the readme shipped with your installation of TIBCO MDM for the most up-to-date software requirements.</p>
JMS Server	The JMS Server must be installed and running with the required queues and topics created
Application Server - For Typical install only	<p>The Application Server must be installed and running with the correct service packs applied.</p> <p>For IBM WebSphere, make sure that JDK patch level matches the application server fix pack level.</p>
Database - For Typical install only	The Database server must be ready with either Oracle, PostgreSQL, or SQL Server installed and must have a user account with full privileges for the database. It is also recommended that a second user be created, but with restricted privileges.

Software Component	Description
Client - For Typical install only	<p>The client for the database must be installed on the TIBCO MDM system machine and must have access to Java JDBC connectors. The SQL Server client is required for creating new seed data. However, we do not need clients for the PostgreSQL database.</p> <p>Oracle Client Software should be Developer Edition or Enterprise Edition and must be on the computer hosting the application server. TIBCO MDM uses the sqlldr utility shipped with these Oracle Client Software editions.</p>
Web Server - For Typical install only	<p>Web server is optional and is needed only if you do not plan to use direct URL access to the application server. If the Web server is going to be used, install it first.</p>
Cache Server - For Typical install only	<p>Cache server is optional and is needed only if a centralized cache server is proposed. Make sure the cache server is installed (but not running).</p> <p><b>Note:</b> For information about the Cache server, see <a href="#">Enable Apache Ignite for TIBCO MDM</a>.</p>

## Additional Software Components

TIBCO MDM requires additional software components as listed in the following table. The requirements of components depend on your installation choices and supported platforms. For a complete list of versions and platforms supported, see the *Readme.txt* file.

### Required Components

Component to Install	Supported options	For more information, see:
JDK	<ul style="list-style-type: none"> <li>For WebSphere application server, use JDK 1.8.</li> <li>For JBoss WildFly and WebLogic application servers, use JDK 11.</li> </ul>	<ul style="list-style-type: none"> <li><a href="#">Installation Overview</a></li> </ul>

Component to Install	Supported options	For more information, see:
<b>Database</b> Install and configure a database.	<ul style="list-style-type: none"> <li>• Oracle</li> <li>• Microsoft SQL Server</li> <li>• PostgreSQL</li> </ul>	<ul style="list-style-type: none"> <li>• <a href="#">Configuration of Oracle Database</a></li> <li>• <a href="#">Configuration of SQL Server Database</a></li> <li>• <a href="#">Simple Installation with PostgreSQL</a></li> </ul>
Database Client	<ul style="list-style-type: none"> <li>• Oracle</li> <li>• Microsoft SQL Server</li> </ul>	
<b>JMS Server</b> Configure a JMS Server	<ul style="list-style-type: none"> <li>• TIBCO Enterprise Messaging Service</li> </ul>	<ul style="list-style-type: none"> <li>• <a href="#">Creating TIBCO EMS Queues and Topics</a></li> </ul>
<b>Application Server</b> Configure a supported Application Server.	<ul style="list-style-type: none"> <li>• Websphere with or without Websphere ND</li> <li>• Weblogic</li> <li>• JBoss WildFly</li> </ul>	<ul style="list-style-type: none"> <li>• <a href="#">Configuring TIBCO MDM for WebSphere Application Server</a></li> <li>• <a href="#">Configuring TIBCO MDM for WebLogic Application Server</a></li> <li>• <a href="#">Configuring TIBCO MDM for JBoss WildFly Application Server</a></li> </ul>

### Optional Components

	Component to Install	Supported options	For more information, see:
1.	<b>AS2 Gateway</b> Configure AS2 Gateway for secure communication with other systems. (required only for	<ul style="list-style-type: none"> <li>• Any AS2 Server (such as TIBCO BusinessConnect)</li> </ul>	<a href="#">Configuration of TIBCO BusinessConnect and TIBCO BusinessWorks</a> Details for configuring

	Component to Install	Supported options	For more information, see:
	GDSN mode or external communication).		TIBCO BusinessConnect. See appropriate documentation for other gateways.
2.	<b>Cache Server</b> Configure a cache Server.	Apache Ignite	<a href="#">Configuration Properties of Apache Ignite</a>
3.	<b>Web Server</b> Configure a supported Web Server to connect to the application server.	<ul style="list-style-type: none"> <li>• IBM HTTP</li> <li>• Apache Server</li> <li>• Microsoft IIS</li> </ul>	<a href="#">Configuration of Web Servers</a>
4.	<b>X Server</b> Configure to upload images for any records maintained using TIBCO MDM.	<a href="#">RealVNC</a>	<a href="#">Installing X Server</a>

## Third Party Libraries

In addition to the distribution provided by TIBCO, MDM requires additional software. This software must be provided for the installation and might have different licensing.

This table lists all the software which might be required.

### *Third Party Libraries*

Library	Library Name	Description
JDK Library	jsse.jar	<p>Required, if you will be using SSL.</p> <p>Can be obtained from JDK.</p> <p>Vendor: ORACLE/IBM/HP</p>

Library	Library Name	Description
XMLC related Libraries	xmlc.jar, xmlc-base.jar, xmlc- chtml.jar, xmlc-taskdef.jar, xmlc- xerces.jar, xmlc-all-runtime.jar, and Sunec.jar	<p>Required for TIBCO MDM UI.</p> <p>Click the <b>XMLC Download</b> link under the TIBCO MDM area at the <a href="#">eDelivery site</a> to download the xmlc-2.2.x.zip.</p> <p>You can choose to download the library or let the installer download the library during the installation process.</p>
	gnu-regexp.jar	Required for compiling HTML.
EMS related Libraries	tibjms.jar and jms-2.0.jar	<p>Required, if you are using TIBCO EMS as a JMS vendor.</p> <p>The libraries can be obtained from the installation directory of TIBCO EMS (pointed by EMS_HOME).</p>
<p><b>Note:</b> EMS libraries are not applicable for the PostgreSQL database.</p>		
JDBC related Libraries	ojdbc8.jar mssql-jdbc- 7.2.2.jre11.-jar postgresql- 42.2.11.jar	<ul style="list-style-type: none"> <li>ojdbc8.jar is required for Oracle.</li> <li>mssql-jdbc-7.2.2.jre11.jar ( Microsoft JDBC Driver 7.2 for SQL Server, Java Development Kit (JDK) 11.0 ) is required for Microsoft SQL Server.</li> <li>postgresql-42.2.11.jar is required for PostgreSQL. (Not required if you are using Simple Installation)</li> </ul> <p>Copy the following JAR files to <code>\$MQ_HOME/configurator/server/configurator/lib/ext</code>.</p> <ul style="list-style-type: none"> <li>ojdbc8.jar copy from <code>\$ORACLE_HOME/jdbc/lib</code>.</li> <li>Download the mssql-jdbc-7.2.2.jre11.jar ( Microsoft JDBC Driver 7.2 for SQL Server, Java Development Kit (JDK)</li> </ul>

Library	Library Name	Description
		<p>11.0 ) file from <a href="#">Microsoft Download Center</a>.</p> <ul style="list-style-type: none"> <li>• postgresql-42.2.11.jar file copy from <code>\$MQ_HOME/bin/pgsql/driver</code></li> </ul>
Hibernate Assembly	hibern-ate3.jar and cglib-2.2.jar	<p>Required by TIBCO MDM for some database interactions.</p> <p>You can choose to download the library or let the installer download the library during the installation process.</p> <p>Click the <b>Download</b> link under the TIBCO MDM area at the <a href="#">eDelivery site</a> to download the product_tibco_hibernate_lgpl_3.6.10.003.zip.</p>

All the required libraries are to be added to the distribution provided (ECM.ear) with TIBCO MDM.

## Hardware Configuration

The following table lists sample hardware configurations. Additional memory may be required to accommodate data caching needs.

### Hardware Configurations

Configuration	Quantity	Type			Memory
		Sun	IBM	Intel	
<b>Low End</b>					
Single machine for web server, application server, and DB server	1	Sun Fire X4100 - 2 CPU	IBM xSeries (AMD or Xeon) or equivalent	Xeon 2GHz, 2 CPU	4 GB RAM, 50 - 100 GB disk 8 GB RAM and Dual core processors are recommended

Configuration	Quantity	Type			Memory
		Sun	IBM	Intel	
					to achieve increased throughput.
<b>Mid-range / Mid-range clustered</b>					
Web server	1	Sun Fire x2100 or Sun Fire x4100 equivalent, 1-2 CPU	IBM xSeries 1-2 CPU or pSeries entry level servers	Xeon 2 GHz, 1 CPU	1 GB RAM, 36 GB internal disk
Application server	1-2	Sun Fire x4100 2 CPU with Dual core processors or Sun Fire V240 with 4 CPU	IBM i520 or IBM 630 with 2-4 core/CPU	Xeon 3 GHz, 2-4 CPU	4- 6 GB RAM, 36 GB disk 8 GB RAM and dual core processors are recommended for higher throughput.
Database server	1	Sun Fire 445 or equivalent with 2-4 CPU	IBM i520 or P630 with 2-4 Core/CPU	Xeon 3 GHz, 2-4 CPU	6-8 GB RAM, 200-500 GB disk.
Storage	1				Disk array, disks of 100 - 200 GB.
<b>High-end</b>					
Web server	1-2	Sun Fire, V100, 1-2	IBM P610, 1-2 CPU	Xeon 2 GHz, 1-	2 GB RAM, 36 GB internal

Configuration	Quantity	Type			Memory
		Sun	IBM	Intel	
		CPU		2 CPU	disks
Application server	2-4	Sun Fire V490 with 4 CPU or Sun Fire x4100 with 2 CPU dual core	IBM P650, 4-8 CPU	Xeon 3 GHz, 4-8 CPU	6-8 GB RAM, 40 GB disk for each server  12 GB RAM recommended for higher throughput.
Database server	1	Sun Fire V4800, 4-8 CPU	IBM P650, 4-8 CPU	Xeon 3 GHz, 4-8 CPU	Minimum 12 GB RAM  400-600 GB disk.
Storage	1				Disk array, disks of 200 to 500+ GBb.

The hardware required depends on many factors including, number of concurrent users, usage patterns, retention of history and rate of change for the data. A more accurate capacity planning exercise should be done based on detailed scenario tests done in performance labs.

Contact TIBCO Professional Services or TIBCO Customer support for more details on how to calculate the required hardware. It is recommended that any production hardware planning must be done using scenario based testing results. A sample capacity planning worksheet can be obtained from TIBCO Customer Support.

## Environment Variables

You must set the important environment variables before installing TIBCO MDM.

**i** Note:

- It is recommended that you use ASCII characters for all file names. If these names include non-ASCII characters, copying the files from Windows to UNIX or Linux and vice versa may result in corruption of file names.
- While setting environment variables on all platforms, if the ‘\’ character is used as a path separator instead of ‘/’, it leads to errors as ‘\’ is treated as an escape character.
- For Simple install, set only `JAVA_HOME` environment variable.
- For Typical install, set all the environment variables mentioned in the Environment Variables table.

*Environment Variables*

Variable	Description
<code>MQ_HOME</code>	<p>Define <code>MQ_HOME</code> to point to the installation directory. It is recommended that you allocate at least 8 GB to this directory. In a clustered environment, each application server should point to a separate location.</p> <p>Example: <code>/home/tibco/mdm/version</code></p>
<code>MQ_LOG</code>	<p>The location where log files will be generated (the recommended location is <code>\$MQ_HOME/log</code>). In a clustered environment, each server should point to a separate location. Define <code>MQ_LOG</code> to point to this directory. A minimum of 1 GB should be allocated to this directory. The best practice is to change the default location such that the directory is not a subdirectory of <code>MQ_HOME</code>.</p> <p>Example: <code>\$MQ_HOME/log</code></p>
<code>MQ_COMMON_DIR</code>	<p>All standard configurations files for workflow and data validation as well as all customizations are stored in this directory. This directory also holds all files generated during normal application processing. It is shared by all application servers in the cluster, and should be mounted to each server. All disk space indicated in the section <a href="#">Hardware Configuration</a> should be assigned to this directory, and the <code>MQ_</code></p>

Variable	Description
	<p>COMMON_DIR variable should be set. The best practice is to change the default location such that the directory is not a subdirectory of MQ_HOME.</p> <p>Example: <code>/home/tibco/mdm/version/common</code></p> <p>If you plan to create a copy of the TIBCO MDM instance across operating systems (for instance, Linux to Windows or Windows to Linux) and if the path contains any non English characters, such a copy may not be possible. For example, using Japanese characters in the path.</p>
MQ_CONFIG_FILE	<p>Points to <code>\$MQ_HOME/config/ConfigValues.xml</code>. The values/parameters in this file can be set using the Configurator.</p> <p>Example: <code>/home/tibco/mdm/version/config/ConfigValues.xml</code></p>
JAVA_HOME	<p>The directory where JRE/JDK is installed.</p> <p>Example: <code>/opt/jdkversion</code></p>
EMS_HOME	<p>The directory where TIBCO EMS (or the messaging software) is installed.</p> <p>Example: <code>/home/tibco/ems</code></p>
ANT_HOME	<p>The Directory path where ant is installed.</p> <p>Example: <code>/opt/antversion</code></p>
MQ_HTTP_SESSION_REPLICATION_ENABLED	<p>If you use multiple nodes and want to replicate the session, then set the value of the MQ_HTTP_SESSION_REPLICATION_ENABLED environment variable to <b>true</b> to enable the session replication.</p>
MDM_DB_USE_SERVICENAME	<p>Specify this variable when you are connecting to the database by using the Configurator and when you are running TIBCO MDM on container platforms.</p> <ul style="list-style-type: none"> <li>• Set to <b>true</b> to connect to the Oracle database by using the service name</li> <li>• Set to <b>false</b> to connect to the Oracle database by using SID</li> </ul>

Variable	Description
	For more information, see <a href="#">Connecting to Database Using SID and Service Name</a> .
MDMPORT	Port number on which the TIBCO MDM node is running.
PROTOCOL	Specifies a protocol such as http or https to access the TIBCO MDM node. By default, the http protocol is used.

### Application Server Specific

<i>WAS_HOME</i>	The directory where WebSphere is installed (required <i>only</i> if using WebSphere).  Example: /opt/WebSphere/AppServer
<i>JBOSS_HOME</i>	For JBoss WildFly Application Server. Specify the path value until the root of the WildFly directory.  Example, E:\JBoss\wildfly- <i>version</i> .Final.
<i>JBOSS_HOME</i> (Simple Install)	The directory where JBOSS is installed (required only if using simple installation).  Example: %MQ_HOME%\bin\wildfly- <i>version</i> .Final
<i>WLS_HOME</i>	For WebLogic Application Server. Specify the path value of the WebLogic Application Server directory.  Example: <ul style="list-style-type: none"> <li>• For Linux: /opt/bea</li> <li>• For Windows: G:\WebLogic\wlserver_<i>version</i></li> </ul>

### Database Specific

<i>ORACLE_HOME</i>	For Oracle database. The directory where Oracle is installed.  Example: <ul style="list-style-type: none"> <li>• For Windows: /home/oracle/product/<i>version</i>/db_1</li> </ul>
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Variable	Description
	<ul style="list-style-type: none"> <li>On UNIX: <code>\$export ORACLE_HOME=/u01/app/oracle/product/<i>version</i></code></li> </ul>
<code>LD_LIBRARY_PATH</code>	For Oracle database: <code>\$ORACLE_HOME/lib</code>
<code>NLS_LANG</code>	<p>For Oracle database. Example:</p> <ul style="list-style-type: none"> <li>On UNIX:           <pre>export NLS_LANG=AMERICAN_AMERICA.UTF8</pre> </li> <li>On Windows:           <pre>set NLS_LANG=AMERICAN_AMERICA.UTF8</pre> </li> </ul>
<code>POSTGRESQL_HOME</code>	<p>For PostgreSQL database. The directory where PostgreSQL is installed.</p> <p>Example: <code>\$MQ_HOME/bin/pgsql</code></p>
<code>OS</code>	The Operating system. For example, Linux.
<code>DISPLAY</code>	This environment variable is used by X-Windows based applications. It points to a device capable of displaying an X-Windows based UI.
<code>LD_ASSUME_KERNEL</code>	Used on the Linux platform to make Linux use the old Linux threads library, particularly required for Oracle installation (required <i>only</i> if Oracle is used as the database).
<code>PATH</code>	<p>This is a list of directories separated by a separator. When any command or program is executed, the OS tries to locate the program in the directories listed in PATH. If the program is not found in any of the directories, the OS cannot load and execute the program. The Separator character is ':' for Unix and Linux platforms, and ';' for the Windows platform.</p> <p>Ensure that there is no space with the commas and colons between the program in the directories listed which are separated by ':' for Unix and Linux platforms, and ';' for the Windows platform.</p>

Variable	Description
<i>SHLIB_PATH</i>	List of directories separated by a separator (see PATH) where a dynamic linker tries to find the libraries. Used on UNIX platforms.
<i>LIBPATH</i>	List of directories separated by a separator (see PATH) where the Operating system as well as the application library files reside. Used on UNIX platforms.
<i>NODE_ID</i>	Points to the current cluster member. Example: NODE_ID=Member1
<b>TIBCO MDM REST API through Swagger UI</b>	
<i>SWAGGER_MDM_HOST</i>	An IP address of the TIBCO MDM server on which you want to try out the TIBCO MDM REST APIs.
<i>SWAGGER_MDM_PORT</i>	Port of the TIBCO MDM server on which you want to try out the TIBCO MDM REST APIs.

## Simple Installation with PostgreSQL

The simple installation provides minimal prompts and installs standard components in the default locations. You can change the default locations, if required.

The simple installation includes the following features:

- Currently supports JBoss WildFly Application Server and PostgreSQL database on Windows.
- Similar to the existing installer, in addition, it bundles the following dependencies except EMS.
  - Apache Ignite
  - TIBCO Patterns - Search
  - PostgreSQL Database
  - JBoss modules
- Installs dependencies in \$MQ\_HOME/bin directory. Therefore, not much control over the directories.

- Provides an additional page to download the JBoss WildFly Application Server, that is, the installer zip file.
- Provides default settings, thus TIBCO MDM is configured automatically.

## Installing TIBCO MDM (Simple Installation)

In Simple installation, the installer bundles, installs, and configures most of the required software. You need not worry about dependencies. Thus, it simplifies the installation process.


### Before you begin

- Verify that your computer meets the system requirements to install TIBCO MDM for PostgreSQL. The system requirements are listed in the readme.txt file. All the software components are installed under \$MQ\_HOME. Ensure that you have at least 5 GB of disk space.
- Set the \$JAVA\_HOME environment variable.
- Optional: Download the wildfly-26.0.0.Final.zip file from <http://wildfly.org/downloads/>.
- If you are installing in a Linux environment, ensure that you are a non ROOT user.
- TIBCO MDM does not use the existing PostgreSQL instance. It re-installs and re-configures PostgreSQL. Ensure that you have stopped the current PostgreSQL instance, if running. Ensure that the default port 5432 is not in use.
- Download TIBCO MDM from [TIBCO eDelivery site](#). The application is available as a ZIP file.
- Extract contents of the ZIP file to a folder on your computer.
- Search for the TIBCOUniversalInstaller application in the location where you have extracted the ZIP file.


### Procedure

1. Run the TIBCOUniversalInstaller.exe application. The TIBCO Universal Installer Welcome window is displayed.
2. Review the information and click **Next**. The license agreement is displayed.
3. Review the terms of the license agreement. If you agree with its terms, accept the license agreement and click **Next**.

4. In the Installation Profile Selection window, do one of the following:
  - a. Select **Create a new TIBCO\_HOME** option. A TIBCO installation environment is used for software installations and consists of a Name and Directory. Products installed into different installation environments do not share components; therefore you can keep product installations completely isolated from each other.
    - **Directory:** Browse to the directory where the product needs to be installed and provide a unique environment name. Ensure that you have write permission to this directory.

 **Note:** On Microsoft Windows, it is recommended that you do not install under C:\Program Files or any other directory which contains spaces in the name. The Simple installer does not recognize the path if the folder name contains a space.

- **Name:** Specify the environment name.
- b. If you have previously installed a TIBCO product using the Universal Installer, you can select **Use an existing TIBCO\_HOME**. By default, the installer detects the directory for your TIBCO\_HOME and displays the path.

 **Note:** If you had installed the application earlier, the directory cannot be modified. For a new installation, the directory can be changed.

5. Click **Next**. The Installation Profile Selection window is displayed. By default, the **Typical** installation profile is selected.
  - a. If you select the **Customize Installation** check box, a list of components is enabled (**Executable Image** and **Common Configuration**).
  - b. Select your preferred options and click **Next**.
6. In the Download JBoss Application Server window, do one of the following:
  - a. Download the wildfly-26.0.0.Final.zip file by clicking the URL and save it to your local drive.
  - b. Click **Browse** and select the ZIP file location. If you have already downloaded the JBoss Application Server, point it to the existing ZIP file and click **Next**.

**i** **Note:** The installer validates the `wildfly-appclient-26.0.0.Final.jar` file located in the `wildfly-26.0.0.Final/modules/system/layers/base/org/jboss/as/applclient/main` directory.

7. In the Enterprise Creation window, do the following:
  - a. Select the **Create Enterprise** check box. The following fields are enabled:  
**Enterprise Name:** Type the enterprise name.  
**Admin User Name:** Type the user name of the administrator.  
**Admin Password:** Type the password of the administrator.

**i** **Note:** The password must contain eight alphanumeric characters with at least one lowercase and one uppercase alphabet and one numeric entry. Additionally, if you want to add special characters, change the default value of the `Password Required` property. For information about password policy, see the section, "Configuration Properties for Password" in *TIBCO MDM System Administration*.

Click Next.

**i** **Note:** If you do not select the **Create Enterprise** check box, an enterprise and administrator credentials fields are disabled, and the next Template Selection window is not displayed.

8. In the Template Selection window, do the following:
  - a. Select any one of the data models:

- None


**i** **Note:** If you select **None**, the **Customer**, **Party** and **Insurance** options and the **Add Sample Data** check box are disabled.

- Customer
- Party

- **Insurance**


- b. If you select **Customer** or **Party** or **Insurance** option, you can also select the **Add Sample Data** check box.
- c. However, if you do not select the **Add Sample Data** check box, the customer, party or insurance models are imported but the sample data is not added.
- d. Click **Next**.

9. In the TIBCO MDM Configurator Settings window, the default port values are displayed. You can change the default port values. Click **Next**.

 **Note:** The specified port values must not be in use by another application.

10. In the TIBCO MDM Common Config Location window, select the common configuration location and click **Next**.

If you have selected the standard common configuration option, the default \$MQ\_HOME\common directory location is displayed. You can retain the location or change it by clicking **Browse**.

 **Note:** If you do not specify the common configuration location, Configurator does not start and you need to perform the manual configuration. For information, see [Manually Configuring TIBCO MDM](#).

11. In LGPL Assembly Download window, select one of the following options:
  - **Download HIBERNATE assembly from TIBCO:** if you select this option, the HIBERNATE assembly is downloaded and configured.
  - **Provide the location for the assembly previously downloaded from TIBCO:** If you select this option, the **HIBERNATE Assembly Path** field is enabled. Click **Browse** to select the HIBERNATE assembly.

Click **Next**.

12. The HIBERNATE LGPL License Agreement window is displayed. If you agree with its terms, accept the license agreement, and click **Next**.
13. The XMLC LGPL License Agreement window is displayed. If you agree with its

terms, accept the license agreement, and click **Next**.

14. In LGPL Assembly Download window, select one of the following options:
  - **Download XMLC assembly from TIBCO:** if you select this option, the XMLC assembly is downloaded and configured.
  - **Provide the location for the assembly previously downloaded from TIBCO:** If you select this option, the XMLC Assembly Path field is enabled. Click **Browse** to select the XMLC assembly.

Click **Next**.

15. In the Pre-Install Summary window, review a list of the components that are going to be installed and the installation environment details and click **Next**.
16. In the Post-Install Summary window, review a list of the components that are installed and the installation environment details.
17. Click **Finish** to exit the wizard.

**i Note:** On some Windows environments, databases might not get created postinstallation. For successful database creation, create a folder, apply the Full Control permission to it, and then install TIBCO MDM in this specific folder.

## Performing Postinstallation Tasks for Simple Installation

After the first round of installation, the TIBCO MDM server, TIBCO Patterns - Search server, and the Configurator automatically start. You must complete the postinstallation tasks for the second round of installation.

After installation, \$MQ\_HOME contains most of the required software.

Folder	Component
\$MQ_HOME/bin/ignite	Apache Ignite Cache Server
\$MQ_HOME/bin/wildfly-version.Final	JBoss WildFly Application Server
\$MQ_HOME/bin/pgsql	PostgreSQL Database Engine
\$TIBCO_HOME/tps	TIBCO Patterns - Search Server

The following table lists the ports available after installation:

Port Number	Component
8080	HTTP JBoss WildFly Application Start Server Port
8009	HTTP JBoss WildFly Application Stop Server Port
6080	Configurator HTTP Port
5051	TIBCO Patterns - Search Server Standard Port
5432	PostgreSQL Database Standard Port
48500	Apache Ignite Cache Server Default Port

## Procedure

1. Start TIBCO MDM Server: Ensure that \$JAVA\_HOME is set.
  - a. Select the **Start MDM Server** option from the Programs menu or run StartMDMServer.bat. The file is located at \$MQ\_HOME/bin/wildfly-version.Final/bin. The TIBCO MDM server starts. Starting the TIBCO MDM server starts the following components:
    - PostgreSQL database instance
    - TIBCO MDM Configurator server
    - TIBCO Patterns - Search server
    - Apache ActiveMQ console
  - b. Optional: If you want to stop the TIBCO MDM server, select the **Stop MDM Server** option from the Programs menu or run StopMDMServer.bat. The file is located at \$MQ\_HOME/bin/wildfly-version.Final/bin. The TIBCO MDM server stops. Stopping the TIBCO MDM server stops all earlier mentioned components.
2. Start TIBCO MDM: Type `http://localhost:8080/eml/Login` in the browser. For more information about accessing TIBCO MDM, see "Introduction to TIBCO MDM" chapter of the *TIBCO MDM User's Guide*.
3. Optional: Start and Stop PostgreSQL Server

- a. To start PostgreSQL, run `pg_start.bat`.
- b. To stop PostgreSQL, run `pg_stop.bat`.

The files are located at `$MQ_HOME/db/postgreSQL/install`.

#### 4. Optional: Start and Stop TIBCO Patterns - Search Server

- a. To start the TIBCO Patterns - Search Server, run `netricsServer.bat -startService`.
- b. To stop the TIBCO Patterns - Search Server, run `netricsServer.bat -stopServer`.

The files are located at `$MQ_HOME/bin`.

For more information, see *TIBCO MDM System Administration*.

#### 5. Optional: Start and Stop the Configurator

If you want to change default configuration, you can start the Configurator. Ensure that the `$JAVA_HOME` environment variable is set and it points to the valid `JDKversion` installation path.

- a. Use the **Start Server** option or run `startup.bat` to start the Configurator.
- b. Use the **Shutdown Server** option or run `shutdown.bat` to stop the Configurator.

The `startup.bat` and `shutdown.bat` files are located at `$MQ_HOME/configurator/server/bin`.

- c. Use the **Launch** option or double-click `$MQ_HOME/configurator/launch.html` to start the Configurator.
- d. To log in to the Configurator, type `admin` as a user name and `eucl1dAI` as password.

To change default credentials, edit the `ConfigLogin.info` file located at `$MQ_HOME/config`. Change the password value for the `admin.password=password` property.

## Troubleshooting with Simple Installation

If you encounter an issue while installing TIBCO MDM with PostgreSQL, you might resolve the issues by completing the common troubleshooting procedures.

*Troubleshooting with Simple Installation*

Issue	Description	Solution
Database specific error	<p>The following exception is displayed in \$MQ_HOME/log/elink.log: Unable to get managed connection for java:jboss/eCMDDataSource</p> <p>The exception might get displayed due to the following reasons:</p> <ul style="list-style-type: none"> <li>• PostgreSQL is not running</li> <li>• PostgreSQL initialization failed</li> <li>• MDM database schema does not exist</li> </ul>	<p>To resolve this error, perform the following steps:</p> <p>Execute pg_start.bat/.sh and pg_stop.bat/.sh to start and stop PostgreSQL Server. The files are located at \$MQ_HOME/db/postgreSQL/install.</p> <p>Execute pg_init.bat/.sh to initialize the PostgreSQL database instance. The files are located at \$MQ_HOME/bin/pgsql.</p> <p>Perform the following tasks:</p> <ul style="list-style-type: none"> <li>• Create the missing tablespace directories:           <pre>\$MQ_HOME/bin/pgsql/tablespaces/velodbdata \$MQ_HOME/bin/pgsql/tablespaces/velodbindx</pre> <p>Ensure that the logged in user is the owner and has full permission to access these directories.</p> </li> <li>• Execute install.bat from \$MQ_HOME/db/postgreSQL/install and type the following:           <pre>\$MQ_HOME/bin/pgsql localhost 5432 postgres USERNAME "" mdmuser mdmpassword</pre> <p>Where <i>USERNAME</i> is the logged-in user name.</p> <pre>\$MQ_HOME/bin/pgsql/tablespaces/velodbdata \$MQ_HOME/bin/pgsql/tablespaces/velodbindx dev dev</pre> </li> </ul>

Issue	Description	Solution
		Verify if the MDM schema exists by starting the PostgreSQL Administration console.

## JBossWildFly, Oracle, and EMS

Follow the instructions to install TIBCO MDM on JBoss WildFly application server, Oracle database, and TIBCO EMS:

1. [Installation Overview](#)
  - a. [Prerequisites for Installation](#)
  - b. [Additional Software Components](#)
  - c. [Third Party Libraries](#)
  - d. [Hardware Configuration](#)
  - e. [Environment Variables](#)
2. [Supported Databases](#)
3. [Database Sizing Requirements](#)
4. [Installing TIBCO MDM \(Typical Installation\)](#)
5. [Configuration of Oracle Database](#)
  - a. [Creating Tablespaces](#)
  - b. [Installing Seed Data Using Database Setup Wizard](#)
  - c. [Troubleshooting with Oracle Database](#)
6. [Creating TIBCO EMS Queues and Topics](#)
  - a. [Verifying Queues and Topics](#)
7. [Configuring TIBCO MDM for JBoss WildFly Application Server](#)
  - a. [Removal of jaxrs Entries for JBoss WildFly Application Server](#)
  - b. [Enabling SSL on JBossWildFly Application Server](#)
  - c. [Configuring EMS over SSL on Application Servers](#)

- d. [Deploying TIBCO MDM on JBoss WildFly Application Server](#)
  - e. [Starting JBoss WildFly Application Server](#)
  - f. [Troubleshooting with JBoss WildFly Application Server](#)
- 8. [Performing Postinstallation Tasks for Typical Installation](#)
  - 9. [Troubleshooting with Typical Installation](#)

## Installation Overview

Download TIBCO MDM from the [TIBCO eDelivery](#) website . To login, you need user name and password. If you have not received a user name and password, contact TIBCO Technical Support. After you download TIBCO MDM, install it using the installer provided.

### Default Installation Directory

- **Microsoft Windows** The default installation location is  $\$TIBCO\_HOME$  where all TIBCO products are installed. Typically,  $\$TIBCO\_HOME$  is at `c:\tibco`.
- **UNIX** The default installation directory depends on who performs the installation:
  - For root users, the default installation directory is `/opt/tibco`.
  - For non-root users, the default installation directory is `/myhome/tibco`, where *myhome* is the home directory of the user.

### Installer Disk Space Requirements in Temporary Area

- **Microsoft Windows Platforms** The entire package is extracted into a temp folder (minimum requirements 40 GB and 4 GB RAM), typically `SystemDrive:\Temp` or `SystemDrive:\Documents and Settings\user_name\Local Settings\Temp`.
- **UNIX Platforms** The installer launcher first extracts a Java Virtual Machine (JVM) in a temporary directory (minimum requirements 40 GB and 4 GB RAM) and uses this JVM to launch itself. The size of the extracted JVM differs from platform to platform. You can select the temporary area using the following option when starting the installer: `install_package_name.sh -is:tempdir /temp_area`

## Prerequisites for Installation

Before you start the TIBCO MDM installation, ensure that your system meets all of the requirements.

### Prerequisites

Software Component	Description
JDK	<p>TIBCO MDM is certified with Oracle Java and AdoptOpenJDK.</p> <ul style="list-style-type: none"> <li>TIBCO MDM bundles Oracle Java with the installer. The bundled Oracle Java is located under TIBCO MDM installation home (<i>TIBCO_HOME</i>\tibcojre64\11). You do not need to download Java from the Oracle download site. If any updates to Java 11, TIBCO MDM continues to ship through the hotfix installers.</li> <li>To install AdoptOpenJDK, download the executable file from the <a href="#">AdoptOpenJDK</a> site and install it at the appropriate location.</li> </ul> <p>Ensure that the <i>JAVA_HOME</i> environment variable has been set correctly.</p> <ul style="list-style-type: none"> <li>For the JBossEAP, JBoss WildFly, and WebLogic application servers, TIBCO MDM supports Java 11.</li> <li>For WebSphere application server, TIBCO MDM supports Java 1.8.</li> </ul> <p>Consult the readme shipped with your installation of TIBCO MDM for the most up-to-date software requirements.</p>
JMS Server	The JMS Server must be installed and running with the required queues and topics created
Application Server - For Typical install only	<p>The Application Server must be installed and running with the correct service packs applied.</p> <p>For IBM WebSphere, make sure that JDK patch level matches the application server fix pack level.</p>
Database - For Typical install only	The Database server must be ready with either Oracle, PostgreSQL, or SQL Server installed and must have a user account with full privileges for the database. It is also recommended that a second user be created, but with restricted privileges.

Software Component	Description
Client - For Typical install only	<p>The client for the database must be installed on the TIBCO MDM system machine and must have access to Java JDBC connectors. The SQL Server client is required for creating new seed data. However, we do not need clients for the PostgreSQL database.</p> <p>Oracle Client Software should be Developer Edition or Enterprise Edition and must be on the computer hosting the application server. TIBCO MDM uses the sqlldr utility shipped with these Oracle Client Software editions.</p>
Web Server - For Typical install only	<p>Web server is optional and is needed only if you do not plan to use direct URL access to the application server. If the Web server is going to be used, install it first.</p>
Cache Server - For Typical install only	<p>Cache server is optional and is needed only if a centralized cache server is proposed. Make sure the cache server is installed (but not running).</p> <p><b>Note:</b> For information about the Cache server, see <a href="#">Enable Apache Ignite for TIBCO MDM</a>.</p>

## Additional Software Components

TIBCO MDM requires additional software components as listed in the following table. The requirements of components depend on your installation choices and supported platforms. For a complete list of versions and platforms supported, see the *Readme.txt* file.

### Required Components

Component to Install	Supported options	For more information, see:
JDK	<ul style="list-style-type: none"> <li>For WebSphere application server, use JDK 1.8.</li> <li>For JBoss WildFly and WebLogic application servers, use JDK 11.</li> </ul>	<ul style="list-style-type: none"> <li><a href="#">Installation Overview</a></li> </ul>

Component to Install	Supported options	For more information, see:
<b>Database</b> Install and configure a database.	<ul style="list-style-type: none"> <li>• Oracle</li> <li>• Microsoft SQL Server</li> <li>• PostgreSQL</li> </ul>	<ul style="list-style-type: none"> <li>• <a href="#">Configuration of Oracle Database</a></li> <li>• <a href="#">Configuration of SQL Server Database</a></li> <li>• <a href="#">Simple Installation with PostgreSQL</a></li> </ul>
Database Client	<ul style="list-style-type: none"> <li>• Oracle</li> <li>• Microsoft SQL Server</li> </ul>	
<b>JMS Server</b> Configure a JMS Server	<ul style="list-style-type: none"> <li>• TIBCO Enterprise Messaging Service</li> </ul>	<ul style="list-style-type: none"> <li>• <a href="#">Creating TIBCO EMS Queues and Topics</a></li> </ul>
<b>Application Server</b> Configure a supported Application Server.	<ul style="list-style-type: none"> <li>• Websphere with or without Websphere ND</li> <li>• Weblogic</li> <li>• JBoss WildFly</li> </ul>	<ul style="list-style-type: none"> <li>• <a href="#">Configuring TIBCO MDM for WebSphere Application Server</a></li> <li>• <a href="#">Configuring TIBCO MDM for WebLogic Application Server</a></li> <li>• <a href="#">Configuring TIBCO MDM for JBoss WildFly Application Server</a></li> </ul>

### Optional Components

	Component to Install	Supported options	For more information, see:
1.	<b>AS2 Gateway</b> Configure AS2 Gateway for secure communication with other systems. (required only for	<ul style="list-style-type: none"> <li>• Any AS2 Server (such as TIBCO BusinessConnect)</li> </ul>	<a href="#">Configuration of TIBCO BusinessConnect and TIBCO BusinessWorks</a> Details for configuring

	Component to Install	Supported options	For more information, see:
	GDSN mode or external communication).		TIBCO BusinessConnect. See appropriate documentation for other gateways.
2.	<b>Cache Server</b> Configure a cache Server.	Apache Ignite	<a href="#">Configuration Properties of Apache Ignite</a>
3.	<b>Web Server</b> Configure a supported Web Server to connect to the application server.	<ul style="list-style-type: none"> <li>• IBM HTTP</li> <li>• Apache Server</li> <li>• Microsoft IIS</li> </ul>	<a href="#">Configuration of Web Servers</a>
4.	<b>X Server</b> Configure to upload images for any records maintained using TIBCO MDM.	<a href="#">RealVNC</a>	<a href="#">Installing X Server</a>

## Third Party Libraries

In addition to the distribution provided by TIBCO, MDM requires additional software. This software must be provided for the installation and might have different licensing.

This table lists all the software which might be required.

### *Third Party Libraries*

Library	Library Name	Description
JDK Library	jsse.jar	<p>Required, if you will be using SSL.</p> <p>Can be obtained from JDK.</p> <p>Vendor: ORACLE/IBM/HP</p>

Library	Library Name	Description
XMLC related Libraries	xmlc.jar, xmlc-base.jar, xmlc- chtml.jar, xmlc-taskdef.jar, xmlc- xerces.jar, xmlc-all-runtime.jar, and Sunec.jar	<p>Required for TIBCO MDM UI.</p> <p>Click the <b>XMLC Download</b> link under the TIBCO MDM area at the <a href="#">eDelivery site</a> to download the xmlc-2.2.x.zip.</p> <p>You can choose to download the library or let the installer download the library during the installation process.</p>
	gnu-regexp.jar	Required for compiling HTML.
EMS related Libraries	tibjms.jar and jms-2.0.jar	<p>Required, if you are using TIBCO EMS as a JMS vendor.</p> <p>The libraries can be obtained from the installation directory of TIBCO EMS (pointed by EMS_HOME).</p>
<p><b>Note:</b> EMS libraries are not applicable for the PostgreSQL database.</p>		
JDBC related Libraries	ojdbc8.jar mssql-jdbc- 7.2.2.jre11.-jar postgresql- 42.2.11.jar	<ul style="list-style-type: none"> <li>ojdbc8.jar is required for Oracle.</li> <li>mssql-jdbc-7.2.2.jre11.jar ( Microsoft JDBC Driver 7.2 for SQL Server, Java Development Kit (JDK) 11.0 ) is required for Microsoft SQL Server.</li> <li>postgresql-42.2.11.jar is required for PostgreSQL. (Not required if you are using Simple Installation)</li> </ul> <p>Copy the following JAR files to <code>\$MQ_HOME/configurator/server/configurator/lib/ext</code>.</p> <ul style="list-style-type: none"> <li>ojdbc8.jar copy from <code>\$ORACLE_HOME/jdbc/lib</code>.</li> <li>Download the mssql-jdbc-7.2.2.jre11.jar ( Microsoft JDBC Driver 7.2 for SQL Server, Java Development Kit (JDK)</li> </ul>

Library	Library Name	Description
		<p>11.0 ) file from <a href="#">Microsoft Download Center</a>.</p> <ul style="list-style-type: none"> <li>• postgresql-42.2.11.jar file copy from <code>\$MQ_HOME/bin/pgsql/driver</code></li> </ul>
Hibernate Assembly	hibern-ate3.jar and cglib-2.2.jar	<p>Required by TIBCO MDM for some database interactions.</p> <p>You can choose to download the library or let the installer download the library during the installation process.</p> <p>Click the <b>Download</b> link under the TIBCO MDM area at the <a href="#">eDelivery site</a> to download the product_tibco_hibernate_lgpl_3.6.10.003.zip.</p>

All the required libraries are to be added to the distribution provided (ECM.ear) with TIBCO MDM.

## Hardware Configuration

The following table lists sample hardware configurations. Additional memory may be required to accommodate data caching needs.

### Hardware Configurations

Configuration	Quantity	Type			Memory
		Sun	IBM	Intel	
<b>Low End</b>					
Single machine for web server, application server, and DB server	1	Sun Fire X4100 - 2 CPU	IBM xSeries (AMD or Xeon) or equivalent	Xeon 2GHz, 2 CPU	4 GB RAM, 50 - 100 GB disk 8 GB RAM and Dual core processors are recommended

Configuration	Quantity	Type			Memory
		Sun	IBM	Intel	
					to achieve increased throughput.
<b>Mid-range / Mid-range clustered</b>					
Web server	1	Sun Fire x2100 or Sun Fire x4100 equivalent, 1-2 CPU	IBM xSeries 1-2 CPU or pSeries entry level servers	Xeon 2 GHz, 1 CPU	1 GB RAM, 36 GB internal disk
Application server	1-2	Sun Fire x4100 2 CPU with Dual core processors or Sun Fire V240 with 4 CPU	IBM i520 or IBM 630 with 2-4 core/CPU	Xeon 3 GHz, 2-4 CPU	4- 6 GB RAM, 36 GB disk 8 GB RAM and dual core processors are recommended for higher throughput.
Database server	1	Sun Fire 445 or equivalent with 2-4 CPU	IBM i520 or P630 with 2-4 Core/CPU	Xeon 3 GHz, 2-4 CPU	6-8 GB RAM, 200-500 GB disk.
Storage	1				Disk array, disks of 100 - 200 GB.
<b>High-end</b>					
Web server	1-2	Sun Fire, V100, 1-2	IBM P610, 1-2 CPU	Xeon 2 GHz, 1-	2 GB RAM, 36 GB internal

Configuration	Quantity	Type			Memory
		Sun	IBM	Intel	
		CPU		2 CPU	disks
Application server	2-4	Sun Fire V490 with 4 CPU or Sun Fire x4100 with 2 CPU dual core	IBM P650, 4-8 CPU	Xeon 3 GHz, 4-8 CPU	6-8 GB RAM, 40 GB disk for each server  12 GB RAM recommended for higher throughput.
Database server	1	Sun Fire V4800, 4-8 CPU	IBM P650, 4-8 CPU	Xeon 3 GHz, 4-8 CPU	Minimum 12 GB RAM  400-600 GB disk.
Storage	1				Disk array, disks of 200 to 500+ GBb.

The hardware required depends on many factors including, number of concurrent users, usage patterns, retention of history and rate of change for the data. A more accurate capacity planning exercise should be done based on detailed scenario tests done in performance labs.

Contact TIBCO Professional Services or TIBCO Customer support for more details on how to calculate the required hardware. It is recommended that any production hardware planning must be done using scenario based testing results. A sample capacity planning worksheet can be obtained from TIBCO Customer Support.

## Environment Variables

You must set the important environment variables before installing TIBCO MDM.

**i** Note:

- It is recommended that you use ASCII characters for all file names. If these names include non-ASCII characters, copying the files from Windows to UNIX or Linux and vice versa may result in corruption of file names.
- While setting environment variables on all platforms, if the ‘\’ character is used as a path separator instead of ‘/’, it leads to errors as ‘\’ is treated as an escape character.
- For Simple install, set only `JAVA_HOME` environment variable.
- For Typical install, set all the environment variables mentioned in the Environment Variables table.

*Environment Variables*

Variable	Description
<code>MQ_HOME</code>	<p>Define <code>MQ_HOME</code> to point to the installation directory. It is recommended that you allocate at least 8 GB to this directory. In a clustered environment, each application server should point to a separate location.</p> <p>Example: <code>/home/tibco/mdm/version</code></p>
<code>MQ_LOG</code>	<p>The location where log files will be generated (the recommended location is <code>\$MQ_HOME/log</code>). In a clustered environment, each server should point to a separate location. Define <code>MQ_LOG</code> to point to this directory. A minimum of 1 GB should be allocated to this directory. The best practice is to change the default location such that the directory is not a subdirectory of <code>MQ_HOME</code>.</p> <p>Example: <code>\$MQ_HOME/log</code></p>
<code>MQ_COMMON_DIR</code>	<p>All standard configurations files for workflow and data validation as well as all customizations are stored in this directory. This directory also holds all files generated during normal application processing. It is shared by all application servers in the cluster, and should be mounted to each server. All disk space indicated in the section <a href="#">Hardware Configuration</a> should be assigned to this directory, and the <code>MQ_</code></p>

Variable	Description
	<p>COMMON_DIR variable should be set. The best practice is to change the default location such that the directory is not a subdirectory of MQ_HOME.</p> <p>Example: <code>/home/tibco/mdm/version/common</code></p> <p>If you plan to create a copy of the TIBCO MDM instance across operating systems (for instance, Linux to Windows or Windows to Linux) and if the path contains any non English characters, such a copy may not be possible. For example, using Japanese characters in the path.</p>
<i>MQ_CONFIG_FILE</i>	<p>Points to <code>\$MQ_HOME/config/ConfigValues.xml</code>. The values/parameters in this file can be set using the Configurator.</p> <p>Example: <code>/home/tibco/mdm/version/config/ConfigValues.xml</code></p>
<i>JAVA_HOME</i>	<p>The directory where JRE/JDK is installed.</p> <p>Example: <code>/opt/jdkversion</code></p>
<i>EMS_HOME</i>	<p>The directory where TIBCO EMS (or the messaging software) is installed.</p> <p>Example: <code>/home/tibco/ems</code></p>
<i>ANT_HOME</i>	<p>The Directory path where ant is installed.</p> <p>Example: <code>/opt/antversion</code></p>
MQ_HTTP_SESSION_REPLICATION_ENABLED	<p>If you use multiple nodes and want to replicate the session, then set the value of the MQ_HTTP_SESSION_REPLICATION_ENABLED environment variable to <b>true</b> to enable the session replication.</p>
MDM_DB_USE_SERVICENAME	<p>Specify this variable when you are connecting to the database by using the Configurator and when you are running TIBCO MDM on container platforms.</p> <ul style="list-style-type: none"> <li>• Set to <b>true</b> to connect to the Oracle database by using the service name</li> <li>• Set to <b>false</b> to connect to the Oracle database by using SID</li> </ul>

Variable	Description
	For more information, see <a href="#">Connecting to Database Using SID and Service Name</a> .
MDMPORT	Port number on which the TIBCO MDM node is running.
PROTOCOL	Specifies a protocol such as http or https to access the TIBCO MDM node. By default, the http protocol is used.

### Application Server Specific

<i>WAS_HOME</i>	<p>The directory where WebSphere is installed (required <i>only</i> if using WebSphere).</p> <p>Example: /opt/WebSphere/AppServer</p>
<i>JBOSS_HOME</i>	<p>For JBoss WildFly Application Server. Specify the path value until the root of the WildFly directory.</p> <p>Example, E:\JBoss\wildfly-<i>version</i>.Final.</p>
<i>JBOSS_HOME</i> (Simple Install)	<p>The directory where JBOSS is installed (required only if using simple installation).</p> <p>Example: %MQ_HOME%\bin\wildfly-<i>version</i>.Final</p>
<i>WLS_HOME</i>	<p>For WebLogic Application Server. Specify the path value of the WebLogic Application Server directory.</p> <p>Example:</p> <ul style="list-style-type: none"> <li>• For Linux: /opt/bea</li> <li>• For Windows: G:\WebLogic\wlserver_<i>version</i></li> </ul>

### Database Specific

<i>ORACLE_HOME</i>	<p>For Oracle database. The directory where Oracle is installed.</p> <p>Example:</p> <ul style="list-style-type: none"> <li>• For Windows: /home/oracle/product/<i>version</i>/db_1</li> </ul>
--------------------	--

Variable	Description
	<ul style="list-style-type: none"> <li>On UNIX: <code>\$export ORACLE_HOME=/u01/app/oracle/product/<i>version</i></code></li> </ul>
<code>LD_LIBRARY_PATH</code>	For Oracle database: <code>\$ORACLE_HOME/lib</code>
<code>NLS_LANG</code>	<p>For Oracle database. Example:</p> <ul style="list-style-type: none"> <li>On UNIX:           <pre>export NLS_LANG=AMERICAN_AMERICA.UTF8</pre> </li> <li>On Windows:           <pre>set NLS_LANG=AMERICAN_AMERICA.UTF8</pre> </li> </ul>
<code>POSTGRESQL_HOME</code>	<p>For PostgreSQL database. The directory where PostgreSQL is installed.</p> <p>Example: <code>\$MQ_HOME/bin/pgsql</code></p>
<code>OS</code>	The Operating system. For example, Linux.
<code>DISPLAY</code>	This environment variable is used by X-Windows based applications. It points to a device capable of displaying an X-Windows based UI.
<code>LD_ASSUME_KERNEL</code>	Used on the Linux platform to make Linux use the old Linux threads library, particularly required for Oracle installation (required <i>only</i> if Oracle is used as the database).
<code>PATH</code>	<p>This is a list of directories separated by a separator. When any command or program is executed, the OS tries to locate the program in the directories listed in PATH. If the program is not found in any of the directories, the OS cannot load and execute the program. The Separator character is ':' for Unix and Linux platforms, and ';' for the Windows platform.</p> <p>Ensure that there is no space with the commas and colons between the program in the directories listed which are separated by ':' for Unix and Linux platforms, and ';' for the Windows platform.</p>

Variable	Description
<code>SHLIB_PATH</code>	List of directories separated by a separator (see PATH) where a dynamic linker tries to find the libraries. Used on UNIX platforms.
<code>LIBPATH</code>	List of directories separated by a separator (see PATH) where the Operating system as well as the application library files reside. Used on UNIX platforms.
<code>NODE_ID</code>	Points to the current cluster member. Example: <code>NODE_ID=Member1</code>
<b>TIBCO MDM REST API through Swagger UI</b>	
<code>SWAGGER_MDM_HOST</code>	An IP address of the TIBCO MDM server on which you want to try out the TIBCO MDM REST APIs.
<code>SWAGGER_MDM_PORT</code>	Port of the TIBCO MDM server on which you want to try out the TIBCO MDM REST APIs.

## Supported Databases

Install any one of the following databases as per your requirement. For a list of versions and platforms supported, see the *Readme.txt* file shipped with installation of TIBCO MDM.

### Supported Databases

Database	Description	Site Reference
Oracle	Download the supported version of the Oracle database from the Oracle site and unzip it to the required location.	Install the Oracle server software as directed in the <a href="#">Oracle installation document</a> .
SQL Server	Download the latest version of Microsoft SQL Server from the following site and unzip it to the required location	Install the SQL Server software as directed in the appropriate <a href="#">SQL</a>

Database	Description	Site Reference
		<a href="#">installation document.</a>
PostgreSQL	The PostgreSQL database is installed with the Simple installation. You do not need to separately download it. For more information about simple installation, see <a href="#">Simple Installation with PostgreSQL.</a>	Not Applicable

## Database Sizing Requirements

The database sizing requirements include the minimal sizing requirements for `initdbname.ora` (`initedcm50.ora`); for small, medium, and large databases.

### *Database Sizing Requirements*

Database Parameter Setting	Low-end	Mid-range	High-end
Db block size	8192	8192	8192
Db_file_multiblock_read_count	8	16	32
Shared pool size	75 MB	150 MB	200 MB*
Processes	(# of application servers)* (application server max db connection pool size) + 200		
Parallel max servers	2	4	5*
Log_buffers	25% of the system memory		

Database Parameter Setting	Low-end	Mid-range	High-end
Timed_statistics	True	True	True
Max_dump_file_size	5 MB	10 MB	20 MB
Rollback_segments	8 seg	16 seg	32 seg*
Open cursors	300	450	3000
Character set	UTF-8		
Buffer Pool Size	150 MB	300 MB	500 MB - 2 GB*
db_writer_processes	75% of the cpu_count parameter value		
Sessions	1.1* processes + 200		
optimizer_mode	ALL_ROWS		
shared_servers	# of dispatchers* 2		
Transactions	# sessions		

\* These values depend on various factors including concurrent users, message and workflow volumes, number of records, and so on. Your DBA should adjust these values based on the actual load and required performance characteristics.

## Installing TIBCO MDM (Typical Installation)


In the typical installation, the installer presents panels which you can select choices about the product location, and so on.

### Prerequisites

- Verify that your computer meets the System requirements. The system requirements are listed in the `readme.txt` file.
- Download the Installer. The application is available as a ZIP file.
- Extract the contents of the ZIP file to a folder on your computer.
- Search for the `TIBCOUniversalInstaller` application in the location where you have extracted the ZIP file.


## Procedure

1. Run the `TIBCOUniversalInstaller.exe` application. The TIBCO Universal Installer Welcome window is displayed.
2. Review the information and click **Next**. The license agreement is displayed.
3. Review the terms of the license agreement. If you agree with its terms, accept the license agreement and click **Next**.
4. In the Installation Profile Selection window, do one of the following:
  - a. Select **Create a new TIBCO\_HOME** option. A TIBCO installation environment is used for software installations and consists of a Name and Directory. Products installed into different installation environments do not share components; therefore you can keep product installations completely isolated from each other.
    - **Directory**: browse to the directory where the product needs to be installed and provide a unique environment name. Ensure that you have write permission to this directory.
    - **Name**: specify the environment name that is easy to identify your environment. For example, 'User Acceptance' or 'Procurement Department'.
  - a. If you have previously installed a TIBCO product using the Universal Installer, you can select **Use an existing TIBCO\_HOME**. By default, the installer detects the directory for your `TIBCO_HOME` and displays the path. For example, on Windows, the default installation directory is `c:\tibco`.

 **Note:** If you had installed the application earlier, the directory cannot be modified. For a new installation, the directory can be changed.

Click **Next**.

5. In the Installation Profile Selection window, by default, the **Typical** installation profile is selected.
  - a. If you check the **Customize Installation** check box, a list of components is enabled (**Executable Image** and **Common Configuration**).
  - b. Select your preferred options and click **Next**.
6. In the TIBCO MDM Configurator Tomcat Settings window, the default port values are displayed. You can change the default port values. Click **Next**.

 **Warning:** The specified port values must not be in use by another application. If you do not specify configuration information, Configurator does not start and you need to perform manual configuration. For more information about the Configurator, see [Configurator](#).

7. In the TIBCO Patterns - Search Settings window, the default user interface port value (required for Patterns GUI tomcat server) and Patterns server port value (required for Patterns binary) are displayed. You can change the default port values.
  - a. Select **Install as a Windows Service** check box if you want to install the Patterns server binary as a service.

Click **Next**.

8. In the TIBCO MDM Common Config Location window, select the common configuration location and click **Next**.

If you have selected the standard common configuration option, the default \$MQ\_HOME\common directory location is displayed. You can retain the location or change it by clicking **Browse**.

✔ **Tip:** The best practice is to assign a location separate from MQ\_HOME. TIBCO MDM creates files in this directory and it is better to keep it separate from MQ\_HOME. In a clustered environment, this directory should be shared for all instances.

i **Note:** If you do not specify the common configuration location, Configurator does not start and you need to perform the manual configuration. For information, see [Manually Configuring TIBCO MDM](#).

9. The HIBERNATE LGPL License Agreement window is displayed. If you agree with its terms, accept the license agreement, and click **Next**.
10. The LGPL Assembly Download window is displayed. Select one of the following options:
  - **Download HIBERNATE assembly from TIBCO:** if you are downloading the LGPL assembly for the first time, select this option. The HIBERNATE assembly is downloaded in the same folder as the installer. All the third party software which is used in the application and their licenses are downloaded.
  - **Provide the location for the assembly previously downloaded from TIBCO:** if you have previously downloaded the LGPL assembly, specify the folder in which you have downloaded the hibernate assembly. Browse to the directory where the assembly is previously downloaded and saved.

i **Note:** If the LGPL Assembly is already downloaded, the LGPL Assembly Download window is not displayed.

Click **Next**.

11. The XMLC LGPL License Agreement window is displayed. If you agree with its terms, accept the license agreement, and click **Next**.
12. Select the **Download XMLC assembly from TIBCO** option. The assembly gets downloaded in the same folder as the installer. Click **Next**.
13. The Oracle Elliptic Curve Library LGPL License Agreement window is displayed. If you agree with its terms, accept the license agreement, and click **Next**.
14. In LGPL Assembly Download window, select one of the following options:

- **Download Oracle Elliptic Curve Cryptography Library assembly from TIBCO:** if you select this option, the Cryptography assembly is downloaded and configured.
- **Provide the location for the assembly previously downloaded from TIBCO:** If you select this option, the **Oracle Elliptic Curve Cryptography Library Assembly Path** field is enabled. Click **Browse** to select the Cryptography assembly.

Click **Next**.

**Note:** The steps 13 and 14 are applicable only for the JBoss WildFly application server with Oracle and SQL server database combination.

15. In the Pre-Install Summary window, review a list of the components that are going to be installed and the installation environment details and click **Next** to begin the installation process.
16. In the Post-Install Summary window, review a list of the components that are installed and the installation environment details. Click **Finish** to exit the wizard.

## Result

The following auto generated log files are created in the `C:\Users\username.TIBCO\install_currentyear-currentmonth-currentdate.uniqueID` folder: Using the log files, you can troubleshoot for errors in the installation process.

- `antTask_log_installerConfig_currentyear-currentmonth-currentdate.uniqueID`: consists of configuration related logs.
- `antTask_log_installerMergeXMLC_currentyear-currentmonth-currentdate.uniqueID`: consists of the XMLC merge related logs.
- `tibco_universal_installer.username_install`: consists of installer related logs.
- `antTask_log_updateEARToIncludeHibernateLib_currentyear-currentmonth-currentdate.uniqueID`: consists of ECM.ear file related logs.

## Configuration of Oracle Database

To configure the Oracle database, use the Oracle Configuration Assistant. Consult your Database Administrator on standard practices followed by your IT department to change the recommended structure according to your needs.

## Prerequisites

- Ensure that all required environment variables are set. See [Environment Variables](#).
- Ensure that Oracle Client Software Developer Edition or Enterprise Edition is installed on the computer hosting the application server ().
- Ensure that the sqlldr utility is available.
- Use the latest driver provided by Oracle.
- A valid and tested connect string should be present in the TNSNAMES.ora file. For example, the connection URL: jdbc:oracle:oci:@ORACLERAC  
where ORACLERAC is the TNS entry in the client's TNSNAMES.ora file and oci drivers are used to support TAF.

## TNSNAMES.ora file (client)

```
ORACLERAC =
(DESCRIPTION =
  (ADDRESS_LIST =
    (ADDRESS = (PROTOCOL = TCP)(HOST = hostname1.domainname.com)(PORT = 1521))
    (ADDRESS = (PROTOCOL = TCP)(HOST = hostname2.domainname.com)(PORT = 1521))
  )
  (FAILOVER=on)
  (LOAD_BALANCE = ON)
  (CONNECT_DATA =
    (SERVER = DEDICATED)
    (SERVICE_NAME = orcl)
    (FAILOVER_MODE =
      (TYPE = SELECT)
      (METHOD = BASIC)
      (RETRIES = 180)
      (DELAY = 5)
    )
  )
)
)
```

**i Note:** The TNS entry supports both failover and load balancing.

- Database port
- Database server host name

## Creating Tablespaces

Table spaces are required to hold data and indexes for all tables required for TIBCO MDM and for all data sources uploaded.

TIBCO MDM uses the following different kinds of tables and indexes:

- Fixed tables
- Indexes for fixed tables
- Data source tables
- Master catalog tables
- Indexes for master catalog tables

### Procedure

1. Change the default data file location specified in the createtablespace.sql file based on your Oracle installation.
  - a. Go to \$MQ\_HOME/db/oracle/configure/.
  - b. Open the createtablespace.sql file.
  - c. Change the data file location for all tablespaces. For example, if you have installed Oracle in the E:/app/oradata/orcl folder, change the C:/oracle/version/oradata/orcl path to E:/app/oradata/orcl.
2. Run the createtablespace.sql script to create the following tablespaces:

#### *Tablespaces*

Tablespace Name	Description
VELODBDATA	For fixed TIBCO MDM tables.
VELODBINDX1	For fixed TIBCO MDM table indexes.
VELODBDF	For TIBCO MDM data source tables
VELODBDATA	For TIBCO MDM master catalog tables.
VELODBINDX	For TIBCO MDM master catalog table indexes.

**i Note:**

- The VELODBDATA1 tablespace has a minimum size of 100 MB and maximum size of 500 MB. The remaining tablespaces are 100 MB. You can change the size of the tablespaces based on your requirement. You can also set the size as unlimited for the tablespaces.
- If you are migrating from the earlier versions of Oracle to the latest supported version of Oracle, you have to explicitly grant UNLIMITEDTABLESPACE to the user. Oracle has discontinued the support granting UNLIMITED TABLESPACE to the RESOURCE role user.

Run the following command: `GRANT UNLIMITED TABLESPACE TO username`

3. For a complete installation (tablespaces and seed data), run the installation script from `$MQ_HOME/db/oracle/configure/doall.bat` or `doall.sh`
  - a. To create tablespaces without seed data, run `$MQ_HOME/db/oracle/configure/createusertablespace.sh` or `.bat`
  - b. To create only seed data, see [Creating Seed Data Manually for Oracle Database](#).

## Installing Seed Data Using Database Setup Wizard

The Database Setup Wizard of Configurator makes the database setup process easy and user-friendly.

The Database Setup Wizard is common for all three databases. However, some fields vary according to the selected database in the **Settings > Database** option. The available database options are Oracle, SQL Server, and Postgres. For more information about selecting the database option, see the Configurator chapter of *TIBCO MDM System Administration*.

### Prerequisites

Before running the Database Setup Wizard, ensure the following:

- The database is installed.
- The database client is installed on the local computer.

- If a user has already been created, specify the schema credentials. If the user has not been created, specify the DBA credentials. For information, see [Creating Database User for Oracle Database](#).
- TIBCO MDM is installed and the environment variables are created.
- Database SQL scripts are available.
  - For Oracle: in \$MQ\_HOME/db/oracle.
  - For SQL Server: in \$MQ\_HOME/db/sqlserver.
- For Oracle, the tablespaces are not created.
- The following database JDBC JAR files are copied in the \$MQ\_HOME/configurator/server/lib folder for seed data creation:
  - For Oracle: ojdbc8.jar copy from \$ORACLE\_HOME/jdbc/lib
  - For SQL Server: mssql-jdbc-7.2.2.jre11.jar ( Microsoft JDBC Driver 7.2 for SQL Server, Java Development Kit (JDK) 11.0 ) download from [Microsoft Download Center](#)
- For Oracle Database client globalization support, the following JVM arguments have been added in the \$MQ\_HOME/configurator/server/bin/setenv.bat file.
  - -Duser.country=en
  - -Duser.language=en

## Procedure

1. Log in to the Configurator.
2. Click **Tools > Set up Database**.
3. In the Database Setup Wizard for *databasename* with the Database Access Mode page, select one of the following options:
  - a. **Create New MDM Database User:** Select this option to create a new database user.
  - b. **Use an Existing MDM Database User:** Select this option to specify details of an existing user.

To specify details of a new database user or an existing database user, see the following table:

*New and Existing Database User Details*

Field Name	Description
Database Host	The IP address or host name of the server where the database is installed.
Database Port	<p>By default, the port specific to each database is displayed. For example,</p> <ul style="list-style-type: none"> <li>• For Oracle, the default database port is 1521.</li> <li>• For SQL Server, the default database port is 1433.</li> </ul> <p>You can change the port value, if required.</p>
Database Name (TNS Name)	<p>The name of the database where TIBCO MDM data should be installed.</p> <p><b>Note:</b> For Oracle RAC, specify the SID of either of the two clusters of the RAC database.</p>
DBA User Name	The user name of the database administrator.
DBA User Password	The password of the database administrator.
Test Connection	Click <b>Test Connection</b> to connect to the database and verify if the connection is successful. If the test connection is not successful, verify the specified database details.
New MDM Database User Name	The new user name used for the connection to the database.
New MDM Database	The new password used for the connection to the database.

Field Name	Description
User Password	
Confirm MDM Database User Password	Reenter the new password for confirmation.
<b>Note:</b> Remember the user name and password.	
Tablespace Location  (For Oracle database)	<p>The file system directory (absolute path) location where all tablespaces are created. This must be a local directory on the computer where the database is running. You can specify a custom location and provide a full path of the directory. The directory should have 'write permission' to write a file.</p> <p><b>Notes:</b></p> <ul style="list-style-type: none"> <li>• If you do not specify the tablespace location, by default the tablespaces are created in the \$ORACLE_HOME/database directory.</li> <li>• It is recommended that the file system in this directory contains a significant amount of available space. This directory is assigned by a DBA and should be backed up on a regular basis. For example: /opt/oradata</li> </ul>
Database File Location  (For SQL Server database)	<p>The SQL Server database location. You can specify a custom location and provide a full path of the directory.</p> <p><b>Note:</b> Database File Location should have permission to write files.</p>

- c. On the Database Details and Create New MDM Database User screens, click **Next**.

**i Note:**

- If you are not a DBA user or do not have permission to create tablespace and a new user, you can create a tablespace and database user using the scripts. For information, see [Configuration of Oracle Database](#) and [Configuration of SQL Server Database](#).
- For Oracle, if you select the **Use an Existing MDM Database User** option, see [Creating Database User for Oracle Database](#) for the details of the existing database user.
- For SQL Server, if you select the **Use an Existing MDM Database User** option, see [Creating Database User for SQL Server Database](#) for the details of the existing database user.

4. In the MDM Instance Details page, enter the following details and click **Next**:

*MDM Instance Details*

Field Name	Description
MDM Instance Name	Specify the instance name of TIBCO MDM. When you have multiple instances, and you want to install a database, you can specify a particular instance name. For example, preproduction and postproduction instances. An instance entry is added in the database table.
MDM Instance Description	Specify the instance description of TIBCO MDM.

5. In the Storage Profile Details page, select one of the following storage profile options:
  - a. **Typical Profile:** select this option to use the default values. A Typical profile installs tablespaces for the Oracle database and the database file location for the SQL Server database.  
After you select the **Typical** storage profile option, the Confirm Storage Parameters page is displayed. Confirm the default values and click **Install** to

install the seed data. See step 6.

- b. **Custom Profile:** select this option to specify the customized values for the default tablespace.

After you select the **Custom** storage profile option, the Custom Profile Setup page is displayed. Specify the values, size, and location for the default tablespaces.

- c. Click **Next**.

6. In the Confirm Storage Parameters page, confirm the customized values. Click **Install** to install the seed data.

7. The MDM Seed Data Summary page displays the success and error report of the seed data and schema creation.

- a. To view the schema and seed data log file, click **Open**.

- For Oracle, by default, the log files are stored in \$MQ\_HOME/db/oracle/install/logs folder.



**Note:** You can ignore tablespaces errors. For example,

"ERROR:-ORA-01543: tablespace 'VELODBTEMP' already exists".

- For SQL Server, by default, the log files are stored in \$MQ\_HOME/db/sqlserver/install/logs folder.

8. Click **Finish** to complete the database setup process.

## Troubleshooting with Oracle Database

Resolve the errors that you may come across while configuring the Oracle database.

### *Troubleshooting with Oracle Database*

Issue	Description	Solution
Bad Interpreter Issue	A “bad interpreter” error is displayed on UNIX.	The first line of all scripts on UNIX must be as follows: #!/usr/bin/sh

Issue	Description	Solution
Insufficient Shared Memory Issue	Oracle database error, unable to allocate required shared memory.  (ORA-04031: unable to allocate x bytes of shared memory).	Check whether or not the first line of the UNIX script follows this format. You can also create a soft link as follows: <code>ln -s /bin/sh /usr/bin/sh</code>
Inserting and Updating Data from ProcessLog and ProcessState Tables	Two errors are intermittently thrown when inserting or updating data from ProcessLog and ProcessState tables, even though the data to be inserted has a valid value and length. This error has been observed on Oracle 10.1.0.2.0.  ORA-01461: can bind a LONG value only for insert into a LONG column  ORA-01483: invalid length for DATE or NUMBER bind variable	Restarting the application server might resolve the issue temporarily.  There are similar issues reported in Oracle MetaLink. Reference Document IDs: 241358.1, 461670.1  If the problem persists, contact Oracle support and consider upgrading to the latest patch.
Seed data errors for exceeded length	After you change the value of the MAX_STRING_SIZE parameter from <b>STANDARD</b> to <b>EXTENDED</b> , the following errors occur during seed data creation:  <pre>SQL&gt;CREATE INDEX WORKITEMDETAIL_IDX1 ON WORKITEMDETAIL ( NAME, Value )</pre>	To fix this issue, run the upgradeAttributeLength.sql script located at \$MQ_HOME/db/DatabaseType/install/scripts/utility.

Issue	Description	Solution
	<pre>TABLESPACE VELODBINDX1 ERROR:-ORA-01450: maximum key length (6398) exceeded</pre>	
	<pre>SQL&gt;CREATE INDEX FSENTRY_ IDX ON FSENTRY ( PATH ASC, NAME ASC ) TABLESPACE VELODBINDX1 ERROR:-ORA-01450: maximum key length (6398) exceeded</pre>	
	<pre>SQL&gt;CREATE INDEX SFSENTRY_ IDX ON SFSENTRY ( PATH ASC, NAME ASC ) TABLESPACE VELODBINDX1 ERROR:-ORA-01450: maximum key length (6398) exceeded</pre>	

## Creating TIBCO EMS Queues and Topics

The required queues and topics are located in the \$MQ\_HOME/bin/install/createQueues.txt file.

### Before you begin

Ensure that the EMS Server is running.

### Procedure

1. Go to **All Programs > TIBCO > TIBCO EMS *version*** and click **Start EMS Administration Tool**. The command prompt is displayed.
2. Type **Connect**.
3. Enter login name and password.

**i Note:** If you have not created the administration credentials, press **Enter**. By default, administration login name and password is retrieved.

The connected to: `tcp://localhost:port_number` message is displayed.

4. Go to `$MQ_HOME/bin/install` and open the `createQueues.txt` file.
5. Copy content of the `createQueues.txt` file and place it in the command prompt.  
Queues and topics are created.

## Verifying Queues and Topics

You can verify a list of created queues and topics.

### Procedure

1. Go to **All Programs > TIBCO > TIBCO EMS *version*** and click **Start EMS Administration Tool**.  
The command prompt is displayed.
2. Type **Connect**.
3. Enter login name and password.
4. Type `show queues` in the command prompt and press **Enter**.  
A list of created queues is displayed.
5. Type `show topics` in the command prompt and press **Enter**.  
A list of created topics is displayed.

## Configuring TIBCO MDM for JBoss WildFly Application Server

Some element tags in the `standalone.xml` file differ in the JBoss WildFly version and JBoss EAP versions.

**i Note:** Ensure the correct tagging during configuration.

### Procedure

Perform the following actions in the `standalone.xml` file if you are using JBoss WildFly Application Server:

### 1. Enable access to remote server

- a. Open the `standalone.xml` file located in the `$JBOSS_HOME/standalone/configuration` directory.
- b. Change the value of an interface attribute from **management** to **public** in the following property:

```
<socket-binding name="management-http" interface="public"
port="{jboss.management.http.port:9990}"/>
```

### 2. Specify system properties

- a. Add `<system-properties>` element after the `<extensions>` element.
- b. Under `<system-properties>` element, type the system property name for the name attribute and its value for the value attribute.

```
<system-properties>
<property name="MQ_HOME" value="C:/Apps/tibco/mdm/version"/>
<property name="MQ_CONFIG_FILE"
value="C:/Apps/tibco/mdm/version/config/ConfigValues.xml"/>
<property name="MQ_COMMON_DIR"
value="C:/Apps/tibco/mdm/version/common"/>
<property name="MQ_LOG" value="C:/Apps/tibco/mdm/version/log"/>
<property name="NODE_ID" value="Member1"/>
<property name="PATH" value="C:/Apps/tibco/mdm/bin/ignite/bin";${PATH}"/>
```

**i** **Note:** The `PATH` system property is applicable only for Windows environments.

```
<property name="LD_LIBRARY_PATH" value="C:/Apps/tibco/mdm/bin/ignite/bin:
C:/Apps/tibco/mdm/bin/ignite/libs:${LD_LIBRARY_PATH}"/>
```

**i** **Note:** The `LD_LIBRARY_PATH` system property is applicable only for non-Windows environments.

```

<property name="ORACLE_HOME" value="C:/Apps/Oracle/product/version/dbhome_
1"/>
<property name="log4j2.ignoreTCL" value="true"/>
<property name="log4j2.contextSelector"
value="org.apache.logging.log4j.core.selector.BasicContextSelector"/>
<property name="org.apache.catalina.connector.URI_ENCODING" value="UTF-8"/>
<property name="org.apache.catalina.connector.USE_BODY_ENCODING_FOR_
QUERY_STRING" value="true"/>
</system-properties>

```

**i Note:** The path separator must contain forward slash instead of a backward slash. For example, for MQ\_COMMON\_DIR -  
C:/Apps/tibco/mdm/version/common.

The following table describes property names and their description:

#### *Environment Variables for JBoss WildFly Application Server*

Property Name	Description
MQ_HOME	Refers to \$MQ_HOME of TIBCO MDM.
MQ_CONFIG_FILE	Refers to configuration directory location of TIBCO MDM.
MQ_COMMON_DIR	Refers to the common directory location of TIBCO MDM.
MQ_LOG	Refers to the log folder location specified in \$MQ_HOME.
NODE_ID	Refers to the node ID.
ORACLE_HOME	Refers to the path where Oracle database is installed.

Property Name	Description
log4j2.ignoreTCL	To configure the logging, specify True value for this property. After you configure this property, all logs are displayed in the respective log file.
org.apache.catalina.connector.URI_ENCODING	Refers to the UTF-8 encoding. This needs to be specified to support multiple languages.
org.apache.catalina.connector.USE_BODY_ENCODING_FOR_QUERY_STRING	Specify true. The valid values are true or false.

### 3. Specify max-post-size and max-parameters:

Parameter Name	Description	Example
max-post-size	<p>For uploading a file either through a web service or the TIBCO MDM UI, the maximum file size limit is 10 MB. If you want to upload a file greater than 10MB, add the max-post-size parameter and change the file size. You also need to change the value of the Upload File Size Limit property in the Configurator.</p> <p>For information about uploading a file through the TIBCO MDM UI, see the section, "Creating Records" in <i>TIBCO MDM User's Guide</i>.</p>	<pre>&lt;server name="default-server"&gt; &lt;http-listener name="default" socket-binding="http" redirect-socket="https" enable-http2="true" max- post-size="974247881"/&gt; &lt;https-listener name="https" socket-binding="https" security- realm="ApplicationRealm" enable-http2="true"/&gt; &lt;host name="default-host" alias="localhost"&gt; &lt;location name="/" handler="welcome- content"/&gt; &lt;filter-ref name="server- header"/&gt;</pre>

Parameter Name	Description	Example
max-parameters	<p>The maximum number of parameters that can be added to the TIBCO MDM URL into the browser. Using this value, you can avoid the hash exposure used in the URL. This applies to both query and POST data parameters.</p> <p>By default, the size of the max-parameters is 1000. You can change the value as per your requirement.</p> <p><b>Note:</b> For TIBCO MDM Add-on for Global Data Synchronization, the number of limits might cross due to huge number of attributes. Therefore you must set max-parameters="10000". For example,</p>	<pre>&lt;filter-ref name="x-powered-by-header"/&gt; &lt;/host&gt; &lt;/server&gt;</pre>
	<pre>&lt;http-listener name="default" socket-binding="http" redirect-socket="https" enable-http2="true" max-parameters="10000"/&gt;</pre>	<pre>&lt;server name="default-server"&gt; &lt;http-listener name="default" socket-binding="http" redirect-socket="https" enable-http2="true" max-post-size="974247881" max-parameters="5000"/&gt; &lt;https-listener name="https" socket-binding="https" security-realm="ApplicationRealm" enable-http2="true"/&gt; &lt;host name="default-host" alias="localhost"&gt; &lt;location name="/" handler="welcome-content"/&gt; &lt;filter-ref name="server-header"/&gt; &lt;filter-ref name="x-powered-by-header"/&gt; &lt;/host&gt; &lt;/server&gt;</pre>

4. Add the following VM parameters in standalone.conf (Linux) or standalone.conf.bat (Windows):

```

--add-exports=java.base/jdk.internal.misc=ALL-UNNAMED
--add-exports=java.base/sun.nio.ch=ALL-UNNAMED
--add-exports=java.management/com.sun.jmx.mbeanserver=ALL-UNNAMED
--add-exports=jdk.internal.jvmstat/sun.jvmstat.monitor=ALL-UNNAMED
--add-exports=java.base/sun.reflect.generics.reflectiveObjects=ALL-UNNAMED
--illegal-access=permit
--add-opens jdk.management/com.sun.management.internal=ALL-UNNAMED

```

For example, in `standalone.conf.bat` (Windows) set parameters as shown in the following sample:

```

"JAVA_OPTS=%JAVA_OPTS% --add-exports=java.base/jdk.internal.misc=ALL-UNNAMED"
"JAVA_OPTS=%JAVA_OPTS% --add-exports=java.base/sun.nio.ch=ALL-UNNAMED"
"JAVA_OPTS=%JAVA_OPTS% --add-exports=java.management/com.sun.jmx.mbeanserver=ALL-UNNAMED"
"JAVA_OPTS=%JAVA_OPTS% --add-exports=jdk.internal.jvmstat/sun.jvmstat.monitor=ALL-UNNAMED"
"JAVA_OPTS=%JAVA_OPTS% --add-exports=java.base/sun.reflect.generics.reflectiveObjects=ALL-UNNAMED"
"JAVA_OPTS=%JAVA_OPTS% --illegal-access=permit"
"JAVA_OPTS=%JAVA_OPTS% --add-opens jdk.management/com.sun.management.internal=ALL-UNNAMED"

```

## 5. Create data sources

a. Under `<datasources>` element, add `<DataSource>` element with attributes such as:

- `jndi-name="java:jboss/eCMDDataSource"`
- `pool-name="MDMDataSource"`

a. Enable data source

- Specify `true` for the `enabled` attribute

a. Under `<drivers>` element add JDBC driver specific to each database.

• For the Oracle database:

```
<driver>oracle.jdbc.driver.OracleDriver</driver>
```

• For the SQL Server database:

```
<driver>com.microsoft.sqlserver.jdbc.SQLServerDriver</driver>
```

- For the PostgreSQL database:

```
<driver module="org.postgresql.jdbc.driver" name="PostgresqlDriver">
  <driver-class>org.postgresql.Driver</driver-class>
</driver>
```

- a. Specify connection settings:

- Connection URL-Type any one of the following URLs:

For the Oracle database: `jdbc:oracle:thin:@localhost:1521:dbinstance_name`

For the SQL Server database:

`jdbc:sqlserver://localhost:1433;databaseName=value`

For the PostgreSQL database: `jdbc:postgresql://localhost:5432/dbinstance_name`

- User Name and Password

Specify credentials for the Username and Password attributes.

- a. Configure Transaction Isolation

- Specify the TRANSACTION\_READ\_COMMITTED value for `<transaction-isolation>` attribute.

- a. Specify pool size

By default, 0 pool size is displayed.

- Specify 10 for Min Pool Size: `<min-pool-size>10</min-pool-size>`
- Specify 150 for Max Pool Size: `<max-pool-size>150</max-pool-size>`

- a. Specify transaction timeout

- Specify the transaction timeout in the `<blocking-timeout-millis>` element. This element indicates the maximum time in milliseconds to block a transaction while waiting for a connection and before displaying an exception. This blocks only while waiting for a permit for a connection, and does not display an exception if creating a new connection that takes an inordinately long time. The default is 36000 milliseconds.

For sample data sources, see [Sample Data Sources](#).

## 6. Change deployment timeout

By default, the deployment timeout is displayed as 60 seconds. For slower machines, TIBCO recommends to increase the deployment timeout:

- a. Under `<subsystem xmlns="urn:jboss:domain:deployment-scanner:2.0">` element, add the `deployment-timeout` attribute and its value. For example,

```
<deployment-scanner path="deployments" relative-to="jboss.server.base.dir" scan-
interval="5000" runtime-failure-causes-
rollback="${jboss.deployment.scanner.rollback.on.failure:false}" deployment-
timeout="5000"/>
```

## 7. Specify default timeout

To deploy huge metadata from TIBCO MDM Studio to TIBCO MDM, you need to add the default timeout attribute under the transaction element.

- a. Under `<subsystem xmlns="urn:jboss:domain:transactions:5.0">` element, add the following tag:

```
<coordinator-environment default-timeout="1800000"/>
```

## 8. Change HTTP Port

This step is optional. By default, the HTTP port is 8080. If required, you can change it.

- a. Under the `<socket-binding-group>` element, change the value of the port attribute for http port.

**i** **Note:** Alternatively, you can also change the HTTP port using the following parameter: `standalone.bat -Djboss.socket.binding.port-offset=new_port_number`. For example, if the current HTTP port is 8080 and you want to change it to 8180, type `standalone.bat -Djboss.socket.binding.port-offset=100`; in the command prompt and press Enter. The HTTP port number is changed to 8180.

## 9. Configuration for EJB

- Passing Values by Reference

While invoking the remote method of EJB, JBoss WildFly Application Server

WildFly passes default values using the Passed By Value method instead of the Pass By Reference method. Therefore, to disable the Passed By Value method, add the following property in the standalone.xml file.

- a. For JBoss EAP, navigate to `<subsystem xmlns="urn:jboss:domain:ejb3:6.0">` section, and add the following line at the end of the section: `<in-vm-remote-interface-invocation pass-by-value="false"/>`
- b. For JBoss WildFly, navigate to `<subsystem xmlns="urn:jboss:domain:ejb3:5.0">` section, and add the following line at the end of the section: `<in-vm-remote-interface-invocation pass-by-value="false"/>`

- Define New Pool and Increase EJB Pool Size

When multiple users execute concurrent requests, multiple instances of each bean are used concurrently. Each bean has a limited number of instances in the bean-instance pool, available for use. If all the beans are in use, subsequent requests have to wait for a bean to be released by the previous thread, and then release back into the pool. This wait is for a specific time, that is, five minutes in TIBCO MDM. If the bean is not released within five minutes, an Instance-Acquisition-TimeOut error is displayed and the request remains incomplete.

To avoid such errors, increase the EJB pool size to a large number (500 or 1000). On the JBoss WildFly Application Server, the default pool size is 20, defined in the standalone.xml file. Changing the default pool size may affect all beans in all deployed applications. Therefore, you need to define a new pool.

- a. Navigate to the `<subsystem xmlns="urn:jboss:domain:ejb3:5.0">` (for JBoss WildFly) or `<subsystem xmlns="urn:jboss:domain:ejb3:6.0">` (for JBoss EAP) section, and define the following new pool and specify its pool size:

```
<pools>
<bean-instance-pools>
<strict-max-pool name="mdm-pool" max-pool-size="500" instance-acquisition-
timeout="5" instance-acquisition-timeout-unit="MINUTES"/>
</bean-instance-pools>
</pools>
```

## 10. Defining TIBCO module

In some cases, additional external modules need to be created to configure out-of-

the-box functionality.

- a. Navigate to the `$JBOSS_HOME/modules/system/layers/base/com` folder and create the following hierarchical folders: `tibco/mdm/main`
- b. Create a `module.xml` file in the `$JBOSS_HOME/modules/system/layers/base/com/tibco/mdm/main` folder and add the following snippets:

```
<module xmlns="urn:jboss:module:1.3" name="com.tibco.mdm">
  <resources>
    <resource-root path="tibjms.jar"/>
    <!-- Insert resources here -->
  </resources>
  <dependencies>
    <!-- Insert dependencies here -->
    <module name="javax.api"/>
    <module name="javax.jms.api"/>
  </dependencies>
</module>
```

- c. Save the `module.xml` file.

## 11. Adding TIBCO Module to Global Modules List

**i Note:** Adding TIBCO module to the Global modules list is a must.

- a. Open the `standalone.xml` file located at `$JBOSS_HOME/standalone/configuration` directory.
- b. Modify the existing `<subsystem xmlns="urn:jboss:domain:ee:4.0"/>` section per database as follows:
  - For the Oracle and PostgreSQL databases:

```
<subsystem xmlns="urn:jboss:domain:ee:4.0">
  <global-modules>
    <module name="com.tibco.mdm" slot="main"/>
  </global-modules>
</subsystem>
```

- For the Microsoft SQL Server database, you also need to add the Microsoft SQL driver module to the global Modules list. For example,

```

<subsystem xmlns="urn:jboss:domain:ee:4.0">
  <global-modules>
    <module name="com.tibco.mdm" slot="main"/>
    <module name="com.microsoft.sqlserver" slot="main"/>
  </global-modules>
</subsystem>

```

## 12. Specifying EMS configuration

- a. Copy the `tibjms.jar` file from `$EMS_HOME/lib` and place it in the following folders:  
`$JBOSS_HOME/modules/system/layers/base/com/tibco/mdm/main` and `$MQ_HOME/lib/external`
- b. For JBoss EAP, rename the `jboss-jms-api_2.0_spec-1.0.2.Final-redhat-1.jar` file to `jboss-jms-api_2.0_spec-1.0.2.Final-redhat-1.jar.org` located in the `$JBOSS_HOME/modules/system/layers/base/javax/jms/api/main` folder.
- c. For JBoss WildFly, rename the `jboss-jms-api_2.0_spec-2.0.0.Final.jar` file to `jboss-jms-api_2.0_spec-2.0.0.Final.jar.org` located in the `$JBOSS_HOME/modules/system/layers/base/javax/jms/api/main` folder.
- d. Copy the `jms-2.0.jar` file from `$EMS_HOME/lib` to the `$JBOSS_HOME/modules/system/layers/base/javax/jms/api/main` folder.
- e. Open the `module.xml` file from the `$JBOSS_HOME/modules/system/layers/base/javax/jms/api/main` folder.
- f. For JBoss EAP, replace the path value from `jboss-jms-api_2.0_spec-1.0.2.Final-redhat-1.jar` to `jms-2.0.jar`.
- g. For JBoss WildFly, replace the path value from `jboss-jms-api_2.0_spec-2.0.0.Final.jar` to `jms-2.0.jar`.
- h. Restart the JBoss WildFly application server or JBoss EAP application server.

## 13. Specifying HTTP session timeout

The JBoss WildFly application server provides the default HTTP session timeout of 30 minutes. However, the JBoss Application Server does not support modification of the default value.

As per your business requirement, if you want to override the default HTTP session timeout value for TIBCO MDM, add the following entry in the application `web.xml` file or the `jboss-web.xml` file:

```

<web-app>
  <session-config>
    <!-- HTTP Session timeout, in minutes -->
    <session-timeout>40</session-timeout>
  </session-config>
</web-app>

```

Both the files are available in the ECM.ear > EML.war > WEB-INF directory.

## Removal of jaxrs Entries for JBoss WildFly Application Server

The JBoss WildFly Application Server version provides RESTEasy framework to build RESTful web services and Java applications. It is implemented based on the JAX-RS specification. It conflicts with other RESTful frameworks, which are compliant with the JAX-RS specification.

Remove the jaxrs entries from the standalone.xml file located in the \$JBOSS\_HOME/standalone/configuration directory.

Before modifying the file, back up the existing standalone.xml file, and then remove the following lines:

```

<extension module="org.jboss.as.jaxrs"/>
<subsystem xmlns="urn:jboss:domain:jaxrs:1.0"/>

```

## Enabling SSL on JBoss WildFly Application Server

Enable and verify SSL on JBoss WildFly Application Server.

By default, JBoss WildFly application server uses 8443 port for the HTTPS protocol. Type the following URL into your browser: <https://IPAddress:8443/eml/Login>.

By default, the application realm is mentioned in the standalone.xml file located in the \$JBOSS\_HOME/standalone/configuration directory. The application.keystore is auto generated on the first use with a self-signed certificate for *localhost*. However, generating the self-signed certificates are discouraged because they result in browser warnings on internal sites.

**i Note:** It is always good practice to create a custom application realm. For creating a custom application realm on JBoss WildFly application server, see [WildFly documentation](#).

## Configuring EMS over SSL on Application Servers

*To configure EMS over SSL, configure the application servers.*

Application Server	Steps
WebSphere Application Server	<ol style="list-style-type: none"> <li>1. Stop the application server.</li> <li>2. Copy the following JAR files from \$EMS_HOME/lib to \$WAS_HOME/lib/ext folder: <ul style="list-style-type: none"> <li>• slf4j-api-1.4.2.jar</li> <li>• slf4j-simple-1.4.2.jar</li> </ul> </li> <li>3. Copy the server_root.cert.pem certificate from \$EMS_HOME/samples/certs folder.</li> <li>4. In WebSphere Application Server, perform the following steps: <ol style="list-style-type: none"> <li>a. Under Server Infrastructure, expand Java and Process Management and click the Process definition link.</li> <li>b. On the Configuration tab, under Additional Properties, click the Java Virtual Machine link.</li> <li>c. On the Configuration tab, in the Generic JVM arguments field, enter the following JVM arguments: <div style="border: 1px solid #ccc; padding: 10px; margin: 10px 0;"> <pre style="background-color: #e6f2ff; padding: 5px;">-Dcom.tibco.tibjms.naming.security_protocol=ssl</pre> </div> </li> </ol> </li> </ol>

Application Server	Steps
JBoss WildFly Application Server	<div style="border: 1px solid #ccc; padding: 10px; margin-bottom: 10px;"> <pre style="background-color: #f0f8ff; padding: 5px; margin-bottom: 5px;">-Djsse.providerClass=com.ibm.jsse2.IBMJSSEProvider2</pre> <pre style="background-color: #f0f8ff; padding: 5px; margin-bottom: 5px;">-Dcom.tibco.tibjms.ssl.expected_hostname=server</pre> <pre style="background-color: #f0f8ff; padding: 5px; margin-bottom: 5px;">-Dcom.tibco.tibjms.ssl.enable_verify_host_name=false</pre> <pre style="background-color: #f0f8ff; padding: 5px; margin-bottom: 5px;">-Dcom.tibco.tibjms.ssl.enable_verify_host=false</pre> <pre style="background-color: #f0f8ff; padding: 5px;">-Dcom.tibco.tibjms.ssl.trusted=/local/vsadmin/server_root.cert.pem</pre> </div> <p>Enter these arguments in a single line, separated by a single space.</p> <ol style="list-style-type: none"> <li>5. Log in to the Configurator and navigate to <b>InitialConfig &gt; Member1 &gt; Security Provider &gt; IBM</b> <ul style="list-style-type: none"> <li>• Change the value of SSL Protocol Handler Package property from:com.ibm.net.ssl.internal.www.protocolto com.ibm.net.ssl.www2.protocol</li> <li>• Change the value of SSL Provider property from:com.ibm.jsse.JSSEProvider to com.ibm.jsse2.IBMJSSEProvider2</li> </ul> </li> <li>1. Create a module with name as com.tibco.mdm in JBoss WildFly application server - 26.0.0 version. For information about creating modules, see <a href="#">Module Creation</a>.</li> <li>2. Copy the following JAR files in this module (inside the main directory) from \$EMS_HOME/lib <ul style="list-style-type: none"> <li>• slf4j-api-1.4.2.jar</li> <li>• slf4j-simple-1.4.2.jar</li> </ul> </li> <li>3. Copy the following JAR files in this module. The JAR files are available in the classpath of the JBoss WildFly application server or</li> </ol>

Application Server	Steps
--------------------	-------

in JAVA\_HOME\jre\lib directory:

- jsse.jar
- jce.jar

4. Update the module.xml file as follows:

```
<module xmlns="urn:jboss:module:1.3" name="com.tibco.mdm">  
  
<resources>  
  
<resource-root path="slf4j-api-1.4.2.jar"/>  
  
<resource-root path="slf4j-simple-1.4.2.jar"/>  
  
<!-- if these 2 JARS copied in the module then add -->  
  
<resource-root path="jsse.jar"/>  
  
<resource-root path="jce.jar"/>  
  
</resources>  
  
<dependencies>  
  
<module name="javax.api" />  
  
<module name="javax.jms.api" />  
  
<module name="javax.resource.api" />
```

**Application  
Server****Steps**

```
<!-- These are required for EMS with SSL -->
```

```
<system export="true">
```

```
<paths>
```

```
<path name="sun/security/ssl" />
```

```
<path name="com/sun/net/ssl/internal/ssl" />
```

```
<path name="sun/security/util" />
```

```
<path name="sun/security/validator" />
```

```
<path name="sun/security/provider" />
```

```
<path name="javax/net/ssl" />
```

```
<path name="sun/net/www/protocol/https" />
```

```
</paths>
```

```
</system>
```

```
</dependencies>
```

5. Add the global module in subsystem section `<subsystem xmlns="urn:jboss:domain:ee:4.0">` in `JBOSS_HOME/standalone/configuration/standalone.xml`.

Application Server	Steps
--------------------	-------

```
<subsystem xmlns="urn:jboss:domain:ee:4.0">  
  
  <global-modules>  
  
    <module name="com.tibco.mdm" slot="main"/>  
  
  </global-modules>  
  
</subsystem>
```

OR

Add a dependency in jboss-deployment-structure.xml in ECM.ear/META-INF in dependency section:

```
<dependencies>  
  
  <system export="true">  
  
    <paths>  
  
      <path name="com/sun/net/ssl/internal/ssl" />  
  
    </paths>  
  
  </system>  
  
<module name="com.tibco.mdm"/>
```

Application Server	Steps
	<div style="border: 1px solid #ccc; padding: 5px; margin-bottom: 10px;"><pre>&lt;/dependencies&gt;</pre></div> <p>6. Add the following in the JVM arguments in <code>\$JBOSS_HOME/bin/standalone.conf.bat</code></p> <div style="border: 1px solid #ccc; padding: 5px;"><pre>-Dcom.tibco.tibjms.ssl.enable_verify_host_name=false  -Dcom.tibco.tibjms.ssl.enable_verify_host=true  -Dcom.tibco.tibjms.ssl.expected_hostname=server  -Dcom.tibco.tibjms.ssl.trusted=\$EMS_HOME/samples/certs/server_root.cert.pem</pre></div>

Specify the values for the TIBCO EMS configuration properties in the Configurator.

1. Log in to the Configurator.
2. Navigate to **Queue Setup > Messaging Cluster > TIBCO EMS**.  
Change the value of Localhost Server Connection String property to `ssl://hostname:portno`
3. Navigate to **Bus Setup > Cluster > TIBCO EMS**.
4. Change the value of Localhost Server Connection String property to `ssl://hostname:portno`

#### What to do next

1. Start the application server.
2. Log in to TIBCO MDM.

TIBCO MDM starts running on SSL.

## Deploying TIBCO MDM on JBoss WildFly Application Server

You need to deploy TIBCO MDM on JBoss WildFly Application Server.

### Procedure

1. Copy the ECM.ear file from \$MQ\_HOME to the \$JBOSS\_HOME/standalone/deployments directory.
2. To improve the performance of TIBCO MDM, add the following JVM parameter while starting the JBoss WildFly Application Server:

```
-Dorg.apache.xml.dtm.DTMMManager="org.apache.xml.dtm.ref.DTMMManagerDefault"
```

If the output does not contain any error or exception messages, you are ready to use the JBoss.

**i Note:** When the log4j2 service of TIBCO MDM initializes, it overrides the JBoss rootLogger property and starts writing server logs in the elink.log file. As a workaround, you can comment out the rootLogger property in the \$MQ\_HOME/config/ConfigValues.xml file:

```
<ConfValue description="The root logging level for the MDM server."
name="Root logging Level for MDM Server" propname="log4j2.rootLogger"
sinceVersion="7.0" visibility="All"> <ConfString default="DEBUG"
value="DEBUG"/> </ConfValue>
```

It is recommended that you keep this property to change the root logging level for TIBCO MDM.

## Starting JBoss WildFly Application Server

After you configure TIBCO MDM with JBoss WildFly Application Server, you can start the JBoss WildFly Application Server.

### Procedure

1. On the command line, type `$JBASS_HOME/bin`.
2. Enter the following command:
  - For local host: `standalone.bat` or `./standalone.sh`
  - For remote server: `standalone.bat -b 0.0.0.0` or `./standalone.sh -b 0.0.0.0`

**i Note:** To access the TIBCO MDM instance remotely, you need to provide `-b 0.0.0.0` in addition.

The JBoss WildFly Application Server starts.

## Troubleshooting with JBoss WildFly Application Server

You might come across some exceptions on JBoss WildFly Application Server.

### *Troubleshooting with JBoss WildFly Application Server*

Issue	Description	Solution
Error occurs on the console for the unsupported Java versions	<p>TIBCO MDM is installed with the Windows, JBoss Wildfly application server, and Oracle database with the inbuilt Java version.</p> <p>The JBoss WildFly application server started successfully, however, the error messages are displayed on the console for the unsupported Java versions.</p>	TIBCO MDM supports JDK 11 version. Ensure that the PATH variable does not point to another Java version.

## Performing Postinstallation Tasks for Typical Installation

You need to merge third party libraries with `ECM.ear` that you have created for the WebSphere and WebLogic application servers and manually copy TIBCO EMS libraries that are not shipped with the product due to Licensing restrictions.

### Procedure

## 1. Merge Third Party Libraries with ECM.ear.

- a. Go to \$MQ\_HOME/build/custom.
- b. Execute customUtil.bat OR customUtil.sh-mergeExternalLibrary.  
This command creates the thirdPartyLibrary folder in \$MQ\_HOME.
- c. Copy the consolidated third party JAR file (ThirdParty.jar) to this folder and enter y to proceed for merging. For information about creating a consolidated JAR file, see [Creating a Consolidated JAR File with Third-Party Libraries](#).  
Continue and complete the script. The updated ECM.ear is placed in \$MQ\_HOME.

## 2. Copy EMS Libraries.

- a. Copy the tibjms.jar and jms-2.0.jar from \$EMS\_HOME/lib to \$MQ\_HOME/lib/external directory.



**Warning:** If you do not copy the tibjms.jar and jms-2.0.jar files in \$MQ\_HOME/lib/external directory, the utilities do not work.

# Troubleshooting with Typical Installation

If you encounter an issue while installing TIBCO MDM, you may resolve the issues by completing the common troubleshooting procedures.

## *Troubleshooting with Typical Installation*

Issue	Description	Solution
Display Cannot be Opened	The UNIX installer terminates with the following error message:  Could not open display	If you run the UNIX installer in a graphical mode, your local display has to be specified to the server. This local display needs to have a X Windows client installed. The local display is typically indicated to the server by specifying the DISPLAY environment variable. For example, on a bash shell: export DISPLAY=client host name:0.0  The X windows client also requires that the connection from the server is authorized. To enable the authorization, see the X Windows client documentation. On many X Windows clients, the authorization can be

Issue	Description	Solution
		<p>granted by using the Xhost command. For example:</p> <p>Xhost +</p>
Installer Terminates	The installer terminates without any error message.	<p>The installer creates a detailed time stamped log file in one of the following places:</p> <ul style="list-style-type: none"> <li>• If TIBCO_HOME did not exist at install time, the log file is created in the temp directory of the user in a.TIBCO sub folder.</li> <li>• If TIBCO_HOME exists, the log file is created in the \$TIBCO_HOME/log folder.</li> </ul> <p>Check the log file for any errors and then contact TIBCO Technical Support.</p> <p>You can also run the installer with the installer log enabled using the -is:log option. For example:</p> <pre>./TIBCOUniversalInstaller-lnx-x86.bin -is:javahome -is:log path/log.dat</pre>

## JBossWildFly, SQL Server, and EMS

Follow the instructions to install TIBCO MDM on JBoss WildFly application server, Microsoft SQL Server database, and TIBCO EMS:

1. [Installation Overview](#)
  - a. [Prerequisites for Installation](#)
  - b. [Additional Software Components](#)
  - c. [Third Party Libraries](#)
  - d. [Hardware Configuration](#)
  - e. [Environment Variables](#)
2. [Supported Databases](#)
3. [Database Sizing Requirements](#)

4. [Installing TIBCO MDM \(Typical Installation\)](#)
5. [Configuration of SQL Server Database](#)
  - a. [Set Transaction Isolation Levels](#)
  - b. [SQL Server Installation Verification](#)
  - c. [Support for SQL Server Replication](#)
  - d. [Troubleshooting with SQL Server Database](#)
6. [Creating TIBCO EMS Queues and Topics](#)
  - a. [Verifying Queues and Topics](#)
7. [Configuring TIBCO MDM for JBoss WildFly Application Server](#)
  - a. [Removal of jaxrs Entries for JBoss WildFly Application Server](#)
  - b. [Deploying TIBCO MDM on JBoss WildFly Application Server](#)
  - c. [Starting JBoss WildFly Application Server](#)
  - d. [Troubleshooting with JBoss WildFly Application Server](#)
8. [Performing Postinstallation Tasks for Typical Installation](#)
9. [Troubleshooting with Typical Installation](#)

## Installation Overview

Download TIBCO MDM from the [TIBCO eDelivery](#) website . To login, you need user name and password. If you have not received a user name and password, contact TIBCO Technical Support. After you download TIBCO MDM, install it using the installer provided.

### Default Installation Directory

- **Microsoft Windows** The default installation location is `$TIBCO_HOME` where all TIBCO products are installed. Typically, `$TIBCO_HOME` is at `c:\tibco`.
- **UNIX** The default installation directory depends on who performs the installation:
  - For root users, the default installation directory is `/opt/tibco`.
  - For non-root users, the default installation directory is `/myhome/tibco`, where `myhome` is the home directory of the user.

## Installer Disk Space Requirements in Temporary Area

- **Microsoft Windows Platforms** The entire package is extracted into a temp folder (minimum requirements 40 GB and 4 GB RAM), typically `SystemDrive:\Temp` or `SystemDrive:\Documents and Settings\user_name\Local Settings\Temp`.
- **UNIX Platforms** The installer launcher first extracts a Java Virtual Machine (JVM) in a temporary directory (minimum requirements 40 GB and 4 GB RAM) and uses this JVM to launch itself. The size of the extracted JVM differs from platform to platform. You can select the temporary area using the following option when starting the installer: `install_package_name.sh -is:tempdir /temp_area`

## Prerequisites for Installation

Before you start the TIBCO MDM installation, ensure that your system meets all of the requirements.

### Prerequisites

Software Component	Description
JDK	<p>TIBCO MDM is certified with Oracle Java and AdoptOpenJDK.</p> <ul style="list-style-type: none"> <li>• TIBCO MDM bundles Oracle Java with the installer. The bundled Oracle Java is located under TIBCO MDM installation home (<code>TIBCO_HOME\tibcojre64\11</code>). You do not need to download Java from the Oracle download site. If any updates to Java 11, TIBCO MDM continues to ship through the hotfix installers.</li> <li>• To install AdoptOpenJDK, download the executable file from the <a href="#">AdoptOpenJDK</a> site and install it at the appropriate location.</li> </ul> <p>Ensure that the <code>JAVA_HOME</code> environment variable has been set correctly.</p> <ul style="list-style-type: none"> <li>• For the JBossEAP, JBoss WildFly, and WebLogic application servers, TIBCO MDM supports Java 11.</li> <li>• For WebSphere application server, TIBCO MDM supports Java 1.8.</li> </ul> <p>Consult the readme shipped with your installation of TIBCO MDM for the most up-to-date software requirements.</p>
JMS Server	The JMS Server must be installed and running with the required queues

Software Component	Description
	and topics created
<b>Application Server - For Typical install only</b>	<p>The Application Server must be installed and running with the correct service packs applied.</p> <p>For IBM WebSphere, make sure that JDK patch level matches the application server fix pack level.</p>
<b>Database - For Typical install only</b>	<p>The Database server must be ready with either Oracle, PostgreSQL, or SQL Server installed and must have a user account with full privileges for the database. It is also recommended that a second user be created, but with restricted privileges.</p>
<b>Client - For Typical install only</b>	<p>The client for the database must be installed on the TIBCO MDM system machine and must have access to Java JDBC connectors. The SQL Server client is required for creating new seed data. However, we do not need clients for the PostgreSQL database.</p> <p>Oracle Client Software should be Developer Edition or Enterprise Edition and must be on the computer hosting the application server. TIBCO MDM uses the sqlldr utility shipped with these Oracle Client Software editions.</p>
<b>Web Server - For Typical install only</b>	<p>Web server is optional and is needed only if you do not plan to use direct URL access to the application server. if the Web server is going to be used, install it first.</p>
<b>Cache Server - For Typical install only</b>	<p>Cache server is optional and is needed only if a centralized cache sever is proposed. Make sure the cache server is installed (but not running).</p> <p><b>Note:</b> For information about the Cache server, see <a href="#">Enable Apache Ignite for TIBCO MDM</a>.</p>

## Additional Software Components

TIBCO MDM requires additional software components as listed in the following table. The requirements of components depend on your installation choices and supported platforms. For a complete list of versions and platforms supported, see the *Readme.txt* file.

*Required Components*

Component to Install	Supported options	For more information, see:
JDK	<ul style="list-style-type: none"> <li>• For WebSphere application server, use JDK 1.8.</li> <li>• For JBoss WildFly and WebLogic application servers, use JDK 11.</li> </ul>	<ul style="list-style-type: none"> <li>• <a href="#">Installation Overview</a></li> </ul>
<b>Database</b> Install and configure a database.	<ul style="list-style-type: none"> <li>• Oracle</li> <li>• Microsoft SQL Server</li> <li>• PostgreSQL</li> </ul>	<ul style="list-style-type: none"> <li>• <a href="#">Configuration of Oracle Database</a></li> <li>• <a href="#">Configuration of SQL Server Database</a></li> <li>• <a href="#">Simple Installation with PostgreSQL</a></li> </ul>
Database Client	<ul style="list-style-type: none"> <li>• Oracle</li> <li>• Microsoft SQL Server</li> </ul>	
<b>JMS Server</b> Configure a JMS Server	<ul style="list-style-type: none"> <li>• TIBCO Enterprise Messaging Service</li> </ul>	<ul style="list-style-type: none"> <li>• <a href="#">Creating TIBCO EMS Queues and Topics</a></li> </ul>
<b>Application Server</b> Configure a supported Application Server.	<ul style="list-style-type: none"> <li>• Websphere with or without Websphere ND</li> <li>• Weblogic</li> <li>• JBoss WildFly</li> </ul>	<ul style="list-style-type: none"> <li>• <a href="#">Configuring TIBCO MDM for WebSphere Application Server</a></li> <li>• <a href="#">Configuring TIBCO MDM for WebLogic Application Server</a></li> <li>• <a href="#">Configuring TIBCO MDM for JBoss WildFly Application Server</a></li> </ul>

*Optional Components*

	Component to Install	Supported options	For more information, see:
1.	<b>AS2 Gateway</b> Configure AS2 Gateway for secure communication with other systems. (required only for GDSN mode or external communication).	<ul style="list-style-type: none"> <li>Any AS2 Server</li> </ul> (such as TIBCO BusinessConnect)	<a href="#">Configuration of TIBCO BusinessConnect and TIBCO BusinessWorks</a> Details for configuring TIBCO BusinessConnect. See appropriate documentation for other gateways.
2.	<b>Cache Server</b> Configure a cache Server.	Apache Ignite	<a href="#">Configuration Properties of Apache Ignite</a>
3.	<b>Web Server</b> Configure a supported Web Server to connect to the application server.	<ul style="list-style-type: none"> <li>IBM HTTP</li> <li>Apache Server</li> <li>Microsoft IIS</li> </ul>	<a href="#">Configuration of Web Servers</a>
4.	<b>X Server</b> Configure to upload images for any records maintained using TIBCO MDM.	<a href="#">RealVNC</a>	<a href="#">Installing X Server</a>

## Third Party Libraries

In addition to the distribution provided by TIBCO, MDM requires additional software. This software must be provided for the installation and might have different licensing.

This table lists all the software which might be required.

*Third Party Libraries*

Library	Library Name	Description
JDK Library	jsse.jar	<p>Required, if you will be using SSL.</p> <p>Can be obtained from JDK.</p> <p>Vendor: ORACLE/IBM/HP</p>
XMLC related Libraries	xmlc.jar, xmlc-base.jar, xmlc- chtml.jar, xmlc-taskdef.jar, xmlc- xerces.jar, xmlc-all-runtime.jar, and Sunec.jar	<p>Required for TIBCO MDM UI.</p> <p>Click the <b>XMLC Download</b> link under the TIBCO MDM area at the <a href="#">eDelivery site</a> to download the xmlc-2.2.x.zip.</p> <p>You can choose to download the library or let the installer download the library during the installation process.</p>
	gnu-regexp.jar	Required for compiling HTML.
EMS related Libraries	tibjms.jar and jms-2.0.jar	<p>Required, if you are using TIBCO EMS as a JMS vendor.</p> <p>The libraries can be obtained from the installation directory of TIBCO EMS (pointed by EMS_HOME).</p>
<p><b>Note:</b> EMS libraries are not applicable for the PostgreSQL database.</p>		
JDBC related Libraries	ojdbc8.jar mssql-jdbc- 7.2.2.jre11.-jar postgresql- 42.2.11.jar	<ul style="list-style-type: none"> <li>ojdbc8.jar is required for Oracle.</li> <li>mssql-jdbc-7.2.2.jre11.jar ( Microsoft JDBC Driver 7.2 for SQL Server, Java Development Kit (JDK) 11.0 ) is required for Microsoft SQL Server.</li> <li>postgresql-42.2.11.jar is required for PostgreSQL. (Not required if you are using Simple Installation)</li> </ul> <p>Copy the following JAR files to \$MQ_</p>

Library	Library Name	Description
		<p><i>HOME/configurator/server/configurator/lib/ext.</i></p> <ul style="list-style-type: none"> <li>• ojdbc8.jar copy from <i>\$ORACLE_HOME/jdbc/lib</i>.</li> <li>• Download the mssql-jdbc-7.2.2.jre11.jar ( Microsoft JDBC Driver 7.2 for SQL Server, Java Development Kit (JDK) 11.0 ) file from <a href="#">Microsoft Download Center</a>.</li> <li>• postgresql-42.2.11.jar file copy from <i>\$MQ_HOME/bin/pgsql/driver</i></li> </ul>
Hibernate Assembly	hibern-ate3.jar and cglib-2.2.jar	<p>Required by TIBCO MDM for some database interactions.</p> <p>You can choose to download the library or let the installer download the library during the installation process.</p> <p>Click the <b>Download</b> link under the TIBCO MDM area at the <a href="#">eDelivery site</a> to download the product_tibco_hibernate_lgpl_3.6.10.003.zip.</p>

All the required libraries are to be added to the distribution provided (ECM.ear) with TIBCO MDM.

## Hardware Configuration

The following table lists sample hardware configurations. Additional memory may be required to accommodate data caching needs.

### Hardware Configurations

Configuration	Quantity	Type			Memory
		Sun	IBM	Intel	
Low End					

Configuration	Quantity	Type			Memory
		Sun	IBM	Intel	
Single machine for web server, application server, and DB server	1	Sun Fire X4100 - 2 CPU	IBM xSeries 2 CPU (AMD or Xeon) or equivalent	Xeon 2GHz, 2 CPU	4 GB RAM, 50 - 100 GB disk  8 GB RAM and Dual core processors are recommended to achieve increased throughput.
<b>Mid-range / Mid-range clustered</b>					
Web server	1	Sun Fire x2100 or Sun Fire x4100 equivalent, 1-2 CPU	IBM xSeries 1-2 CPU or pSeries entry level servers	Xeon 2 GHz, 1 CPU	1 GB RAM, 36 GB internal disk
Application server	1-2	Sun Fire x4100 2 CPU with Dual core processors or Sun Fire V240 with 4 CPU	IBM i520 or IBM 630 with 2-4 core/CPU	Xeon 3 GHz, 2-4 CPU	4- 6 GB RAM, 36 GB disk  8 GB RAM and dual core processors are recommended for higher throughput.
Database server	1	Sun Fire 445 or equivalent with 2-4 CPU	IBM i520 or P630 with 2-4 Core/CPU	Xeon 3 GHz, 2-4 CPU	6-8 GB RAM, 200-500 GB disk.
Storage	1				Disk array,

Configuration	Quantity	Type			Memory
		Sun	IBM	Intel	
					disks of 100 - 200 GB.
<b>High-end</b>					
Web server	1-2	Sun Fire, V100, 1-2 CPU	IBM P610, 1-2 CPU	Xeon 2 GHz, 1-2 CPU	2 GB RAM, 36 GB internal disks
Application server	2-4	Sun Fire V490 with 4 CPU or Sun Fire x4100 with 2 CPU dual core	IBM P650, 4-8 CPU	Xeon 3 GHz, 4-8 CPU	6-8 GB RAM, 40 GB disk for each server  12 GB RAM recommended for higher throughput.
Database server	1	Sun Fire V4800, 4-8 CPU	IBM P650, 4-8 CPU	Xeon 3 GHz, 4-8 CPU	Minimum 12 GB RAM  400-600 GB disk.
Storage	1				Disk array, disks of 200 to 500+ GBb.

The hardware required depends on many factors including, number of concurrent users, usage patterns, retention of history and rate of change for the data. A more accurate capacity planning exercise should be done based on detailed scenario tests done in performance labs.

Contact TIBCO Professional Services or TIBCO Customer support for more details on how to calculate the required hardware. It is recommended that any production hardware planning must be done using scenario based testing results. A sample capacity planning worksheet can be obtained from TIBCO Customer Support.

## Environment Variables

You must set the important environment variables before installing TIBCO MDM.



### Note:

- It is recommended that you use ASCII characters for all file names. If these names include non-ASCII characters, copying the files from Windows to UNIX or Linux and vice versa may result in corruption of file names.
- While setting environment variables on all platforms, if the ‘\’ character is used as a path separator instead of ‘/’, it leads to errors as ‘\’ is treated as an escape character.
- For Simple install, set only `JAVA_HOME` environment variable.
- For Typical install, set all the environment variables mentioned in the Environment Variables table.

### Environment Variables

Variable	Description
<code>MQ_HOME</code>	<p>Define <code>MQ_HOME</code> to point to the installation directory. It is recommended that you allocate at least 8 GB to this directory. In a clustered environment, each application server should point to a separate location.</p> <p>Example: <code>/home/tibco/mdm/version</code></p>
<code>MQ_LOG</code>	<p>The location where log files will be generated (the recommended location is <code>\$MQ_HOME/log</code>). In a clustered environment, each server should point to a separate location. Define <code>MQ_LOG</code> to point to this directory. A minimum of 1 GB should be allocated to this directory. The best practice is to change the default location such that the directory is not a subdirectory of <code>MQ_HOME</code>.</p> <p>Example: <code>\$MQ_HOME/log</code></p>
<code>MQ_COMMON_DIR</code>	<p>All standard configurations files for workflow and data validation as well as all customizations are stored in this directory. This directory also holds all files generated during normal application processing. It is</p>

Variable	Description
	<p>shared by all application servers in the cluster, and should be mounted to each server. All disk space indicated in the section <a href="#">Hardware Configuration</a> should be assigned to this directory, and the MQ_COMMON_DIR variable should be set. The best practice is to change the default location such that the directory is not a subdirectory of MQ_HOME.</p> <p>Example: <code>/home/tibco/mdm/version/common</code></p> <p>If you plan to create a copy of the TIBCO MDM instance across operating systems (for instance, Linux to Windows or Windows to Linux) and if the path contains any non English characters, such a copy may not be possible. For example, using Japanese characters in the path.</p>
<i>MQ_CONFIG_FILE</i>	<p>Points to <code>\$MQ_HOME/config/ConfigValues.xml</code>. The values/parameters in this file can be set using the Configurator.</p> <p>Example: <code>/home/tibco/mdm/version/config/ConfigValues.xml</code></p>
<i>JAVA_HOME</i>	<p>The directory where JRE/JDK is installed.</p> <p>Example: <code>/opt/jdkversion</code></p>
<i>EMS_HOME</i>	<p>The directory where TIBCO EMS (or the messaging software) is installed.</p> <p>Example: <code>/home/tibco/ems</code></p>
<i>ANT_HOME</i>	<p>The Directory path where ant is installed.</p> <p>Example: <code>/opt/antversion</code></p>
MQ_HTTP_SESSION_REPLICATION_ENABLED	<p>If you use multiple nodes and want to replicate the session, then set the value of the MQ_HTTP_SESSION_REPLICATION_ENABLED environment variable to <b>true</b> to enable the session replication.</p>
MDM_DB_USE_SERVICENAME	<p>Specify this variable when you are connecting to the database by using the Configurator and when you are running TIBCO MDM on container platforms.</p> <ul style="list-style-type: none"> <li>• Set to <b>true</b> to connect to the Oracle database by using the service</li> </ul>

Variable	Description
	<p>name</p> <ul style="list-style-type: none"> <li>Set to <b>false</b> to connect to the Oracle database by using SID</li> </ul> <p>For more information, see <a href="#">Connecting to Database Using SID and Service Name</a>.</p>
MDMPORT	Port number on which the TIBCO MDM node is running.
PROTOCOL	Specifies a protocol such as http or https to access the TIBCO MDM node. By default, the http protocol is used.
<b>Application Server Specific</b>	
<i>WAS_HOME</i>	<p>The directory where WebSphere is installed (required <i>only</i> if using WebSphere).</p> <p>Example: <code>/opt/WebSphere/AppServer</code></p>
<i>JBOSS_HOME</i>	<p>For JBoss WildFly Application Server. Specify the path value until the root of the WildFly directory.</p> <p>Example, <code>E:\JBoss\wildfly-version.Final</code>.</p>
<i>JBOSS_HOME</i> (Simple Install)	<p>The directory where JBOSS is installed (required only if using simple installation).</p> <p>Example: <code>%MQ_HOME%\bin\wildfly-version.Final</code></p>
<i>WLS_HOME</i>	<p>For WebLogic Application Server. Specify the path value of the WebLogic Application Server directory.</p> <p>Example:</p> <ul style="list-style-type: none"> <li>For Linux: <code>/opt/bea</code></li> <li>For Windows: <code>G:/WebLogic/wlserver_version</code></li> </ul>
<b>Database Specific</b>	
<i>ORACLE_HOME</i>	For Oracle database. The directory where Oracle is installed.

Variable	Description
	<p>Example:</p> <ul style="list-style-type: none"> <li>• For Windows: <code>/home/oracle/product/version/db_1</code></li> <li>• On UNIX: <code>\$export ORACLE_HOME=/u01/app/oracle/product/version</code></li> </ul>
<code>LD_LIBRARY_PATH</code>	For Oracle database: <code>\$ORACLE_HOME/lib</code>
<code>NLS_LANG</code>	<p>For Oracle database. Example:</p> <ul style="list-style-type: none"> <li>• On UNIX:           <pre>export NLS_LANG=AMERICAN_AMERICA.UTF8</pre> </li> <li>• On Windows:           <pre>set NLS_LANG=AMERICAN_AMERICA.UTF8</pre> </li> </ul>
<code>POSTGRESQL_HOME</code>	<p>For PostgreSQL database. The directory where PostgreSQL is installed.</p> <p>Example: <code>\$MQ_HOME/bin/pgsql</code></p>
<code>OS</code>	The Operating system. For example, Linux.
<code>DISPLAY</code>	This environment variable is used by X-Windows based applications. It points to a device capable of displaying an X-Windows based UI.
<code>LD_ASSUME_KERNEL</code>	Used on the Linux platform to make Linux use the old Linux threads library, particularly required for Oracle installation (required <i>only</i> if Oracle is used as the database).
<code>PATH</code>	This is a list of directories separated by a separator. When any command or program is executed, the OS tries to locate the program in the directories listed in PATH. If the program is not found in any of the directories, the OS cannot load and execute the program. The Separator character is ':' for Unix and Linux platforms, and ';' for the Windows platform.

Variable	Description
	Ensure that there is no space with the commas and colons between the program in the directories listed which are separated by ':' for Unix and Linux platforms, and ';' for the Windows platform.
<i>SHLIB_PATH</i>	List of directories separated by a separator (see PATH) where a dynamic linker tries to find the libraries. Used on UNIX platforms.
<i>LIBPATH</i>	List of directories separated by a separator (see PATH) where the Operating system as well as the application library files reside. Used on UNIX platforms.
<i>NODE_ID</i>	Points to the current cluster member. Example: NODE_ID=Member1
<b>TIBCO MDM REST API through Swagger UI</b>	
<i>SWAGGER_MDM_HOST</i>	An IP address of the TIBCO MDM server on which you want to try out the TIBCO MDM REST APIs.
<i>SWAGGER_MDM_PORT</i>	Port of the TIBCO MDM server on which you want to try out the TIBCO MDM REST APIs.

## Supported Databases

Install any one of the following databases as per your requirement. For a list of versions and platforms supported, see the *Readme.txt* file shipped with installation of TIBCO MDM.

### *Supported Databases*

Database	Description	Site Reference
Oracle	Download the supported version of the Oracle database from the Oracle site and unzip it to the required location.	Install the Oracle server software as directed in the <a href="#">Oracle installation document</a> .

Database	Description	Site Reference
SQL Server	Download the latest version of Microsoft SQL Server from the following site and unzip it to the required location	Install the SQL Server software as directed in the appropriate <a href="#">SQL installation document</a> .
PostgreSQL	The PostgreSQL database is installed with the Simple installation. You do not need to separately download it. For more information about simple installation, see <a href="#">Simple Installation with PostgreSQL</a> .	Not Applicable

## Database Sizing Requirements

The database sizing requirements include the minimal sizing requirements for `initdbname.ora` (`initedcm50.ora`); for small, medium, and large databases.

### *Database Sizing Requirements*

Database Parameter Setting	Low-end	Mid-range	High-end
Db block size	8192	8192	8192
Db_file_multiblock_read_count	8	16	32
Shared pool size	75 MB	150 MB	200 MB*
Processes	(# of application servers)* (application server max db connection pool size) + 200		
Parallel max	2	4	5*

Database Parameter Setting	Low-end	Mid-range	High-end
servers			
Log_buffers	25% of the system memory		
Timed_statistics	True	True	True
Max_dump_file_size	5 MB	10 MB	20 MB
Rollback_segments	8 seg	16 seg	32 seg*
Open cursors	300	450	3000
Character set	UTF-8		
Buffer Pool Size	150 MB	300 MB	500 MB - 2 GB*
db_writer_processes	75% of the cpu_count parameter value		
Sessions	1.1* processes + 200		
optimizer_mode	ALL_ROWS		
shared_servers	# of dispatchers* 2		
Transactions	# sessions		

\* These values depend on various factors including concurrent users, message and workflow volumes, number of records, and so on. Your DBA should adjust these values based on the actual load and required performance characteristics.

# Installing TIBCO MDM (Typical Installation)

In the typical installation, the installer presents panels which you can select choices about the product location, and so on.


## Prerequisites

- Verify that your computer meets the System requirements. The system requirements are listed in the readme.txt file.
- Download the Installer. The application is available as a ZIP file.
- Extract the contents of the ZIP file to a folder on your computer.
- Search for the TIBCOUniversalInstaller application in the location where you have extracted the ZIP file.

## Procedure


1. Run the TIBCOUniversalInstaller.exe application. The TIBCO Universal Installer Welcome window is displayed.
2. Review the information and click **Next**. The license agreement is displayed.
3. Review the terms of the license agreement. If you agree with its terms, accept the license agreement and click **Next**.
4. In the Installation Profile Selection window, do one of the following:
  - a. Select **Create a new TIBCO\_HOME** option. A TIBCO installation environment is used for software installations and consists of a Name and Directory. Products installed into different installation environments do not share components; therefore you can keep product installations completely isolated from each other.
    - **Directory**: browse to the directory where the product needs to be installed and provide a unique environment name. Ensure that you have write permission to this directory.
    - **Name**: specify the environment name that is easy to identify your environment. For example, 'User Acceptance' or 'Procurement Department'.
  - a. If you have previously installed a TIBCO product using the Universal Installer, you can select **Use an existing TIBCO\_HOME**. By default, the installer detects the directory for your TIBCO\_HOME and displays the path.

For example, on Windows, the default installation directory is `c:\tibco`.

 **Note:** If you had installed the application earlier, the directory cannot be modified. For a new installation, the directory can be changed.

Click **Next**.

5. In the Installation Profile Selection window, by default, the **Typical** installation profile is selected.
  - a. If you check the **Customize Installation** check box, a list of components is enabled (**Executable Image** and **Common Configuration**).
  - b. Select your preferred options and click **Next**.
6. In the TIBCO MDM Configurator Tomcat Settings window, the default port values are displayed. You can change the default port values. Click **Next**.

 **Warning:** The specified port values must not be in use by another application. If you do not specify configuration information, Configurator does not start and you need to perform manual configuration. For more information about the Configurator, see [Configurator](#).

7. In the TIBCO Patterns - Search Settings window, the default user interface port value (required for Patterns GUI tomcat server) and Patterns server port value (required for Patterns binary) are displayed. You can change the default port values.
  - a. Select **Install as a Windows Service** check box if you want to install the Patterns server binary as a service.

Click **Next**.

8. In the TIBCO MDM Common Config Location window, select the common configuration location and click **Next**.

If you have selected the standard common configuration option, the default `$MQ_HOME\common` directory location is displayed. You can retain the location or change it by clicking **Browse**.

✓ **Tip:** The best practice is to assign a location separate from MQ\_HOME. TIBCO MDM creates files in this directory and it is better to keep it separate from MQ\_HOME. In a clustered environment, this directory should be shared for all instances.

i **Note:** If you do not specify the common configuration location, Configurator does not start and you need to perform the manual configuration. For information, see [Manually Configuring TIBCO MDM](#).

9. The HIBERNATE LGPL License Agreement window is displayed. If you agree with its terms, accept the license agreement, and click **Next**.
10. The LGPL Assembly Download window is displayed. Select one of the following options:
  - **Download HIBERNATE assembly from TIBCO:** if you are downloading the LGPL assembly for the first time, select this option. The HIBERNATE assembly is downloaded in the same folder as the installer. All the third party software which is used in the application and their licenses are downloaded.
  - **Provide the location for the assembly previously downloaded from TIBCO:** if you have previously downloaded the LGPL assembly, specify the folder in which you have downloaded the hibernate assembly. Browse to the directory where the assembly is previously downloaded and saved.

i **Note:** If the LGPL Assembly is already downloaded, the LGPL Assembly Download window is not displayed.

Click **Next**.

11. The XMLC LGPL License Agreement window is displayed. If you agree with its terms, accept the license agreement, and click **Next**.
12. Select the **Download XMLC assembly from TIBCO** option. The assembly gets downloaded in the same folder as the installer. Click **Next**.
13. The Oracle Elliptic Curve Library LGPL License Agreement window is displayed. If you agree with its terms, accept the license agreement, and click **Next**.
14. In LGPL Assembly Download window, select one of the following options:

- **Download Oracle Elliptic Curve Cryptography Library assembly from TIBCO:** if you select this option, the Cryptography assembly is downloaded and configured.
- **Provide the location for the assembly previously downloaded from TIBCO:** If you select this option, the **Oracle Elliptic Curve Cryptography Library Assembly Path** field is enabled. Click **Browse** to select the Cryptography assembly.

Click **Next**.

**Note:** The steps 13 and 14 are applicable only for the JBoss WildFly application server with Oracle and SQL server database combination.

15. In the Pre-Install Summary window, review a list of the components that are going to be installed and the installation environment details and click **Next** to begin the installation process.
16. In the Post-Install Summary window, review a list of the components that are installed and the installation environment details. Click **Finish** to exit the wizard.

## Result

The following auto generated log files are created in the `C:\Users\username.TIBCO\install_currentyear-currentmonth-currentdate.uniqueID` folder: Using the log files, you can troubleshoot for errors in the installation process.

- `antTask_log_installerConfig_currentyear-currentmonth-currentdate.uniqueID`: consists of configuration related logs.
- `antTask_log_installerMergeXMLC_currentyear-currentmonth-currentdate.uniqueID`: consists of the XMLC merge related logs.
- `tibco_universal_installer.username_install`: consists of installer related logs.
- `antTask_log_updateEARToIncludeHibernateLib_currentyear-currentmonth-currentdate.uniqueID`: consists of ECM.ear file related logs.

## Configuration of SQL Server Database

Install the SQL Server software as directed in the appropriate SQL installation document. Consult your Database Administrator about standard practices followed by

your IT department to change the recommended structure according to your needs. After the SQL Server software is installed, configure the database.

TIBCO MDM works with SQL server configured with Windows authentication. For such a setup, you need to configure JBoss WildFly application server. For information, see [Configuring TIBCO MDM for JBoss WildFly Application Server](#).

**i Note:** To improve the performance, the SQL Server database must be installed with collation as CaseInsensitive (CI).

## Set Transaction Isolation Levels

You must set the transaction isolation levels to `READ_COMMITTED_SNAPSHOT` and `ALLOW_SNAPSHOT_ISOLATION` to avoid read locks in a highly concurrent environment.

The snapshot isolation level specifies that data read within a transaction does not reflect changes made by other simultaneous transactions. The transaction uses the data row versions that exist when it begins. Therefore, when the data is read, no locks are placed and the snapshot transactions do not block other transactions from writing data. To enable the snapshot isolation levels, specify the following two properties:

- `READ_COMMITTED_SNAPSHOT`: Set the `READ_COMMITTED_SNAPSHOT` database option to `ON` to provide statement-level read consistency. The statements cannot read data values that are modified, but not yet committed by other transactions.

To set this parameter, log in as admin and run the following script with an appropriate database name:

```
ALTER DATABASE DATABASENAME SET READ_COMMITTED_SNAPSHOT ON
```

By default, the `READ_COMMITTED_SNAPSHOT` database option is set to `OFF`.

- `ALLOW_SNAPSHOT_ISOLATION`: Set the `ALLOW_SNAPSHOT_ISOLATION` database option to `ON` to provide transaction-level read consistency. If another transaction modifies the reading rows, the Microsoft SQL Server database engine instance retrieves the version of the row that existed at the start of the transaction. You can only use Snapshot isolation against a database.

To set this parameter, log in as admin and run the following script with an

appropriate database name:

```
ALTER DATABASE DATABASENAME SET ALLOW_SNAPSHOT_ISOLATION ON
```

By default, the ALLOW\_SNAPSHOT\_ISOLATION is set to OFF.

For the READ\_COMMITTED\_SNAPSHOT and ALLOW\_SNAPSHOT\_ISOLATION levels, the read operations acquire only the Schema Stability (Sch-S) table level locks. It does not lock any pages or rows.

**i Note:** These levels function similar to the SERIALIZABLE level, however you need to ensure that READ does not lock rows.

For more information to set these transaction isolation levels, see the [Microsoft](#) site.

## SQL Server Installation Verification

Verify whether or not SQL Server is properly installed, configured for TIBCO MDM, and running successfully.

Type the following sqlcmd statement on the command line:

```
sqlcmd -S SQL Server name -d database name -U mdm db user name -P mdm db user password -q "Select NAME from ENTERPRISE where ID=0"
```

Ensure that the statement returns TIBCOCIM.

## Support for SQL Server Replication

The SQL Server database has a requirement to create a primary key on tables for replication. Some of the out-of-the-box tables that are provided with TIBCO MDM do not have a primary key. To support SQL Server replication, CreateAdditionalPk.sql script is provided in the \$MQ\_HOME/db/sqlserver/utility folder. Run the CreateAdditionalPk.sql script to create a primary key on the out-of-the-box tables using existing columns.

### Limitations

- The script does not handle dynamically created tables.

- The script does not handle tables, which do not have sufficient columns to create a primary key. For such tables, add an identity column, and use that column as primary key.

## Troubleshooting with SQL Server Database

Resolve the errors that you might come across while configuring the SQL Server database.

### *Troubleshooting with SQL Server Database*

Issue	Description	Solution
Database Verification Message Issue	The Option is: isolation level Value: read committed snapshot message is not displayed in the console.	<p>To resolve this issue, perform the following steps:</p> <p>Navigate to \$MQ_HOME/db/sqlserver/configure.</p> <p>Open the txnisolation.SQL file and run the following commands in Microsoft SQL Server Management Studio:</p> <pre>USE [master] GO ALTER DATABASE mdmuser SET ALLOW_SNAPSHOT_ISOLATION ON ALTER DATABASE mdmuser SET READ_COMMITTED_SNAPSHOT on GO USE [mdmuser] DBCC useroptions GO</pre> <p>After you run DBCC useroptions, isolation level is displayed as read committed snapshot.</p>

## Creating TIBCO EMS Queues and Topics


The required queues and topics are located in the `$MQ_HOME/bin/install/createQueues.txt` file.

### Before you begin

Ensure that the EMS Server is running.

### Procedure

1. Go to **All Programs > TIBCO > TIBCO EMS *version*** and click **Start EMS Administration Tool**. The command prompt is displayed.
2. Type **Connect**.
3. Enter login name and password.

 **Note:** If you have not created the administration credentials, press **Enter**. By default, administration login name and password is retrieved.

The connected to: `tcp://localhost:port_number` message is displayed.

4. Go to `$MQ_HOME/bin/install` and open the `createQueues.txt` file.
5. Copy content of the `createQueues.txt` file and place it in the command prompt. Queues and topics are created.

## Verifying Queues and Topics

You can verify a list of created queues and topics.

### Procedure

1. Go to **All Programs > TIBCO > TIBCO EMS *version*** and click **Start EMS Administration Tool**. The command prompt is displayed.
2. Type **Connect**.
3. Enter login name and password.
4. Type `show queues` in the command prompt and press **Enter**. A list of created queues is displayed.

5. Type show topics in the command prompt and press **Enter**.  
A list of created topics is displayed.

## Configuring TIBCO MDM for JBoss WildFly Application Server

Some element tags in the standalone.xml file differ in the JBoss WildFly version and JBoss EAP versions.

**i** **Note:** Ensure the correct tagging during configuration.

### Procedure

Perform the following actions in the standalone.xml file if you are using JBoss WildFly Application Server:

1. Enable access to remote server
  - a. Open the standalone.xml file located in the \$JBOSS\_HOME/standalone/configuration directory.
  - b. Change the value of an interface attribute from **management** to **public** in the following property:

```
<socket-binding name="management-http" interface="public"
port="{jboss.management.http.port:9990}"/>
```

2. Specify system properties
  - a. Add <system-properties> element after the <extensions> element.
  - b. Under <system-properties> element, type the system property name for the name attribute and its value for the value attribute.

```
<system-properties>
<property name="MQ_HOME" value="C:/Apps/tibco/mdm/version"/>
<property name="MQ_CONFIG_FILE"
value="C:/Apps/tibco/mdm/version/config/ConfigValues.xml"/>
<property name="MQ_COMMON_DIR"
```

```
value="C:/Apps/tibco/mdm/version/common"/>
<property name="MQ_LOG" value="C:/Apps/tibco/mdm/version/log"/>
<property name="NODE_ID" value="Member1"/>
<property name="PATH" value="C:/Apps/tibco/mdm/bin/ignite/bin";${PATH}"/>
```

**i** **Note:** The PATH system property is applicable only for Windows environments.

```
<property name="LD_LIBRARY_PATH" value="C:/Apps/tibco/mdm/bin/ignite/bin:
C:/Apps/tibco/mdm/bin/ignite/libs:${LD_LIBRARY_PATH}"/>
```

**i** **Note:** The LD\_LIBRARY\_PATH system property is applicable only for non-Windows environments.

```
<property name="ORACLE_HOME" value="C:/Apps/Oracle/product/version/dbhome_
1"/>
<property name="log4j2.ignoreTCL" value="true"/>
<property name="log4j2.contextSelector"
value="org.apache.logging.log4j.core.selector.BasicContextSelector"/>
<property name="org.apache.catalina.connector.URI_ENCODING" value="UTF-8"/>
<property name="org.apache.catalina.connector.USE_BODY_ENCODING_FOR_
QUERY_STRING" value="true"/>
</system-properties>
```

**i** **Note:** The path separator must contain forward slash instead of a backward slash. For example, for MQ\_COMMON\_DIR -  
C:/Apps/tibco/mdm/version/common.

The following table describes property names and their description:

*Environment Variables for JBoss WildFly Application Server*

Property Name	Description
MQ_HOME	Refers to \$MQ_HOME of TIBCO MDM.
MQ_CONFIG_FILE	Refers to configuration directory location of TIBCO MDM.
MQ_COMMON_DIR	Refers to the common directory location of TIBCO MDM.
MQ_LOG	Refers to the log folder location specified in \$MQ_HOME.
NODE_ID	Refers to the node ID.
ORACLE_HOME	Refers to the path where Oracle database is installed.
log4j2.ignoreTCL	To configure the logging, specify True value for this property. After you configure this property, all logs are displayed in the respective log file.
org.apache.catalina.connector.URI_ENCODING	Refers to the UTF-8 encoding. This needs to be specified to support multiple languages.
org.apache.catalina.connector.USE_BODY_ENCODING_FOR_QUERY_STRING	Specify true. The valid values are true or false.

### 3. Specify max-post-size and max-parameters:

Parameter Name	Description	Example
max-post-size	<p>For uploading a file either through a web service or the TIBCO MDM UI, the maximum file size limit is 10 MB. If you want to upload a file greater than 10MB, add the max-post-size parameter and change the file size. You also need to change the value of the Upload File Size Limit property in the Configurator.</p> <p>For information about uploading a file through the TIBCO MDM UI, see the section, "Creating Records" in <i>TIBCO MDM User's Guide</i>.</p>	<pre>&lt;server name="default-server"&gt; &lt;http-listener name="default" socket-binding="http" redirect-socket="https" enable-http2="true" max- post-size="974247881"/&gt; &lt;https-listener name="https" socket-binding="https" security- realm="ApplicationRealm" enable-http2="true"/&gt; &lt;host name="default-host" alias="localhost"&gt; &lt;location name="/" handler="welcome- content"/&gt; &lt;filter-ref name="server- header"/&gt; &lt;filter-ref name="x-powered- by-header"/&gt; &lt;/host&gt; &lt;/server&gt;</pre>
max-parameters	<p>The maximum number of parameters that can be added to the TIBCO MDM URL into the browser. Using this value, you can avoid the hash exposure used in the URL. This applies to both query and POST data parameters.</p> <p>By default, the size of the max-parameters is 1000. You can change the value as per your requirement.</p>	<pre>&lt;server name="default-server"&gt; &lt;http-listener name="default" socket-binding="http" redirect-socket="https" enable-http2="true" max- post-size="974247881" max- parameters="5000"/&gt; &lt;https-listener name="https" socket-binding="https" security-</pre>

Parameter Name	Description	Example
	<p><b>Note:</b> For TIBCO MDM Add-on for Global Data Synchronization, the number of limits might cross due to huge number of attributes. Therefore you must set <code>max-parameters="10000"</code>. For example,</p> <pre>&lt;http-listener name="default" socket-binding="http" redirect- socket="https" enable- http2="true" max- parameters="10000"/&gt;</pre>	<pre>realm="ApplicationRealm" enable-http2="true"/&gt; &lt;host name="default-host" alias="localhost"&gt; &lt;location name="/" handler="welcome- content"/&gt; &lt;filter-ref name="server- header"/&gt; &lt;filter-ref name="x-powered- by-header"/&gt; &lt;/host&gt; &lt;/server&gt;</pre>

4. Add the following VM parameters in `standalone.conf` (Linux) or `standalone.conf.bat` (Windows):

```
--add-exports=java.base/jdk.internal.misc=ALL-UNNAMED
--add-exports=java.base/sun.nio.ch=ALL-UNNAMED
--add-exports=java.management/com.sun.jmx.mbeanserver=ALL-UNNAMED
--add-exports=jdk.internal.jvmstat/sun.jvmstat.monitor=ALL-UNNAMED
--add-exports=java.base/sun.reflect.generics.reflectiveObjects=ALL-UNNAMED
--illegal-access=permit
--add-opens jdk.management/com.sun.management.internal=ALL-UNNAMED
```

For example, in `standalone.conf.bat` (Windows) set parameters as shown in the following sample:

```
"JAVA_OPTS=%JAVA_OPTS% --add-exports=java.base/jdk.internal.misc=ALL-
UNNAMED"
"JAVA_OPTS=%JAVA_OPTS% --add-exports=java.base/sun.nio.ch=ALL-UNNAMED"
"JAVA_OPTS=%JAVA_OPTS% --add-
exports=java.management/com.sun.jmx.mbeanserver=ALL-UNNAMED"
"JAVA_OPTS=%JAVA_OPTS% --add-
exports=jdk.internal.jvmstat/sun.jvmstat.monitor=ALL-UNNAMED"
"JAVA_OPTS=%JAVA_OPTS% --add-
```

```

exports=java.base/sun.reflect.generics.reflectiveObjects=ALL-UNNAMED"
"JAVA_OPTS=%JAVA_OPTS% --illegal-access=permit"
"JAVA_OPTS=%JAVA_OPTS% --add-opens
jdk.management/com.sun.management.internal=ALL-UNNAMED"

```

## 5. Create data sources

- a. Under <datasources> element, add <DataSource> element with attributes such as:

- jndi-name="java:jboss/eCMDDataSource"
- pool-name="MDMDataSource"

- a. Enable data source

- Specify true for the enabled attribute

- a. Under <drivers> element add JDBC driver specific to each database.

- For the Oracle database:

```
<driver>oracle.jdbc.driver.OracleDriver</driver>
```

- For the SQL Server database:

```
<driver>com.microsoft.sqlserver.jdbc.SQLServerDriver</driver>
```

- For the PostgreSQL database:

```

<driver module="org.postgresql.jdbc.driver" name="PostgresqlDriver">
  <driver-class>org.postgresql.Driver</driver-class>
</driver>

```

- a. Specify connection settings:

- Connection URL-Type any one of the following URLs:

For the Oracle database: jdbc:oracle:thin:@localhost:1521:*dbinstance\_name*

For the SQL Server database:

jdbc:sqlserver://localhost:1433;databaseName=*value*

For the PostgreSQL database: jdbc:postgresql://localhost:5432/*dbinstance\_*

*name*

- User Name and Password

Specify credentials for the Username and Password attributes.

- a. Configure Transaction Isolation

- Specify the TRANSACTION\_READ\_COMMITTED value for <transaction-isolation> attribute.

- a. Specify pool size

By default, 0 pool size is displayed.

- Specify 10 for Min Pool Size: <min-pool-size>10</min-pool-size>
- Specify 150 for Max Pool Size: <max-pool-size>150</max-pool-size>

- a. Specify transaction timeout

- Specify the transaction timeout in the <blocking-timeout-millis> element. This element indicates the maximum time in milliseconds to block a transaction while waiting for a connection and before displaying an exception. This blocks only while waiting for a permit for a connection, and does not display an exception if creating a new connection that takes an inordinately long time. The default is 36000 milliseconds.

For sample data sources, see [Sample Data Sources](#).

## 6. Change deployment timeout

By default, the deployment timeout is displayed as 60 seconds. For slower machines, TIBCO recommends to increase the deployment timeout:

- a. Under <subsystem xmlns="urn:jboss:domain:deployment-scanner:2.0">element, add the deployment-timeout attribute and its value. For example,

```
<deployment-scanner path="deployments" relative-to="jboss.server.base.dir" scan-
interval="5000" runtime-failure-causes-
rollback="{jboss.deployment.scanner.rollback.on.failure:false}" deployment-
timeout="5000"/>
```

## 7. Specify default timeout

To deploy huge metadata from TIBCO MDM Studio to TIBCO MDM, you need to add the default timeout attribute under the transaction element.

- a. Under <subsystem xmlns="urn:jboss:domain:transactions:5.0"> element, add the

following tag:

```
<coordinator-environment default-timeout="1800000"/>
```

## 8. Change HTTP Port

This step is optional. By default, the HTTP port is 8080. If required, you can change it.

- a. Under the `<socket-binding-group>` element, change the value of the port attribute for http port.

**i Note:** Alternatively, you can also change the HTTP port using the following parameter: `standalone.bat -Djboss.socket.binding.port-offset=new_port_number`. For example, if the current HTTP port is 8080 and you want to change it to 8180, type `standalone.bat -Djboss.socket.binding.port-offset=100`; in the command prompt and press Enter. The HTTP port number is changed to 8180.

## 9. Configuration for EJB

- Passing Values by Reference

While invoking the remote method of EJB, JBoss WildFly Application Server WildFly passes default values using the Passed By Value method instead of the Pass By Reference method. Therefore, to disable the Passed By Value method, add the following property in the `standalone.xml` file.

- a. For JBoss EAP, navigate to `<subsystem xmlns="urn:jboss:domain:ejb3:6.0">` section, and add the following line at the end of the section: `<in-vm-remote-interface-invocation pass-by-value="false"/>`
- b. For JBoss WildFly, navigate to `<subsystem xmlns="urn:jboss:domain:ejb3:5.0">` section, and add the following line at the end of the section: `<in-vm-remote-interface-invocation pass-by-value="false"/>`

- Define New Pool and Increase EJB Pool Size

When multiple users execute concurrent requests, multiple instances of each bean are used concurrently. Each bean has a limited number of instances in the bean-instance pool, available for use. If all the beans are in use, subsequent requests have to wait for a bean to be released by the previous thread, and then release back into the pool. This wait is for a specific time,

that is, five minutes in TIBCO MDM. If the bean is not released within five minutes, an Instance-Acquisition-TimeOut error is displayed and the request remains incomplete.

To avoid such errors, increase the EJB pool size to a large number (500 or 1000). On the JBoss WildFly Application Server, the default pool size is 20, defined in the standalone.xml file. Changing the default pool size may affect all beans in all deployed applications. Therefore, you need to define a new pool.

- a. Navigate to the <subsystem xmlns="urn:jboss:domain:ejb3:5.0"> (for JBoss WildFly) or <subsystem xmlns="urn:jboss:domain:ejb3:6.0"> (for JBoss EAP) section, and define the following new pool and specify its pool size:

```
<pools>
<bean-instance-pools>
<strict-max-pool name="mdm-pool" max-pool-size="500" instance-acquisition-
timeout="5" instance-acquisition-timeout-unit="MINUTES"/>
</bean-instance-pools>
</pools>
```

## 10. Defining TIBCO module

In some cases, additional external modules need to be created to configure out-of-the-box functionality.

- a. Navigate to the \$JBOSS\_HOME/modules/system/layers/base/com folder and create the following hierarchical folders: tibco/mdm/main
- b. Create a module.xml file in the \$JBOSS\_HOME/modules/system/layers/base/com/tibco/mdm/main folder and add the following snippets:

```
<module xmlns="urn:jboss:module:1.3" name="com.tibco.mdm">
<resources>
<resource-root path="tibjms.jar"/>
<!-- Insert resources here -->
</resources>
<dependencies>
<!-- Insert dependencies here -->
<module name="javax.api"/>
<module name="javax.jms.api"/>
</dependencies>
```

```
</module>
```

- c. Save the module.xml file.

## 11. Adding TIBCO Module to Global Modules List

**i Note:** Adding TIBCO module to the Global modules list is a must.

- a. Open the standalone.xml file located at `$JBOSS_HOME/standalone/configuration` directory.
- b. Modify the existing `<subsystem xmlns="urn:jboss:domain:ee:4.0"/>` section per database as follows:
  - For the Oracle and PostgreSQL databases:

```
<subsystem xmlns="urn:jboss:domain:ee:4.0">
  <global-modules>
    <module name="com.tibco.mdm" slot="main"/>
  </global-modules>
</subsystem>
```

- For the Microsoft SQL Server database, you also need to add the Microsoft SQL driver module to the global Modules list. For example,

```
<subsystem xmlns="urn:jboss:domain:ee:4.0">
  <global-modules>
    <module name="com.tibco.mdm" slot="main"/>
    <module name="com.microsoft.sqlserver" slot="main"/>
  </global-modules>
</subsystem>
```

## 12. Specifying EMS configuration

- a. Copy the `tibjms.jar` file from `$EMS_HOME/lib` and place it in the following folders:  
`$JBOSS_HOME/modules/system/layers/base/com/tibco/mdm/main` and `$MQ_HOME/lib/external`
- b. For JBoss EAP, rename the `jboss-jms-api_2.0_spec-1.0.2.Final-redhat-1.jar` file to `jboss-jms-api_2.0_spec-1.0.2.Final-redhat-1.jar.org` located in the `$JBOSS_HOME/modules/system/layers/base/javax/jms/api/main` folder.

- c. For JBoss WildFly, rename the `jboss-jms-api_2.0_spec-2.0.0.Final.jar` file to `jboss-jms-api_2.0_spec-2.0.0.Final.jar.org` located in the `$JBOSS_HOME/modules/system/layers/base/javax/jms/api/main` folder.
- d. Copy the `jms-2.0.jar` file from `$EMS_HOME/lib` to the `$JBOSS_HOME/modules/system/layers/base/javax/jms/api/main` folder.
- e. Open the `module.xml` file from the `$JBOSS_HOME/modules/system/layers/base/javax/jms/api/main` folder.
- f. For JBoss EAP, replace the path value from `jboss-jms-api_2.0_spec-1.0.2.Final-redhat-1.jar` to `jms-2.0.jar`.
- g. For JBoss WildFly, replace the path value from `jboss-jms-api_2.0_spec-2.0.0.Final.jar` to `jms-2.0.jar`.
- h. Restart the JBoss WildFly application server or JBoss EAP application server.

### 13. Specifying HTTP session timeout

The JBoss WildFly application server provides the default HTTP session timeout of 30 minutes. However, the JBoss Application Server does not support modification of the default value.

As per your business requirement, if you want to override the default HTTP session timeout value for TIBCO MDM, add the following entry in the application `web.xml` file or the `jboss-web.xml` file:

```
<web-app>
  <session-config>
    <!-- HTTP Session timeout, in minutes -->
    <session-timeout>40</session-timeout>
  </session-config>
</web-app>
```

Both the files are available in the `ECM.ear > EML.war > WEB-INF` directory.

## Removal of jaxrs Entries for JBoss WildFly Application Server

The JBoss WildFly Application Server version provides RESTEasy framework to build RESTful web services and Java applications. It is implemented based on the JAX-RS specification. It conflicts with other RESTful frameworks, which are compliant with the JAX-RS specification.

Remove the jaxrs entries from the standalone.xml file located in the \$JBOSS\_HOME/standalone/configuration directory.

Before modifying the file, back up the existing standalone.xml file, and then remove the following lines:

```
<extension module="org.jboss.as.jaxrs"/>
<subsystem xmlns="urn:jboss:domain:jaxrs:1.0"/>
```

## Deploying TIBCO MDM on JBoss WildFly Application Server

You need to deploy TIBCO MDM on JBoss WildFly Application Server.

### Procedure

1. Copy the ECM.ear file from \$MQ\_HOME to the \$JBOSS\_HOME/standalone/deployments directory.
2. To improve the performance of TIBCO MDM, add the following JVM parameter while starting the JBoss WildFly Application Server:

```
-Dorg.apache.xml.dtm.DTMMManager="org.apache.xml.dtm.ref.DTMMManagerDefault"
```

If the output does not contain any error or exception messages, you are ready to use the JBoss.

**i Note:** When the log4j2 service of TIBCO MDM initializes, it overrides the JBoss rootLogger property and starts writing server logs in the elink.log file. As a workaround, you can comment out the rootLogger property in the \$MQ\_HOME/config/ConfigValues.xml file:

```
<ConfValue description="The root logging level for the MDM server."
name="Root logging Level for MDM Server" proname="log4j2.rootLogger"
sinceVersion="7.0" visibility="All"> <ConfString default="DEBUG"
value="DEBUG"/> </ConfValue>
```

It is recommended that you keep this property to change the root logging level for TIBCO MDM.

## Starting JBoss WildFly Application Server

After you configure TIBCO MDM with JBoss WildFly Application Server, you can start the JBoss WildFly Application Server.

### Procedure

1. On the command line, type `$JBOSS_HOME/bin`.
2. Enter the following command:
  - For local host: `standalone.bat` or `./standalone.sh`
  - For remote server: `standalone.bat -b 0.0.0.0` or `./standalone.sh -b 0.0.0.0`

**i** **Note:** To access the TIBCO MDM instance remotely, you need to provide `-b 0.0.0.0` in addition.

The JBoss WildFly Application Server starts.

## Troubleshooting with JBoss WildFly Application Server

You might come across some exceptions on JBoss WildFly Application Server.

### *Troubleshooting with JBoss WildFly Application Server*

Issue	Description	Solution
Error occurs on the console for the unsupported Java versions	<p>TIBCO MDM is installed with the Windows, JBoss Wildfly application server, and Oracle database with the inbuilt Java version.</p> <p>The JBoss WildFly application server started successfully, however, the error messages are displayed on the console for the unsupported Java versions.</p>	TIBCO MDM supports JDK 11 version. Ensure that the PATH variable does not point to another Java version.

# Performing Postinstallation Tasks for Typical Installation

You need to merge third party libraries with ECM.ear that you have created for the WebSphere and WebLogic application servers and manually copy TIBCO EMS libraries that are not shipped with the product due to Licensing restrictions.

## Procedure

1. Merge Third Party Libraries with ECM.ear.
  - a. Go to \$MQ\_HOME/build/custom.
  - b. Execute customUtil.bat or customUtil.sh-mergeExternalLibrary.  
This command creates the thirdPartyLibrary folder in \$MQ\_HOME.
  - c. Copy the consolidated third party JAR file (ThirdParty.jar) to this folder and enter y to proceed for merging. For information about creating a consolidated JAR file, see [Creating a Consolidated JAR File with Third-Party Libraries](#).  
Continue and complete the script. The updated ECM.ear is placed in \$MQ\_HOME.
2. Copy EMS Libraries.
  - a. Copy the tibjms.jar and jms-2.0.jar from \$EMS\_HOME/lib to \$MQ\_HOME/lib/external directory.



**Warning:** If you do not copy the tibjms.jar and jms-2.0.jar files in \$MQ\_HOME/lib/external directory, the utilities do not work.

## Troubleshooting with Typical Installation

If you encounter an issue while installing TIBCO MDM, you may resolve the issues by completing the common troubleshooting procedures.

*Troubleshooting with Typical Installation*

Issue	Description	Solution
Display Cannot be Opened	<p>The UNIX installer terminates with the following error message:</p> <p>Could not open display</p>	<p>If you run the UNIX installer in a graphical mode, your local display has to be specified to the server. This local display needs to have a X Windows client installed. The local display is typically indicated to the server by specifying the DISPLAY environment variable. For example, on a bash shell: <code>export DISPLAY=client host name:0.0</code></p> <p>The X windows client also requires that the connection from the server is authorized. To enable the authorization, see the X Windows client documentation. On many X Windows clients, the authorization can be granted by using the Xhost command. For example:</p> <p>Xhost +</p>
Installer Terminates	<p>The installer terminates without any error message.</p>	<p>The installer creates a detailed time stamped log file in one of the following places:</p> <ul style="list-style-type: none"> <li>• If TIBCO_HOME did not exist at install time, the log file is created in the temp directory of the user in a.TIBCO sub folder.</li> <li>• If TIBCO_HOME exists, the log file is created in the \$TIBCO_HOME/log folder.</li> </ul> <p>Check the log file for any errors and then contact TIBCO Technical Support.</p> <p>You can also run the installer with the installer log enabled using the -is:log option. For example:</p> <pre>./TIBCOUniversallInstaller-lnx-x86.bin -is:javahome -is:log path/log.dat</pre>

## WebLogic, Oracle, and EMS

Follow the instructions to install TIBCO MDM on WebLogic application server, Oracle database, and TIBCO EMS:

1. [Installation Overview](#)
  - a. [Prerequisites for Installation](#)
  - b. [Additional Software Components](#)
  - c. [Third Party Libraries](#)
  - d. [Hardware Configuration](#)
  - e. [Environment Variables](#)
2. [Supported Databases](#)
3. [Database Sizing Requirements](#)
4. [Installing TIBCO MDM \(Typical Installation\)](#)
5. [Configuration of Oracle Database](#)
  - a. [Creating Tablespaces](#)
  - b. [Installing Seed Data Using Database Setup Wizard](#)
  - c. [Troubleshooting with Oracle Database](#)
6. [Creating TIBCO EMS Queues and Topics](#)
  - a. [Verifying Queues and Topics](#)
7. [Configuring TIBCO MDM for WebLogic Application Server](#)
  - a. [Deploying TIBCO MDM on WebLogic Application Server](#)
  - b. [Troubleshooting with WebLogic Application Server](#)
8. [Performing Postinstallation Tasks for Typical Installation](#)
9. [Troubleshooting with Typical Installation](#)

## Installation Overview

Download TIBCO MDM from the [TIBCO eDelivery](#) website . To login, you need user name and password. If you have not received a user name and password, contact TIBCO Technical Support. After you download TIBCO MDM, install it using the installer provided.

## Default Installation Directory

- **Microsoft Windows** The default installation location is `$TIBCO_HOME` where all TIBCO products are installed. Typically, `$TIBCO_HOME` is at `c:\tibco`.
- **UNIX** The default installation directory depends on who performs the installation:
  - For root users, the default installation directory is `/opt/tibco`.
  - For non-root users, the default installation directory is `/$myhome/tibco`, where `myhome` is the home directory of the user.

## Installer Disk Space Requirements in Temporary Area

- **Microsoft Windows Platforms** The entire package is extracted into a temp folder (minimum requirements 40 GB and 4 GB RAM), typically `SystemDrive:\Temp` or `SystemDrive:\Documents and Settings\user_name\Local Settings\Temp`.
- **UNIX Platforms** The installer launcher first extracts a Java Virtual Machine (JVM) in a temporary directory (minimum requirements 40 GB and 4 GB RAM) and uses this JVM to launch itself. The size of the extracted JVM differs from platform to platform. You can select the temporary area using the following option when starting the installer: `install_package_name.sh -is:tempdir /temp_area`

## Prerequisites for Installation

Before you start the TIBCO MDM installation, ensure that your system meets all of the requirements.

### Prerequisites

Software Component	Description
JDK	<p>TIBCO MDM is certified with Oracle Java and AdoptOpenJDK.</p> <ul style="list-style-type: none"> <li>• TIBCO MDM bundles Oracle Java with the installer. The bundled Oracle Java is located under TIBCO MDM installation home (<code>\$TIBCO_HOME/tibcojre64\11</code>). You do not need to download Java from the Oracle download site. If any updates to Java 11, TIBCO MDM continues to ship through the hotfix installers.</li> <li>• To install AdoptOpenJDK, download the executable file from the</li> </ul>

Software Component	Description
	<p><a href="#">AdoptOpenJDK</a> site and install it at the appropriate location.</p> <p>Ensure that the <code>JAVA_HOME</code> environment variable has been set correctly.</p> <ul style="list-style-type: none"> <li>• For the JBossEAP, JBoss WildFly, and WebLogic application servers, TIBCO MDM supports Java 11.</li> <li>• For WebSphere application server, TIBCO MDM supports Java 1.8.</li> </ul> <p>Consult the readme shipped with your installation of TIBCO MDM for the most up-to-date software requirements.</p>
<b>JMS Server</b>	The JMS Server must be installed and running with the required queues and topics created
<b>Application Server - For Typical install only</b>	<p>The Application Server must be installed and running with the correct service packs applied.</p> <p>For IBM WebSphere, make sure that JDK patch level matches the application server fix pack level.</p>
<b>Database - For Typical install only</b>	The Database server must be ready with either Oracle, PostgreSQL, or SQL Server installed and must have a user account with full privileges for the database. It is also recommended that a second user be created, but with restricted privileges.
<b>Client - For Typical install only</b>	<p>The client for the database must be installed on the TIBCO MDM system machine and must have access to Java JDBC connectors. The SQL Server client is required for creating new seed data. However, we do not need clients for the PostgreSQL database.</p> <p>Oracle Client Software should be Developer Edition or Enterprise Edition and must be on the computer hosting the application server. TIBCO MDM uses the sqlldr utility shipped with these Oracle Client Software editions.</p>
<b>Web Server - For Typical install only</b>	Web server is optional and is needed only if you do not plan to use direct URL access to the application server. if the Web server is going to be used, install it first.

Software Component	Description
Cache Server - For Typical install only	Cache server is optional and is needed only if a centralized cache sever is proposed. Make sure the cache server is installed (but not running).  <b>Note:</b> For information about the Cache server, see <a href="#">Enable Apache Ignite for TIBCO MDM</a> .

## Additional Software Components

TIBCO MDM requires additional software components as listed in the following table. The requirements of components depend on your installation choices and supported platforms. For a complete list of versions and platforms supported, see the *Readme.txt* file.

### Required Components

Component to Install	Supported options	For more information, see:
JDK	<ul style="list-style-type: none"> <li>For WebSphere application server, use JDK 1.8.</li> <li>For JBoss WildFly and WebLogic application servers, use JDK 11.</li> </ul>	<ul style="list-style-type: none"> <li><a href="#">Installation Overview</a></li> </ul>
Database Install and configure a database.	<ul style="list-style-type: none"> <li>Oracle</li> <li>Microsoft SQL Server</li> <li>PostgreSQL</li> </ul>	<ul style="list-style-type: none"> <li><a href="#">Configuration of Oracle Database</a></li> <li><a href="#">Configuration of SQL Server Database</a></li> <li><a href="#">Simple Installation with PostgreSQL</a></li> </ul>
Database Client	<ul style="list-style-type: none"> <li>Oracle</li> <li>Microsoft SQL Server</li> </ul>	
JMS Server	<ul style="list-style-type: none"> <li>TIBCO Enterprise</li> </ul>	<ul style="list-style-type: none"> <li><a href="#">Creating TIBCO EMS</a></li> </ul>

Component to Install	Supported options	For more information, see:
Configure a JMS Server	Messaging Service	<a href="#">Queues and Topics</a>
<b>Application Server</b> Configure a supported Application Server.	<ul style="list-style-type: none"> <li>• Websphere with or without Websphere ND</li> <li>• Weblogic</li> <li>• JBoss WildFly</li> </ul>	<ul style="list-style-type: none"> <li>• <a href="#">Configuring TIBCO MDM for WebSphere Application Server</a></li> <li>• <a href="#">Configuring TIBCO MDM for WebLogic Application Server</a></li> <li>• <a href="#">Configuring TIBCO MDM for JBoss WildFly Application Server</a></li> </ul>

### *Optional Components*

	Component to Install	Supported options	For more information, see:
1.	<b>AS2 Gateway</b> Configure AS2 Gateway for secure communication with other systems. (required only for GDSN mode or external communication).	<ul style="list-style-type: none"> <li>• Any AS2 Server (such as TIBCO BusinessConnect)</li> </ul>	<a href="#">Configuration of TIBCO BusinessConnect and TIBCO BusinessWorks</a> Details for configuring TIBCO BusinessConnect. See appropriate documentation for other gateways.
2.	<b>Cache Server</b> Configure a cache Server.	Apache Ignite	<a href="#">Configuration Properties of Apache Ignite</a>
3.	<b>Web Server</b> Configure a supported Web	<ul style="list-style-type: none"> <li>• IBM HTTP</li> <li>• Apache Server</li> </ul>	<a href="#">Configuration of Web Servers</a>

	Component to Install	Supported options	For more information, see:
	Server to connect to the application server.	<ul style="list-style-type: none"> <li>Microsoft IIS</li> </ul>	
4.	<b>X Server</b>  Configure to upload images for any records maintained using TIBCO MDM.	<a href="#">RealVNC</a>	<a href="#">Installing X Server</a>

## Third Party Libraries

In addition to the distribution provided by TIBCO, MDM requires additional software. This software must be provided for the installation and might have different licensing.

This table lists all the software which might be required.

### *Third Party Libraries*

Library	Library Name	Description
JDK Library	jsse.jar	Required, if you will be using SSL.  Can be obtained from JDK.  Vendor: ORACLE/IBM/HP
XMLC related Libraries	xmlc.jar, xmlc-base.jar, xmlc-charset.jar, xmlc-taskdef.jar, xmlc-xerces.jar, xmlc-all-runtime.jar, and Sunec.jar	Required for TIBCO MDM UI.  Click the <b>XMLC Download</b> link under the TIBCO MDM area at the <a href="#">eDelivery site</a> to download the xmlc-2.2.x.zip.  You can choose to download the library or let the installer download the library during the installation process.
	gnu-regexp.jar	Required for compiling HTML.

Library	Library Name	Description
EMS related Libraries	tibjms.jar and jms-2.0.jar	<p>Required, if you are using TIBCO EMS as a JMS vendor.</p> <p>The libraries can be obtained from the installation directory of TIBCO EMS (pointed by EMS_HOME).</p>

**Note:** EMS libraries are not applicable for the PostgreSQL database.

JDBC related Libraries	ojdbc8.jar mssql-jdbc-7.2.2.jre11.jar postgresql-42.2.11.jar	<ul style="list-style-type: none"> <li>• ojdbc8.jar is required for Oracle.</li> <li>• mssql-jdbc-7.2.2.jre11.jar ( Microsoft JDBC Driver 7.2 for SQL Server, Java Development Kit (JDK) 11.0 ) is required for Microsoft SQL Server.</li> <li>• postgresql-42.2.11.jar is required for PostgreSQL. (Not required if you are using Simple Installation)</li> </ul> <p>Copy the following JAR files to <i>\$MQ_HOME/configurator/server/configurator/lib/ext</i>.</p> <ul style="list-style-type: none"> <li>• ojdbc8.jar copy from <i>\$ORACLE_HOME/jdbc/lib</i>.</li> <li>• Download the mssql-jdbc-7.2.2.jre11.jar ( Microsoft JDBC Driver 7.2 for SQL Server, Java Development Kit (JDK) 11.0 ) file from <a href="#">Microsoft Download Center</a>.</li> <li>• postgresql-42.2.11.jar file copy from <i>\$MQ_HOME/bin/pgsql/driver</i></li> </ul>
Hibernate Assembly	hibernate3.jar and cglib-2.2.jar	<p>Required by TIBCO MDM for some database interactions.</p> <p>You can choose to download the library or let the installer download the library during the installation process.</p> <p>Click the <b>Download</b> link under the TIBCO</p>

Library	Library Name	Description
		MDM area at the <a href="#">eDelivery site</a> to download the product_tibco_hibernate_lgpl_3.6.10.003.zip.

All the required libraries are to be added to the distribution provided (ECM.ear) with TIBCO MDM.

## Hardware Configuration

The following table lists sample hardware configurations. Additional memory may be required to accommodate data caching needs.

### Hardware Configurations

Configuration	Quantity	Type			Memory
		Sun	IBM	Intel	
<b>Low End</b>					
Single machine for web server, application server, and DB server	1	Sun Fire X4100 - 2 CPU	IBM xSeries 2 CPU (AMD or Xeon) or equivalent	Xeon 2GHz, 2 CPU	4 GB RAM, 50 - 100 GB disk  8 GB RAM and Dual core processors are recommended to achieve increased throughput.
<b>Mid-range / Mid-range clustered</b>					
Web server	1	Sun Fire x2100 or Sun Fire x4100 equivalent, 1-2 CPU	IBM xSeries 1-2 CPU or pSeries entry level servers	Xeon 2 GHz, 1 CPU	1 GB RAM, 36 GB internal disk

Configuration	Quantity	Type			Memory
		Sun	IBM	Intel	
Application server	1-2	Sun Fire x4100 2 CPU with Dual core processors or Sun Fire V240 with 4 CPU	IBM i520 or IBM 630 with 2-4 core/CPU	Xeon 3 GHz, 2-4 CPU	4- 6 GB RAM, 36 GB disk  8 GB RAM and dual core processors are recommended for higher throughput.
Database server	1	Sun Fire 445 or equivalent with 2-4 CPU	IBM i520 or P630 with 2-4 Core/CPU	Xeon 3 GHz, 2-4 CPU	6-8 GB RAM, 200-500 GB disk.
Storage	1				Disk array, disks of 100 - 200 GB.
<b>High-end</b>					
Web server	1-2	Sun Fire, V100, 1-2 CPU	IBM P610, 1-2 CPU	Xeon 2 GHz, 1-2 CPU	2 GB RAM, 36 GB internal disks
Application server	2-4	Sun Fire V490 with 4 CPU or Sun Fire x4100 with 2 CPU dual core	IBM P650, 4-8 CPU	Xeon 3 GHz, 4-8 CPU	6-8 GB RAM, 40 GB disk for each server  12 GB RAM recommended for higher throughput.
Database server	1	Sun Fire V4800,	IBM P650, 4-8 CPU	Xeon 3 GHz, 4-	Minimum 12 GB RAM

Configuration	Quantity	Type			Memory
		Sun	IBM	Intel	
		4-8 CPU		8 CPU	400-600 GB disk.
Storage	1				Disk array, disks of 200 to 500+ GBb.

The hardware required depends on many factors including, number of concurrent users, usage patterns, retention of history and rate of change for the data. A more accurate capacity planning exercise should be done based on detailed scenario tests done in performance labs.

Contact TIBCO Professional Services or TIBCO Customer support for more details on how to calculate the required hardware. It is recommended that any production hardware planning must be done using scenario based testing results. A sample capacity planning worksheet can be obtained from TIBCO Customer Support.

## Environment Variables

You must set the important environment variables before installing TIBCO MDM.

### **i** Note:

- It is recommended that you use ASCII characters for all file names. If these names include non-ASCII characters, copying the files from Windows to UNIX or Linux and vice versa may result in corruption of file names.
- While setting environment variables on all platforms, if the ‘\’ character is used as a path separator instead of ‘/’, it leads to errors as ‘\’ is treated as an escape character.
- For Simple install, set only `JAVA_HOME` environment variable.
- For Typical install, set all the environment variables mentioned in the Environment Variables table.

*Environment Variables*

Variable	Description
<i>MQ_HOME</i>	<p>Define MQ_HOME to point to the installation directory. It is recommended that you allocate at least 8 GB to this directory. In a clustered environment, each application server should point to a separate location.</p> <p>Example: <code>/home/tibco/mdm/version</code></p>
<i>MQ_LOG</i>	<p>The location where log files will be generated (the recommended location is <code>\$MQ_HOME/log</code>). In a clustered environment, each server should point to a separate location. Define MQ_LOG to point to this directory. A minimum of 1 GB should be allocated to this directory. The best practice is to change the default location such that the directory is not a subdirectory of MQ_HOME.</p> <p>Example: <code>\$MQ_HOME/log</code></p>
<i>MQ_COMMON_DIR</i>	<p>All standard configurations files for workflow and data validation as well as all customizations are stored in this directory. This directory also holds all files generated during normal application processing. It is shared by all application servers in the cluster, and should be mounted to each server. All disk space indicated in the section <a href="#">Hardware Configuration</a> should be assigned to this directory, and the MQ_COMMON_DIR variable should be set. The best practice is to change the default location such that the directory is not a subdirectory of MQ_HOME.</p> <p>Example: <code>/home/tibco/mdm/version/common</code></p> <p>If you plan to create a copy of the TIBCO MDM instance across operating systems (for instance, Linux to Windows or Windows to Linux) and if the path contains any non English characters, such a copy may not be possible. For example, using Japanese characters in the path.</p>
<i>MQ_CONFIG_FILE</i>	<p>Points to <code>\$MQ_HOME/config/ConfigValues.xml</code>. The values/parameters in this file can be set using the Configurator.</p> <p>Example: <code>/home/tibco/mdm/version/config/ConfigValues.xml</code></p>
<i>JAVA_HOME</i>	<p>The directory where JRE/JDK is installed.</p>

Variable	Description
	Example: <code>/opt/jdkversion</code>
<code>EMS_HOME</code>	The directory where TIBCO EMS (or the messaging software) is installed.  Example: <code>/home/tibco/ems</code>
<code>ANT_HOME</code>	The Directory path where ant is installed.  Example: <code>/opt/antversion</code>
<code>MQ_HTTP_SESSION_REPLICATION_ENABLED</code>	If you use multiple nodes and want to replicate the session, then set the value of the <code>MQ_HTTP_SESSION_REPLICATION_ENABLED</code> environment variable to <b>true</b> to enable the session replication.
<code>MDM_DB_USE_SERVICENAME</code>	Specify this variable when you are connecting to the database by using the Configurator and when you are running TIBCO MDM on container platforms. <ul style="list-style-type: none"> <li>• Set to <b>true</b> to connect to the Oracle database by using the service name</li> <li>• Set to <b>false</b> to connect to the Oracle database by using SID</li> </ul> For more information, see <a href="#">Connecting to Database Using SID and Service Name</a> .
<code>MDMPORT</code>	Port number on which the TIBCO MDM node is running.
<code>PROTOCOL</code>	Specifies a protocol such as http or https to access the TIBCO MDM node. By default, the http protocol is used.
<b>Application Server Specific</b>	
<code>WAS_HOME</code>	The directory where WebSphere is installed (required <i>only</i> if using WebSphere).  Example: <code>/opt/WebSphere/AppServer</code>
<code>JBOSS_HOME</code>	For JBoss WildFly Application Server. Specify the path value until the

Variable	Description
	<p>root of the WildFly directory.</p> <p>Example, E:\JBoss\wildfly-<i>version</i>.Final.</p>
<i>JBOSS_HOME</i> (Simple Install)	<p>The directory where JBOSS is installed (required only if using simple installation).</p> <p>Example: %<i>MQ_HOME</i>%\bin\wildfly-<i>version</i>.Final</p>
<i>WLS_HOME</i>	<p>For WebLogic Application Server. Specify the path value of the WebLogic Application Server directory.</p> <p>Example:</p> <ul style="list-style-type: none"> <li>• For Linux: /opt/bea</li> <li>• For Windows: G:\WebLogic\wlserver_<i>version</i></li> </ul>
<b>Database Specific</b>	
<i>ORACLE_HOME</i>	<p>For Oracle database. The directory where Oracle is installed.</p> <p>Example:</p> <ul style="list-style-type: none"> <li>• For Windows: /home/oracle/product/<i>version</i>/db_1</li> <li>• On UNIX: \$export <i>ORACLE_HOME</i>=/u01/app/oracle/product/<i>version</i></li> </ul>
<i>LD_LIBRARY_PATH</i>	<p>For Oracle database: \$<i>ORACLE_HOME</i>/lib</p>
<i>NLS_LANG</i>	<p>For Oracle database. Example:</p> <ul style="list-style-type: none"> <li>• On UNIX: <pre>export NLS_LANG=AMERICAN_AMERICA.UTF8</pre> </li> <li>• On Windows: <pre>set NLS_LANG=AMERICAN_AMERICA.UTF8</pre> </li> </ul>

Variable	Description
<i>POSTGRESQL_HOME</i>	For PostgreSQL database. The directory where PostgreSQL is installed. Example: <i>\$MQ_HOME/bin/pgsql</i>
<i>OS</i>	The Operating system. For example, Linux.
<i>DISPLAY</i>	This environment variable is used by X-Windows based applications. It points to a device capable of displaying an X-Windows based UI.
<i>LD_ASSUME_KERNEL</i>	Used on the Linux platform to make Linux use the old Linux threads library, particularly required for Oracle installation (required <i>only</i> if Oracle is used as the database).
<i>PATH</i>	This is a list of directories separated by a separator. When any command or program is executed, the OS tries to locate the program in the directories listed in <i>PATH</i> . If the program is not found in any of the directories, the OS cannot load and execute the program. The Separator character is ':' for Unix and Linux platforms, and ';' for the Windows platform.  Ensure that there is no space with the commas and colons between the program in the directories listed which are separated by ':' for Unix and Linux platforms, and ';' for the Windows platform.
<i>SHLIB_PATH</i>	List of directories separated by a separator (see <i>PATH</i> ) where a dynamic linker tries to find the libraries. Used on UNIX platforms.
<i>LIBPATH</i>	List of directories separated by a separator (see <i>PATH</i> ) where the Operating system as well as the application library files reside. Used on UNIX platforms.
<i>NODE_ID</i>	Points to the current cluster member. Example: <i>NODE_ID=Member1</i>
<b>TIBCO MDM REST API through Swagger UI</b>	
<i>SWAGGER_MDM_HOST</i>	An IP address of the TIBCO MDM server on which you want to try out the TIBCO MDM REST APIs.

Variable	Description
<code>SWAGGER_MDM_PORT</code>	Port of the TIBCO MDM server on which you want to try out the TIBCO MDM REST APIs.

## Supported Databases

Install any one of the following databases as per your requirement. For a list of versions and platforms supported, see the *Readme.txt* file shipped with installation of TIBCO MDM.

### *Supported Databases*

Database	Description	Site Reference
Oracle	Download the supported version of the Oracle database from the Oracle site and unzip it to the required location.	Install the Oracle server software as directed in the <a href="#">Oracle installation document</a> .
SQL Server	Download the latest version of Microsoft SQL Server from the following site and unzip it to the required location	Install the SQL Server software as directed in the appropriate <a href="#">SQL installation document</a> .
PostgreSQL	The PostgreSQL database is installed with the Simple installation. You do not need to separately download it. For more information about simple installation, see <a href="#">Simple Installation with PostgreSQL</a> .	Not Applicable

## Database Sizing Requirements

The database sizing requirements include the minimal sizing requirements for `initdbname.ora` (`initemcm50.ora`); for small, medium, and large databases.

*Database Sizing Requirements*

Database Parameter Setting	Low-end	Mid-range	High-end
Db block size	8192	8192	8192
Db_file_multiblock_read_count	8	16	32
Shared pool size	75 MB	150 MB	200 MB*
Processes	(# of application servers)* (application server max db connection pool size) + 200		
Parallel max servers	2	4	5*
Log_buffers	25% of the system memory		
Timed_statistics	True	True	True
Max_dump_file_size	5 MB	10 MB	20 MB
Rollback_segments	8 seg	16 seg	32 seg*
Open cursors	300	450	3000
Character set	UTF-8		
Buffer Pool Size	150 MB	300 MB	500 MB - 2 GB*
db_writer_processes	75% of the cpu_count parameter value		

Database Parameter Setting	Low-end	Mid-range	High-end
Sessions	1.1* processes + 200		
optimizer_mode	ALL_ROWS		
shared_servers	# of dispatchers* 2		
Transactions	# sessions		

\* These values depend on various factors including concurrent users, message and workflow volumes, number of records, and so on. Your DBA should adjust these values based on the actual load and required performance characteristics.

## Installing TIBCO MDM (Typical Installation)

In the typical installation, the installer presents panels which you can select choices about the product location, and so on.

### Prerequisites

- Verify that your computer meets the System requirements. The system requirements are listed in the `readme.txt` file.
- Download the Installer. The application is available as a ZIP file.
- Extract the contents of the ZIP file to a folder on your computer.
- Search for the `TIBCOUniversalInstaller` application in the location where you have extracted the ZIP file.

### Procedure


1. Run the `TIBCOUniversalInstaller.exe` application. The TIBCO Universal Installer Welcome window is displayed.
2. Review the information and click **Next**. The license agreement is displayed.
3. Review the terms of the license agreement. If you agree with its terms, accept the license agreement and click **Next**.

4. In the Installation Profile Selection window, do one of the following:
  - a. Select **Create a new TIBCO\_HOME** option. A TIBCO installation environment is used for software installations and consists of a Name and Directory. Products installed into different installation environments do not share components; therefore you can keep product installations completely isolated from each other.
    - **Directory:** browse to the directory where the product needs to be installed and provide a unique environment name. Ensure that you have write permission to this directory.
    - **Name:** specify the environment name that is easy to identify your environment. For example, 'User Acceptance' or 'Procurement Department'.
  - a. If you have previously installed a TIBCO product using the Universal Installer, you can select **Use an existing TIBCO\_HOME**. By default, the installer detects the directory for your TIBCO\_HOME and displays the path. For example, on Windows, the default installation directory is c:\tibco.

**i** **Note:** If you had installed the application earlier, the directory cannot be modified. For a new installation, the directory can be changed.

Click **Next**.

5. In the Installation Profile Selection window, by default, the **Typical** installation profile is selected.
  - a. If you check the **Customize Installation** check box, a list of components is enabled (**Executable Image** and **Common Configuration**).
  - b. Select your preferred options and click **Next**.
6. In the TIBCO MDM Configurator Tomcat Settings window, the default port values are displayed. You can change the default port values. Click **Next**.


 **Warning:** The specified port values must not be in use by another application. If you do not specify configuration information, Configurator does not start and you need to perform manual configuration. For more information about the Configurator, see [Configurator](#).


7. In the TIBCO Patterns - Search Settings window, the default user interface port value (required for Patterns GUI tomcat server) and Patterns server port value (required for Patterns binary) are displayed. You can change the default port values.
  - a. Select **Install as a Windows Service** check box if you want to install the Patterns server binary as a service.

Click **Next**.

8. In the TIBCO MDM Common Config Location window, select the common configuration location and click **Next**.

If you have selected the standard common configuration option, the default \$MQ\_HOME\common directory location is displayed. You can retain the location or change it by clicking **Browse**.

 **Tip:** The best practice is to assign a location separate from MQ\_HOME. TIBCO MDM creates files in this directory and it is better to keep it separate from MQ\_HOME. In a clustered environment, this directory should be shared for all instances.

 **Note:** If you do not specify the common configuration location, Configurator does not start and you need to perform the manual configuration. For information, see [Manually Configuring TIBCO MDM](#).

9. The HIBERNATE LGPL License Agreement window is displayed. If you agree with its terms, accept the license agreement, and click **Next**.
10. The LGPL Assembly Download window is displayed. Select one of the following options:
  - **Download HIBERNATE assembly from TIBCO:** if you are downloading the LGPL assembly for the first time, select this option. The HIBERNATE

assembly is downloaded in the same folder as the installer. All the third party software which is used in the application and their licenses are downloaded.

- **Provide the location for the assembly previously downloaded from TIBCO:** if you have previously downloaded the LGPL assembly, specify the folder in which you have downloaded the hibernate assembly. Browse to the directory where the assembly is previously downloaded and saved.

**i Note:** If the LGPL Assembly is already downloaded, the LGPL Assembly Download window is not displayed.

Click **Next**.

11. The XMLC LGPL License Agreement window is displayed. If you agree with its terms, accept the license agreement, and click **Next**.
12. Select the **Download XMLC assembly from TIBCO** option. The assembly gets downloaded in the same folder as the installer. Click **Next**.
13. The Oracle Elliptic Curve Library LGPL License Agreement window is displayed. If you agree with its terms, accept the license agreement, and click **Next**.
14. In LGPL Assembly Download window, select one of the following options:
  - **Download Oracle Elliptic Curve Cryptography Library assembly from TIBCO:** if you select this option, the Cryptography assembly is downloaded and configured.
  - **Provide the location for the assembly previously downloaded from TIBCO:** If you select this option, the **Oracle Elliptic Curve Cryptography Library Assembly Path** field is enabled. Click **Browse** to select the Cryptography assembly.

Click **Next**.

**i Note:** The steps 13 and 14 are applicable only for the JBoss WildFly application server with Oracle and SQL server database combination.

15. In the Pre-Install Summary window, review a list of the components that are going to be installed and the installation environment details and click **Next** to begin the installation process.
16. In the Post-Install Summary window, review a list of the components that are

installed and the installation environment details. Click **Finish** to exit the wizard.

## Result

The following auto generated log files are created in the `C:\Users\username.TIBCO\install_currentyear-currentmonth-currentdate.uniqueID` folder: Using the log files, you can troubleshoot for errors in the installation process.

- `antTask_log_installerConfig_currentyear-currentmonth-currentdate.uniqueID`: consists of configuration related logs.
- `antTask_log_installerMergeXMLC_currentyear-currentmonth-currentdate.uniqueID`: consists of the XMLC merge related logs.
- `tibco_universal_installer.username_install`: consists of installer related logs.
- `antTask_log_updateEARToIncludeHibernateLib_currentyear-currentmonth-currentdate.uniqueID`: consists of ECM.ear file related logs.

## Configuration of Oracle Database

To configure the Oracle database, use the Oracle Configuration Assistant. Consult your Database Administrator on standard practices followed by your IT department to change the recommended structure according to your needs.

### Prerequisites

- Ensure that all required environment variables are set. See [Environment Variables](#).
- Ensure that Oracle Client Software Developer Edition or Enterprise Edition is installed on the computer hosting the application server ().
- Ensure that the `sqlldr` utility is available.
- Use the latest driver provided by Oracle.
- A valid and tested connect string should be present in the `TNSNAMES.ora` file. For example, the connection URL: `jdbc:oracle:oci:@ORACLERAC`  
where `ORACLERAC` is the TNS entry in the client's `TNSNAMES.ora` file and `oci` drivers are used to support TAF.

### TNSNAMES.ora file (client)

```

ORACLERAC =
(DESCRIPTION =
  (ADDRESS_LIST =
    (ADDRESS = (PROTOCOL = TCP)(HOST = hostname1.domainname.com)(PORT = 1521))
    (ADDRESS = (PROTOCOL = TCP)(HOST = hostname2.domainname.com)(PORT = 1521))
  )
  (FAILOVER=on)
  (LOAD_BALANCE = ON)
  (CONNECT_DATA =
    (SERVER = DEDICATED)
    (SERVICE_NAME = orcl)
    (FAILOVER_MODE =
      (TYPE = SELECT)
      (METHOD = BASIC)
      (RETRIES = 180)
      (DELAY = 5)
    )
  )
)
)
)

```

**i** **Note:** The TNS entry supports both failover and load balancing.

- Database port
- Database server host name

## Creating Tablespaces

Table spaces are required to hold data and indexes for all tables required for TIBCO MDM and for all data sources uploaded.

TIBCO MDM uses the following different kinds of tables and indexes:

- Fixed tables
- Indexes for fixed tables
- Data source tables
- Master catalog tables
- Indexes for master catalog tables

### Procedure

1. Change the default data file location specified in the createtablespace.sql file based on your Oracle installation.
  - a. Go to \$MQ\_HOME/db/oracle/configure/.
  - b. Open the createtablespace.sql file.
  - c. Change the data file location for all tablespaces. For example, if you have installed Oracle in the E:/app/oradata/orcl folder, change the C:/oracle/version/oradata/orcl path to E:/app/oradata/orcl.
2. Run the createtablespace.sql script to create the following tablespaces:

#### Tablespaces

Tablespace Name	Description
VELODBDATA	For fixed TIBCO MDM tables.
VELODBINDX1	For fixed TIBCO MDM table indexes.
VELODBDF	For TIBCO MDM data source tables
VELODBDATA	For TIBCO MDM master catalog tables.
VELODBINDX	For TIBCO MDM master catalog table indexes.

#### **i** Note:

- The VELODBDATA1 tablespace has a minimum size of 100 MB and maximum size of 500 MB. The remaining tablespaces are 100 MB. You can change the size of the tablespaces based on your requirement. You can also set the size as unlimited for the tablespaces.
- If you are migrating from the earlier versions of Oracle to the latest supported version of Oracle, you have to explicitly grant UNLIMITEDTABLESPACE to the user. Oracle has discontinued the support granting UNLIMITED TABLESPACE to the RESOURCE role user.

Run the following command: GRANT UNLIMITED TABLESPACE TO *username*

3. For a complete installation (tablespaces and seed data), run the installation script from `$MQ_HOME/db/oracle/configure/doall.bat` or `doall.sh`
  - a. To create tablespaces without seed data, run `$MQ_HOME/db/oracle/configure/createusertablespace.sh` or `.bat`
  - b. To create only seed data, see [Creating Seed Data Manually for Oracle Database](#).

## Installing Seed Data Using Database Setup Wizard

The Database Setup Wizard of Configurator makes the database setup process easy and user-friendly.

The Database Setup Wizard is common for all three databases. However, some fields vary according to the selected database in the **Settings > Database** option. The available database options are Oracle, SQL Server, and Postgres. For more information about selecting the database option, see the Configurator chapter of *TIBCO MDM System Administration*.

### Prerequisites

Before running the Database Setup Wizard, ensure the following:

- The database is installed.
- The database client is installed on the local computer.
- If a user has already been created, specify the schema credentials. If the user has not been created, specify the DBA credentials. For information, see [Creating Database User for Oracle Database](#).
- TIBCO MDM is installed and the environment variables are created.
- Database SQL scripts are available.
  - For Oracle: in `$MQ_HOME/db/oracle`.
  - For SQL Server: in `$MQ_HOME/db/sqlserver`.
- For Oracle, the tablespaces are not created.
- The following database JDBC JAR files are copied in the `$MQ_HOME/configurator/server/lib` folder for seed data creation:
  - For Oracle: `ojdbc8.jar` copy from `$ORACLE_HOME/jdbc/lib`

- For SQL Server: mssql-jdbc-7.2.2.jre11.jar ( Microsoft JDBC Driver 7.2 for SQL Server, Java Development Kit (JDK) 11.0 ) download from [Microsoft Download Center](#)
- For Oracle Database client globalization support, the following JVM arguments have been added in the \$MQ\_HOME/configurator/server/bin/setenv.bat file.
  - -Duser.country=en
  - -Duser.language=en

## Procedure

1. Log in to the Configurator.
2. Click **Tools > Set up Database**.
3. In the Database Setup Wizard for *databasename* with the Database Access Mode page, select one of the following options:
  - a. **Create New MDM Database User:** Select this option to create a new database user.
  - b. **Use an Existing MDM Database User:** Select this option to specify details of an existing user.

To specify details of a new database user or an existing database user, see the following table:

*New and Existing Database User Details*

Field Name	Description
Database Host	The IP address or host name of the server where the database is installed.
Database Port	By default, the port specific to each database is displayed. For example, <ul style="list-style-type: none"> <li>• For Oracle, the default database port is 1521.</li> <li>• For SQL Server, the default database port is 1433.</li> </ul> You can change the port value, if required.

Field Name	Description
Database Name (TNS Name)	<p>The name of the database where TIBCO MDM data should be installed.</p> <p><b>Note:</b> For Oracle RAC, specify the SID of either of the two clusters of the RAC database.</p>
DBA User Name	The user name of the database administrator.
DBA User Password	The password of the database administrator.
Test Connection	Click <b>Test Connection</b> to connect to the database and verify if the connection is successful. If the test connection is not successful, verify the specified database details.
New MDM Database User Name	The new user name used for the connection to the database.
New MDM Database User Password	The new password used for the connection to the database.
Confirm MDM Database User Password	Reenter the new password for confirmation.
<b>Note:</b> Remember the user name and password.	
Tablespace	The file system directory (absolute path) location where all

Field Name	Description
Location (For Oracle database)	<p>tablespaces are created. This must be a local directory on the computer where the database is running. You can specify a custom location and provide a full path of the directory. The directory should have 'write permission' to write a file.</p> <p><b>Notes:</b></p> <ul style="list-style-type: none"> <li>• If you do not specify the tablespace location, by default the tablespaces are created in the \$ORACLE_HOME/database directory.</li> <li>• It is recommended that the file system in this directory contains a significant amount of available space. This directory is assigned by a DBA and should be backed up on a regular basis. For example: /opt/oradata</li> </ul>
Database File Location (For SQL Server database)	<p>The SQL Server database location. You can specify a custom location and provide a full path of the directory.</p> <p><b>Note:</b> Database File Location should have permission to write files.</p>

- c. On the Database Details and Create New MDM Database User screens, click **Next**.

**i Note:**

- If you are not a DBA user or do not have permission to create tablespace and a new user, you can create a tablespace and database user using the scripts. For information, see [Configuration of Oracle Database](#) and [Configuration of SQL Server Database](#).
- For Oracle, if you select the **Use an Existing MDM Database User** option, see [Creating Database User for Oracle Database](#) for the details of the existing database user.
- For SQL Server, if you select the **Use an Existing MDM Database User** option, see [Creating Database User for SQL Server Database](#) for the details of the existing database user.

4. In the MDM Instance Details page, enter the following details and click **Next**:

*MDM Instance Details*

Field Name	Description
MDM Instance Name	Specify the instance name of TIBCO MDM. When you have multiple instances, and you want to install a database, you can specify a particular instance name. For example, preproduction and postproduction instances. An instance entry is added in the database table.
MDM Instance Description	Specify the instance description of TIBCO MDM.

5. In the Storage Profile Details page, select one of the following storage profile options:
  - a. **Typical Profile**: select this option to use the default values. A Typical profile installs tablespaces for the Oracle database and the database file location for the SQL Server database.

After you select the **Typical** storage profile option, the Confirm Storage Parameters page is displayed. Confirm the default values and click **Install** to

install the seed data. See step 6.

- b. **Custom Profile:** select this option to specify the customized values for the default tablespace.

After you select the **Custom** storage profile option, the Custom Profile Setup page is displayed. Specify the values, size, and location for the default tablespaces.

- c. Click **Next**.

6. In the Confirm Storage Parameters page, confirm the customized values. Click **Install** to install the seed data.
7. The MDM Seed Data Summary page displays the success and error report of the seed data and schema creation.
  - a. To view the schema and seed data log file, click **Open**.
    - For Oracle, by default, the log files are stored in \$MQ\_HOME/db/oracle/install/logs folder.



**Note:** You can ignore tablespaces errors. For example,

"ERROR:-ORA-01543: tablespace 'VELODBTEMP' already exists".

- For SQL Server, by default, the log files are stored in \$MQ\_HOME/db/sqlserver/install/logs folder.
8. Click **Finish** to complete the database setup process.

## Troubleshooting with Oracle Database

Resolve the errors that you may come across while configuring the Oracle database.

### *Troubleshooting with Oracle Database*

Issue	Description	Solution
Bad Interpreter Issue	A “bad interpreter” error is displayed on UNIX.	The first line of all scripts on UNIX must be as follows: #!/usr/bin/sh

Issue	Description	Solution
Insufficient Shared Memory Issue	Oracle database error, unable to allocate required shared memory.  (ORA-04031: unable to allocate x bytes of shared memory).	Check whether or not the first line of the UNIX script follows this format. You can also create a soft link as follows: <code>ln -s /bin/sh /usr/bin/sh</code>
Inserting and Updating Data from ProcessLog and ProcessState Tables	Two errors are intermittently thrown when inserting or updating data from ProcessLog and ProcessState tables, even though the data to be inserted has a valid value and length. This error has been observed on Oracle 10.1.0.2.0.  ORA-01461: can bind a LONG value only for insert into a LONG column  ORA-01483: invalid length for DATE or NUMBER bind variable	Restarting the application server might resolve the issue temporarily.  There are similar issues reported in Oracle MetaLink. Reference Document IDs: 241358.1, 461670.1  If the problem persists, contact Oracle support and consider upgrading to the latest patch.
Seed data errors for exceeded length	After you change the value of the MAX_STRING_SIZE parameter from <b>STANDARD</b> to <b>EXTENDED</b> , the following errors occur during seed data creation:  <pre>SQL&gt;CREATE INDEX WORKITEMDETAIL_IDX1 ON WORKITEMDETAIL ( NAME, Value )</pre>	To fix this issue, run the upgradeAttributeLength.sql script located at \$MQ_HOME/db/DatabaseType/install/scripts/utility.

Issue	Description	Solution
	<pre>TABLESPACE VELODBINDX1 ERROR:-ORA-01450: maximum key length (6398) exceeded</pre>	
	<pre>SQL&gt;CREATE INDEX FSENTRY_ IDX ON FSENTRY ( PATH ASC, NAME ASC ) TABLESPACE VELODBINDX1 ERROR:-ORA-01450: maximum key length (6398) exceeded</pre>	
	<pre>SQL&gt;CREATE INDEX SFSENTRY_ IDX ON SFSENTRY ( PATH ASC, NAME ASC ) TABLESPACE VELODBINDX1 ERROR:-ORA-01450: maximum key length (6398) exceeded</pre>	

## Creating TIBCO EMS Queues and Topics

The required queues and topics are located in the \$MQ\_HOME/bin/install/createQueues.txt file.

### Before you begin

Ensure that the EMS Server is running.

### Procedure

1. Go to **All Programs > TIBCO > TIBCO EMS *version*** and click **Start EMS Administration Tool**. The command prompt is displayed.
2. Type **Connect**.
3. Enter login name and password.

**i Note:** If you have not created the administration credentials, press **Enter**. By default, administration login name and password is retrieved.

The connected to: `tcp://localhost:port_number` message is displayed.

4. Go to `$MQ_HOME/bin/install` and open the `createQueues.txt` file.
5. Copy content of the `createQueues.txt` file and place it in the command prompt.  
Queues and topics are created.

## Verifying Queues and Topics

You can verify a list of created queues and topics.

### Procedure

1. Go to **All Programs > TIBCO > TIBCO EMS *version*** and click **Start EMS Administration Tool**.  
The command prompt is displayed.
2. Type **Connect**.
3. Enter login name and password.
4. Type `show queues` in the command prompt and press **Enter**.  
A list of created queues is displayed.
5. Type `show topics` in the command prompt and press **Enter**.  
A list of created topics is displayed.

## Configuring TIBCO MDM for WebLogic Application Server

Using the Configuration wizard, create a WebLogic domain.

### Prerequisites

Configure the following properties in the Configurator:

*Configurator Properties for WebLogic Application Server*

Property Name	Location	Value	Description
Application Server Name	<i>Node ID</i> > Application Server	WebLogic	The name of the application server. If the value is WebLogic, it refers to the WebLogic application server.
JNDI Naming Service URL	<i>Node ID</i> > Application Server > WebLogic	t3://localhost:7001	The Uniform Resource Locator (URL) used by the WebLogic application server to expose the J2EE Naming service. This value is has already been defined in the application server configuration.
Encryption Provider	InitialConfig > Security Provider > SUN	The default value is sun.security.provider.Sun. This value typically does not need to be changed.	Refers to the name of the Java class, which is the default security encryption on the SUN Java Virtual Machine. This

Property Name	Location	Value	Description
			value is sufficient.
JNDI Context Factory	<i>Node ID</i> > Application Server > WebLogic	The default value is <code>weblogic.jndi.WLInitialContextFactory</code> . This value typically does not need to be changed.	The Java class that initiates a connection to the naming service of the application server.

## Procedure

1. Configure the Server
  - a. Start the WebLogic application server.
  - b. Verify that an instance of WebLogic is running by logging into the admin console (use the user name and password you provided during domain creation)
2. Set up Timeout Seconds
  - a. Go to **Domain > Configuration > JTA** tab.
  - b. Set the **Timeout Seconds** to **36000**.
  - c. Click **Save**.
3. Enable the Archived Real Path to dynamically deploy the resource files of a customized page that is built using UI Builder and to improve the page loading performance.
  - a. Go to **Domain > Configuration > Web Application**.
  - b. Select the **Archived Real Path Enabled** check box.
  - c. Click **Save**.
4. Set up JDBC Drivers for Oracle - WebLogic
  - a. In the left pane, expand **Services > > Data Sources**. The **Summary of JDBC Data Sources** page is displayed.

- b. In the Data Sources section, click the **New** button to create a new data source. The following three options are displayed: **Generic Data Source**, **GridLink Data Source**, and **Multi Data Source**.
- c. Select the **Generic Data Source** option.
- d. In the **Name** field, specify a name for the JDBC Data Source.


**i** **Note:** The name and JNDI name should be eCMDDataSource.

- e. Select **Database Type** as **Oracle**.
- f. Click **Next**. The **Create a New JDBC Data Source** page is displayed.
- g. Select **Oracle's Driver (Thin) for Service Connections; Versions: Any** from the Database Driver drop-down list.
- h. Click **Next**. Click **Next** on the following page.

The screenshot shows a dialog box titled "Create a New JDBC Data Source". At the top, there are buttons for "Back", "Next", "Finish", and "Cancel". Below this is the "Transaction Options" section. It starts with a heading "Transaction Options" and a sub-heading "You have selected non-XA JDBC driver to create database connection in your new data source." followed by the question "Does this data source support global transactions? If yes, please choose the transaction protocol for this data source." There are three radio button options: "Supports Global Transactions" (which is checked), "Logging Last Resource", and "Emulate Two-Phase Commit". Below these are three paragraphs of explanatory text for each option. At the bottom of the dialog, there are buttons for "Back", "Next", "Finish", and "Cancel".

- i. Enter the details in the **Database Name**, **Host Name**, **Port**, **Database User Name**, **Password** and **Confirm Password** fields. Note that the Database Name = SID.
  - j. Click **Next**.
  - k. Click **Test Configuration**.
  - l. Click **Next**. You are prompted to select targets to deploy your new JDBC data source.
  - m. Select the Server and click **Finish**.
5. Configure the Connection Pool

- a. In the left pane, click **Services > > Data Sources > > eCMDDataSource**. The **Settings for eCMDDataSource** page is displayed.
- b. Click the **Connection pool** tab.
- c. Expand **Advanced** at the bottom of the page.
- d. Select the **Test Connections on Reserve** check box.
- e. Specify **7200** in the **Inactive Connection Timeout** field.
- f. Specify **10** in the **Maximum Waiting for Connection** field.


 **Note:** Maximum Capacity for connection settings is 100.

- g. Select the **Ignore In-Use Connections and Remove Infected Connections Enabled** check boxes.
- h. Click **Save**. The connection pool configuration for the eCMDDataSource is saved.
- i. Copy the following files from `%TIBEMSDIR%\lib` to `%WLS_HOME%\user_projects\domains\domain name\lib` and `$MQ_HOME/lib/external`

```
tibjms.jar
```

## 6. Modify the startWebLogic.cmd or startWebLogic.sh file.

- a. Ensure that the WebLogic Application Server is running.
- b. Edit the startWebLogic.sh or startWebLogic.cmd file located under `$WLS_HOME/user_projects/domains/domain_name/bin` to add the following lines in the # START WEBLOGIC section:

 **Note:** If you are using Windows operating system, replace \$ with %text% in the following example:

```
java ${JAVA_VM} ${MEM_ARGS} ${JAVA_OPTIONS}
-Dweblogic.Name=${SERVER_NAME}
-Dweblogic.management.username=${WLS_USER}
-Dweblogic.management.password=${WLS_PW}
-Dweblogic.ProductionModeEnabled=${STARTMODE}
```

```
-DMQ_HOME=${MQ_HOME}
-DMQ_CONFIG_FILE="${MQ_HOME}/config/ConfigValues.xml"
-DMQ_COMMON_DIR=${MQ_COMMON_DIR}
-DORACLE_HOME=${ORACLE_HOME}
-DNODE_ID=Member1
-DMQ_LOG=${MQ_LOG}
-DTNS_ADMIN=${ORACLE_HOME}/network/admin
-DPATH=${MQ_HOME}/bin:${WL_HOME}/server/bin:
${WL_HOME}/common/bin:${ORACLE_HOME}/bin:/usr/bin
-Djava.security.policy="${WL_HOME}/server/lib/weblogic.policy"
weblogic.Server
--add-opens jdk.management/com.sun.management.internal=ALL-UNNAMED
-
-Dlog4j2.contextSelector=org.apache.logging.log4j.core.selector.BasicContextSelect
or
-Dlog4j2.ignoreTCL=true
```

**Note:**

- To deploy the Configurator in WebLogic, set the following parameter: `-Dcatalina.home=${MQ_LOG}`

- Optional: To improve the TIBCO MDM performance, add the following JVM parameter while starting the application server:

```
-Dorg.apache.xml.dtm.DTMMManager="org.apache.xml.dtm.ref.DTMMManagerDefault"
```

- To monitor application server JVM, add the following JVM arguments:

```
-Dcom.sun.management.jmxremote.authenticate=false
-Dcom.sun.management.jmxremote.ssl=false
-Dcom.sun.management.jmxremote.port=9999
```

- Set up `TIBEMSDIR=path` environment variable for EMS installation. For example: `set TIBEMSDIR=C:\Tibco\emsversion\ems\version`
- The CLASSPATH set in the WebLogic startup script must include the location of the JAR files. Include the following JAR files in the `CLASSPATH` variable.
  - Windows:

```
%TIBEMSDIR%\lib\tibjms.jar;%TIBEMSDIR%\lib\tibjmsapps.jar;
%TIBEMSDIR%\lib\tibrvjms.jar;%TIBEMSDIR%\lib\tibjmsadmin.jar;
%MQ_HOME%\lib\external\xbean.jar;
%MQ_HOME%\lib\external\log4j2-version.jar;
%MQ_HOME%\lib\external\commons-logging-version.jar;
%MQ_HOME%\lib\external\gwt-user.jar;
%MQ_HOME%\lib\external\dom4j-version.jar;
%MQ_HOME%\lib\external\hibernate\hibernate3.jar;
%MQ_HOME%\lib\external\javassist-version.GA.jar;
%MQ_HOME%\lib\external\slf4j-api-version.jar;
%MQ_HOME%\lib\external\stickyConfiguration.jar
```

- UNIX:

```
$TIBEMSDIR/lib/tibjms.jar:$TIBEMSDIR/lib/tibjmsapps.jar:
$TIBEMSDIR/lib/tibrvjms.jar:$TIBEMSDIR/lib/tibjmsadmin.jar:
$MQ_HOME/lib/external/xbean.jar:
$MQ_HOME/lib/external/log4j2-version.jar:
$MQ_HOME/lib/external/commons-logging-version.jar:
$MQ_HOME/lib/external/gwt-user.jar:
$MQ_HOME/lib/external/dom4j-version.jar:
$MQ_HOME/lib/external/hibernate/hibernate3.jar:
$MQ_HOME/lib/external/javassist-version.GA.jar:
$MQ_HOME/lib/external/slf4j-api-version.jar:
$MQ_HOME/lib/external/stickyConfiguration.jar:
$CLASSPATH
```

## Deploying TIBCO MDM on WebLogic Application Server

After configuring TIBCO MDM with WebLogic Application Server, deploy TIBCO MDM.

### Procedure

1. Type the following command:
 

```
$ ./ startWebLogic.sh or startWebLogic.cmd located under $WLS_HOME/user_
projects/domains/domain_name/bin
```
2. Open the WebLogic Server Console (for example: <http://localhost:7001/console>)
3. Log in to the Console.
4. In the left pane, click **Deployments**.
5. Click **Install** under **Deployments** on the **Control** tab.

6. Browse to the location of the ECM.ear file.
7. Select ECM.ear and click **Next**.
8. Choose targeting style as **Install this deployment as an application**.
9. Click **Next**.
10. Click **Finish**.

A success message is displayed.

**Note:**

- Ensure that you click **Activate Changes** on the left to activate all your changes. Under Deployments, select the application, click **Start** and select **Servicing all requests** option.
- You can also verify if the application is installed successfully using the following URL: `http://IP address:7001/eml/Login`. The port for the WebLogic application server is 7001.

When you stop the WebLogic application server, perform the following actions:

1. From the **Deployment** tab, stop ECM.ear.
2. Stop the WebLogic application server.

Thus, when you restart TIBCO MDM with the WebLogic application server, you must start ECM.ear from the **Deployment** tab.

## Troubleshooting with WebLogic Application Server

Resolve the errors that you may come across while working with the WebLogic Application Server.

### *Troubleshooting with WebLogic Application Server*

Issue	Description	Solution
Login Page is Not Shown After Installation	The Login Page is not shown and error.log shows an error.	Check for the JDBC driver. It should be <code>oracle.jdbc.driver.OracleDriver</code> . Specify <code>\$AS_HOME/bin</code> and <code>\$AS_HOME/lib</code> in

Issue	Description	Solution
		the classpath.
404 Page Not Found	You get the 404 Page Not Found error when using the Apache 2.0 Plug-in for the WebLogic Server.	<p>Check PathTrim property within weblogic.conf. It has to be null, otherwise it will trim the /eml part from the URL.</p> <p>Check the httpd.conf file for the &lt;IfModule mod_weblogic.c&gt; section. The path given within the include statement for weblogic.conf is relative to the Apache20 directory.</p>
Garbage Collection Data is Not Available for Analysis	If you are experiencing performance issues, TIBCO Customer Support may request for garbage collection statistics.	<p>To enable garbage collection data collection, change the JVM settings as follows:</p> <p><b>Servers &gt; Application Server &gt; server1 &gt; Process Definition &gt; Java Virtual Machine.</b>Select the <b>Verbose garbage collection</b> check box against it.</p> <p>The garbage collection data is stored in \$WAS_HOME/profiles/&lt;profilename&gt;/logs/server1/native_stderr.log</p>

## Performing Postinstallation Tasks for Typical Installation

You need to merge third party libraries with ECM.ear that you have created for the WebSphere and WebLogic application servers and manually copy TIBCO EMS libraries that are not shipped with the product due to Licensing restrictions.

### Procedure

1. Merge Third Party Libraries with ECM.ear.
  - a. Go to \$MQ\_HOME/build/custom.
  - b. Execute customUtil.bat OR customUtil.sh-mergeExternalLibrary.

This command creates the thirdPartyLibrary folder in \$MQ\_HOME.

- c. Copy the consolidated third party JAR file (ThirdParty.jar) to this folder and enter `y` to proceed for merging. For information about creating a consolidated JAR file, see [Creating a Consolidated JAR File with Third-Party Libraries](#).

Continue and complete the script. The updated ECM.ear is placed in \$MQ\_HOME.

## 2. Copy EMS Libraries.

- a. Copy the `tibjms.jar` and `jms-2.0.jar` from `$EMS_HOME/lib` to `$MQ_HOME/lib/external` directory.



**Warning:** If you do not copy the `tibjms.jar` and `jms-2.0.jar` files in `$MQ_HOME/lib/external` directory, the utilities do not work.

## Troubleshooting with Typical Installation

If you encounter an issue while installing TIBCO MDM, you may resolve the issues by completing the common troubleshooting procedures.

### *Troubleshooting with Typical Installation*

Issue	Description	Solution
Display Cannot be Opened	The UNIX installer terminates with the following error message:  Could not open display	If you run the UNIX installer in a graphical mode, your local display has to be specified to the server. This local display needs to have a X Windows client installed. The local display is typically indicated to the server by specifying the DISPLAY environment variable. For example, on a bash shell: <code>export DISPLAY=client host name:0.0</code>  The X windows client also requires that the connection from the server is authorized. To enable the authorization, see the X Windows client documentation. On many X Windows clients, the authorization can be granted by using the Xhost command. For example:  Xhost +
Installer	The installer	The installer creates a detailed time stamped log file in

Issue	Description	Solution
Terminates	terminates without any error message.	<p>one of the following places:</p> <ul style="list-style-type: none"> <li>• If TIBCO_HOME did not exist at install time, the log file is created in the temp directory of the user in a.TIBCO sub folder.</li> <li>• If TIBCO_HOME exists, the log file is created in the \$TIBCO_HOME/log folder.</li> </ul> <p>Check the log file for any errors and then contact TIBCO Technical Support.</p> <p>You can also run the installer with the installer log enabled using the -is:log option. For example:</p> <pre>./TIBCOUniversalInstaller-lnx-x86.bin -is:javahome -is:log path/log.dat</pre>

## WebLogic, Oracle, EMS, and Apache Web Server

Follow the instructions to install TIBCO MDM on WebLogic application server, Oracle database, TIBCO EMS, and Apache web server:

1. [Installation Overview](#)
  - a. [Prerequisites for Installation](#)
  - b. [Additional Software Components](#)
  - c. [Third Party Libraries](#)
  - d. [Hardware Configuration](#)
  - e. [Environment Variables](#)
2. [Supported Databases](#)
3. [Database Sizing Requirements](#)
4. [Installing TIBCO MDM \(Typical Installation\)](#)
5. [Configuration of Oracle Database](#)

- a. [Creating Tablespaces](#)
- b. [Installing Seed Data Using Database Setup Wizard](#)
- c. [Troubleshooting with Oracle Database](#)
6. [Creating TIBCO EMS Queues and Topics](#)
  - a. [Verifying Queues and Topics](#)
7. [Configuring TIBCO MDM for WebLogic Application Server](#)
  - a. [Deploying TIBCO MDM on WebLogic Application Server](#)
  - b. [Troubleshooting with WebLogic Application Server](#)
8. [Configuring Apache Web Server Plug-in with WebLogic](#)
9. [Performing Postinstallation Tasks for Typical Installation](#)
10. [Troubleshooting with Typical Installation](#)

## Installation Overview

Download TIBCO MDM from the [TIBCO eDelivery](#) website . To login, you need user name and password. If you have not received a user name and password, contact TIBCO Technical Support. After you download TIBCO MDM, install it using the installer provided.

### Default Installation Directory

- **Microsoft Windows** The default installation location is `$TIBCO_HOME` where all TIBCO products are installed. Typically, `$TIBCO_HOME` is at `c:\tibco`.
- **UNIX** The default installation directory depends on who performs the installation:
  - For root users, the default installation directory is `/opt/tibco`.
  - For non-root users, the default installation directory is `/$myhome/tibco`, where `myhome` is the home directory of the user.

### Installer Disk Space Requirements in Temporary Area

- **Microsoft Windows Platforms** The entire package is extracted into a temp folder (minimum requirements 40 GB and 4 GB RAM), typically `SystemDrive:\Temp` or

SystemDrive:\Documents and Settings\*user\_name*\Local Settings\Temp.

- **UNIX Platforms** The installer launcher first extracts a Java Virtual Machine (JVM) in a temporary directory (minimum requirements 40 GB and 4 GB RAM) and uses this JVM to launch itself. The size of the extracted JVM differs from platform to platform. You can select the temporary area using the following option when starting the installer: `install_package_name.sh -is:tempdir /temp_area`

## Prerequisites for Installation

Before you start the TIBCO MDM installation, ensure that your system meets all of the requirements.

### Prerequisites

Software Component	Description
JDK	<p>TIBCO MDM is certified with Oracle Java and AdoptOpenJDK.</p> <ul style="list-style-type: none"> <li>• TIBCO MDM bundles Oracle Java with the installer. The bundled Oracle Java is located under TIBCO MDM installation home (<code>TIBCO_HOME\tibcojre64\11</code>). You do not need to download Java from the Oracle download site. If any updates to Java 11, TIBCO MDM continues to ship through the hotfix installers.</li> <li>• To install AdoptOpenJDK, download the executable file from the <a href="#">AdoptOpenJDK</a> site and install it at the appropriate location.</li> </ul> <p>Ensure that the <code>JAVA_HOME</code> environment variable has been set correctly.</p> <ul style="list-style-type: none"> <li>• For the JBossEAP, JBoss WildFly, and WebLogic application servers, TIBCO MDM supports Java 11.</li> <li>• For WebSphere application server, TIBCO MDM supports Java 1.8.</li> </ul> <p>Consult the readme shipped with your installation of TIBCO MDM for the most up-to-date software requirements.</p>
JMS Server	The JMS Server must be installed and running with the required queues and topics created
Application	The Application Server must be installed and running with the correct

Software Component	Description
Server - For Typical install only	<p>service packs applied.</p> <p>For IBM WebSphere, make sure that JDK patch level matches the application server fix pack level.</p>
Database - For Typical install only	<p>The Database server must be ready with either Oracle, PostgreSQL, or SQL Server installed and must have a user account with full privileges for the database. It is also recommended that a second user be created, but with restricted privileges.</p>
Client - For Typical install only	<p>The client for the database must be installed on the TIBCO MDM system machine and must have access to Java JDBC connectors. The SQL Server client is required for creating new seed data. However, we do not need clients for the PostgreSQL database.</p> <p>Oracle Client Software should be Developer Edition or Enterprise Edition and must be on the computer hosting the application server. TIBCO MDM uses the sqlldr utility shipped with these Oracle Client Software editions.</p>
Web Server - For Typical install only	<p>Web server is optional and is needed only if you do not plan to use direct URL access to the application server. if the Web server is going to be used, install it first.</p>
Cache Server - For Typical install only	<p>Cache server is optional and is needed only if a centralized cache sever is proposed. Make sure the cache server is installed (but not running).</p> <p><b>Note:</b> For information about the Cache server, see <a href="#">Enable Apache Ignite for TIBCO MDM</a>.</p>

## Additional Software Components

TIBCO MDM requires additional software components as listed in the following table. The requirements of components depend on your installation choices and supported platforms. For a complete list of versions and platforms supported, see the *Readme.txt* file.

*Required Components*

Component to Install	Supported options	For more information, see:
JDK	<ul style="list-style-type: none"> <li>For WebSphere application server, use JDK 1.8.</li> <li>For JBoss WildFly and WebLogic application servers, use JDK 11.</li> </ul>	<ul style="list-style-type: none"> <li><a href="#">Installation Overview</a></li> </ul>
<b>Database</b> Install and configure a database.	<ul style="list-style-type: none"> <li>Oracle</li> <li>Microsoft SQL Server</li> <li>PostgreSQL</li> </ul>	<ul style="list-style-type: none"> <li><a href="#">Configuration of Oracle Database</a></li> <li><a href="#">Configuration of SQL Server Database</a></li> <li><a href="#">Simple Installation with PostgreSQL</a></li> </ul>
Database Client	<ul style="list-style-type: none"> <li>Oracle</li> <li>Microsoft SQL Server</li> </ul>	
<b>JMS Server</b> Configure a JMS Server	<ul style="list-style-type: none"> <li>TIBCO Enterprise Messaging Service</li> </ul>	<ul style="list-style-type: none"> <li><a href="#">Creating TIBCO EMS Queues and Topics</a></li> </ul>
<b>Application Server</b> Configure a supported Application Server.	<ul style="list-style-type: none"> <li>WebSphere with or without WebSphere ND</li> <li>Weblogic</li> <li>JBoss WildFly</li> </ul>	<ul style="list-style-type: none"> <li><a href="#">Configuring TIBCO MDM for WebSphere Application Server</a></li> <li><a href="#">Configuring TIBCO MDM for WebLogic Application Server</a></li> <li><a href="#">Configuring TIBCO MDM for JBoss WildFly Application Server</a></li> </ul>

*Optional Components*

	Component to Install	Supported options	For more information, see:
1.	<b>AS2 Gateway</b> Configure AS2 Gateway for secure communication with other systems. (required only for GDSN mode or external communication).	<ul style="list-style-type: none"> <li>Any AS2 Server</li> </ul> (such as TIBCO BusinessConnect)	<a href="#">Configuration of TIBCO BusinessConnect and TIBCO BusinessWorks</a> Details for configuring TIBCO BusinessConnect. See appropriate documentation for other gateways.
2.	<b>Cache Server</b> Configure a cache Server.	Apache Ignite	<a href="#">Configuration Properties of Apache Ignite</a>
3.	<b>Web Server</b> Configure a supported Web Server to connect to the application server.	<ul style="list-style-type: none"> <li>IBM HTTP</li> <li>Apache Server</li> <li>Microsoft IIS</li> </ul>	<a href="#">Configuration of Web Servers</a>
4.	<b>X Server</b> Configure to upload images for any records maintained using TIBCO MDM.	<a href="#">RealVNC</a>	<a href="#">Installing X Server</a>

## Third Party Libraries

In addition to the distribution provided by TIBCO, MDM requires additional software. This software must be provided for the installation and might have different licensing.

This table lists all the software which might be required.

*Third Party Libraries*

Library	Library Name	Description
JDK Library	jsse.jar	<p>Required, if you will be using SSL.</p> <p>Can be obtained from JDK.</p> <p>Vendor: ORACLE/IBM/HP</p>
XMLC related Libraries	xmlc.jar, xmlc-base.jar, xmlc- chtml.jar, xmlc-taskdef.jar, xmlc- xerces.jar, xmlc-all-runtime.jar, and Sunec.jar	<p>Required for TIBCO MDM UI.</p> <p>Click the <b>XMLC Download</b> link under the TIBCO MDM area at the <a href="#">eDelivery site</a> to download the xmlc-2.2.x.zip.</p> <p>You can choose to download the library or let the installer download the library during the installation process.</p>
	gnu-regexp.jar	Required for compiling HTML.
EMS related Libraries	tibjms.jar and jms-2.0.jar	<p>Required, if you are using TIBCO EMS as a JMS vendor.</p> <p>The libraries can be obtained from the installation directory of TIBCO EMS (pointed by EMS_HOME).</p>
<p><b>Note:</b> EMS libraries are not applicable for the PostgreSQL database.</p>		
JDBC related Libraries	ojdbc8.jar mssql-jdbc- 7.2.2.jre11.-jar postgresql- 42.2.11.jar	<ul style="list-style-type: none"> <li>ojdbc8.jar is required for Oracle.</li> <li>mssql-jdbc-7.2.2.jre11.jar ( Microsoft JDBC Driver 7.2 for SQL Server, Java Development Kit (JDK) 11.0 ) is required for Microsoft SQL Server.</li> <li>postgresql-42.2.11.jar is required for PostgreSQL. (Not required if you are using Simple Installation)</li> </ul> <p>Copy the following JAR files to \$MQ_</p>

Library	Library Name	Description
		<p><i>HOME/configurator/server/configurator/lib/ext.</i></p> <ul style="list-style-type: none"> <li>• ojdbc8.jar copy from <i>\$ORACLE_HOME/jdbc/lib</i>.</li> <li>• Download the mssql-jdbc-7.2.2.jre11.jar ( Microsoft JDBC Driver 7.2 for SQL Server, Java Development Kit (JDK) 11.0 ) file from <a href="#">Microsoft Download Center</a>.</li> <li>• postgresql-42.2.11.jar file copy from <i>\$MQ_HOME/bin/pgsql/driver</i></li> </ul>
Hibernate Assembly	hibern-ate3.jar and cglib-2.2.jar	<p>Required by TIBCO MDM for some database interactions.</p> <p>You can choose to download the library or let the installer download the library during the installation process.</p> <p>Click the <b>Download</b> link under the TIBCO MDM area at the <a href="#">eDelivery site</a> to download the product_tibco_hibernate_lgpl_3.6.10.003.zip.</p>

All the required libraries are to be added to the distribution provided (ECM.ear) with TIBCO MDM.

## Hardware Configuration

The following table lists sample hardware configurations. Additional memory may be required to accommodate data caching needs.

### Hardware Configurations

Configuration	Quantity	Type			Memory
		Sun	IBM	Intel	
Low End					

Configuration	Quantity	Type			Memory
		Sun	IBM	Intel	
Single machine for web server, application server, and DB server	1	Sun Fire X4100 - 2 CPU	IBM xSeries 2 CPU (AMD or Xeon) or equivalent	Xeon 2GHz, 2 CPU	4 GB RAM, 50 - 100 GB disk  8 GB RAM and Dual core processors are recommended to achieve increased throughput.
<b>Mid-range / Mid-range clustered</b>					
Web server	1	Sun Fire x2100 or Sun Fire x4100 equivalent, 1-2 CPU	IBM xSeries 1-2 CPU or pSeries entry level servers	Xeon 2 GHz, 1 CPU	1 GB RAM, 36 GB internal disk
Application server	1-2	Sun Fire x4100 2 CPU with Dual core processors or Sun Fire V240 with 4 CPU	IBM i520 or IBM 630 with 2-4 core/CPU	Xeon 3 GHz, 2-4 CPU	4- 6 GB RAM, 36 GB disk  8 GB RAM and dual core processors are recommended for higher throughput.
Database server	1	Sun Fire 445 or equivalent with 2-4 CPU	IBM i520 or P630 with 2-4 Core/CPU	Xeon 3 GHz, 2-4 CPU	6-8 GB RAM, 200-500 GB disk.
Storage	1				Disk array,

Configuration	Quantity	Type			Memory
		Sun	IBM	Intel	
					disks of 100 - 200 GB.
<b>High-end</b>					
Web server	1-2	Sun Fire, V100, 1-2 CPU	IBM P610, 1-2 CPU	Xeon 2 GHz, 1-2 CPU	2 GB RAM, 36 GB internal disks
Application server	2-4	Sun Fire V490 with 4 CPU or Sun Fire x4100 with 2 CPU dual core	IBM P650, 4-8 CPU	Xeon 3 GHz, 4-8 CPU	6-8 GB RAM, 40 GB disk for each server  12 GB RAM recommended for higher throughput.
Database server	1	Sun Fire V4800, 4-8 CPU	IBM P650, 4-8 CPU	Xeon 3 GHz, 4-8 CPU	Minimum 12 GB RAM  400-600 GB disk.
Storage	1				Disk array, disks of 200 to 500+ GBb.

The hardware required depends on many factors including, number of concurrent users, usage patterns, retention of history and rate of change for the data. A more accurate capacity planning exercise should be done based on detailed scenario tests done in performance labs.

Contact TIBCO Professional Services or TIBCO Customer support for more details on how to calculate the required hardware. It is recommended that any production hardware planning must be done using scenario based testing results. A sample capacity planning worksheet can be obtained from TIBCO Customer Support.

## Environment Variables

You must set the important environment variables before installing TIBCO MDM.



### Note:

- It is recommended that you use ASCII characters for all file names. If these names include non-ASCII characters, copying the files from Windows to UNIX or Linux and vice versa may result in corruption of file names.
- While setting environment variables on all platforms, if the ‘\’ character is used as a path separator instead of ‘/’, it leads to errors as ‘\’ is treated as an escape character.
- For Simple install, set only `JAVA_HOME` environment variable.
- For Typical install, set all the environment variables mentioned in the Environment Variables table.

### Environment Variables

Variable	Description
<code>MQ_HOME</code>	<p>Define <code>MQ_HOME</code> to point to the installation directory. It is recommended that you allocate at least 8 GB to this directory. In a clustered environment, each application server should point to a separate location.</p> <p>Example: <code>/home/tibco/mdm/version</code></p>
<code>MQ_LOG</code>	<p>The location where log files will be generated (the recommended location is <code>\$MQ_HOME/log</code>). In a clustered environment, each server should point to a separate location. Define <code>MQ_LOG</code> to point to this directory. A minimum of 1 GB should be allocated to this directory. The best practice is to change the default location such that the directory is not a subdirectory of <code>MQ_HOME</code>.</p> <p>Example: <code>\$MQ_HOME/log</code></p>
<code>MQ_COMMON_DIR</code>	<p>All standard configurations files for workflow and data validation as well as all customizations are stored in this directory. This directory also holds all files generated during normal application processing. It is</p>

Variable	Description
	<p>shared by all application servers in the cluster, and should be mounted to each server. All disk space indicated in the section <a href="#">Hardware Configuration</a> should be assigned to this directory, and the MQ_COMMON_DIR variable should be set. The best practice is to change the default location such that the directory is not a subdirectory of MQ_HOME.</p> <p>Example: <code>/home/tibco/mdm/version/common</code></p> <p>If you plan to create a copy of the TIBCO MDM instance across operating systems (for instance, Linux to Windows or Windows to Linux) and if the path contains any non English characters, such a copy may not be possible. For example, using Japanese characters in the path.</p>
MQ_CONFIG_FILE	<p>Points to <code>\$MQ_HOME/config/ConfigValues.xml</code>. The values/parameters in this file can be set using the Configurator.</p> <p>Example: <code>/home/tibco/mdm/version/config/ConfigValues.xml</code></p>
JAVA_HOME	<p>The directory where JRE/JDK is installed.</p> <p>Example: <code>/opt/jdkversion</code></p>
EMS_HOME	<p>The directory where TIBCO EMS (or the messaging software) is installed.</p> <p>Example: <code>/home/tibco/ems</code></p>
ANT_HOME	<p>The Directory path where ant is installed.</p> <p>Example: <code>/opt/antversion</code></p>
MQ_HTTP_SESSION_REPLICATION_ENABLED	<p>If you use multiple nodes and want to replicate the session, then set the value of the MQ_HTTP_SESSION_REPLICATION_ENABLED environment variable to <b>true</b> to enable the session replication.</p>
MDM_DB_USE_SERVICENAME	<p>Specify this variable when you are connecting to the database by using the Configurator and when you are running TIBCO MDM on container platforms.</p> <ul style="list-style-type: none"> <li>Set to <b>true</b> to connect to the Oracle database by using the service</li> </ul>

Variable	Description
	<p>name</p> <ul style="list-style-type: none"> <li>• Set to <b>false</b> to connect to the Oracle database by using SID</li> </ul> <p>For more information, see <a href="#">Connecting to Database Using SID and Service Name</a>.</p>
MDMPORT	Port number on which the TIBCO MDM node is running.
PROTOCOL	Specifies a protocol such as http or https to access the TIBCO MDM node. By default, the http protocol is used.
<b>Application Server Specific</b>	
<i>WAS_HOME</i>	<p>The directory where WebSphere is installed (required <i>only</i> if using WebSphere).</p> <p>Example: <code>/opt/WebSphere/AppServer</code></p>
<i>JBOSS_HOME</i>	<p>For JBoss WildFly Application Server. Specify the path value until the root of the WildFly directory.</p> <p>Example, <code>E:\JBoss\wildfly-version.Final</code>.</p>
<i>JBOSS_HOME</i> (Simple Install)	<p>The directory where JBOSS is installed (required only if using simple installation).</p> <p>Example: <code>%MQ_HOME%\bin\wildfly-version.Final</code></p>
<i>WLS_HOME</i>	<p>For WebLogic Application Server. Specify the path value of the WebLogic Application Server directory.</p> <p>Example:</p> <ul style="list-style-type: none"> <li>• For Linux: <code>/opt/bea</code></li> <li>• For Windows: <code>G:/WebLogic/wlserver_version</code></li> </ul>
<b>Database Specific</b>	
<i>ORACLE_HOME</i>	For Oracle database. The directory where Oracle is installed.

Variable	Description
	<p>Example:</p> <ul style="list-style-type: none"> <li>• For Windows: <code>/home/oracle/product/version/db_1</code></li> <li>• On UNIX: <code>\$export ORACLE_HOME=/u01/app/oracle/product/version</code></li> </ul>
<code>LD_LIBRARY_PATH</code>	For Oracle database: <code>\$ORACLE_HOME/lib</code>
<code>NLS_LANG</code>	<p>For Oracle database. Example:</p> <ul style="list-style-type: none"> <li>• On UNIX:           <pre>export NLS_LANG=AMERICAN_AMERICA.UTF8</pre> </li> <li>• On Windows:           <pre>set NLS_LANG=AMERICAN_AMERICA.UTF8</pre> </li> </ul>
<code>POSTGRESQL_HOME</code>	<p>For PostgreSQL database. The directory where PostgreSQL is installed.</p> <p>Example: <code>\$MQ_HOME/bin/pgsql</code></p>
<code>OS</code>	The Operating system. For example, Linux.
<code>DISPLAY</code>	This environment variable is used by X-Windows based applications. It points to a device capable of displaying an X-Windows based UI.
<code>LD_ASSUME_KERNEL</code>	Used on the Linux platform to make Linux use the old Linux threads library, particularly required for Oracle installation (required <i>only</i> if Oracle is used as the database).
<code>PATH</code>	This is a list of directories separated by a separator. When any command or program is executed, the OS tries to locate the program in the directories listed in PATH. If the program is not found in any of the directories, the OS cannot load and execute the program. The Separator character is ':' for Unix and Linux platforms, and ';' for the Windows platform.

Variable	Description
	Ensure that there is no space with the commas and colons between the program in the directories listed which are separated by ':' for Unix and Linux platforms, and ';' for the Windows platform.
<i>SHLIB_PATH</i>	List of directories separated by a separator (see PATH) where a dynamic linker tries to find the libraries. Used on UNIX platforms.
<i>LIBPATH</i>	List of directories separated by a separator (see PATH) where the Operating system as well as the application library files reside. Used on UNIX platforms.
<i>NODE_ID</i>	Points to the current cluster member. Example: NODE_ID=Member1
<b>TIBCO MDM REST API through Swagger UI</b>	
<i>SWAGGER_MDM_HOST</i>	An IP address of the TIBCO MDM server on which you want to try out the TIBCO MDM REST APIs.
<i>SWAGGER_MDM_PORT</i>	Port of the TIBCO MDM server on which you want to try out the TIBCO MDM REST APIs.

## Supported Databases

Install any one of the following databases as per your requirement. For a list of versions and platforms supported, see the *Readme.txt* file shipped with installation of TIBCO MDM.

### *Supported Databases*

Database	Description	Site Reference
Oracle	Download the supported version of the Oracle database from the Oracle site and unzip it to the required location.	Install the Oracle server software as directed in the <a href="#">Oracle installation document</a> .

Database	Description	Site Reference
SQL Server	Download the latest version of Microsoft SQL Server from the following site and unzip it to the required location	Install the SQL Server software as directed in the appropriate <a href="#">SQL installation document</a> .
PostgreSQL	The PostgreSQL database is installed with the Simple installation. You do not need to separately download it. For more information about simple installation, see <a href="#">Simple Installation with PostgreSQL</a> .	Not Applicable

## Database Sizing Requirements

The database sizing requirements include the minimal sizing requirements for `initdbname.ora` (`initedcm50.ora`); for small, medium, and large databases.

### *Database Sizing Requirements*

Database Parameter Setting	Low-end	Mid-range	High-end
Db block size	8192	8192	8192
Db_file_multiblock_read_count	8	16	32
Shared pool size	75 MB	150 MB	200 MB*
Processes	(# of application servers)* (application server max db connection pool size) + 200		
Parallel max	2	4	5*

Database Parameter Setting	Low-end	Mid-range	High-end
servers			
Log_buffers	25% of the system memory		
Timed_statistics	True	True	True
Max_dump_file_size	5 MB	10 MB	20 MB
Rollback_segments	8 seg	16 seg	32 seg*
Open cursors	300	450	3000
Character set	UTF-8		
Buffer Pool Size	150 MB	300 MB	500 MB - 2 GB*
db_writer_processes	75% of the cpu_count parameter value		
Sessions	1.1* processes + 200		
optimizer_mode	ALL_ROWS		
shared_servers	# of dispatchers* 2		
Transactions	# sessions		

\* These values depend on various factors including concurrent users, message and workflow volumes, number of records, and so on. Your DBA should adjust these values based on the actual load and required performance characteristics.

# Installing TIBCO MDM (Typical Installation)

In the typical installation, the installer presents panels which you can select choices about the product location, and so on.


## Prerequisites

- Verify that your computer meets the System requirements. The system requirements are listed in the `readme.txt` file.
- Download the Installer. The application is available as a ZIP file.
- Extract the contents of the ZIP file to a folder on your computer.
- Search for the `TIBCOUniversalInstaller` application in the location where you have extracted the ZIP file.

## Procedure


1. Run the `TIBCOUniversalInstaller.exe` application. The TIBCO Universal Installer Welcome window is displayed.
2. Review the information and click **Next**. The license agreement is displayed.
3. Review the terms of the license agreement. If you agree with its terms, accept the license agreement and click **Next**.
4. In the Installation Profile Selection window, do one of the following:
  - a. Select **Create a new TIBCO\_HOME** option. A TIBCO installation environment is used for software installations and consists of a Name and Directory. Products installed into different installation environments do not share components; therefore you can keep product installations completely isolated from each other.
    - **Directory**: browse to the directory where the product needs to be installed and provide a unique environment name. Ensure that you have write permission to this directory.
    - **Name**: specify the environment name that is easy to identify your environment. For example, 'User Acceptance' or 'Procurement Department'.
  - a. If you have previously installed a TIBCO product using the Universal Installer, you can select **Use an existing TIBCO\_HOME**. By default, the installer detects the directory for your `TIBCO_HOME` and displays the path.

For example, on Windows, the default installation directory is `c:\tibco`.

 **Note:** If you had installed the application earlier, the directory cannot be modified. For a new installation, the directory can be changed.

Click **Next**.

5. In the Installation Profile Selection window, by default, the **Typical** installation profile is selected.
  - a. If you check the **Customize Installation** check box, a list of components is enabled (**Executable Image** and **Common Configuration**).
  - b. Select your preferred options and click **Next**.
6. In the TIBCO MDM Configurator Tomcat Settings window, the default port values are displayed. You can change the default port values. Click **Next**.

 **Warning:** The specified port values must not be in use by another application. If you do not specify configuration information, Configurator does not start and you need to perform manual configuration. For more information about the Configurator, see [Configurator](#).

7. In the TIBCO Patterns - Search Settings window, the default user interface port value (required for Patterns GUI tomcat server) and Patterns server port value (required for Patterns binary) are displayed. You can change the default port values.
  - a. Select **Install as a Windows Service** check box if you want to install the Patterns server binary as a service.

Click **Next**.

8. In the TIBCO MDM Common Config Location window, select the common configuration location and click **Next**.

If you have selected the standard common configuration option, the default `$MQ_HOME\common` directory location is displayed. You can retain the location or change it by clicking **Browse**.

✔ **Tip:** The best practice is to assign a location separate from MQ\_HOME. TIBCO MDM creates files in this directory and it is better to keep it separate from MQ\_HOME. In a clustered environment, this directory should be shared for all instances.

i **Note:** If you do not specify the common configuration location, Configurator does not start and you need to perform the manual configuration. For information, see [Manually Configuring TIBCO MDM](#).

9. The HIBERNATE LGPL License Agreement window is displayed. If you agree with its terms, accept the license agreement, and click **Next**.
10. The LGPL Assembly Download window is displayed. Select one of the following options:
  - **Download HIBERNATE assembly from TIBCO:** if you are downloading the LGPL assembly for the first time, select this option. The HIBERNATE assembly is downloaded in the same folder as the installer. All the third party software which is used in the application and their licenses are downloaded.
  - **Provide the location for the assembly previously downloaded from TIBCO:** if you have previously downloaded the LGPL assembly, specify the folder in which you have downloaded the hibernate assembly. Browse to the directory where the assembly is previously downloaded and saved.

i **Note:** If the LGPL Assembly is already downloaded, the LGPL Assembly Download window is not displayed.

Click **Next**.

11. The XMLC LGPL License Agreement window is displayed. If you agree with its terms, accept the license agreement, and click **Next**.
12. Select the **Download XMLC assembly from TIBCO** option. The assembly gets downloaded in the same folder as the installer. Click **Next**.
13. The Oracle Elliptic Curve Library LGPL License Agreement window is displayed. If you agree with its terms, accept the license agreement, and click **Next**.
14. In LGPL Assembly Download window, select one of the following options:

- **Download Oracle Elliptic Curve Cryptography Library assembly from TIBCO:** if you select this option, the Cryptography assembly is downloaded and configured.
- **Provide the location for the assembly previously downloaded from TIBCO:** If you select this option, the **Oracle Elliptic Curve Cryptography Library Assembly Path** field is enabled. Click **Browse** to select the Cryptography assembly.

Click **Next**.

**i Note:** The steps 13 and 14 are applicable only for the JBoss WildFly application server with Oracle and SQL server database combination.

15. In the Pre-Install Summary window, review a list of the components that are going to be installed and the installation environment details and click **Next** to begin the installation process.
16. In the Post-Install Summary window, review a list of the components that are installed and the installation environment details. Click **Finish** to exit the wizard.

## Result

The following auto generated log files are created in the `C:\Users\username.TIBCO\install_currentyear-currentmonth-currentdate.uniqueID` folder: Using the log files, you can troubleshoot for errors in the installation process.

- `antTask_log_installerConfig_currentyear-currentmonth-currentdate.uniqueID`: consists of configuration related logs.
- `antTask_log_installerMergeXMLC_currentyear-currentmonth-currentdate.uniqueID`: consists of the XMLC merge related logs.
- `tibco_universal_installer.username_install`: consists of installer related logs.
- `antTask_log_updateEARToIncludeHibernateLib_currentyear-currentmonth-currentdate.uniqueID`: consists of ECM.ear file related logs.

## Configuration of Oracle Database

To configure the Oracle database, use the Oracle Configuration Assistant. Consult your Database Administrator on standard practices followed by your IT department to change the recommended structure according to your needs.

## Prerequisites

- Ensure that all required environment variables are set. See [Environment Variables](#).
- Ensure that Oracle Client Software Developer Edition or Enterprise Edition is installed on the computer hosting the application server ().
- Ensure that the sqlldr utility is available.
- Use the latest driver provided by Oracle.
- A valid and tested connect string should be present in the TNSNAMES.ora file. For example, the connection URL: jdbc:oracle:oci:@ORACLERAC  
where ORACLERAC is the TNS entry in the client's TNSNAMES.ora file and oci drivers are used to support TAF.

## TNSNAMES.ora file (client)

```
ORACLERAC =
(DESCRIPTION =
  (ADDRESS_LIST =
    (ADDRESS = (PROTOCOL = TCP)(HOST = hostname1.domainname.com)(PORT = 1521))
    (ADDRESS = (PROTOCOL = TCP)(HOST = hostname2.domainname.com)(PORT = 1521))
  )
  (FAILOVER=on)
  (LOAD_BALANCE = ON)
  (CONNECT_DATA =
    (SERVER = DEDICATED)
    (SERVICE_NAME = orcl)
    (FAILOVER_MODE =
      (TYPE = SELECT)
      (METHOD = BASIC)
      (RETRIES = 180)
      (DELAY = 5)
    )
  )
)
)
```

**i Note:** The TNS entry supports both failover and load balancing.

- Database port
- Database server host name

## Creating Tablespaces

Table spaces are required to hold data and indexes for all tables required for TIBCO MDM and for all data sources uploaded.

TIBCO MDM uses the following different kinds of tables and indexes:

- Fixed tables
- Indexes for fixed tables
- Data source tables
- Master catalog tables
- Indexes for master catalog tables

### Procedure

1. Change the default data file location specified in the createtablespace.sql file based on your Oracle installation.
  - a. Go to \$MQ\_HOME/db/oracle/configure/.
  - b. Open the createtablespace.sql file.
  - c. Change the data file location for all tablespaces. For example, if you have installed Oracle in the E:/app/oradata/orcl folder, change the C:/oracle/version/oradata/orcl path to E:/app/oradata/orcl.
2. Run the createtablespace.sql script to create the following tablespaces:

#### *Tablespaces*

Tablespace Name	Description
VELODBDATA	For fixed TIBCO MDM tables.
VELODBINDEX1	For fixed TIBCO MDM table indexes.
VELODBDF	For TIBCO MDM data source tables
VELODBDATA	For TIBCO MDM master catalog tables.
VELODBINDEX	For TIBCO MDM master catalog table indexes.

**i Note:**

- The VELODBDATA1 tablespace has a minimum size of 100 MB and maximum size of 500 MB. The remaining tablespaces are 100 MB. You can change the size of the tablespaces based on your requirement. You can also set the size as unlimited for the tablespaces.
- If you are migrating from the earlier versions of Oracle to the latest supported version of Oracle, you have to explicitly grant UNLIMITEDTABLESPACE to the user. Oracle has discontinued the support granting UNLIMITED TABLESPACE to the RESOURCE role user.

Run the following command: `GRANT UNLIMITED TABLESPACE TO username`

3. For a complete installation (tablespaces and seed data), run the installation script from `$MQ_HOME/db/oracle/configure/doall.bat` or `doall.sh`
  - a. To create tablespaces without seed data, run `$MQ_HOME/db/oracle/configure/createusertablespace.sh` or `.bat`
  - b. To create only seed data, see [Creating Seed Data Manually for Oracle Database](#).

## Installing Seed Data Using Database Setup Wizard

The Database Setup Wizard of Configurator makes the database setup process easy and user-friendly.

The Database Setup Wizard is common for all three databases. However, some fields vary according to the selected database in the **Settings > Database** option. The available database options are Oracle, SQL Server, and Postgres. For more information about selecting the database option, see the Configurator chapter of *TIBCO MDM System Administration*.

### Prerequisites

Before running the Database Setup Wizard, ensure the following:

- The database is installed.
- The database client is installed on the local computer.

- If a user has already been created, specify the schema credentials. If the user has not been created, specify the DBA credentials. For information, see [Creating Database User for Oracle Database](#).
- TIBCO MDM is installed and the environment variables are created.
- Database SQL scripts are available.
  - For Oracle: in \$MQ\_HOME/db/oracle.
  - For SQL Server: in \$MQ\_HOME/db/sqlserver.
- For Oracle, the tablespaces are not created.
- The following database JDBC JAR files are copied in the \$MQ\_HOME/configurator/server/lib folder for seed data creation:
  - For Oracle: ojdbc8.jar copy from \$ORACLE\_HOME/jdbc/lib
  - For SQL Server: mssql-jdbc-7.2.2.jre11.jar ( Microsoft JDBC Driver 7.2 for SQL Server, Java Development Kit (JDK) 11.0 ) download from [Microsoft Download Center](#)
- For Oracle Database client globalization support, the following JVM arguments have been added in the \$MQ\_HOME/configurator/server/bin/setenv.bat file.
  - -Duser.country=en
  - -Duser.language=en

## Procedure

1. Log in to the Configurator.
2. Click **Tools > Set up Database**.
3. In the Database Setup Wizard for *databasename* with the Database Access Mode page, select one of the following options:
  - a. **Create New MDM Database User:** Select this option to create a new database user.
  - b. **Use an Existing MDM Database User:** Select this option to specify details of an existing user.

To specify details of a new database user or an existing database user, see the following table:

*New and Existing Database User Details*

Field Name	Description
Database Host	The IP address or host name of the server where the database is installed.
Database Port	<p>By default, the port specific to each database is displayed. For example,</p> <ul style="list-style-type: none"> <li>• For Oracle, the default database port is 1521.</li> <li>• For SQL Server, the default database port is 1433.</li> </ul> <p>You can change the port value, if required.</p>
Database Name (TNS Name)	<p>The name of the database where TIBCO MDM data should be installed.</p> <p><b>Note:</b> For Oracle RAC, specify the SID of either of the two clusters of the RAC database.</p>
DBA User Name	The user name of the database administrator.
DBA User Password	The password of the database administrator.
Test Connection	Click <b>Test Connection</b> to connect to the database and verify if the connection is successful. If the test connection is not successful, verify the specified database details.
New MDM Database User Name	The new user name used for the connection to the database.
New MDM Database	The new password used for the connection to the database.

Field Name	Description
User Password	
Confirm MDM Database User Password	Reenter the new password for confirmation.
<b>Note:</b> Remember the user name and password.	
Tablespace Location  (For Oracle database)	<p>The file system directory (absolute path) location where all tablespaces are created. This must be a local directory on the computer where the database is running. You can specify a custom location and provide a full path of the directory. The directory should have 'write permission' to write a file.</p> <p><b>Notes:</b></p> <ul style="list-style-type: none"> <li>• If you do not specify the tablespace location, by default the tablespaces are created in the \$ORACLE_HOME/database directory.</li> <li>• It is recommended that the file system in this directory contains a significant amount of available space. This directory is assigned by a DBA and should be backed up on a regular basis. For example: /opt/oradata</li> </ul>
Database File Location  (For SQL Server database)	<p>The SQL Server database location. You can specify a custom location and provide a full path of the directory.</p> <p><b>Note:</b> Database File Location should have permission to write files.</p>

- c. On the Database Details and Create New MDM Database User screens, click **Next**.

**i Note:**

- If you are not a DBA user or do not have permission to create tablespace and a new user, you can create a tablespace and database user using the scripts. For information, see [Configuration of Oracle Database](#) and [Configuration of SQL Server Database](#).
- For Oracle, if you select the **Use an Existing MDM Database User** option, see [Creating Database User for Oracle Database](#) for the details of the existing database user.
- For SQL Server, if you select the **Use an Existing MDM Database User** option, see [Creating Database User for SQL Server Database](#) for the details of the existing database user.

4. In the MDM Instance Details page, enter the following details and click **Next**:

*MDM Instance Details*

Field Name	Description
MDM Instance Name	Specify the instance name of TIBCO MDM. When you have multiple instances, and you want to install a database, you can specify a particular instance name. For example, preproduction and postproduction instances. An instance entry is added in the database table.
MDM Instance Description	Specify the instance description of TIBCO MDM.

5. In the Storage Profile Details page, select one of the following storage profile options:
  - a. **Typical Profile**: select this option to use the default values. A Typical profile installs tablespaces for the Oracle database and the database file location for the SQL Server database.

After you select the **Typical** storage profile option, the Confirm Storage Parameters page is displayed. Confirm the default values and click **Install** to

install the seed data. See step 6.

- b. **Custom Profile:** select this option to specify the customized values for the default tablespace.

After you select the **Custom** storage profile option, the Custom Profile Setup page is displayed. Specify the values, size, and location for the default tablespaces.

- c. Click **Next**.

6. In the Confirm Storage Parameters page, confirm the customized values. Click **Install** to install the seed data.
7. The MDM Seed Data Summary page displays the success and error report of the seed data and schema creation.
  - a. To view the schema and seed data log file, click **Open**.
    - For Oracle, by default, the log files are stored in \$MQ\_HOME/db/oracle/install/logs folder.



**Note:** You can ignore tablespaces errors. For example,

```
"ERROR:-ORA-01543: tablespace 'VELODBTEMP' already exists".
```

- For SQL Server, by default, the log files are stored in \$MQ\_HOME/db/sqlserver/install/logs folder.
8. Click **Finish** to complete the database setup process.

## Troubleshooting with Oracle Database

Resolve the errors that you may come across while configuring the Oracle database.

### *Troubleshooting with Oracle Database*

Issue	Description	Solution
Bad Interpreter Issue	A “bad interpreter” error is displayed on UNIX.	The first line of all scripts on UNIX must be as follows: #!/usr/bin/sh

Issue	Description	Solution
Insufficient Shared Memory Issue	Oracle database error, unable to allocate required shared memory.  (ORA-04031: unable to allocate x bytes of shared memory).	Check whether or not the first line of the UNIX script follows this format. You can also create a soft link as follows: <code>ln -s /bin/sh /usr/bin/sh</code>
Inserting and Updating Data from ProcessLog and ProcessState Tables	Two errors are intermittently thrown when inserting or updating data from ProcessLog and ProcessState tables, even though the data to be inserted has a valid value and length. This error has been observed on Oracle 10.1.0.2.0.  ORA-01461: can bind a LONG value only for insert into a LONG column  ORA-01483: invalid length for DATE or NUMBER bind variable	Restarting the application server might resolve the issue temporarily.  There are similar issues reported in Oracle MetaLink. Reference Document IDs: 241358.1, 461670.1  If the problem persists, contact Oracle support and consider upgrading to the latest patch.
Seed data errors for exceeded length	After you change the value of the MAX_STRING_SIZE parameter from <b>STANDARD</b> to <b>EXTENDED</b> , the following errors occur during seed data creation:  <pre>SQL&gt;CREATE INDEX WORKITEMDETAIL_IDX1 ON WORKITEMDETAIL ( NAME, Value )</pre>	To fix this issue, run the upgradeAttributeLength.sql script located at \$MQ_HOME/db/DatabaseType/install/scripts/utility.

Issue	Description	Solution
	<pre>TABLESPACE VELODBINDX1 ERROR:-ORA-01450: maximum key length (6398) exceeded</pre>	
	<pre>SQL&gt;CREATE INDEX FSENTRY_ IDX ON FSENTRY ( PATH ASC, NAME ASC ) TABLESPACE VELODBINDX1 ERROR:-ORA-01450: maximum key length (6398) exceeded</pre>	
	<pre>SQL&gt;CREATE INDEX SFSENTRY_ IDX ON SFSENTRY ( PATH ASC, NAME ASC ) TABLESPACE VELODBINDX1 ERROR:-ORA-01450: maximum key length (6398) exceeded</pre>	

## Creating TIBCO EMS Queues and Topics

The required queues and topics are located in the \$MQ\_HOME/bin/install/createQueues.txt file.

### Before you begin

Ensure that the EMS Server is running.

### Procedure

1. Go to **All Programs > TIBCO > TIBCO EMS *version*** and click **Start EMS Administration Tool**. The command prompt is displayed.
2. Type **Connect**.
3. Enter login name and password.

**i Note:** If you have not created the administration credentials, press **Enter**. By default, administration login name and password is retrieved.

The connected to: `tcp://localhost:port_number` message is displayed.

4. Go to `$MQ_HOME/bin/install` and open the `createQueues.txt` file.
5. Copy content of the `createQueues.txt` file and place it in the command prompt.  
Queues and topics are created.

## Verifying Queues and Topics

You can verify a list of created queues and topics.

### Procedure

1. Go to **All Programs > TIBCO > TIBCO EMS *version*** and click **Start EMS Administration Tool**.  
The command prompt is displayed.
2. Type **Connect**.
3. Enter login name and password.
4. Type `show queues` in the command prompt and press **Enter**.  
A list of created queues is displayed.
5. Type `show topics` in the command prompt and press **Enter**.  
A list of created topics is displayed.

## Configuring TIBCO MDM for WebLogic Application Server

Using the Configuration wizard, create a WebLogic domain.

### Prerequisites

Configure the following properties in the Configurator:

*Configurator Properties for WebLogic Application Server*

Property Name	Location	Value	Description
Application Server Name	<i>Node ID</i> > Application Server	WebLogic	The name of the application server. If the value is WebLogic, it refers to the WebLogic application server.
JNDI Naming Service URL	<i>Node ID</i> > Application Server > WebLogic	t3://localhost:7001	The Uniform Resource Locator (URL) used by the WebLogic application server to expose the J2EE Naming service. This value is has already been defined in the application server configuration.
Encryption Provider	InitialConfig > Security Provider > SUN	The default value is sun.security.provider.Sun. This value typically does not need to be changed.	Refers to the name of the Java class, which is the default security encryption on the SUN Java Virtual Machine. This

Property Name	Location	Value	Description
			value is sufficient.
JNDI Context Factory	<i>Node ID</i> > Application Server > WebLogic	The default value is <code>weblogic.jndi.WLInitialContextFactory</code> . This value typically does not need to be changed.	The Java class that initiates a connection to the naming service of the application server.

## Procedure

1. Configure the Server
  - a. Start the WebLogic application server.
  - b. Verify that an instance of WebLogic is running by logging into the admin console (use the user name and password you provided during domain creation)
2. Set up Timeout Seconds
  - a. Go to **Domain > Configuration > JTA** tab.
  - b. Set the **Timeout Seconds** to **36000**.
  - c. Click **Save**.
3. Enable the Archived Real Path to dynamically deploy the resource files of a customized page that is built using UI Builder and to improve the page loading performance.
  - a. Go to **Domain > Configuration > Web Application**.
  - b. Select the **Archived Real Path Enabled** check box.
  - c. Click **Save**.
4. Set up JDBC Drivers for Oracle - WebLogic
  - a. In the left pane, expand **Services > > Data Sources**. The **Summary of JDBC Data Sources** page is displayed.

- b. In the Data Sources section, click the **New** button to create a new data source. The following three options are displayed: **Generic Data Source**, **GridLink Data Source**, and **Multi Data Source**.
- c. Select the **Generic Data Source** option.
- d. In the **Name** field, specify a name for the JDBC Data Source.


**i** **Note:** The name and JNDI name should be eCMDDataSource.

- e. Select **Database Type** as **Oracle**.
- f. Click **Next**. The **Create a New JDBC Data Source** page is displayed.
- g. Select **Oracle's Driver (Thin) for Service Connections; Versions: Any** from the Database Driver drop-down list.
- h. Click **Next**. Click **Next** on the following page.

The screenshot shows a dialog box titled "Create a New JDBC Data Source". At the top, there are buttons for "Back", "Next", "Finish", and "Cancel". Below this is the "Transaction Options" section. It starts with the text: "You have selected non-XA JDBC driver to create database connection in your new data source. Does this data source support global transactions? If yes, please choose the transaction protocol for this data source." There are three radio button options: "Supports Global Transactions" (which is checked), "Logging Last Resource", and "Emulate Two-Phase Commit". Below these are three explanatory paragraphs: "Select this option if you want to enable non-XA JDBC connections from the data source to participate in global transactions using the Logging Last Resource (LLR) transaction optimization. Recommended in place of Emulate Two-Phase Commit.", "Select this option if you want to enable non-XA JDBC connections from the data source to emulate participation in global transactions using JTA. Select this option only if your application can tolerate heuristic conditions.", and "Select this option if you want to enable non-XA JDBC connections from the data source to participate in global transactions using the one-phase commit transaction processing. With this option, no other resources can participate in the global transaction." At the bottom of the dialog, there are buttons for "Back", "Next", "Finish", and "Cancel".

- i. Enter the details in the **Database Name**, **Host Name**, **Port**, **Database User Name**, **Password** and **Confirm Password** fields. Note that the Database Name = SID.
  - j. Click **Next**.
  - k. Click **Test Configuration**.
  - l. Click **Next**. You are prompted to select targets to deploy your new JDBC data source.
  - m. Select the Server and click **Finish**.
5. Configure the Connection Pool

- a. In the left pane, click **Services > > Data Sources > > eCMDDataSource**. The **Settings for eCMDDataSource** page is displayed.
- b. Click the **Connection pool** tab.
- c. Expand **Advanced** at the bottom of the page.
- d. Select the **Test Connections on Reserve** check box.
- e. Specify **7200** in the **Inactive Connection Timeout** field.
- f. Specify **10** in the **Maximum Waiting for Connection** field.


 **Note:** Maximum Capacity for connection settings is 100.

- g. Select the **Ignore In-Use Connections and Remove Infected Connections Enabled** check boxes.
- h. Click **Save**. The connection pool configuration for the eCMDDataSource is saved.
- i. Copy the following files from `%TIBEMSDIR%\lib` to `%WLS_HOME%\user_projects\domains\domain name\lib` and `$MQ_HOME/lib/external`

```
tibjms.jar
```

## 6. Modify the startWebLogic.cmd or startWebLogic.sh file.

- a. Ensure that the WebLogic Application Server is running.
- b. Edit the startWebLogic.sh or startWebLogic.cmd file located under `$WLS_HOME/user_projects/domains/domain_name/bin` to add the following lines in the # START WEBLOGIC section:

 **Note:** If you are using Windows operating system, replace \$ with %text% in the following example:

```
java ${JAVA_VM} ${MEM_ARGS} ${JAVA_OPTIONS}
-Dweblogic.Name=${SERVER_NAME}
-Dweblogic.management.username=${WLS_USER}
-Dweblogic.management.password=${WLS_PW}
-Dweblogic.ProductionModeEnabled=${STARTMODE}
```

```

-DMQ_HOME=${MQ_HOME}
-DMQ_CONFIG_FILE="${MQ_HOME}/config/ConfigValues.xml"
-DMQ_COMMON_DIR=${MQ_COMMON_DIR}
-DORACLE_HOME=${ORACLE_HOME}
-DNODE_ID=Member1
-DMQ_LOG=${MQ_LOG}
-DTNS_ADMIN=${ORACLE_HOME}/network/admin
-DPATH=${MQ_HOME}/bin:${WL_HOME}/server/bin:
${WL_HOME}/common/bin:${ORACLE_HOME}/bin:/usr/bin
-Djava.security.policy="${WL_HOME}/server/lib/weblogic.policy"
weblogic.Server
--add-opens jdk.management/com.sun.management.internal=ALL-UNNAMED
-
-Dlog4j2.contextSelector=org.apache.logging.log4j.core.selector.BasicContextSelect
or
-Dlog4j2.ignoreTCL=true

```

**Note:**

- To deploy the Configurator in WebLogic, set the following parameter: `-Dcatalina.home=${MQ_LOG}`

- Optional: To improve the TIBCO MDM performance, add the following JVM parameter while starting the application server:

```
-Dorg.apache.xml.dtm.DTMMManager="org.apache.xml.dtm.ref.DTMMManagerDefault"
```

- To monitor application server JVM, add the following JVM arguments:

```

-Dcom.sun.management.jmxremote.authenticate=false
-Dcom.sun.management.jmxremote.ssl=false
-Dcom.sun.management.jmxremote.port=9999

```

- Set up `TIBEMSDIR=path` environment variable for EMS installation. For example: `set TIBEMSDIR=C:\Tibco\ems $version$ \ems\ $version$`
- The `CLASSPATH` set in the WebLogic startup script must include the location of the JAR files. Include the following JAR files in the `CLASSPATH` variable.
  - Windows:

```
%TIBEMSDIR%\lib\tibjms.jar;%TIBEMSDIR%\lib\tibjmsapps.jar;
%TIBEMSDIR%\lib\tibrvjms.jar;%TIBEMSDIR%\lib\tibjmsadmin.jar;
%MQ_HOME%\lib\external\xbean.jar;
%MQ_HOME%\lib\external\log4j2-version.jar;
%MQ_HOME%\lib\external\commons-logging-version.jar;
%MQ_HOME%\lib\external\gwt-user.jar;
%MQ_HOME%\lib\external\dom4j-version.jar;
%MQ_HOME%\lib\external\hibernate\hibernate3.jar;
%MQ_HOME%\lib\external\javassist-version.GA.jar;
%MQ_HOME%\lib\external\slf4j-api-version.jar;
%MQ_HOME%\lib\external\stickyConfiguration.jar
```

- UNIX:

```
$TIBEMSDIR/lib/tibjms.jar:$TIBEMSDIR/lib/tibjmsapps.jar:
$TIBEMSDIR/lib/tibrvjms.jar:$TIBEMSDIR/lib/tibjmsadmin.jar:
$MQ_HOME/lib/external/xbean.jar:
$MQ_HOME/lib/external/log4j2-version.jar:
$MQ_HOME/lib/external/commons-logging-version.jar:
$MQ_HOME/lib/external/gwt-user.jar:
$MQ_HOME/lib/external/dom4j-version.jar:
$MQ_HOME/lib/external/hibernate/hibernate3.jar:
$MQ_HOME/lib/external/javassist-version.GA.jar:
$MQ_HOME/lib/external/slf4j-api-version.jar:
$MQ_HOME/lib/external/stickyConfiguration.jar:
$CLASSPATH
```

## Deploying TIBCO MDM on WebLogic Application Server

After configuring TIBCO MDM with WebLogic Application Server, deploy TIBCO MDM.

### Procedure

1. Type the following command:
 

```
$ ./ startWebLogic.sh or startWebLogic.cmd located under $WLS_HOME/user_
projects/domains/domain_name/bin
```
2. Open the WebLogic Server Console (for example: <http://localhost:7001/console>)
3. Log in to the Console.
4. In the left pane, click **Deployments**.
5. Click **Install** under **Deployments** on the **Control** tab.

6. Browse to the location of the ECM.ear file.
7. Select ECM.ear and click **Next**.
8. Choose targeting style as **Install this deployment as an application**.
9. Click **Next**.
10. Click **Finish**.

A success message is displayed.

**Note:**

- Ensure that you click **Activate Changes** on the left to activate all your changes. Under Deployments, select the application, click **Start** and select **Servicing all requests** option.
- You can also verify if the application is installed successfully using the following URL: `http://IP address:7001/eml/Login`. The port for the WebLogic application server is 7001.

When you stop the WebLogic application server, perform the following actions:

1. From the **Deployment** tab, stop ECM.ear.
2. Stop the WebLogic application server.

Thus, when you restart TIBCO MDM with the WebLogic application server, you must start ECM.ear from the **Deployment** tab.

## Troubleshooting with WebLogic Application Server

Resolve the errors that you may come across while working with the WebLogic Application Server.

### *Troubleshooting with WebLogic Application Server*

Issue	Description	Solution
Login Page is Not Shown After Installation	The Login Page is not shown and error.log shows an error.	Check for the JDBC driver. It should be <code>oracle.jdbc.driver.OracleDriver</code> . Specify <code>\$AS_HOME/bin</code> and <code>\$AS_HOME/lib</code> in

Issue	Description	Solution
		the classpath.
404 Page Not Found	You get the 404 Page Not Found error when using the Apache 2.0 Plug-in for the WebLogic Server.	<p>Check PathTrim property within weblogic.conf. It has to be null, otherwise it will trim the /eml part from the URL.</p> <p>Check the httpd.conf file for the &lt;IfModule mod_weblogic.c&gt; section. The path given within the include statement for weblogic.conf is relative to the Apache20 directory.</p>
Garbage Collection Data is Not Available for Analysis	If you are experiencing performance issues, TIBCO Customer Support may request for garbage collection statistics.	<p>To enable garbage collection data collection, change the JVM settings as follows:</p> <p><b>Servers &gt; Application Server &gt; server1 &gt; Process Definition &gt; Java Virtual Machine.</b>Select the <b>Verbose garbage collection</b> check box against it.</p> <p>The garbage collection data is stored in \$WAS_HOME/profiles/&lt;profilename&gt;/logs/server1/native_stderr.log</p>

## Configuring Apache Web Server Plug-in with WebLogic

You can configure Apache plug-in configuration for WebLogic Application Server.

### Procedure

1. Copy the `mod_wl_version.so` file to the `$APACHE_HOME/modules` folder.
2. Modify the `httpd.conf` file located in the `$APACHE_HOME/conf` directory. You need read write permission to modify this configuration file.
  - a. Search for Dynamic Shared Object (DSO) Support within `Httpd.conf` and append the listing with:

```
LoadModule weblogic_module modules/mod_wl_version.so
```

- b. Search for **Bring in additional module-specific configurations within Httpd.conf** and add the following lines:

```
<IfModule mod_weblogic.c>
  Include conf/weblogic.conf
</IfModule>
```

- c. Search for **server-info** within httpd.conf and add:

```
<Location /eml>
  SetHandler weblogic-handler</Location>
```

3. Create a weblogic.conf file in the `$APACHE_HOME/conf` directory.
4. Add the following properties to the weblogic.conf file. Maintain a single space between a property name and property value:

WebLogicHost *weblogic-host-name*

WebLogicPort *weblogic-port*

PathTrim null

## Performing Postinstallation Tasks for Typical Installation

You need to merge third party libraries with ECM.ear that you have created for the WebSphere and WebLogic application servers and manually copy TIBCO EMS libraries that are not shipped with the product due to Licensing restrictions.

### Procedure

1. Merge Third Party Libraries with ECM.ear.
  - a. Go to `$MQ_HOME/build/custom`.
  - b. Execute `customUtil.bat` OR `customUtil.sh-mergeExternalLibrary`.  
This command creates the `thirdPartyLibrary` folder in `$MQ_HOME`.
  - c. Copy the consolidated third party JAR file (`ThirdParty.jar`) to this folder and

enter `y` to proceed for merging. For information about creating a consolidated JAR file, see [Creating a Consolidated JAR File with Third-Party Libraries](#).

Continue and complete the script. The updated ECM.ear is placed in `$MQ_HOME`.

## 2. Copy EMS Libraries.

- a. Copy the `tibjms.jar` and `jms-2.0.jar` from `$EMS_HOME/lib` to `$MQ_HOME/lib/external` directory.



**Warning:** If you do not copy the `tibjms.jar` and `jms-2.0.jar` files in `$MQ_HOME/lib/external` directory, the utilities do not work.

# Troubleshooting with Typical Installation

If you encounter an issue while installing TIBCO MDM, you may resolve the issues by completing the common troubleshooting procedures.

## *Troubleshooting with Typical Installation*

Issue	Description	Solution
Display Cannot be Opened	The UNIX installer terminates with the following error message:  Could not open display	If you run the UNIX installer in a graphical mode, your local display has to be specified to the server. This local display needs to have a X Windows client installed. The local display is typically indicated to the server by specifying the <code>DISPLAY</code> environment variable. For example, on a bash shell: <code>export DISPLAY=client host name:0.0</code>  The X windows client also requires that the connection from the server is authorized. To enable the authorization, see the X Windows client documentation. On many X Windows clients, the authorization can be granted by using the <code>Xhost</code> command. For example:  <code>Xhost +</code>
Installer Terminates	The installer terminates without any	The installer creates a detailed time stamped log file in one of the following places: <ul style="list-style-type: none"> <li>• If <code>TIBCO_HOME</code> did not exist at install time, the log</li> </ul>

Issue	Description	Solution
	error message.	<p>file is created in the temp directory of the user in a.TIBCO sub folder.</p> <ul style="list-style-type: none"> <li>If TIBCO_HOME exists, the log file is created in the \$TIBCO_HOME/log folder.</li> </ul> <p>Check the log file for any errors and then contact TIBCO Technical Support.</p> <p>You can also run the installer with the installer log enabled using the -is:log option. For example:</p> <pre>./TIBCOUniversalInstaller-lnx-x86.bin -is:javahome -is:log path/log.dat</pre>

## WebSphere, Oracle, and EMS

Follow the instructions to install TIBCO MDM on WebSphere application server, Oracle database, and TIBCO EMS:

1. [Installation Overview](#)
  - a. [Prerequisites for Installation](#)
  - b. [Additional Software Components](#)
  - c. [Third Party Libraries](#)
  - d. [Hardware Configuration](#)
  - e. [Environment Variables](#)
2. [Supported Databases](#)
3. [Database Sizing Requirements](#)
4. [Installing TIBCO MDM \(Typical Installation\)](#)
5. [Configuration of Oracle Database](#)
  - a. [Creating Tablespaces](#)
  - b. [Installing Seed Data Using Database Setup Wizard](#)
  - c. [Troubleshooting with Oracle Database](#)

6. [Creating TIBCO EMS Queues and Topics](#)
  - a. [Verifying Queues and Topics](#)
7. [Configuring TIBCO MDM for WebSphere Application Server](#)
  - a. [Configuring EMS over SSL on Application Servers](#)
  - b. [Deploying TIBCO MDM on WebSphere Application Server](#)
  - c. [Setting Class Loader Policy](#)
  - d. [Specifying MIME Types](#)
  - e. [Enabling Cookies](#)
  - f. [Enabling URL Rewriting](#)
  - g. [Troubleshooting with WebSphere Application Server](#)
8. [Performing Postinstallation Tasks for Typical Installation](#)
9. [Troubleshooting with Typical Installation](#)

## Installation Overview

Download TIBCO MDM from the [TIBCO eDelivery](#) website . To login, you need user name and password. If you have not received a user name and password, contact TIBCO Technical Support. After you download TIBCO MDM, install it using the installer provided.

### Default Installation Directory

- **Microsoft Windows** The default installation location is *\$TIBCO\_HOME* where all TIBCO products are installed. Typically, *\$TIBCO\_HOME* is at *c:\tibco*.
- **UNIX** The default installation directory depends on who performs the installation:
  - For root users, the default installation directory is */opt/tibco*.
  - For non-root users, the default installation directory is */myhome/tibco*, where *myhome* is the home directory of the user.

### Installer Disk Space Requirements in Temporary Area

- **Microsoft Windows Platforms** The entire package is extracted into a temp folder

(minimum requirements 40 GB and 4 GB RAM), typically `SystemDrive:\Temp` or `SystemDrive:\Documents and Settings\user_name\Local Settings\Temp`.

- **UNIX Platforms** The installer launcher first extracts a Java Virtual Machine (JVM) in a temporary directory (minimum requirements 40 GB and 4 GB RAM) and uses this JVM to launch itself. The size of the extracted JVM differs from platform to platform. You can select the temporary area using the following option when starting the installer: `install_package_name.sh -is:tempdir /temp_area`

## Prerequisites for Installation

Before you start the TIBCO MDM installation, ensure that your system meets all of the requirements.

### Prerequisites

Software Component	Description
JDK	<p>TIBCO MDM is certified with Oracle Java and AdoptOpenJDK.</p> <ul style="list-style-type: none"> <li>• TIBCO MDM bundles Oracle Java with the installer. The bundled Oracle Java is located under TIBCO MDM installation home (<code>TIBCO_HOME\tibcojre64\11</code>). You do not need to download Java from the Oracle download site. If any updates to Java 11, TIBCO MDM continues to ship through the hotfix installers.</li> <li>• To install AdoptOpenJDK, download the executable file from the <a href="#">AdoptOpenJDK</a> site and install it at the appropriate location.</li> </ul> <p>Ensure that the <code>JAVA_HOME</code> environment variable has been set correctly.</p> <ul style="list-style-type: none"> <li>• For the JBossEAP, JBoss WildFly, and WebLogic application servers, TIBCO MDM supports Java 11.</li> <li>• For WebSphere application server, TIBCO MDM supports Java 1.8.</li> </ul> <p>Consult the readme shipped with your installation of TIBCO MDM for the most up-to-date software requirements.</p>
JMS Server	<p>The JMS Server must be installed and running with the required queues and topics created</p>

Software Component	Description
Application Server - For Typical install only	<p>The Application Server must be installed and running with the correct service packs applied.</p> <p>For IBM WebSphere, make sure that JDK patch level matches the application server fix pack level.</p>
Database - For Typical install only	<p>The Database server must be ready with either Oracle, PostgreSQL, or SQL Server installed and must have a user account with full privileges for the database. It is also recommended that a second user be created, but with restricted privileges.</p>
Client - For Typical install only	<p>The client for the database must be installed on the TIBCO MDM system machine and must have access to Java JDBC connectors. The SQL Server client is required for creating new seed data. However, we do not need clients for the PostgreSQL database.</p> <p>Oracle Client Software should be Developer Edition or Enterprise Edition and must be on the computer hosting the application server. TIBCO MDM uses the sqlldr utility shipped with these Oracle Client Software editions.</p>
Web Server - For Typical install only	<p>Web server is optional and is needed only if you do not plan to use direct URL access to the application server. If the Web server is going to be used, install it first.</p>
Cache Server - For Typical install only	<p>Cache server is optional and is needed only if a centralized cache server is proposed. Make sure the cache server is installed (but not running).</p> <p><b>Note:</b> For information about the Cache server, see <a href="#">Enable Apache Ignite for TIBCO MDM</a>.</p>

## Additional Software Components

TIBCO MDM requires additional software components as listed in the following table. The requirements of components depend on your installation choices and supported platforms. For a complete list of versions and platforms supported, see the *Readme.txt* file.

*Required Components*

Component to Install	Supported options	For more information, see:
JDK	<ul style="list-style-type: none"> <li>• For WebSphere application server, use JDK 1.8.</li> <li>• For JBoss WildFly and WebLogic application servers, use JDK 11.</li> </ul>	<ul style="list-style-type: none"> <li>• <a href="#">Installation Overview</a></li> </ul>
<b>Database</b> Install and configure a database.	<ul style="list-style-type: none"> <li>• Oracle</li> <li>• Microsoft SQL Server</li> <li>• PostgreSQL</li> </ul>	<ul style="list-style-type: none"> <li>• <a href="#">Configuration of Oracle Database</a></li> <li>• <a href="#">Configuration of SQL Server Database</a></li> <li>• <a href="#">Simple Installation with PostgreSQL</a></li> </ul>
Database Client	<ul style="list-style-type: none"> <li>• Oracle</li> <li>• Microsoft SQL Server</li> </ul>	
<b>JMS Server</b> Configure a JMS Server	<ul style="list-style-type: none"> <li>• TIBCO Enterprise Messaging Service</li> </ul>	<ul style="list-style-type: none"> <li>• <a href="#">Creating TIBCO EMS Queues and Topics</a></li> </ul>
<b>Application Server</b> Configure a supported Application Server.	<ul style="list-style-type: none"> <li>• Websphere with or without Websphere ND</li> <li>• Weblogic</li> <li>• JBoss WildFly</li> </ul>	<ul style="list-style-type: none"> <li>• <a href="#">Configuring TIBCO MDM for WebSphere Application Server</a></li> <li>• <a href="#">Configuring TIBCO MDM for WebLogic Application Server</a></li> <li>• <a href="#">Configuring TIBCO MDM for JBoss WildFly Application Server</a></li> </ul>

*Optional Components*

	Component to Install	Supported options	For more information, see:
1.	<b>AS2 Gateway</b> Configure AS2 Gateway for secure communication with other systems. (required only for GDSN mode or external communication).	<ul style="list-style-type: none"> <li>Any AS2 Server</li> </ul> (such as TIBCO BusinessConnect)	<a href="#">Configuration of TIBCO BusinessConnect and TIBCO BusinessWorks</a> Details for configuring TIBCO BusinessConnect. See appropriate documentation for other gateways.
2.	<b>Cache Server</b> Configure a cache Server.	Apache Ignite	<a href="#">Configuration Properties of Apache Ignite</a>
3.	<b>Web Server</b> Configure a supported Web Server to connect to the application server.	<ul style="list-style-type: none"> <li>IBM HTTP</li> <li>Apache Server</li> <li>Microsoft IIS</li> </ul>	<a href="#">Configuration of Web Servers</a>
4.	<b>X Server</b> Configure to upload images for any records maintained using TIBCO MDM.	<a href="#">RealVNC</a>	<a href="#">Installing X Server</a>

## Third-Party Libraries

In addition to the distribution provided by TIBCO, MDM requires additional software. This software must be provided for the installation and might have different licensing.

This table lists all the software which might be required.

*Third Party Libraries*

Library	Library Name	Description
JDK Library	jsse.jar	<p>Required, if you will be using SSL.</p> <p>Can be obtained from JDK.</p> <p>Vendor: ORACLE/IBM/HP</p>
XMLC related Libraries	xmlc.jar, xmlc-base.jar, xmlc- chtml.jar, xmlc-taskdef.jar, xmlc- xerces.jar, xmlc-all-runtime.jar, and Sunec.jar	<p>Required for TIBCO MDM UI.</p> <p>Click the <b>XMLC Download</b> link under the TIBCO MDM area at the <a href="#">eDelivery site</a> to download the xmlc-2.2.x.zip.</p> <p>You can choose to download the library or let the installer download the library during the installation process.</p>
	gnu-regexp.jar	Required for compiling HTML.
EMS related Libraries	tibjms.jar and jms-2.0.jar	<p>Required, if you are using TIBCO EMS as a JMS vendor.</p> <p>The libraries can be obtained from the installation directory of TIBCO EMS (pointed by EMS_HOME).</p>
<p><b>Note:</b> EMS libraries are not applicable for the PostgreSQL database.</p>		
JDBC related Libraries	ojdbc8.jar mssql-jdbc- 7.2.2.jre11.-jar postgresql- 42.2.11.jar	<ul style="list-style-type: none"> <li>ojdbc8.jar is required for Oracle.</li> <li>mssql-jdbc-7.2.2.jre11.jar ( Microsoft JDBC Driver 7.2 for SQL Server, Java Development Kit (JDK) 11.0 ) is required for Microsoft SQL Server.</li> <li>postgresql-42.2.11.jar is required for PostgreSQL. (Not required if you are using Simple Installation)</li> </ul> <p>Copy the following JAR files to \$MQ_</p>

Library	Library Name	Description
		<p><i>HOME/configurator/server/configurator/lib/ext.</i></p> <ul style="list-style-type: none"> <li>• ojdbc8.jar copy from <i>\$ORACLE_HOME/jdbc/lib</i>.</li> <li>• Download the mssql-jdbc-7.2.2.jre11.jar ( Microsoft JDBC Driver 7.2 for SQL Server, Java Development Kit (JDK) 11.0 ) file from <a href="#">Microsoft Download Center</a>.</li> <li>• postgresql-42.2.11.jar file copy from <i>\$MQ_HOME/bin/pgsql/driver</i></li> </ul>
Hibernate Assembly	hibern-ate3.jar and cglib-2.2.jar	<p>Required by TIBCO MDM for some database interactions.</p> <p>You can choose to download the library or let the installer download the library during the installation process.</p> <p>Click the <b>Download</b> link under the TIBCO MDM area at the <a href="#">eDelivery site</a> to download the product_tibco_hibernate_lgpl_3.6.10.003.zip.</p>

All the required libraries are to be added to the distribution provided (ECM.ear) with TIBCO MDM.

## Hardware Configuration

The following table lists sample hardware configurations. Additional memory may be required to accommodate data caching needs.

### Hardware Configurations

Configuration	Quantity	Type			Memory
		Sun	IBM	Intel	
Low End					

Configuration	Quantity	Type			Memory
		Sun	IBM	Intel	
Single machine for web server, application server, and DB server	1	Sun Fire X4100 - 2 CPU	IBM xSeries 2 CPU (AMD or Xeon) or equivalent	Xeon 2GHz, 2 CPU	4 GB RAM, 50 - 100 GB disk  8 GB RAM and Dual core processors are recommended to achieve increased throughput.
<b>Mid-range / Mid-range clustered</b>					
Web server	1	Sun Fire x2100 or Sun Fire x4100 equivalent, 1-2 CPU	IBM xSeries 1-2 CPU or pSeries entry level servers	Xeon 2 GHz, 1 CPU	1 GB RAM, 36 GB internal disk
Application server	1-2	Sun Fire x4100 2 CPU with Dual core processors or Sun Fire V240 with 4 CPU	IBM i520 or IBM 630 with 2-4 core/CPU	Xeon 3 GHz, 2-4 CPU	4- 6 GB RAM, 36 GB disk  8 GB RAM and dual core processors are recommended for higher throughput.
Database server	1	Sun Fire 445 or equivalent with 2-4 CPU	IBM i520 or P630 with 2-4 Core/CPU	Xeon 3 GHz, 2-4 CPU	6-8 GB RAM, 200-500 GB disk.
Storage	1				Disk array,

Configuration	Quantity	Type			Memory
		Sun	IBM	Intel	
					disks of 100 - 200 GB.
<b>High-end</b>					
Web server	1-2	Sun Fire, V100, 1-2 CPU	IBM P610, 1-2 CPU	Xeon 2 GHz, 1-2 CPU	2 GB RAM, 36 GB internal disks
Application server	2-4	Sun Fire V490 with 4 CPU or Sun Fire x4100 with 2 CPU dual core	IBM P650, 4-8 CPU	Xeon 3 GHz, 4-8 CPU	6-8 GB RAM, 40 GB disk for each server  12 GB RAM recommended for higher throughput.
Database server	1	Sun Fire V4800, 4-8 CPU	IBM P650, 4-8 CPU	Xeon 3 GHz, 4-8 CPU	Minimum 12 GB RAM  400-600 GB disk.
Storage	1				Disk array, disks of 200 to 500+ GBb.

The hardware required depends on many factors including, number of concurrent users, usage patterns, retention of history and rate of change for the data. A more accurate capacity planning exercise should be done based on detailed scenario tests done in performance labs.

Contact TIBCO Professional Services or TIBCO Customer support for more details on how to calculate the required hardware. It is recommended that any production hardware planning must be done using scenario based testing results. A sample capacity planning worksheet can be obtained from TIBCO Customer Support.

## Environment Variables

You must set the important environment variables before installing TIBCO MDM.



### Note:

- It is recommended that you use ASCII characters for all file names. If these names include non-ASCII characters, copying the files from Windows to UNIX or Linux and vice versa may result in corruption of file names.
- While setting environment variables on all platforms, if the ‘\’ character is used as a path separator instead of ‘/’, it leads to errors as ‘\’ is treated as an escape character.
- For Simple install, set only `JAVA_HOME` environment variable.
- For Typical install, set all the environment variables mentioned in the Environment Variables table.

### Environment Variables

Variable	Description
<code>MQ_HOME</code>	<p>Define <code>MQ_HOME</code> to point to the installation directory. It is recommended that you allocate at least 8 GB to this directory. In a clustered environment, each application server should point to a separate location.</p> <p>Example: <code>/home/tibco/mdm/version</code></p>
<code>MQ_LOG</code>	<p>The location where log files will be generated (the recommended location is <code>\$MQ_HOME/log</code>). In a clustered environment, each server should point to a separate location. Define <code>MQ_LOG</code> to point to this directory. A minimum of 1 GB should be allocated to this directory. The best practice is to change the default location such that the directory is not a subdirectory of <code>MQ_HOME</code>.</p> <p>Example: <code>\$MQ_HOME/log</code></p>
<code>MQ_COMMON_DIR</code>	<p>All standard configurations files for workflow and data validation as well as all customizations are stored in this directory. This directory also holds all files generated during normal application processing. It is</p>

Variable	Description
	<p>shared by all application servers in the cluster, and should be mounted to each server. All disk space indicated in the section <a href="#">Hardware Configuration</a> should be assigned to this directory, and the MQ_COMMON_DIR variable should be set. The best practice is to change the default location such that the directory is not a subdirectory of MQ_HOME.</p> <p>Example: <code>/home/tibco/mdm/version/common</code></p> <p>If you plan to create a copy of the TIBCO MDM instance across operating systems (for instance, Linux to Windows or Windows to Linux) and if the path contains any non English characters, such a copy may not be possible. For example, using Japanese characters in the path.</p>
<code>MQ_CONFIG_FILE</code>	<p>Points to <code>\$MQ_HOME/config/ConfigValues.xml</code>. The values/parameters in this file can be set using the Configurator.</p> <p>Example: <code>/home/tibco/mdm/version/config/ConfigValues.xml</code></p>
<code>JAVA_HOME</code>	<p>The directory where JRE/JDK is installed.</p> <p>Example: <code>/opt/jdkversion</code></p>
<code>EMS_HOME</code>	<p>The directory where TIBCO EMS (or the messaging software) is installed.</p> <p>Example: <code>/home/tibco/ems</code></p>
<code>ANT_HOME</code>	<p>The Directory path where ant is installed.</p> <p>Example: <code>/opt/antversion</code></p>
<code>MQ_HTTP_SESSION_REPLICATION_ENABLED</code>	<p>If you use multiple nodes and want to replicate the session, then set the value of the <code>MQ_HTTP_SESSION_REPLICATION_ENABLED</code> environment variable to <b>true</b> to enable the session replication.</p>
<code>MDM_DB_USE_SERVICENAME</code>	<p>Specify this variable when you are connecting to the database by using the Configurator and when you are running TIBCO MDM on container platforms.</p> <ul style="list-style-type: none"> <li>• Set to <b>true</b> to connect to the Oracle database by using the service</li> </ul>

Variable	Description
	<p>name</p> <ul style="list-style-type: none"> <li>• Set to <b>false</b> to connect to the Oracle database by using SID</li> </ul> <p>For more information, see <a href="#">Connecting to Database Using SID and Service Name</a>.</p>
MDMPORT	Port number on which the TIBCO MDM node is running.
PROTOCOL	Specifies a protocol such as http or https to access the TIBCO MDM node. By default, the http protocol is used.

### Application Server Specific

<i>WAS_HOME</i>	<p>The directory where WebSphere is installed (required <i>only</i> if using WebSphere).</p> <p>Example: <code>/opt/WebSphere/AppServer</code></p>
<i>JBOSS_HOME</i>	<p>For JBoss WildFly Application Server. Specify the path value until the root of the WildFly directory.</p> <p>Example, <code>E:\JBoss\wildfly-version.Final</code>.</p>
<i>JBOSS_HOME</i> (Simple Install)	<p>The directory where JBOSS is installed (required only if using simple installation).</p> <p>Example: <code>%MQ_HOME%\bin\wildfly-version.Final</code></p>
<i>WLS_HOME</i>	<p>For WebLogic Application Server. Specify the path value of the WebLogic Application Server directory.</p> <p>Example:</p> <ul style="list-style-type: none"> <li>• For Linux: <code>/opt/bea</code></li> <li>• For Windows: <code>G:/WebLogic/wlserver_version</code></li> </ul>

### Database Specific

<i>ORACLE_HOME</i>	For Oracle database. The directory where Oracle is installed.
--------------------	---

Variable	Description
	<p>Example:</p> <ul style="list-style-type: none"> <li>• For Windows: <code>/home/oracle/product/version/db_1</code></li> <li>• On UNIX: <code>\$export ORACLE_HOME=/u01/app/oracle/product/version</code></li> </ul>
<code>LD_LIBRARY_PATH</code>	For Oracle database: <code>\$ORACLE_HOME/lib</code>
<code>NLS_LANG</code>	<p>For Oracle database. Example:</p> <ul style="list-style-type: none"> <li>• On UNIX:           <pre>export NLS_LANG=AMERICAN_AMERICA.UTF8</pre> </li> <li>• On Windows:           <pre>set NLS_LANG=AMERICAN_AMERICA.UTF8</pre> </li> </ul>
<code>POSTGRESQL_HOME</code>	<p>For PostgreSQL database. The directory where PostgreSQL is installed.</p> <p>Example: <code>\$MQ_HOME/bin/pgsql</code></p>
<code>OS</code>	The Operating system. For example, Linux.
<code>DISPLAY</code>	This environment variable is used by X-Windows based applications. It points to a device capable of displaying an X-Windows based UI.
<code>LD_ASSUME_KERNEL</code>	Used on the Linux platform to make Linux use the old Linux threads library, particularly required for Oracle installation (required <i>only</i> if Oracle is used as the database).
<code>PATH</code>	This is a list of directories separated by a separator. When any command or program is executed, the OS tries to locate the program in the directories listed in PATH. If the program is not found in any of the directories, the OS cannot load and execute the program. The Separator character is ':' for Unix and Linux platforms, and ';' for the Windows platform.

Variable	Description
	Ensure that there is no space with the commas and colons between the program in the directories listed which are separated by ':' for Unix and Linux platforms, and ';' for the Windows platform.
<i>SHLIB_PATH</i>	List of directories separated by a separator (see PATH) where a dynamic linker tries to find the libraries. Used on UNIX platforms.
<i>LIBPATH</i>	List of directories separated by a separator (see PATH) where the Operating system as well as the application library files reside. Used on UNIX platforms.
<i>NODE_ID</i>	Points to the current cluster member. Example: NODE_ID=Member1
<b>TIBCO MDM REST API through Swagger UI</b>	
<i>SWAGGER_MDM_HOST</i>	An IP address of the TIBCO MDM server on which you want to try out the TIBCO MDM REST APIs.
<i>SWAGGER_MDM_PORT</i>	Port of the TIBCO MDM server on which you want to try out the TIBCO MDM REST APIs.

## Supported Databases

Install any one of the following databases as per your requirement. For a list of versions and platforms supported, see the *Readme.txt* file shipped with installation of TIBCO MDM.

### *Supported Databases*

Database	Description	Site Reference
Oracle	Download the supported version of the Oracle database from the Oracle site and unzip it to the required location.	Install the Oracle server software as directed in the <a href="#">Oracle installation document</a> .

Database	Description	Site Reference
SQL Server	Download the latest version of Microsoft SQL Server from the following site and unzip it to the required location	Install the SQL Server software as directed in the appropriate <a href="#">SQL installation document</a> .
PostgreSQL	The PostgreSQL database is installed with the Simple installation. You do not need to separately download it. For more information about simple installation, see <a href="#">Simple Installation with PostgreSQL</a> .	Not Applicable

## Database Sizing Requirements

The database sizing requirements include the minimal sizing requirements for `initdbname.ora` (`initedcm50.ora`); for small, medium, and large databases.

### *Database Sizing Requirements*

Database Parameter Setting	Low-end	Mid-range	High-end
Db block size	8192	8192	8192
Db_file_multiblock_read_count	8	16	32
Shared pool size	75 MB	150 MB	200 MB*
Processes	(# of application servers)* (application server max db connection pool size) + 200		
Parallel max	2	4	5*

Database Parameter Setting	Low-end	Mid-range	High-end
servers			
Log_buffers	25% of the system memory		
Timed_statistics	True	True	True
Max_dump_file_size	5 MB	10 MB	20 MB
Rollback_segments	8 seg	16 seg	32 seg*
Open cursors	300	450	3000
Character set	UTF-8		
Buffer Pool Size	150 MB	300 MB	500 MB - 2 GB*
db_writer_processes	75% of the cpu_count parameter value		
Sessions	1.1* processes + 200		
optimizer_mode	ALL_ROWS		
shared_servers	# of dispatchers* 2		
Transactions	# sessions		

\* These values depend on various factors including concurrent users, message and workflow volumes, number of records, and so on. Your DBA should adjust these values based on the actual load and required performance characteristics.

# Installing TIBCO MDM (Typical Installation)

In the typical installation, the installer presents panels which you can select choices about the product location, and so on.

## Prerequisites

- Verify that your computer meets the System requirements. The system requirements are listed in the `readme.txt` file.
- Download the Installer. The application is available as a ZIP file.
- Extract the contents of the ZIP file to a folder on your computer.
- Search for the `TIBCOUniversalInstaller` application in the location where you have extracted the ZIP file.

## Procedure

1. Run the `TIBCOUniversalInstaller.exe` application. The TIBCO Universal Installer Welcome window is displayed.
2. Review the information and click **Next**. The license agreement is displayed.
3. Review the terms of the license agreement. If you agree with its terms, accept the license agreement and click **Next**.
4. In the Installation Profile Selection window, do one of the following:
  - a. Select **Create a new TIBCO\_HOME** option. A TIBCO installation environment is used for software installations and consists of a Name and Directory. Products installed into different installation environments do not share components; therefore you can keep product installations completely isolated from each other.
    - **Directory**: browse to the directory where the product needs to be installed and provide a unique environment name. Ensure that you have write permission to this directory.
    - **Name**: specify the environment name that is easy to identify your environment. For example, 'User Acceptance' or 'Procurement Department'.
  - a. If you have previously installed a TIBCO product using the Universal Installer, you can select **Use an existing TIBCO\_HOME**. By default, the installer detects the directory for your `TIBCO_HOME` and displays the path.

For example, on Windows, the default installation directory is `c:\tibco`.

**i** **Note:** If you had installed the application earlier, the directory cannot be modified. For a new installation, the directory can be changed.

Click **Next**.

5. In the Installation Profile Selection window, by default, the **Typical** installation profile is selected.
  - a. If you check the **Customize Installation** check box, a list of components is enabled (**Executable Image** and **Common Configuration**).
  - b. Select your preferred options and click **Next**.
6. In the TIBCO MDM Configurator Tomcat Settings window, the default port values are displayed. You can change the default port values. Click **Next**.

**!** **Warning:** The specified port values must not be in use by another application. If you do not specify configuration information, Configurator does not start and you need to perform manual configuration. For more information about the Configurator, see [Configurator](#).

7. In the TIBCO Patterns - Search Settings window, the default user interface port value (required for Patterns GUI tomcat server) and Patterns server port value (required for Patterns binary) are displayed. You can change the default port values.
  - a. Select **Install as a Windows Service** check box if you want to install the Patterns server binary as a service.

Click **Next**.

8. In the TIBCO MDM Common Config Location window, select the common configuration location and click **Next**.

If you have selected the standard common configuration option, the default `$MQ_HOME\common` directory location is displayed. You can retain the location or change it by clicking **Browse**.

✔ **Tip:** The best practice is to assign a location separate from MQ\_HOME. TIBCO MDM creates files in this directory and it is better to keep it separate from MQ\_HOME. In a clustered environment, this directory should be shared for all instances.

i **Note:** If you do not specify the common configuration location, Configurator does not start and you need to perform the manual configuration. For information, see [Manually Configuring TIBCO MDM](#).

9. The HIBERNATE LGPL License Agreement window is displayed. If you agree with its terms, accept the license agreement, and click **Next**.
10. The LGPL Assembly Download window is displayed. Select one of the following options:
  - **Download HIBERNATE assembly from TIBCO:** if you are downloading the LGPL assembly for the first time, select this option. The HIBERNATE assembly is downloaded in the same folder as the installer. All the third party software which is used in the application and their licenses are downloaded.
  - **Provide the location for the assembly previously downloaded from TIBCO:** if you have previously downloaded the LGPL assembly, specify the folder in which you have downloaded the hibernate assembly. Browse to the directory where the assembly is previously downloaded and saved.

i **Note:** If the LGPL Assembly is already downloaded, the LGPL Assembly Download window is not displayed.

Click **Next**.

11. The XMLC LGPL License Agreement window is displayed. If you agree with its terms, accept the license agreement, and click **Next**.
12. Select the **Download XMLC assembly from TIBCO** option. The assembly gets downloaded in the same folder as the installer. Click **Next**.
13. The Oracle Elliptic Curve Library LGPL License Agreement window is displayed. If you agree with its terms, accept the license agreement, and click **Next**.
14. In LGPL Assembly Download window, select one of the following options:

- **Download Oracle Elliptic Curve Cryptography Library assembly from TIBCO:** if you select this option, the Cryptography assembly is downloaded and configured.
- **Provide the location for the assembly previously downloaded from TIBCO:** If you select this option, the **Oracle Elliptic Curve Cryptography Library Assembly Path** field is enabled. Click **Browse** to select the Cryptography assembly.

Click **Next**.

**i Note:** The steps 13 and 14 are applicable only for the JBoss WildFly application server with Oracle and SQL server database combination.

15. In the Pre-Install Summary window, review a list of the components that are going to be installed and the installation environment details and click **Next** to begin the installation process.
16. In the Post-Install Summary window, review a list of the components that are installed and the installation environment details. Click **Finish** to exit the wizard.

## Result

The following auto generated log files are created in the `C:\Users\username.TIBCO\install_currentyear-currentmonth-currentdate.uniqueID` folder: Using the log files, you can troubleshoot for errors in the installation process.

- `antTask_log_installerConfig_currentyear-currentmonth-currentdate.uniqueID`: consists of configuration related logs.
- `antTask_log_installerMergeXMLC_currentyear-currentmonth-currentdate.uniqueID`: consists of the XMLC merge related logs.
- `tibco_universal_installer.username_install`: consists of installer related logs.
- `antTask_log_updateEARToIncludeHibernateLib_currentyear-currentmonth-currentdate.uniqueID`: consists of ECM.ear file related logs.

## Configuration of Oracle Database

To configure the Oracle database, use the Oracle Configuration Assistant. Consult your Database Administrator on standard practices followed by your IT department to change the recommended structure according to your needs.

## Prerequisites

- Ensure that all required environment variables are set. See [Environment Variables](#).
- Ensure that Oracle Client Software Developer Edition or Enterprise Edition is installed on the computer hosting the application server ().
- Ensure that the sqlldr utility is available.
- Use the latest driver provided by Oracle.
- A valid and tested connect string should be present in the TNSNAMES.ora file. For example, the connection URL: jdbc:oracle:oci:@ORACLERAC  
where ORACLERAC is the TNS entry in the client's TNSNAMES.ora file and oci drivers are used to support TAF.

## TNSNAMES.ora file (client)

```
ORACLERAC =
(DESCRIPTION =
  (ADDRESS_LIST =
    (ADDRESS = (PROTOCOL = TCP)(HOST = hostname1.domainname.com)(PORT = 1521))
    (ADDRESS = (PROTOCOL = TCP)(HOST = hostname2.domainname.com)(PORT = 1521))
  )
  (FAILOVER=on)
  (LOAD_BALANCE = ON)
  (CONNECT_DATA =
    (SERVER = DEDICATED)
    (SERVICE_NAME = orcl)
    (FAILOVER_MODE =
      (TYPE = SELECT)
      (METHOD = BASIC)
      (RETRIES = 180)
      (DELAY = 5)
    )
  )
)
)
```

**i Note:** The TNS entry supports both failover and load balancing.

- Database port
- Database server host name

## Creating Tablespaces

Table spaces are required to hold data and indexes for all tables required for TIBCO MDM and for all data sources uploaded.

TIBCO MDM uses the following different kinds of tables and indexes:

- Fixed tables
- Indexes for fixed tables
- Data source tables
- Master catalog tables
- Indexes for master catalog tables

### Procedure

1. Change the default data file location specified in the createtablespace.sql file based on your Oracle installation.
  - a. Go to \$MQ\_HOME/db/oracle/configure/.
  - b. Open the createtablespace.sql file.
  - c. Change the data file location for all tablespaces. For example, if you have installed Oracle in the E:/app/oradata/orcl folder, change the C:/oracle/version/oradata/orcl path to E:/app/oradata/orcl.
2. Run the createtablespace.sql script to create the following tablespaces:

#### *Tablespaces*

Tablespace Name	Description
VELODBDATA	For fixed TIBCO MDM tables.
VELODBINDEX1	For fixed TIBCO MDM table indexes.
VELODBDF	For TIBCO MDM data source tables
VELODBDATA	For TIBCO MDM master catalog tables.
VELODBINDEX	For TIBCO MDM master catalog table indexes.

**i Note:**

- The VELODBDATA1 tablespace has a minimum size of 100 MB and maximum size of 500 MB. The remaining tablespaces are 100 MB. You can change the size of the tablespaces based on your requirement. You can also set the size as unlimited for the tablespaces.
- If you are migrating from the earlier versions of Oracle to the latest supported version of Oracle, you have to explicitly grant UNLIMITEDTABLESPACE to the user. Oracle has discontinued the support granting UNLIMITED TABLESPACE to the RESOURCE role user.

Run the following command: `GRANT UNLIMITED TABLESPACE TO username`

3. For a complete installation (tablespaces and seed data), run the installation script from `$MQ_HOME/db/oracle/configure/doall.bat` or `doall.sh`
  - a. To create tablespaces without seed data, run `$MQ_HOME/db/oracle/configure/createusertablespace.sh` or `.bat`
  - b. To create only seed data, see [Creating Seed Data Manually for Oracle Database](#).

## Installing Seed Data Using Database Setup Wizard

The Database Setup Wizard of Configurator makes the database setup process easy and user-friendly.

The Database Setup Wizard is common for all three databases. However, some fields vary according to the selected database in the **Settings > Database** option. The available database options are Oracle, SQL Server, and Postgres. For more information about selecting the database option, see the Configurator chapter of *TIBCO MDM System Administration*.

### Prerequisites

Before running the Database Setup Wizard, ensure the following:

- The database is installed.
- The database client is installed on the local computer.

- If a user has already been created, specify the schema credentials. If the user has not been created, specify the DBA credentials. For information, see [Creating Database User for Oracle Database](#).
- TIBCO MDM is installed and the environment variables are created.
- Database SQL scripts are available.
  - For Oracle: in \$MQ\_HOME/db/oracle.
  - For SQL Server: in \$MQ\_HOME/db/sqlserver.
- For Oracle, the tablespaces are not created.
- The following database JDBC JAR files are copied in the \$MQ\_HOME/configurator/server/lib folder for seed data creation:
  - For Oracle: ojdbc8.jar copy from \$ORACLE\_HOME/jdbc/lib
  - For SQL Server: mssql-jdbc-7.2.2.jre11.jar ( Microsoft JDBC Driver 7.2 for SQL Server, Java Development Kit (JDK) 11.0 ) download from [Microsoft Download Center](#)
- For Oracle Database client globalization support, the following JVM arguments have been added in the \$MQ\_HOME/configurator/server/bin/setenv.bat file.
  - -Duser.country=en
  - -Duser.language=en

## Procedure

1. Log in to the Configurator.
2. Click **Tools > Set up Database**.
3. In the Database Setup Wizard for *databasename* with the Database Access Mode page, select one of the following options:
  - a. **Create New MDM Database User:** Select this option to create a new database user.
  - b. **Use an Existing MDM Database User:** Select this option to specify details of an existing user.

To specify details of a new database user or an existing database user, see the following table:

*New and Existing Database User Details*

Field Name	Description
Database Host	The IP address or host name of the server where the database is installed.
Database Port	By default, the port specific to each database is displayed. For example, <ul style="list-style-type: none"> <li>• For Oracle, the default database port is 1521.</li> <li>• For SQL Server, the default database port is 1433.</li> </ul> You can change the port value, if required.
Database Name (TNS Name)	The name of the database where TIBCO MDM data should be installed. <div style="border: 1px solid #ccc; padding: 5px; margin-top: 10px;"> <p><b>Note:</b> For Oracle RAC, specify the SID of either of the two clusters of the RAC database.</p> </div>
DBA User Name	The user name of the database administrator.
DBA User Password	The password of the database administrator.
Test Connection	Click <b>Test Connection</b> to connect to the database and verify if the connection is successful. If the test connection is not successful, verify the specified database details.
New MDM Database User Name	The new user name used for the connection to the database.
New MDM Database Password	The new password used for the connection to the database.

Field Name	Description
User Password	
Confirm MDM Database User Password	Reenter the new password for confirmation.
<b>Note:</b> Remember the user name and password.	
Tablespace Location  (For Oracle database)	<p>The file system directory (absolute path) location where all tablespaces are created. This must be a local directory on the computer where the database is running. You can specify a custom location and provide a full path of the directory. The directory should have 'write permission' to write a file.</p> <p><b>Notes:</b></p> <ul style="list-style-type: none"> <li>• If you do not specify the tablespace location, by default the tablespaces are created in the \$ORACLE_HOME/database directory.</li> <li>• It is recommended that the file system in this directory contains a significant amount of available space. This directory is assigned by a DBA and should be backed up on a regular basis. For example: /opt/oradata</li> </ul>
Database File Location  (For SQL Server database)	<p>The SQL Server database location. You can specify a custom location and provide a full path of the directory.</p> <p><b>Note:</b> Database File Location should have permission to write files.</p>

- c. On the Database Details and Create New MDM Database User screens, click **Next**.

**i Note:**

- If you are not a DBA user or do not have permission to create tablespace and a new user, you can create a tablespace and database user using the scripts. For information, see [Configuration of Oracle Database](#) and [Configuration of SQL Server Database](#).
- For Oracle, if you select the **Use an Existing MDM Database User** option, see [Creating Database User for Oracle Database](#) for the details of the existing database user.
- For SQL Server, if you select the **Use an Existing MDM Database User** option, see [Creating Database User for SQL Server Database](#) for the details of the existing database user.

4. In the MDM Instance Details page, enter the following details and click **Next**:

*MDM Instance Details*

Field Name	Description
MDM Instance Name	Specify the instance name of TIBCO MDM. When you have multiple instances, and you want to install a database, you can specify a particular instance name. For example, preproduction and postproduction instances. An instance entry is added in the database table.
MDM Instance Description	Specify the instance description of TIBCO MDM.

5. In the Storage Profile Details page, select one of the following storage profile options:
  - a. **Typical Profile:** select this option to use the default values. A Typical profile installs tablespaces for the Oracle database and the database file location for the SQL Server database.

After you select the **Typical** storage profile option, the Confirm Storage Parameters page is displayed. Confirm the default values and click **Install** to

install the seed data. See step 6.

- b. **Custom Profile:** select this option to specify the customized values for the default tablespace.

After you select the **Custom** storage profile option, the Custom Profile Setup page is displayed. Specify the values, size, and location for the default tablespaces.

- c. Click **Next**.

6. In the Confirm Storage Parameters page, confirm the customized values. Click **Install** to install the seed data.

7. The MDM Seed Data Summary page displays the success and error report of the seed data and schema creation.

- a. To view the schema and seed data log file, click **Open**.

- For Oracle, by default, the log files are stored in \$MQ\_HOME/db/oracle/install/logs folder.



**Note:** You can ignore tablespaces errors. For example,

```
"ERROR:-ORA-01543: tablespace 'VELODBTEMP' already exists".
```

- For SQL Server, by default, the log files are stored in \$MQ\_HOME/db/sqlserver/install/logs folder.

8. Click **Finish** to complete the database setup process.

## Troubleshooting with Oracle Database

Resolve the errors that you may come across while configuring the Oracle database.

### *Troubleshooting with Oracle Database*

Issue	Description	Solution
Bad Interpreter Issue	A “bad interpreter” error is displayed on UNIX.	The first line of all scripts on UNIX must be as follows: #!/usr/bin/sh

Issue	Description	Solution
Insufficient Shared Memory Issue	Oracle database error, unable to allocate required shared memory.  (ORA-04031: unable to allocate x bytes of shared memory).	Check whether or not the first line of the UNIX script follows this format. You can also create a soft link as follows: <code>ln -s /bin/sh /usr/bin/sh</code>
Inserting and Updating Data from ProcessLog and ProcessState Tables	Two errors are intermittently thrown when inserting or updating data from ProcessLog and ProcessState tables, even though the data to be inserted has a valid value and length. This error has been observed on Oracle 10.1.0.2.0.  ORA-01461: can bind a LONG value only for insert into a LONG column  ORA-01483: invalid length for DATE or NUMBER bind variable	Restarting the application server might resolve the issue temporarily.  There are similar issues reported in Oracle MetaLink. Reference Document IDs: 241358.1, 461670.1  If the problem persists, contact Oracle support and consider upgrading to the latest patch.
Seed data errors for exceeded length	After you change the value of the MAX_STRING_SIZE parameter from <b>STANDARD</b> to <b>EXTENDED</b> , the following errors occur during seed data creation:  <pre>SQL&gt;CREATE INDEX WORKITEMDETAIL_IDX1 ON WORKITEMDETAIL ( NAME, Value )</pre>	To fix this issue, run the upgradeAttributeLength.sql script located at \$MQ_HOME/db/DatabaseType/install/scripts/utility.

Issue	Description	Solution
	<pre>TABLESPACE VELODBINDX1 ERROR:-ORA-01450: maximum key length (6398) exceeded</pre>	
	<pre>SQL&gt;CREATE INDEX FSENTRY_ IDX ON FSENTRY ( PATH ASC, NAME ASC ) TABLESPACE VELODBINDX1 ERROR:-ORA-01450: maximum key length (6398) exceeded</pre>	
	<pre>SQL&gt;CREATE INDEX SFSENTRY_ IDX ON SFSENTRY ( PATH ASC, NAME ASC ) TABLESPACE VELODBINDX1 ERROR:-ORA-01450: maximum key length (6398) exceeded</pre>	

## Creating TIBCO EMS Queues and Topics

The required queues and topics are located in the \$MQ\_HOME/bin/install/createQueues.txt file.

### Before you begin

Ensure that the EMS Server is running.

### Procedure

1. Go to **All Programs > TIBCO > TIBCO EMS *version*** and click **Start EMS Administration Tool**. The command prompt is displayed.
2. Type **Connect**.
3. Enter login name and password.

**i Note:** If you have not created the administration credentials, press **Enter**. By default, administration login name and password is retrieved.

The connected to: `tcp://localhost:port_number` message is displayed.

4. Go to `$MQ_HOME/bin/install` and open the `createQueues.txt` file.
5. Copy content of the `createQueues.txt` file and place it in the command prompt.  
Queues and topics are created.

## Verifying Queues and Topics

You can verify a list of created queues and topics.

### Procedure

1. Go to **All Programs > TIBCO > TIBCO EMS *version*** and click **Start EMS Administration Tool**.  
The command prompt is displayed.
2. Type **Connect**.
3. Enter login name and password.
4. Type `show queues` in the command prompt and press **Enter**.  
A list of created queues is displayed.
5. Type `show topics` in the command prompt and press **Enter**.  
A list of created topics is displayed.

## Configuring TIBCO MDM for WebSphere Application Server

Log in to the Administrative console of WebSphere Application Server to configure the properties.

Configure the following properties in the Configurator:

*Configurator Properties for WebSphere Application Server*

Property Name	Value
JNDI Naming Service URL	By default, the value is <code>iiop://localhost:2809</code> . As per your application profile, you need to change the host IP address and port number. For the port number, see <code>BOOTSTRAP ADDRESS</code> specified in the WebSphere Application Server. Login to the Administrative console of the WebSphere Application Server console and expand <b>Application Servers &gt; <i>server name</i> &gt; Ports</b> .
Security Provider Type	By default, a SUN security provider is defined. For WebSphere Application Server, you need to change it to IBM.

**i Note:** For clustered setup, it is recommended that you:

- Increase the poolsize per server to 100.
- Increase the transaction timeout of the application server to 36000.

**Procedure**

1. Creating a Profile on WebSphere Application Server
  - a. Create a profile other than the default using the profile creation wizard.
  - b. Start the Administration Server.
    - Go to the `$WAS_HOME/profiles/profilename/bin` directory.
    - Enter the following command: `./startServer.sh server1`
2. Log in to the Administrative console of WebSphere Application Server.
3. Specify Servers Details
  - a. In the left panel, expand **Servers > Server Types** and click **WebSphere > application servers**. The Application servers panel is displayed on the right.
  - b. Under Preferences, click `servername`. The **Configuration** tab is displayed.
4. For Transaction Service Details:
  - a. Under **Container Settings**, expand **Container Services** and click the

**Transaction Service** link. The **Configuration** tab for the Transaction Service is displayed.

- b. Under General Properties, enter the following values:

*Transaction Service General Properties*

Field / Drop-down List Name	Values
Total transaction lifetime timeout	36000
Client inactivity timeout	7200
Maximum transaction timeout	0
Heuristic retry limit	0
Heuristic retry wait	0
Heuristic completion direction	ROLLBACK

- c. Click **OK**. A message is displayed with the Save and Review options.  
 d. Click the **Save** link to save changes to the master configuration.

5. For ORB Service Details:

- a. Under Container Settings, expand **Container Services** and click the **ORB service** link. The **Configuration** tab is displayed.  
 b. Under General Properties, check the **Pass by reference** check box.  
 c. Click **OK**. A message is displayed with the Save and Review options.  
 d. Click the **Save** link to save changes to the master configuration.

6. For Server Infrastructure Details:

- a. Under Server Infrastructure, expand **Java and Process Management** and click the **Process definition** link. The **Configuration** tab is displayed.  
 b. Under Additional Properties, click the **Java Virtual Machine** link. The **Configuration** tab is displayed.  
 c. In the Initial heap size and Maximum heap size fields, enter the heap size to

1024 as the minimum value for both the fields.

d. In the Generic JVM arguments field, enter the following JVM arguments:

**i Note:** For readability, each entry is listed on a separate line. However, you must enter these arguments in a single line, separated by a single space.

```
-DLANG=en_US.UTF-8
-DNODE_ID=${NODE_ID}
-Dclient.encoding.override=UTF-8
-DMQ_HOME=${MQ_HOME}
-DMQ_LOG=${MQ_LOG}
-DMQ_CONFIG_FILE=${MQ_HOME}/config/ConfigValues.xml
-DMQ_COMMON_DIR=${MQ_COMMON_DIR}
-DPATH=${PATH}
-DOS=<OS>
-DDISPLAY=:1.0
-Djavax.xml.transform.TransformerFactory=org.apache.xalan.processor.
TransformerFactoryImpl
-Djavax.xml.parsers.DocumentBuilderFactory=org.apache.xerces.jaxp.
DocumentBuilderFactoryImpl
-
-Dlog4j2.contextSelector=org.apache.logging.log4j.core.selector.BasicContextSelect
or
-Dlog4j2.ignoreTCL=true
```

**i Note:**

- For the Oracle database, enter `-DORACLE_HOME=${ORACLE_HOME}`.
- To improve the performance of TIBCO MDM, enter the following JVM parameter when starting the application server:
 

```
-Dorg.apache.xml.dtm.DTMManager=
"org.apache.xml.dtm.ref.DTMManagerDefault"
```
- To deploy TIBCO MDM custom pages to a common folder in the cluster environment, set the following parameter:
 

```
-DMQ_CUSTOMFORMS_HOME=MQ_COMMON_DIR
```

- e. To monitor the JVM application server, enter the following JVM arguments:

```
-Dcom.sun.management.jmxremote
-Dcom.sun.management.jmxremote.authenticate=false
-Dcom.sun.management.jmxremote.ssl=false
-Dcom.sun.management.jmxremote.port=9999
-Djavax.management.builder.initial=
```

The value of `Djavax.management.builder.initial` argument must be empty.

- f. Click **OK**. A message is displayed with the Save and Review options.
- g. Click the **Save** link to save changes to the master configuration.
7. For Port Details: if multiple servers and clusters are involved while installing TIBCO MDM on the WebSphere Application Server, you need to configure and allocate multiple ports to the application.
- Under Communications, expand **Ports**. A list of ports is displayed.
  - Verify the value of the `wc_defaulthost` port. The WebSphere Application Server runs on this default port.
  - Ensure that the port is defined as a domain name system (DNS) alias in the `default_host` Virtual Host definition.

**i** **Note:** The DNS alias by which the virtual host is known is defined through **Environment > Virtual Hosts > `default_host` > Host Aliases**. The Virtual host for the Web modules that are contained in application is specified through **Applications > WebSphere Enterprise Applications > `ECM` > Virtual hosts**.

8. Specify Environment Variables
- In the left panel, expand **Environment** and click **WebSphere variables > .** The WebSphere Variables panel is displayed on the right.
  - In the Scope drop-down list, select **Node=<nodeID>,Server=server1**.
  - Under Preferences, click **New**. The **Configuration** tab is displayed.
  - Under General Properties, type a system variable name in the Name field and its value in the Value field. The Description field is optional.
- Add the following environment variable for the custom pages deployment:

MQ\_CUSTOMFORMS\_HOME=MQ\_COMMON\_DIR

- e. Click **OK**. The variable is listed in the table.

Similarly, create other Environmental Variables. The following table displays a list of all other added environment variables.

<a href="#">DISPLAY</a>	:1.0	Node=MDMWIN2K16VM138Node03,Server=server1
<a href="#">JAVA_HOME</a>	C:\Program Files\IBM\WebSphere\AppServer\java\	Node=MDMWIN2K16VM138Node03,Server=server1
<a href="#">MQ_COMMON_DIR</a>	C:\MDM_Installations\ \ _WasOra_Common	Node=MDMWIN2K16VM138Node03,Server=server1
<a href="#">MQ_CONFIG_FILE</a>	C:\MDM_Installations\ \ _WasOra\mdm\ \config\ConfigValues.xml	Node=MDMWIN2K16VM138Node03,Server=server1
<a href="#">MQ_CUSTOMFORMS_HOME</a>	MQ_COMMON_DIR	Node=MDMWIN2K16VM138Node03,Server=server1
<a href="#">MQ_HOME</a>	C:\MDM_Installations\ \ _WasOra\mdm\	Node=MDMWIN2K16VM138Node03,Server=server1
<a href="#">NODE_ID</a>	Member3	Node=MDMWIN2K16VM138Node03,Server=server1
<a href="#">ORACLE_JDBC_DRIVER_PATH</a>	C:\MDM_Installations\ \Assemblies	Node=MDMWIN2K16VM138Node03,Server=server1
<a href="#">PATH</a>	C:\Program Files\IBM\WebSphere\AppServer\java\ \bin;C:\MDM_Installations\MDM931WASORA\mdm\ \bin	Node=MDMWIN2K16VM138Node03,Server=server1
<a href="#">SERVER_LOG_ROOT</a>	\${LOG_ROOT}/server1	Node=MDMWIN2K16VM138Node03,Server=server1
<a href="#">SWAGGER_MDM_HOST</a>		Node=MDMWIN2K16VM138Node03,Server=server1
<a href="#">SWAGGER_MDM_PORT</a>	9082	Node=MDMWIN2K16VM138Node03,Server=server1
<a href="#">WAS_SERVER_NAME</a>	server1	Node=MDMWIN2K16VM138Node03,Server=server1

## 9. Configuring Database Drivers and Data Source


### a. Specify JDBC Details

- i. In the left panel, expand **Resources > JDBC**, and then click **JDBC providers**. The JDBC providers panel is displayed on the right.
- ii. In the Scope drop-down list, select **Node=<nodeID>, Server=server1**.
- iii. Under Preferences, click **New**. The Create a new JDBC Provider window is displayed.
  - In the Database type drop-down list, select **Oracle**. The Provider type is populated with **Oracle JDBC Driver**.
  - In the Implementation type drop-down list, select **Connection pool data source**. The Name and Description fields are populated with Oracle JDBC Driver.
- i. Click **Next**. The Enter database class path information window is displayed.
- ii. If you have selected the Oracle database option in the last step, type

the location of the `ojdbc8.jar` file. If you are using Oracle Database 19.3, copy `ojdbc8.jar` in `$ORACLE_HOME/19c/lib`.

- iii. Click **Next**. The Summary window is displayed. Review the information.
  - iv. Click **Finish**. The Oracle JDBC Driver is listed under Preferences and a message is displayed with the Save and Review options.
  - v. Click the **Save** link to save changes to the master configuration.
- b. Specify Security Details
- i. In the left panel, expand **Security** and click **Global security**. The Global security panel is displayed on the right.
  - ii. Under Authentication, expand **Java Authentication and Authorization Service** and click the **J2C authentication data** link.
  - iii. Under Preferences, click **New**. The General Properties window is displayed.
  - iv. In the Alias, User ID, and Password fields, type the database alias name, its user ID, and password respectively. The Description field is optional.
  - v. Click **Apply**, and then click **OK**. The database Alias is listed under Preferences and a message is displayed with the Save and Review options.
  - vi. Click the **Save** link to save changes to the master configuration.
- c. Specify Data Source Details
- i. In the left panel, expand **Resources > JDBC**, and then click **Data sources**. The data source panel is displayed on the right.
  - ii. In the Scope drop-down list, select **Node=<nodeID>**, **Server=server1**.
  - iii. Under Preferences, click **New**. The Create a data source window is displayed.
  - iv. Enter the **Data source name** and **JNDI name**.
  - v. Click **Next**. The Select JDBC provider window is displayed.
  - vi. Select either of the following two options:

- **Create a new JDBC provider**
  - **Select an existing JDBC provider:** After you select this option, the existing JDBC providers are displayed in the drop-down list. You can select it from the list.
- vii. Click **Next**. The Enter database specific properties for the data source window is displayed.
- In the Value field, enter the database connection URL. For example, for Oracle database: `jdbc:oracle:thin:@ machinename or ipaddress:portnumber. INSTANCENAME`.
  - In the Data store helper class name drop-down list, select the appropriate data store helper class name. For example, **Oracle11g data store helper**.
- viii. Click **Next**. The Setup security aliases window is displayed.
- In the Component-managed authentication alias drop-down list, select the alias.
  - In the Mapping-configuration alias drop-down list, select **DefaultPrincipleMapping**.
  - In the Container-managed authentication alias drop-down list, select **alias**.
- ix. Click **Next**. The Summary window is displayed. Review the information.
- x. Click **Finish**. The data source is listed in the Preferences section and a message is displayed with the Save and Review options.
- xi. Click the **Save** link to save changes to the master configuration.

 **Note:** You must save the data source name before testing its connection, else an error message is displayed.

- xii. Under Preferences, select the *Data Source name* and click **Test Connection** to test the connection.  
A Connection Successful message is displayed.

**i** **Note:** Navigate to **Data sources > DataSourceName > Connection pool properties** to set the Maximum connections to 50 and the connection timeout to 7200.

## Configuring EMS over SSL on Application Servers

*To configure EMS over SSL, configure the application servers.*

Application Server	Steps
WebSphere Application Server	<ol style="list-style-type: none"> <li>1. Stop the application server.</li> <li>2. Copy the following JAR files from \$EMS_HOME/lib to \$WAS_HOME/lib/ext folder: <ul style="list-style-type: none"> <li>• slf4j-api-1.4.2.jar</li> <li>• slf4j-simple-1.4.2.jar</li> </ul> </li> <li>3. Copy the server_root.cert.pem certificate from \$EMS_HOME/samples/certs folder.</li> <li>4. In WebSphere Application Server, perform the following steps: <ol style="list-style-type: none"> <li>a. Under Server Infrastructure, expand Java and Process Management and click the Process definition link.</li> <li>b. On the Configuration tab, under Additional Properties, click the Java Virtual Machine link.</li> <li>c. On the Configuration tab, in the Generic JVM arguments field, enter the following JVM arguments: <div style="border: 1px solid #ccc; padding: 10px; margin: 10px 0;"> <pre style="background-color: #e6f2ff; padding: 5px;">-Dcom.tibco.tibjms.naming.security_protocol=ssl</pre> </div> </li> </ol> </li> </ol>

Application Server	Steps
JBoss WildFly Application Server	<div style="border: 1px solid #ccc; padding: 10px; margin-bottom: 10px;"> <pre style="background-color: #f0f8ff; padding: 5px;">-Djsse.providerClass=com.ibm.jsse2.IBMJSSEProvider2  -Dcom.tibco.tibjms.ssl.expected_hostname=server  -Dcom.tibco.tibjms.ssl.enable_verify_host_name=false  -Dcom.tibco.tibjms.ssl.enable_verify_host=false  -Dcom.tibco.tibjms.ssl.trusted=/local/vsadmin/server_root.cert.pem</pre> </div> <p>Enter these arguments in a single line, separated by a single space.</p> <ol style="list-style-type: none"> <li>5. Log in to the Configurator and navigate to <b>InitialConfig &gt; Member1 &gt; Security Provider &gt; IBM</b> <ul style="list-style-type: none"> <li>• Change the value of SSL Protocol Handler Package property from:com.ibm.net.ssl.internal.www.protocolto com.ibm.net.ssl.www2.protocol</li> <li>• Change the value of SSL Provider property from:com.ibm.jsse.JSSEProvider to com.ibm.jsse2.IBMJSSEProvider2</li> </ul> </li> <li>1. Create a module with name as com.tibco.mdm in JBoss WildFly application server - 26.0.0 version. For information about creating modules, see <a href="#">Module Creation</a>.</li> <li>2. Copy the following JAR files in this module (inside the main directory) from \$EMS_HOME/lib <ul style="list-style-type: none"> <li>• slf4j-api-1.4.2.jar</li> <li>• slf4j-simple-1.4.2.jar</li> </ul> </li> <li>3. Copy the following JAR files in this module. The JAR files are available in the classpath of the JBoss WildFly application server or</li> </ol>

Application Server	Steps
--------------------	-------

in JAVA\_HOME\jre\lib directory:

- jsse.jar
- jce.jar

4. Update the module.xml file as follows:

```
<module xmlns="urn:jboss:module:1.3" name="com.tibco.mdm">  
  
<resources>  
  
<resource-root path="slf4j-api-1.4.2.jar"/>  
  
<resource-root path="slf4j-simple-1.4.2.jar"/>  
  
<!-- if these 2 JARS copied in the module then add -->  
  
<resource-root path="jsse.jar"/>  
  
<resource-root path="jce.jar"/>  
  
</resources>  
  
<dependencies>  
  
<module name="javax.api" />  
  
<module name="javax.jms.api" />  
  
<module name="javax.resource.api" />
```

**Application  
Server****Steps**

```
<!-- These are required for EMS with SSL -->
```

```
<system export="true">
```

```
<paths>
```

```
<path name="sun/security/ssl" />
```

```
<path name="com/sun/net/ssl/internal/ssl" />
```

```
<path name="sun/security/util" />
```

```
<path name="sun/security/validator" />
```

```
<path name="sun/security/provider" />
```

```
<path name="javax/net/ssl" />
```

```
<path name="sun/net/www/protocol/https" />
```

```
</paths>
```

```
</system>
```

```
</dependencies>
```

5. Add the global module in subsystem section `<subsystem xmlns="urn:jboss:domain:ee:4.0">` in `JBOSS_HOME/standalone/configuration/standalone.xml`.

Application Server	Steps
--------------------	-------

```
<subsystem xmlns="urn:jboss:domain:ee:4.0">  
  
  <global-modules>  
  
    <module name="com.tibco.mdm" slot="main"/>  
  
  </global-modules>  
  
</subsystem>
```

OR

Add a dependency in jboss-deployment-structure.xml in ECM.ear/META-INF in dependency section:

```
<dependencies>  
  
  <system export="true">  
  
    <paths>  
  
      <path name="com/sun/net/ssl/internal/ssl" />  
  
    </paths>  
  
  </system>  
  
  <module name="com.tibco.mdm"/>
```

Application Server	Steps
	<div><pre>&lt;/dependencies&gt;</pre></div> <p>6. Add the following in the JVM arguments in <code>\$JBOSS_HOME/bin/standalone.conf.bat</code></p> <div><pre>-Dcom.tibco.tibjms.ssl.enable_verify_host_name=false  -Dcom.tibco.tibjms.ssl.enable_verify_host=true  -Dcom.tibco.tibjms.ssl.expected_hostname=server  -Dcom.tibco.tibjms.ssl.trusted=\$EMS_HOME/samples/certs/server_root.cert.pem</pre></div>

Specify the values for the TIBCO EMS configuration properties in the Configurator.

1. Log in to the Configurator.
2. Navigate to **Queue Setup > Messaging Cluster > TIBCO EMS**.  
Change the value of Localhost Server Connection String property to `ssl://hostname:portno`
3. Navigate to **Bus Setup > Cluster > TIBCO EMS**.
4. Change the value of Localhost Server Connection String property to `ssl://hostname:portno`

#### What to do next

1. Start the application server.
2. Log in to TIBCO MDM.

TIBCO MDM starts running on SSL.

## Deploying TIBCO MDM on WebSphere Application Server

After configuring TIBCO MDM with WebSphere Application Server, deploy TIBCO MDM.

### Procedure

1. In the left panel, expand **Applications** and click **New Application**. The New Application panel is displayed on the right.
2. Under Install a New Application, click the **New Enterprise Application** link. The Preparing for the application installation window is displayed.
3. Under Path to the new application, click **Browse**. The Choose File to Upload window is displayed.
4. Browse to the path of the ECM.ear file located in \$MQ\_HOME. Click **Next**.

**i Note:** If you have a ECM.ear file located at the remote location, you can select the file path using the Remote file system option.

5. Under How do you want to install the application?, select the **Detailed - Show all installation options and parameters** option, and then click **Next**. The Application Security Warnings are displayed.
6. Click **Continue**. The Install New Application window is displayed with the Select installation options window.
7. Click **Next**. The Map modules to servers window is displayed. Verify that Cluster and servers are properly selected.
8. Click **Next**. The Provide JSP reloading options for Web modules window is displayed.
9. Click **Next**. The Map shared libraries window is displayed.
10. Click **Next**. The Map shared library relationships window is displayed.
11. Click **Next**. The Initialize parameters for servlets window is displayed.
12. Click **Next**. The Provide JNDI names for beans window is displayed. Verify that all JNDI names are pre-populated.

13. Click **Next**. The Map virtual hosts for Web modules window is displayed.
14. Click **Next**. The Map context roots for Web modules window is displayed.
15. Click **Next**. The Map JASPI provider window is displayed.
16. Click **Next**. The Ensure all unprotected 2.x methods have the correct level of protection window is displayed with installation options summary.
17. Click **Next**. The Metadata for modules window is displayed.
18. Click **Next**. The Display module build Ids window is displayed.
19. Click **Next**. The Summary window is displayed.
20. Click **Finish**.
21. After installing, click **Save**.

After a successful startup, a confirmation message is displayed in the log file located at \$WAS\_HOME/logs.

**i** **Note:** You can also verify if the application is installed successfully using the following URL: `http://hostname:port_number/eml/Login`, For example: `http://localhost:9081/eml/Login`

## Setting Class Loader Policy

After deploying TIBCO MDM on Websphere Application Server, set the class loader policy.

### Procedure

1. In the left panel, expand **Servers > Server Types** and click **WebSphere application servers**.  
The Application servers panel is displayed on the right.
2. Under Preferences, click *servername*.  
For example, **server1**. The **Configuration** tab is displayed.
3. Under Applications, click the **Installed applications** link.
4. Under Preferences, click the *application name*. For example, **ECM**.
5. Under Detail Properties, click the **Class loading and update detection** link.

The **Configuration** tab is displayed.

6. Under **Class Loader** order, select the **Classes loaded with local class loader first (parent last)** option.
7. Under **WAR class loader policy**, ensure that the **Class loader for each WAR file in application** option is selected.
8. Click **Apply**, and then click **OK**.

The class loader policy settings are saved a message is displayed with the **Save** and **Review** options.

9. Click the **Save** link to save changes to the master configuration.

## Specifying MIME Types

After setting the class loader policy to parent last, configure the MIME types.

### Procedure

1. In the left panel, expand **Environment** and click **Virtual Hosts**. The **Virtual Hosts** panel is displayed on the right.
2. Under **Preferences**, click the virtual host link where ECM is installed. For example, **default\_host**. The **Configuration** tab is displayed.
3. Under **Additional Properties**, click the **MIME Types** link. A list of MIME types is displayed.
4. Under **Preferences**, click the **New** button. The **Configuration** tab is displayed.
5. Under **General Properties**,
  - In the **MIME Type** field, enter **application/xml**.
  - In the **Extensions** field, enter **xslt**.
6. Click the **OK** button. A message is displayed with the **Save** and **Review** options.
7. Click the **Save** link to save changes to the master configuration.

## Enabling Cookies

TIBCO MDM uses a cookie to keep track of menus selected by the user. The business sensitive information stored in the cookies should be kept confidential and sent only over


a secure link. Make cookies secure by requiring them to be transmitted only over secure links and to the appropriate location.

### Procedure

1. In the left panel, expand **Servers > Server Types** and click **WebSphere application servers**. The Application servers panel is displayed on the right.
2. Under Preferences, click *servername*. The **Configuration** tab is displayed.
3. Under Container Settings, expand **Web Container Settings** and click the **Web container** link. The **Configuration** tab is displayed.
4. Under Additional Properties, click the **Session management** link. The **Configuration** tab is displayed.
5. Under General Properties, click the **Enable cookies** check box. The **Configuration** tab for Cookies is displayed.
6. For the JSESSIONID cookie property, enter the domain and path in the Cookie domain and Cookie path fields for which session tracking cookie should be sent.
7. Click the **Restrict cookies to HTTPS sessions** check box to restrict session cookies to HTTPS sessions.
8. Click the **OK** button. A message is displayed with the Save and Review options.
9. Click the **Save** link to save changes to the master configuration.

## Enabling URL Rewriting

You need to enable URL rewriting to send web service requests with JessionID and if the installation does not support cookies.

 **Note:** TIBCO MDM recommends that cookies are enabled.

### Procedure

1. In the left panel, expand **Servers > Server Types** and click **WebSphere application servers**. The Application servers panel is displayed on the right.
2. Under Preferences, click *servername*. The **Configuration** tab is displayed.
3. Under Container Settings, click the **Session management** link. The **Configuration**

tab is displayed.

4. Under General Properties,
  - Select the **Enable cookies** and **Enable URL rewriting** check boxes.
5. Click the **OK** button. A message is displayed with the **Save** and **Review** options.
6. Click the **Save** link to save changes to the master configuration.

## Troubleshooting with WebSphere Application Server

Resolve the errors that you may come across while working with the WebSphere Application Server.

### *Troubleshooting with WebSphere Application Server*

Issue	Description	Solution
Error Creating Catalogs and Data Sources After Installation	<ul style="list-style-type: none"> <li>• Error during catalog creation through the UI.</li> <li>• Catalog attributes not defined.</li> <li>• Error during data source creation through the UI.</li> <li>• Data source -1 could not be loaded.</li> </ul>	<p>Using the WebSphere Administrative Console, select <b>Servers &gt; Application Servers &gt; server1 &gt; Container Services &gt; ORB Service</b>, then select the <b>Pass by Reference</b> check box.</p> <p><b>Background Information:</b> If these errors are seen while creating data sources and catalogs, the WebSphere configuration may be incorrect. In WebSphere, the ORB Service should have the <b>Pass by Reference</b> check box selected.</p> <p>You can also check this value by viewing the WebSphere configuration <code>server.xml</code> file for your application server. Look at the following XML element and check if the <b>noLocalCopies</b> attribute is set to true:</p> <pre>\$WAS_HOME/profiles/&lt;profile name&gt;/config/cells/&lt;cell name&gt;/nodes/&lt;node name&gt;/servers/server1/server.xml&lt;services xmi:type="orb:ObjectRequestBroker" xmi:id="ObjectRequestBroker_&lt;id&gt;" enable="true" requestTimeout="180" requestRetriesCount="1"</pre>

Issue	Description	Solution
Login Screen Not Visible and Logs Show “Naming service not available” Error	The Naming service not available error is displayed in the log file and the Login page is not visible.	<pre>requestRetriesDelay="0" connectionCacheMaximum="240" connectionCacheMinimum="100" commTraceEnabled="false" locateRequestTimeout="180" forceTunnel="never" noLocalCopies="true"&gt;</pre> <p>This usually happens when a wrong IOP port number is specified in the Configurator. When WebSphere starts, in the SystemOut.log, you should see the following output:</p> <pre>[7/27/04 15:28:28:451 PDT] 7b04ccd1 HttpTransport A SRVE0171I: Transport http is listening on port 9,083. [7/27/04 15:28:28:503 PDT] 7b04ccd1 RMIConnectorC A ADMC0026I: RMI Connector available at port 2810</pre> <p>In this example, the 2810 port number should be used for the JNDI Naming Service URL property in the Configurator (<b>Application Server &gt; WEBSPPHERE</b>).</p>
Cannot Log In After Installation	You have the login page and your seed data is good but you cannot log in.	This means your security provider is invalid. You can fix this by changing your security provider class name in the Configurator. The default security provider is SUN. If you are using WebSphere Application Server, select IBM as the security provider.
Enabling Memory Allocation Trace	Memory allocation tracing may be requested by TIBCO Customer Support for analysis of certain problems.	<p>Set up the tracing as follows:</p> <p><b>Environment &gt; WebSphere Variables.</b> Select the server.</p> <p>Create the following environment entries:</p>

Issue	Description	Solution
Enabling Garbage Collection Data Logging	If you are experiencing memory usage issues, TIBCO Customer Support may request for collection of garbage collection statistics.	<div style="background-color: #e6f2ff; padding: 5px;"> <p>IBM_MALLOCTRACE - set value as 1  MALLOC_TRACE - set value to  \$WAS_HOME/profiles/&lt;profilename&gt;/logs/server1/mt  race.log</p> </div> <p>Substitute the absolute directory name for \$WAS_HOME.</p>
Failed Reflecting Values Error	The IWAV0002E Failed reflecting values warning is displayed when TIBCO MDM is installed on WebSphere Application Server.	<p>To enable garbage collection data collection, change the JVM settings as follows:</p> <p><b>Servers &gt; Application Server &gt; &lt;servername&gt; &gt; Server Infrastructure &gt; Java and Process Management &gt; Process Definition &gt; Java Virtual Machine.</b>Select the <b>Verbose garbage collection</b> check box against it.</p> <p>The garbage collection data is stored in  \$WAS_HOME/profiles/&lt;profilename&gt;/logs/server1/native_stderr.log</p>
Incorrect Startup Message Error	When TIBCO MDM is deployed on the WebSphere Application Server, if for some reason the TIBCO MDM application does not start up because of initialization	None. If the user in such a scenario hits the TIBCO MDM login page URL, initialization errors may be listed on that page.

Issue	Description	Solution
	errors, the WebSphere Application Server UI still shows the application status as Started.	
The TIBCO MDM server failed to start	The TIBCO MDM server failed to start and showed the following error message: java.lang.NoClassDefFoundError: javax.jms.JMSContext exception	<ol style="list-style-type: none"> <li>1. Navigate to \$EMS_HOME/lib directory.</li> <li>2. Copy the jms-2.0.jar file.</li> <li>3. Navigate to \$MQ_HOME/ECM.ear and place the jms-2.0.jar file.</li> <li>4. Navigate to \$MQ_HOME/ECM.ear/EML.war/META-INF directory.</li> <li>5. Open the MANIFEST.MF file and append the &lt;space&gt; jms-2.0.jar file name.</li> <li>6. Save the MANIFEST.MF file.</li> <li>7. Deploy the updated ECM.ear file in the WebSphere application server.</li> <li>8. Restart the WebSphere application server.</li> </ol>
An exception on the WebSphere Application Server startup	The WebAppNotLoadedException occurs on the WebSphere Application Server startup	After deploying TIBCO MDM on Websphere Application Server, ensure that the <b>Class loader for each WAR file in application</b> option is selected by the class loader policy. For information, see the "Setting Class Loader Policy" section in <i>TIBCO MDM Installation and Configuration</i> .

# Performing Postinstallation Tasks for Typical Installation

You need to merge third party libraries with ECM.ear that you have created for the WebSphere and WebLogic application servers and manually copy TIBCO EMS libraries that are not shipped with the product due to Licensing restrictions.

## Procedure

1. Merge Third Party Libraries with ECM.ear.
  - a. Go to \$MQ\_HOME/build/custom.
  - b. Execute customUtil.bat or customUtil.sh-mergeExternalLibrary.  
This command creates the thirdPartyLibrary folder in \$MQ\_HOME.
  - c. Copy the consolidated third party JAR file (ThirdParty.jar) to this folder and enter y to proceed for merging. For information about creating a consolidated JAR file, see [Creating a Consolidated JAR File with Third-Party Libraries](#).  
Continue and complete the script. The updated ECM.ear is placed in \$MQ\_HOME.
2. Copy EMS Libraries.
  - a. Copy the tibjms.jar and jms-2.0.jar from \$EMS\_HOME/lib to \$MQ\_HOME/lib/external directory.



**Warning:** If you do not copy the tibjms.jar and jms-2.0.jar files in \$MQ\_HOME/lib/external directory, the utilities do not work.

## Troubleshooting with Typical Installation

If you encounter an issue while installing TIBCO MDM, you may resolve the issues by completing the common troubleshooting procedures.

*Troubleshooting with Typical Installation*

Issue	Description	Solution
Display Cannot be Opened	<p>The UNIX installer terminates with the following error message:</p> <p>Could not open display</p>	<p>If you run the UNIX installer in a graphical mode, your local display has to be specified to the server. This local display needs to have a X Windows client installed. The local display is typically indicated to the server by specifying the DISPLAY environment variable. For example, on a bash shell: <code>export DISPLAY=client host name:0.0</code></p> <p>The X windows client also requires that the connection from the server is authorized. To enable the authorization, see the X Windows client documentation. On many X Windows clients, the authorization can be granted by using the Xhost command. For example:</p> <p>Xhost +</p>
Installer Terminates	<p>The installer terminates without any error message.</p>	<p>The installer creates a detailed time stamped log file in one of the following places:</p> <ul style="list-style-type: none"> <li>• If TIBCO_HOME did not exist at install time, the log file is created in the temp directory of the user in a.TIBCO sub folder.</li> <li>• If TIBCO_HOME exists, the log file is created in the \$TIBCO_HOME/log folder.</li> </ul> <p>Check the log file for any errors and then contact TIBCO Technical Support.</p> <p>You can also run the installer with the installer log enabled using the -is:log option. For example:</p> <pre>./TIBCOUniversallInstaller-lnx-x86.bin -is:javahome -is:log path/log.dat</pre>

## WebSphere, Oracle, EMS, and IBM HTTP

Follow the instructions to install TIBCO MDM on WebSphere application server, Oracle database, TIBCO EMS, and IBM HTTP web server:

1. [Installation Overview](#)
  - a. [Prerequisites for Installation](#)
  - b. [Additional Software Components](#)
  - c. [Third Party Libraries](#)
  - d. [Hardware Configuration](#)
  - e. [Environment Variables](#)
2. [Supported Databases](#)
3. [Database Sizing Requirements](#)
4. [Installing TIBCO MDM \(Typical Installation\)](#)
5. [Configuration of Oracle Database](#)
  - a. [Creating Tablespaces](#)
  - b. [Installing Seed Data Using Database Setup Wizard](#)
  - c. [Troubleshooting with Oracle Database](#)
6. [Creating TIBCO EMS Queues and Topics](#)
  - a. [Verifying Queues and Topics](#)
7. [Configuring TIBCO MDM for WebSphere Application Server](#)
  - a. [Configuring EMS over SSL on Application Servers](#)
  - b. [Deploying TIBCO MDM on WebSphere Application Server](#)
  - c. [Setting Class Loader Policy](#)
  - d. [Specifying MIME Types](#)
  - e. [Enabling Cookies](#)
  - f. [Enabling URL Rewriting](#)
  - g. [Troubleshooting with WebSphere Application Server](#)
8. [Configuring IBM HTTP Web Server with WebSphere](#)
9. [Performing Postinstallation Tasks for Typical Installation](#)
10. [Troubleshooting with Typical Installation](#)

## Installation Overview

Download TIBCO MDM from the [TIBCO eDelivery](#) website . To login, you need user name and password. If you have not received a user name and password, contact TIBCO Technical Support. After you download TIBCO MDM, install it using the installer provided.

### Default Installation Directory

- **Microsoft Windows** The default installation location is  $\$TIBCO\_HOME$  where all TIBCO products are installed. Typically,  $\$TIBCO\_HOME$  is at `c:\tibco`.
- **UNIX** The default installation directory depends on who performs the installation:
  - For root users, the default installation directory is `/opt/tibco`.
  - For non-root users, the default installation directory is `/myhome/tibco`, where *myhome* is the home directory of the user.

### Installer Disk Space Requirements in Temporary Area

- **Microsoft Windows Platforms** The entire package is extracted into a temp folder (minimum requirements 40 GB and 4 GB RAM), typically `SystemDrive:\Temp` or `SystemDrive:\Documents and Settings\user_name\Local Settings\Temp`.
- **UNIX Platforms** The installer launcher first extracts a Java Virtual Machine (JVM) in a temporary directory (minimum requirements 40 GB and 4 GB RAM) and uses this JVM to launch itself. The size of the extracted JVM differs from platform to platform. You can select the temporary area using the following option when starting the installer: `install_package_name.sh -is:tempdir /temp_area`

## Prerequisites for Installation

Before you start the TIBCO MDM installation, ensure that your system meets all of the requirements.

*Prerequisites*

Software Component	Description
<b>JDK</b>	<p>TIBCO MDM is certified with Oracle Java and AdoptOpenJDK.</p> <ul style="list-style-type: none"> <li>TIBCO MDM bundles Oracle Java with the installer. The bundled Oracle Java is located under TIBCO MDM installation home (<i>TIBCO_HOME</i>tibcojre64\11). You do not need to download Java from the Oracle download site. If any updates to Java 11, TIBCO MDM continues to ship through the hotfix installers.</li> <li>To install AdoptOpenJDK, download the executable file from the <a href="#">AdoptOpenJDK</a> site and install it at the appropriate location.</li> </ul> <p>Ensure that the <i>JAVA_HOME</i> environment variable has been set correctly.</p> <ul style="list-style-type: none"> <li>For the JBossEAP, JBoss WildFly, and WebLogic application servers, TIBCO MDM supports Java 11.</li> <li>For WebSphere application server, TIBCO MDM supports Java 1.8.</li> </ul> <p>Consult the readme shipped with your installation of TIBCO MDM for the most up-to-date software requirements.</p>
<b>JMS Server</b>	<p>The JMS Server must be installed and running with the required queues and topics created</p>
<b>Application Server - For Typical install only</b>	<p>The Application Server must be installed and running with the correct service packs applied.</p> <p>For IBM WebSphere, make sure that JDK patch level matches the application server fix pack level.</p>
<b>Database - For Typical install only</b>	<p>The Database server must be ready with either Oracle, PostgreSQL, or SQL Server installed and must have a user account with full privileges for the database. It is also recommended that a second user be created, but with restricted privileges.</p>
<b>Client - For Typical install only</b>	<p>The client for the database must be installed on the TIBCO MDM system machine and must have access to Java JDBC connectors. The SQL Server client is required for creating new seed data. However, we do not need clients for the PostgreSQL database.</p>

Software Component	Description
	Oracle Client Software should be Developer Edition or Enterprise Edition and must be on the computer hosting the application server. TIBCO MDM uses the sqlldr utility shipped with these Oracle Client Software editions.
Web Server - For Typical install only	Web server is optional and is needed only if you do not plan to use direct URL access to the application server. If the Web server is going to be used, install it first.
Cache Server - For Typical install only	Cache server is optional and is needed only if a centralized cache server is proposed. Make sure the cache server is installed (but not running).  <b>Note:</b> For information about the Cache server, see <a href="#">Enable Apache Ignite for TIBCO MDM</a> .

## Additional Software Components

TIBCO MDM requires additional software components as listed in the following table. The requirements of components depend on your installation choices and supported platforms. For a complete list of versions and platforms supported, see the *Readme.txt* file.

### Required Components

Component to Install	Supported options	For more information, see:
JDK	<ul style="list-style-type: none"> <li>For WebSphere application server, use JDK 1.8.</li> <li>For JBoss WildFly and WebLogic application servers, use JDK 11.</li> </ul>	<ul style="list-style-type: none"> <li><a href="#">Installation Overview</a></li> </ul>
Database Install and configure a database.	<ul style="list-style-type: none"> <li>Oracle</li> <li>Microsoft SQL Server</li> <li>PostgreSQL</li> </ul>	<ul style="list-style-type: none"> <li><a href="#">Configuration of Oracle Database</a></li> <li><a href="#">Configuration of SQL Server Database</a></li> </ul>

Component to Install	Supported options	For more information, see:
		<ul style="list-style-type: none"> <li>• <a href="#">Simple Installation with PostgreSQL</a></li> </ul>
Database Client	<ul style="list-style-type: none"> <li>• Oracle</li> <li>• Microsoft SQL Server</li> </ul>	
<b>JMS Server</b> Configure a JMS Server	<ul style="list-style-type: none"> <li>• TIBCO Enterprise Messaging Service</li> </ul>	<ul style="list-style-type: none"> <li>• <a href="#">Creating TIBCO EMS Queues and Topics</a></li> </ul>
<b>Application Server</b> Configure a supported Application Server.	<ul style="list-style-type: none"> <li>• Websphere with or without Websphere ND</li> <li>• Weblogic</li> <li>• JBoss WildFly</li> </ul>	<ul style="list-style-type: none"> <li>• <a href="#">Configuring TIBCO MDM for WebSphere Application Server</a></li> <li>• <a href="#">Configuring TIBCO MDM for WebLogic Application Server</a></li> <li>• <a href="#">Configuring TIBCO MDM for JBoss WildFly Application Server</a></li> </ul>

### Optional Components

	Component to Install	Supported options	For more information, see:
1.	<b>AS2 Gateway</b> Configure AS2 Gateway for secure communication with other systems. (required only for GDSN mode or external communication).	<ul style="list-style-type: none"> <li>• Any AS2 Server (such as TIBCO BusinessConnect)</li> </ul>	<a href="#">Configuration of TIBCO BusinessConnect and TIBCO BusinessWorks</a> Details for configuring TIBCO BusinessConnect. See appropriate documentation for other gateways.

	Component to Install	Supported options	For more information, see:
2.	<b>Cache Server</b> Configure a cache Server.	Apache Ignite	<a href="#">Configuration Properties of Apache Ignite</a>
3.	<b>Web Server</b> Configure a supported Web Server to connect to the application server.	<ul style="list-style-type: none"> <li>• IBM HTTP</li> <li>• Apache Server</li> <li>• Microsoft IIS</li> </ul>	<a href="#">Configuration of Web Servers</a>
4.	<b>X Server</b> Configure to upload images for any records maintained using TIBCO MDM.	<a href="#">RealVNC</a>	<a href="#">Installing X Server</a>

## Third Party Libraries

In addition to the distribution provided by TIBCO, MDM requires additional software. This software must be provided for the installation and might have different licensing.

This table lists all the software which might be required.

### *Third Party Libraries*

Library	Library Name	Description
JDK Library	jsse.jar	Required, if you will be using SSL.  Can be obtained from JDK.  Vendor: ORACLE/IBM/HP
XMLC related Libraries	xmlc.jar, xmlc-base.jar, xmlc- html.jar, xmlc-taskdef.jar, xmlc- xerces.jar, xmlc-all-runtime.jar, and Sunec.jar	Required for TIBCO MDM UI.  Click the <b>XMLC Download</b> link under the TIBCO MDM area at the <a href="#">eDelivery site</a> to download the xmlc-2.2.x.zip.

Library	Library Name	Description
		You can choose to download the library or let the installer download the library during the installation process.
	gnu-regexp.jar	Required for compiling HTML.
EMS related Libraries	tibjms.jar and jms-2.0.jar	<p>Required, if you are using TIBCO EMS as a JMS vendor.</p> <p>The libraries can be obtained from the installation directory of TIBCO EMS (pointed by EMS_HOME).</p>

**Note:** EMS libraries are not applicable for the PostgreSQL database.

JDBC related Libraries	ojdbc8.jar mssql-jdbc-7.2.2.jre11.jar postgresql-42.2.11.jar	<ul style="list-style-type: none"> <li>ojdbc8.jar is required for Oracle.</li> <li>mssql-jdbc-7.2.2.jre11.jar ( Microsoft JDBC Driver 7.2 for SQL Server, Java Development Kit (JDK) 11.0 ) is required for Microsoft SQL Server.</li> <li>postgresql-42.2.11.jar is required for PostgreSQL. (Not required if you are using Simple Installation)</li> </ul> <p>Copy the following JAR files to <i>\$MQ_HOME/configurator/server/configurator/lib/ext</i>.</p> <ul style="list-style-type: none"> <li>ojdbc8.jar copy from <i>\$ORACLE_HOME/jdbc/lib</i>.</li> <li>Download the mssql-jdbc-7.2.2.jre11.jar ( Microsoft JDBC Driver 7.2 for SQL Server, Java Development Kit (JDK) 11.0 ) file from <a href="#">Microsoft Download Center</a>.</li> <li>postgresql-42.2.11.jar file copy from <i>\$MQ_HOME/bin/pgsql/driver</i></li> </ul>
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Library	Library Name	Description
Hibernate Assembly	hibern-ate3.jar and cglib-2.2.jar	<p>Required by TIBCO MDM for some database interactions.</p> <p>You can choose to download the library or let the installer download the library during the installation process.</p> <p>Click the <b>Download</b> link under the TIBCO MDM area at the <a href="#">eDelivery site</a> to download the product_tibco_hibernate_lgpl_3.6.10.003.zip.</p>

All the required libraries are to be added to the distribution provided (ECM.ear) with TIBCO MDM.

## Hardware Configuration

The following table lists sample hardware configurations. Additional memory may be required to accommodate data caching needs.

### Hardware Configurations

Configuration	Quantity	Type			Memory
		Sun	IBM	Intel	
<b>Low End</b>					
Single machine for web server, application server, and DB server	1	Sun Fire X4100 - 2 CPU	IBM xSeries 2 CPU (AMD or Xeon) or equivalent	Xeon 2GHz, 2 CPU	4 GB RAM, 50 - 100 GB disk  8 GB RAM and Dual core processors are recommended to achieve increased throughput.
<b>Mid-range / Mid-range clustered</b>					

Configuration	Quantity	Type			Memory
		Sun	IBM	Intel	
Web server	1	Sun Fire x2100 or Sun Fire x4100 equivalent, 1-2 CPU	IBM xSeries 1-2 CPU or pSeries entry level servers	Xeon 2 GHz, 1 CPU	1 GB RAM, 36 GB internal disk
Application server	1-2	Sun Fire x4100 2 CPU with Dual core processors or Sun Fire V240 with 4 CPU	IBM i520 or IBM 630 with 2-4 core/CPU	Xeon 3 GHz, 2-4 CPU	4- 6 GB RAM, 36 GB disk  8 GB RAM and dual core processors are recommended for higher throughput.
Database server	1	Sun Fire 445 or equivalent with 2-4 CPU	IBM i520 or P630 with 2-4 Core/CPU	Xeon 3 GHz, 2-4 CPU	6-8 GB RAM, 200-500 GB disk.
Storage	1				Disk array, disks of 100 - 200 GB.
<b>High-end</b>					
Web server	1-2	Sun Fire, V100, 1-2 CPU	IBM P610, 1-2 CPU	Xeon 2 GHz, 1-2 CPU	2 GB RAM, 36 GB internal disks
Application server	2-4	Sun Fire V490 with 4 CPU or Sun Fire x4100	IBM P650, 4-8 CPU	Xeon 3 GHz, 4-8 CPU	6-8 GB RAM, 40 GB disk for each server

Configuration	Quantity	Type			Memory
		Sun	IBM	Intel	
		with 2 CPU dual core			12 GB RAM recommended for higher throughput.
Database server	1	Sun Fire V4800, 4-8 CPU	IBM P650, 4-8 CPU	Xeon 3 GHz, 4-8 CPU	Minimum 12 GB RAM 400-600 GB disk.
Storage	1				Disk array, disks of 200 to 500+ GBb.

The hardware required depends on many factors including, number of concurrent users, usage patterns, retention of history and rate of change for the data. A more accurate capacity planning exercise should be done based on detailed scenario tests done in performance labs.

Contact TIBCO Professional Services or TIBCO Customer support for more details on how to calculate the required hardware. It is recommended that any production hardware planning must be done using scenario based testing results. A sample capacity planning worksheet can be obtained from TIBCO Customer Support.

## Environment Variables

You must set the important environment variables before installing TIBCO MDM.

**i** Note:

- It is recommended that you use ASCII characters for all file names. If these names include non-ASCII characters, copying the files from Windows to UNIX or Linux and vice versa may result in corruption of file names.
- While setting environment variables on all platforms, if the ‘\’ character is used as a path separator instead of ‘/’, it leads to errors as ‘\’ is treated as an escape character.
- For Simple install, set only `JAVA_HOME` environment variable.
- For Typical install, set all the environment variables mentioned in the Environment Variables table.

*Environment Variables*

Variable	Description
<code>MQ_HOME</code>	<p>Define <code>MQ_HOME</code> to point to the installation directory. It is recommended that you allocate at least 8 GB to this directory. In a clustered environment, each application server should point to a separate location.</p> <p>Example: <code>/home/tibco/mdm/version</code></p>
<code>MQ_LOG</code>	<p>The location where log files will be generated (the recommended location is <code>\$MQ_HOME/log</code>). In a clustered environment, each server should point to a separate location. Define <code>MQ_LOG</code> to point to this directory. A minimum of 1 GB should be allocated to this directory. The best practice is to change the default location such that the directory is not a subdirectory of <code>MQ_HOME</code>.</p> <p>Example: <code>\$MQ_HOME/log</code></p>
<code>MQ_COMMON_DIR</code>	<p>All standard configurations files for workflow and data validation as well as all customizations are stored in this directory. This directory also holds all files generated during normal application processing. It is shared by all application servers in the cluster, and should be mounted to each server. All disk space indicated in the section <a href="#">Hardware Configuration</a> should be assigned to this directory, and the <code>MQ_</code></p>

Variable	Description
	<p>COMMON_DIR variable should be set. The best practice is to change the default location such that the directory is not a subdirectory of MQ_HOME.</p> <p>Example: <code>/home/tibco/mdm/version/common</code></p> <p>If you plan to create a copy of the TIBCO MDM instance across operating systems (for instance, Linux to Windows or Windows to Linux) and if the path contains any non English characters, such a copy may not be possible. For example, using Japanese characters in the path.</p>
<i>MQ_CONFIG_FILE</i>	<p>Points to <code>\$MQ_HOME/config/ConfigValues.xml</code>. The values/parameters in this file can be set using the Configurator.</p> <p>Example: <code>/home/tibco/mdm/version/config/ConfigValues.xml</code></p>
<i>JAVA_HOME</i>	<p>The directory where JRE/JDK is installed.</p> <p>Example: <code>/opt/jdkversion</code></p>
<i>EMS_HOME</i>	<p>The directory where TIBCO EMS (or the messaging software) is installed.</p> <p>Example: <code>/home/tibco/ems</code></p>
<i>ANT_HOME</i>	<p>The Directory path where ant is installed.</p> <p>Example: <code>/opt/antversion</code></p>
MQ_HTTP_SESSION_REPLICATION_ENABLED	<p>If you use multiple nodes and want to replicate the session, then set the value of the MQ_HTTP_SESSION_REPLICATION_ENABLED environment variable to <b>true</b> to enable the session replication.</p>
MDM_DB_USE_SERVICENAME	<p>Specify this variable when you are connecting to the database by using the Configurator and when you are running TIBCO MDM on container platforms.</p> <ul style="list-style-type: none"> <li>• Set to <b>true</b> to connect to the Oracle database by using the service name</li> <li>• Set to <b>false</b> to connect to the Oracle database by using SID</li> </ul>

Variable	Description
	For more information, see <a href="#">Connecting to Database Using SID and Service Name</a> .
MDMPORT	Port number on which the TIBCO MDM node is running.
PROTOCOL	Specifies a protocol such as http or https to access the TIBCO MDM node. By default, the http protocol is used.
<b>Application Server Specific</b>	
<i>WAS_HOME</i>	The directory where WebSphere is installed (required <i>only</i> if using WebSphere).  Example: /opt/WebSphere/AppServer
<i>JBOSS_HOME</i>	For JBoss WildFly Application Server. Specify the path value until the root of the WildFly directory.  Example, E:\JBoss\wildfly- <i>version</i> .Final.
<i>JBOSS_HOME</i> (Simple Install)	The directory where JBOSS is installed (required only if using simple installation).  Example: %MQ_HOME%\bin\wildfly- <i>version</i> .Final
<i>WLS_HOME</i>	For WebLogic Application Server. Specify the path value of the WebLogic Application Server directory.  Example: <ul style="list-style-type: none"> <li>• For Linux: /opt/bea</li> <li>• For Windows: G:\WebLogic\wlserver_<i>version</i></li> </ul>
<b>Database Specific</b>	
<i>ORACLE_HOME</i>	For Oracle database. The directory where Oracle is installed.  Example: <ul style="list-style-type: none"> <li>• For Windows: /home/oracle/product/<i>version</i>/db_1</li> </ul>

Variable	Description
	<ul style="list-style-type: none"> <li>On UNIX: <code>\$export ORACLE_HOME=/u01/app/oracle/product/<i>version</i></code></li> </ul>
<code>LD_LIBRARY_PATH</code>	For Oracle database: <code>\$ORACLE_HOME/lib</code>
<code>NLS_LANG</code>	<p>For Oracle database. Example:</p> <ul style="list-style-type: none"> <li>On UNIX:           <pre>export NLS_LANG=AMERICAN_AMERICA.UTF8</pre> </li> <li>On Windows:           <pre>set NLS_LANG=AMERICAN_AMERICA.UTF8</pre> </li> </ul>
<code>POSTGRESQL_HOME</code>	<p>For PostgreSQL database. The directory where PostgreSQL is installed.</p> <p>Example: <code>\$MQ_HOME/bin/pgsql</code></p>
<code>OS</code>	The Operating system. For example, Linux.
<code>DISPLAY</code>	This environment variable is used by X-Windows based applications. It points to a device capable of displaying an X-Windows based UI.
<code>LD_ASSUME_KERNEL</code>	Used on the Linux platform to make Linux use the old Linux threads library, particularly required for Oracle installation (required <i>only</i> if Oracle is used as the database).
<code>PATH</code>	<p>This is a list of directories separated by a separator. When any command or program is executed, the OS tries to locate the program in the directories listed in PATH. If the program is not found in any of the directories, the OS cannot load and execute the program. The Separator character is ':' for Unix and Linux platforms, and ';' for the Windows platform.</p> <p>Ensure that there is no space with the commas and colons between the program in the directories listed which are separated by ':' for Unix and Linux platforms, and ';' for the Windows platform.</p>

Variable	Description
<code>SHLIB_PATH</code>	List of directories separated by a separator (see PATH) where a dynamic linker tries to find the libraries. Used on UNIX platforms.
<code>LIBPATH</code>	List of directories separated by a separator (see PATH) where the Operating system as well as the application library files reside. Used on UNIX platforms.
<code>NODE_ID</code>	Points to the current cluster member. Example: <code>NODE_ID=Member1</code>
<b>TIBCO MDM REST API through Swagger UI</b>	
<code>SWAGGER_MDM_HOST</code>	An IP address of the TIBCO MDM server on which you want to try out the TIBCO MDM REST APIs.
<code>SWAGGER_MDM_PORT</code>	Port of the TIBCO MDM server on which you want to try out the TIBCO MDM REST APIs.

## Supported Databases

Install any one of the following databases as per your requirement. For a list of versions and platforms supported, see the *Readme.txt* file shipped with installation of TIBCO MDM.

### Supported Databases

Database	Description	Site Reference
Oracle	Download the supported version of the Oracle database from the Oracle site and unzip it to the required location.	Install the Oracle server software as directed in the <a href="#">Oracle installation document</a> .
SQL Server	Download the latest version of Microsoft SQL Server from the following site and unzip it to the required location	Install the SQL Server software as directed in the appropriate <a href="#">SQL</a>

Database	Description	Site Reference
		<a href="#">installation document.</a>
PostgreSQL	The PostgreSQL database is installed with the Simple installation. You do not need to separately download it. For more information about simple installation, see <a href="#">Simple Installation with PostgreSQL.</a>	Not Applicable

## Database Sizing Requirements

The database sizing requirements include the minimal sizing requirements for `initdbname.ora` (`initemc50.ora`); for small, medium, and large databases.

### *Database Sizing Requirements*

Database Parameter Setting	Low-end	Mid-range	High-end
Db block size	8192	8192	8192
Db_file_multiblock_read_count	8	16	32
Shared pool size	75 MB	150 MB	200 MB*
Processes	(# of application servers)* (application server max db connection pool size) + 200		
Parallel max servers	2	4	5*
Log_buffers	25% of the system memory		

Database Parameter Setting	Low-end	Mid-range	High-end
Timed_statistics	True	True	True
Max_dump_file_size	5 MB	10 MB	20 MB
Rollback_segments	8 seg	16 seg	32 seg*
Open cursors	300	450	3000
Character set	UTF-8		
Buffer Pool Size	150 MB	300 MB	500 MB - 2 GB*
db_writer_processes	75% of the cpu_count parameter value		
Sessions	1.1* processes + 200		
optimizer_mode	ALL_ROWS		
shared_servers	# of dispatchers* 2		
Transactions	# sessions		

\* These values depend on various factors including concurrent users, message and workflow volumes, number of records, and so on. Your DBA should adjust these values based on the actual load and required performance characteristics.

## Installing TIBCO MDM (Typical Installation)


In the typical installation, the installer presents panels which you can select choices about the product location, and so on.

### Prerequisites

- Verify that your computer meets the System requirements. The system requirements are listed in the `readme.txt` file.
- Download the Installer. The application is available as a ZIP file.
- Extract the contents of the ZIP file to a folder on your computer.
- Search for the `TIBCOUniversalInstaller` application in the location where you have extracted the ZIP file.


## Procedure

1. Run the `TIBCOUniversalInstaller.exe` application. The TIBCO Universal Installer Welcome window is displayed.
2. Review the information and click **Next**. The license agreement is displayed.
3. Review the terms of the license agreement. If you agree with its terms, accept the license agreement and click **Next**.
4. In the Installation Profile Selection window, do one of the following:
  - a. Select **Create a new TIBCO\_HOME** option. A TIBCO installation environment is used for software installations and consists of a Name and Directory. Products installed into different installation environments do not share components; therefore you can keep product installations completely isolated from each other.
    - **Directory**: browse to the directory where the product needs to be installed and provide a unique environment name. Ensure that you have write permission to this directory.
    - **Name**: specify the environment name that is easy to identify your environment. For example, 'User Acceptance' or 'Procurement Department'.
  - a. If you have previously installed a TIBCO product using the Universal Installer, you can select **Use an existing TIBCO\_HOME**. By default, the installer detects the directory for your `TIBCO_HOME` and displays the path. For example, on Windows, the default installation directory is `c:\tibco`.

 **Note:** If you had installed the application earlier, the directory cannot be modified. For a new installation, the directory can be changed.

Click **Next**.

5. In the Installation Profile Selection window, by default, the **Typical** installation profile is selected.
  - a. If you check the **Customize Installation** check box, a list of components is enabled (**Executable Image** and **Common Configuration**).
  - b. Select your preferred options and click **Next**.
6. In the TIBCO MDM Configurator Tomcat Settings window, the default port values are displayed. You can change the default port values. Click **Next**.

 **Warning:** The specified port values must not be in use by another application. If you do not specify configuration information, Configurator does not start and you need to perform manual configuration. For more information about the Configurator, see [Configurator](#).

7. In the TIBCO Patterns - Search Settings window, the default user interface port value (required for Patterns GUI tomcat server) and Patterns server port value (required for Patterns binary) are displayed. You can change the default port values.
  - a. Select **Install as a Windows Service** check box if you want to install the Patterns server binary as a service.

Click **Next**.

8. In the TIBCO MDM Common Config Location window, select the common configuration location and click **Next**.

If you have selected the standard common configuration option, the default \$MQ\_HOME\common directory location is displayed. You can retain the location or change it by clicking **Browse**.

✓ **Tip:** The best practice is to assign a location separate from MQ\_HOME. TIBCO MDM creates files in this directory and it is better to keep it separate from MQ\_HOME. In a clustered environment, this directory should be shared for all instances.

i **Note:** If you do not specify the common configuration location, Configurator does not start and you need to perform the manual configuration. For information, see [Manually Configuring TIBCO MDM](#).

9. The HIBERNATE LGPL License Agreement window is displayed. If you agree with its terms, accept the license agreement, and click **Next**.
10. The LGPL Assembly Download window is displayed. Select one of the following options:
  - **Download HIBERNATE assembly from TIBCO:** if you are downloading the LGPL assembly for the first time, select this option. The HIBERNATE assembly is downloaded in the same folder as the installer. All the third party software which is used in the application and their licenses are downloaded.
  - **Provide the location for the assembly previously downloaded from TIBCO:** if you have previously downloaded the LGPL assembly, specify the folder in which you have downloaded the hibernate assembly. Browse to the directory where the assembly is previously downloaded and saved.


i **Note:** If the LGPL Assembly is already downloaded, the LGPL Assembly Download window is not displayed.

Click **Next**.

11. The XMLC LGPL License Agreement window is displayed. If you agree with its terms, accept the license agreement, and click **Next**.
12. Select the **Download XMLC assembly from TIBCO** option. The assembly gets downloaded in the same folder as the installer. Click **Next**.
13. The Oracle Elliptic Curve Library LGPL License Agreement window is displayed. If you agree with its terms, accept the license agreement, and click **Next**.
14. In LGPL Assembly Download window, select one of the following options:

- **Download Oracle Elliptic Curve Cryptography Library assembly from TIBCO:** if you select this option, the Cryptography assembly is downloaded and configured.
- **Provide the location for the assembly previously downloaded from TIBCO:** If you select this option, the **Oracle Elliptic Curve Cryptography Library Assembly Path** field is enabled. Click **Browse** to select the Cryptography assembly.

Click **Next**.

 **Note:** The steps 13 and 14 are applicable only for the JBoss WildFly application server with Oracle and SQL server database combination.

15. In the Pre-Install Summary window, review a list of the components that are going to be installed and the installation environment details and click **Next** to begin the installation process.
16. In the Post-Install Summary window, review a list of the components that are installed and the installation environment details. Click **Finish** to exit the wizard.

## Result

The following auto generated log files are created in the `C:\Users\username.TIBCO\install_currentyear-currentmonth-currentdate.uniqueID` folder: Using the log files, you can troubleshoot for errors in the installation process.

- `antTask_log_installerConfig_currentyear-currentmonth-currentdate.uniqueID`: consists of configuration related logs.
- `antTask_log_installerMergeXMLC_currentyear-currentmonth-currentdate.uniqueID`: consists of the XMLC merge related logs.
- `tibco_universal_installer.username_install`: consists of installer related logs.
- `antTask_log_updateEARToIncludeHibernateLib_currentyear-currentmonth-currentdate.uniqueID`: consists of ECM.ear file related logs.

## Configuration of Oracle Database

To configure the Oracle database, use the Oracle Configuration Assistant. Consult your Database Administrator on standard practices followed by your IT department to change the recommended structure according to your needs.

## Prerequisites

- Ensure that all required environment variables are set. See [Environment Variables](#).
- Ensure that Oracle Client Software Developer Edition or Enterprise Edition is installed on the computer hosting the application server ().
- Ensure that the sqlldr utility is available.
- Use the latest driver provided by Oracle.
- A valid and tested connect string should be present in the TNSNAMES.ora file. For example, the connection URL: jdbc:oracle:oci:@ORACLERAC  
where ORACLERAC is the TNS entry in the client's TNSNAMES.ora file and oci drivers are used to support TAF.

## TNSNAMES.ora file (client)

```
ORACLERAC =
(DESCRIPTION =
  (ADDRESS_LIST =
    (ADDRESS = (PROTOCOL = TCP)(HOST = hostname1.domainname.com)(PORT = 1521))
    (ADDRESS = (PROTOCOL = TCP)(HOST = hostname2.domainname.com)(PORT = 1521))
  )
  (FAILOVER=on)
  (LOAD_BALANCE = ON)
  (CONNECT_DATA =
    (SERVER = DEDICATED)
    (SERVICE_NAME = orcl)
    (FAILOVER_MODE =
      (TYPE = SELECT)
      (METHOD = BASIC)
      (RETRIES = 180)
      (DELAY = 5)
    )
  )
)
)
```

**i Note:** The TNS entry supports both failover and load balancing.

- Database port
- Database server host name

## Creating Tablespaces

Table spaces are required to hold data and indexes for all tables required for TIBCO MDM and for all data sources uploaded.

TIBCO MDM uses the following different kinds of tables and indexes:

- Fixed tables
- Indexes for fixed tables
- Data source tables
- Master catalog tables
- Indexes for master catalog tables

### Procedure

1. Change the default data file location specified in the createtablespace.sql file based on your Oracle installation.
  - a. Go to \$MQ\_HOME/db/oracle/configure/.
  - b. Open the createtablespace.sql file.
  - c. Change the data file location for all tablespaces. For example, if you have installed Oracle in the E:/app/oradata/orcl folder, change the C:/oracle/version/oradata/orcl path to E:/app/oradata/orcl.
2. Run the createtablespace.sql script to create the following tablespaces:

#### *Tablespaces*

Tablespace Name	Description
VELODBDATA	For fixed TIBCO MDM tables.
VELODBINDEX1	For fixed TIBCO MDM table indexes.
VELODBDF	For TIBCO MDM data source tables
VELODBDATA	For TIBCO MDM master catalog tables.
VELODBINDEX	For TIBCO MDM master catalog table indexes.

**i Note:**

- The VELODBDATA1 tablespace has a minimum size of 100 MB and maximum size of 500 MB. The remaining tablespaces are 100 MB. You can change the size of the tablespaces based on your requirement. You can also set the size as unlimited for the tablespaces.
- If you are migrating from the earlier versions of Oracle to the latest supported version of Oracle, you have to explicitly grant UNLIMITEDTABLESPACE to the user. Oracle has discontinued the support granting UNLIMITED TABLESPACE to the RESOURCE role user.

Run the following command: `GRANT UNLIMITED TABLESPACE TO username`

3. For a complete installation (tablespaces and seed data), run the installation script from `$MQ_HOME/db/oracle/configure/doall.bat` or `doall.sh`
  - a. To create tablespaces without seed data, run `$MQ_HOME/db/oracle/configure/createusertablespace.sh` or `.bat`
  - b. To create only seed data, see [Creating Seed Data Manually for Oracle Database](#).

## Installing Seed Data Using Database Setup Wizard

The Database Setup Wizard of Configurator makes the database setup process easy and user-friendly.

The Database Setup Wizard is common for all three databases. However, some fields vary according to the selected database in the **Settings > Database** option. The available database options are Oracle, SQL Server, and Postgres. For more information about selecting the database option, see the Configurator chapter of *TIBCO MDM System Administration*.

### Prerequisites

Before running the Database Setup Wizard, ensure the following:

- The database is installed.
- The database client is installed on the local computer.

- If a user has already been created, specify the schema credentials. If the user has not been created, specify the DBA credentials. For information, see [Creating Database User for Oracle Database](#).
- TIBCO MDM is installed and the environment variables are created.
- Database SQL scripts are available.
  - For Oracle: in \$MQ\_HOME/db/oracle.
  - For SQL Server: in \$MQ\_HOME/db/sqlserver.
- For Oracle, the tablespaces are not created.
- The following database JDBC JAR files are copied in the \$MQ\_HOME/configurator/server/lib folder for seed data creation:
  - For Oracle: ojdbc8.jar copy from \$ORACLE\_HOME/jdbc/lib
  - For SQL Server: mssql-jdbc-7.2.2.jre11.jar ( Microsoft JDBC Driver 7.2 for SQL Server, Java Development Kit (JDK) 11.0 ) download from [Microsoft Download Center](#)
- For Oracle Database client globalization support, the following JVM arguments have been added in the \$MQ\_HOME/configurator/server/bin/setenv.bat file.
  - -Duser.country=en
  - -Duser.language=en

## Procedure

1. Log in to the Configurator.
2. Click **Tools > Set up Database**.
3. In the Database Setup Wizard for *databasename* with the Database Access Mode page, select one of the following options:
  - a. **Create New MDM Database User:** Select this option to create a new database user.
  - b. **Use an Existing MDM Database User:** Select this option to specify details of an existing user.

To specify details of a new database user or an existing database user, see the following table:

*New and Existing Database User Details*

Field Name	Description
Database Host	The IP address or host name of the server where the database is installed.
Database Port	<p>By default, the port specific to each database is displayed. For example,</p> <ul style="list-style-type: none"> <li>• For Oracle, the default database port is 1521.</li> <li>• For SQL Server, the default database port is 1433.</li> </ul> <p>You can change the port value, if required.</p>
Database Name (TNS Name)	<p>The name of the database where TIBCO MDM data should be installed.</p> <p><b>Note:</b> For Oracle RAC, specify the SID of either of the two clusters of the RAC database.</p>
DBA User Name	The user name of the database administrator.
DBA User Password	The password of the database administrator.
Test Connection	Click <b>Test Connection</b> to connect to the database and verify if the connection is successful. If the test connection is not successful, verify the specified database details.
New MDM Database User Name	The new user name used for the connection to the database.
New MDM Database	The new password used for the connection to the database.

Field Name	Description
User Password	
Confirm MDM Database User Password	Reenter the new password for confirmation.
<b>Note:</b> Remember the user name and password.	
Tablespace Location  (For Oracle database)	<p>The file system directory (absolute path) location where all tablespaces are created. This must be a local directory on the computer where the database is running. You can specify a custom location and provide a full path of the directory. The directory should have 'write permission' to write a file.</p> <p><b>Notes:</b></p> <ul style="list-style-type: none"> <li>• If you do not specify the tablespace location, by default the tablespaces are created in the \$ORACLE_HOME/database directory.</li> <li>• It is recommended that the file system in this directory contains a significant amount of available space. This directory is assigned by a DBA and should be backed up on a regular basis. For example: /opt/oradata</li> </ul>
Database File Location  (For SQL Server database)	<p>The SQL Server database location. You can specify a custom location and provide a full path of the directory.</p> <p><b>Note:</b> Database File Location should have permission to write files.</p>

- c. On the Database Details and Create New MDM Database User screens, click **Next**.

**i Note:**

- If you are not a DBA user or do not have permission to create tablespace and a new user, you can create a tablespace and database user using the scripts. For information, see [Configuration of Oracle Database](#) and [Configuration of SQL Server Database](#).
- For Oracle, if you select the **Use an Existing MDM Database User** option, see [Creating Database User for Oracle Database](#) for the details of the existing database user.
- For SQL Server, if you select the **Use an Existing MDM Database User** option, see [Creating Database User for SQL Server Database](#) for the details of the existing database user.

4. In the MDM Instance Details page, enter the following details and click **Next**:

*MDM Instance Details*

Field Name	Description
MDM Instance Name	Specify the instance name of TIBCO MDM. When you have multiple instances, and you want to install a database, you can specify a particular instance name. For example, preproduction and postproduction instances. An instance entry is added in the database table.
MDM Instance Description	Specify the instance description of TIBCO MDM.

5. In the Storage Profile Details page, select one of the following storage profile options:
  - a. **Typical Profile:** select this option to use the default values. A Typical profile installs tablespaces for the Oracle database and the database file location for the SQL Server database.  
After you select the **Typical** storage profile option, the Confirm Storage Parameters page is displayed. Confirm the default values and click **Install** to

install the seed data. See step 6.

- b. **Custom Profile:** select this option to specify the customized values for the default tablespace.

After you select the **Custom** storage profile option, the Custom Profile Setup page is displayed. Specify the values, size, and location for the default tablespaces.

- c. Click **Next**.

6. In the Confirm Storage Parameters page, confirm the customized values. Click **Install** to install the seed data.

7. The MDM Seed Data Summary page displays the success and error report of the seed data and schema creation.

- a. To view the schema and seed data log file, click **Open**.

- For Oracle, by default, the log files are stored in \$MQ\_HOME/db/oracle/install/logs folder.



**Note:** You can ignore tablespaces errors. For example,

"ERROR:-ORA-01543: tablespace 'VELODBTEMP' already exists".

- For SQL Server, by default, the log files are stored in \$MQ\_HOME/db/sqlserver/install/logs folder.

8. Click **Finish** to complete the database setup process.

## Troubleshooting with Oracle Database

Resolve the errors that you may come across while configuring the Oracle database.

### *Troubleshooting with Oracle Database*

Issue	Description	Solution
Bad Interpreter Issue	A “bad interpreter” error is displayed on UNIX.	The first line of all scripts on UNIX must be as follows: #!/usr/bin/sh

Issue	Description	Solution
Insufficient Shared Memory Issue	Oracle database error, unable to allocate required shared memory.  (ORA-04031: unable to allocate x bytes of shared memory).	Check whether or not the first line of the UNIX script follows this format. You can also create a soft link as follows: <code>ln -s /bin/sh /usr/bin/sh</code>
Inserting and Updating Data from ProcessLog and ProcessState Tables	Two errors are intermittently thrown when inserting or updating data from ProcessLog and ProcessState tables, even though the data to be inserted has a valid value and length. This error has been observed on Oracle 10.1.0.2.0.  ORA-01461: can bind a LONG value only for insert into a LONG column  ORA-01483: invalid length for DATE or NUMBER bind variable	Restarting the application server might resolve the issue temporarily.  There are similar issues reported in Oracle MetaLink. Reference Document IDs: 241358.1, 461670.1  If the problem persists, contact Oracle support and consider upgrading to the latest patch.
Seed data errors for exceeded length	After you change the value of the MAX_STRING_SIZE parameter from <b>STANDARD</b> to <b>EXTENDED</b> , the following errors occur during seed data creation:  <pre>SQL&gt;CREATE INDEX WORKITEMDETAIL_IDX1 ON WORKITEMDETAIL ( NAME, Value )</pre>	To fix this issue, run the upgradeAttributeLength.sql script located at \$MQ_HOME/db/DatabaseType/install/scripts/utility.

Issue	Description	Solution
	<pre>TABLESPACE VELODBINDX1 ERROR:-ORA-01450: maximum key length (6398) exceeded</pre>	
	<pre>SQL&gt;CREATE INDEX FSENTRY_ IDX ON FSENTRY ( PATH ASC, NAME ASC ) TABLESPACE VELODBINDX1 ERROR:-ORA-01450: maximum key length (6398) exceeded</pre>	
	<pre>SQL&gt;CREATE INDEX SFSENTRY_ IDX ON SFSENTRY ( PATH ASC, NAME ASC ) TABLESPACE VELODBINDX1 ERROR:-ORA-01450: maximum key length (6398) exceeded</pre>	

## Creating TIBCO EMS Queues and Topics

The required queues and topics are located in the \$MQ\_HOME/bin/install/createQueues.txt file.

### Before you begin

Ensure that the EMS Server is running.

### Procedure

1. Go to **All Programs > TIBCO > TIBCO EMS *version*** and click **Start EMS Administration Tool**. The command prompt is displayed.
2. Type **Connect**.
3. Enter login name and password.

**i Note:** If you have not created the administration credentials, press **Enter**. By default, administration login name and password is retrieved.

The connected to: `tcp://localhost:port_number` message is displayed.

4. Go to `$MQ_HOME/bin/install` and open the `createQueues.txt` file.
5. Copy content of the `createQueues.txt` file and place it in the command prompt.  
Queues and topics are created.

## Verifying Queues and Topics

You can verify a list of created queues and topics.

### Procedure

1. Go to **All Programs > TIBCO > TIBCO EMS *version*** and click **Start EMS Administration Tool**.  
The command prompt is displayed.
2. Type **Connect**.
3. Enter login name and password.
4. Type `show queues` in the command prompt and press **Enter**.  
A list of created queues is displayed.
5. Type `show topics` in the command prompt and press **Enter**.  
A list of created topics is displayed.

## Configuring TIBCO MDM for WebSphere Application Server

Log in to the Administrative console of WebSphere Application Server to configure the properties.

Configure the following properties in the Configurator:

*Configurator Properties for WebSphere Application Server*

Property Name	Value
JNDI Naming Service URL	By default, the value is <code>iiop://localhost:2809</code> . As per your application profile, you need to change the host IP address and port number. For the port number, see <code>BOOTSTRAP ADDRESS</code> specified in the WebSphere Application Server. Login to the Administrative console of the WebSphere Application Server console and expand <b>Application Servers &gt; <i>server name</i> &gt; Ports</b> .
Security Provider Type	By default, a SUN security provider is defined. For WebSphere Application Server, you need to change it to IBM.

**i Note:** For clustered setup, it is recommended that you:

- Increase the poolsize per server to 100.
- Increase the transaction timeout of the application server to 36000.

**Procedure**

1. Creating a Profile on WebSphere Application Server
  - a. Create a profile other than the default using the profile creation wizard.
  - b. Start the Administration Server.
    - Go to the `$WAS_HOME/profiles/profilename/bin` directory.
    - Enter the following command: `./startServer.sh server1`
2. Log in to the Administrative console of WebSphere Application Server.
3. Specify Servers Details
  - a. In the left panel, expand **Servers > Server Types** and click **WebSphere > application servers**. The Application servers panel is displayed on the right.
  - b. Under Preferences, click *servername*. The **Configuration** tab is displayed.
4. For Transaction Service Details:
  - a. Under **Container Settings**, expand **Container Services** and click the

**Transaction Service** link. The **Configuration** tab for the Transaction Service is displayed.

- b. Under General Properties, enter the following values:

*Transaction Service General Properties*

Field / Drop-down List Name	Values
Total transaction lifetime timeout	36000
Client inactivity timeout	7200
Maximum transaction timeout	0
Heuristic retry limit	0
Heuristic retry wait	0
Heuristic completion direction	ROLLBACK

- c. Click **OK**. A message is displayed with the Save and Review options.  
 d. Click the **Save** link to save changes to the master configuration.

5. For ORB Service Details:

- a. Under Container Settings, expand **Container Services** and click the **ORB service** link. The **Configuration** tab is displayed.  
 b. Under General Properties, check the **Pass by reference** check box.  
 c. Click **OK**. A message is displayed with the Save and Review options.  
 d. Click the **Save** link to save changes to the master configuration.

6. For Server Infrastructure Details:

- a. Under Server Infrastructure, expand **Java and Process Management** and click the **Process definition** link. The **Configuration** tab is displayed.  
 b. Under Additional Properties, click the **Java Virtual Machine** link. The **Configuration** tab is displayed.  
 c. In the Initial heap size and Maximum heap size fields, enter the heap size to

1024 as the minimum value for both the fields.

d. In the Generic JVM arguments field, enter the following JVM arguments:

**i Note:** For readability, each entry is listed on a separate line. However, you must enter these arguments in a single line, separated by a single space.

```
-DLANG=en_US.UTF-8
-DNODE_ID=${NODE_ID}
-Dclient.encoding.override=UTF-8
-DMQ_HOME=${MQ_HOME}
-DMQ_LOG=${MQ_LOG}
-DMQ_CONFIG_FILE=${MQ_HOME}/config/ConfigValues.xml
-DMQ_COMMON_DIR=${MQ_COMMON_DIR}
-DPATH=${PATH}
-DOS=<OS>
-DDISPLAY=:1.0
-Djavax.xml.transform.TransformerFactory=org.apache.xalan.processor.
TransformerFactoryImpl
-Djavax.xml.parsers.DocumentBuilderFactory=org.apache.xerces.jaxp.
DocumentBuilderFactoryImpl
-
-Dlog4j2.contextSelector=org.apache.logging.log4j.core.selector.BasicContextSelect
or
-Dlog4j2.ignoreTCL=true
```

**i Note:**

- For the Oracle database, enter `-DORACLE_HOME=${ORACLE_HOME}`.
- To improve the performance of TIBCO MDM, enter the following JVM parameter when starting the application server:
 

```
-Dorg.apache.xml.dtm.DTManager=
"org.apache.xml.dtm.ref.DTManagerDefault"
```
- To deploy TIBCO MDM custom pages to a common folder in the cluster environment, set the following parameter:
 

```
-DMQ_CUSTOMFORMS_HOME=MQ_COMMON_DIR
```

- e. To monitor the JVM application server, enter the following JVM arguments:

```
-Dcom.sun.management.jmxremote
-Dcom.sun.management.jmxremote.authenticate=false
-Dcom.sun.management.jmxremote.ssl=false
-Dcom.sun.management.jmxremote.port=9999
-Djavax.management.builder.initial=
```

The value of `Djavax.management.builder.initial` argument must be empty.

- f. Click **OK**. A message is displayed with the Save and Review options.
- g. Click the **Save** link to save changes to the master configuration.
7. For Port Details: if multiple servers and clusters are involved while installing TIBCO MDM on the WebSphere Application Server, you need to configure and allocate multiple ports to the application.
- Under Communications, expand **Ports**. A list of ports is displayed.
  - Verify the value of the `wc_defaulthost` port. The WebSphere Application Server runs on this default port.
  - Ensure that the port is defined as a domain name system (DNS) alias in the `default_host` Virtual Host definition.

**i** **Note:** The DNS alias by which the virtual host is known is defined through **Environment > Virtual Hosts > `default_host` > Host Aliases**. The Virtual host for the Web modules that are contained in application is specified through **Applications > WebSphere Enterprise Applications > `ECM` > Virtual hosts**.

8. Specify Environment Variables
- In the left panel, expand **Environment** and click **WebSphere variables > .** The WebSphere Variables panel is displayed on the right.
  - In the Scope drop-down list, select **Node=<nodeID>,Server=server1**.
  - Under Preferences, click **New**. The **Configuration** tab is displayed.
  - Under General Properties, type a system variable name in the Name field and its value in the Value field. The Description field is optional.
- Add the following environment variable for the custom pages deployment:

MQ\_CUSTOMFORMS\_HOME=MQ\_COMMON\_DIR

- e. Click **OK**. The variable is listed in the table.

Similarly, create other Environmental Variables. The following table displays a list of all other added environment variables.

DISPLAY	:1.0	Node=MDMWIN2K16VM138Node03,Server=server1
JAVA_HOME	C:\Program Files\IBM\WebSphere\AppServer\java\	Node=MDMWIN2K16VM138Node03,Server=server1
MQ_COMMON_DIR	C:\MDM_Installations\ \ _WasOra_Common	Node=MDMWIN2K16VM138Node03,Server=server1
MQ_CONFIG_FILE	C:\MDM_Installations\ \ _WasOra\mdm\ \config\ConfigValues.xml	Node=MDMWIN2K16VM138Node03,Server=server1
MQ_CUSTOMFORMS_HOME	MQ_COMMON_DIR	Node=MDMWIN2K16VM138Node03,Server=server1
MQ_HOME	C:\MDM_Installations\ \ _WasOra\mdm\	Node=MDMWIN2K16VM138Node03,Server=server1
NODE_ID	Member3	Node=MDMWIN2K16VM138Node03,Server=server1
ORACLE_JDBC_DRIVER_PATH	C:\MDM_Installations\ \Assemblies	Node=MDMWIN2K16VM138Node03,Server=server1
PATH	C:\Program Files\IBM\WebSphere\AppServer\java\ \bin;C:\MDM_Installations\MDM931WASORA\mdm\ \bin	Node=MDMWIN2K16VM138Node03,Server=server1
SERVER_LOG_ROOT	\${LOG_ROOT}/server1	Node=MDMWIN2K16VM138Node03,Server=server1
SWAGGER_MDM_HOST		Node=MDMWIN2K16VM138Node03,Server=server1
SWAGGER_MDM_PORT	9082	Node=MDMWIN2K16VM138Node03,Server=server1
WAS_SERVER_NAME	server1	Node=MDMWIN2K16VM138Node03,Server=server1

## 9. Configuring Database Drivers and Data Source

### a. Specify JDBC Details

- i. In the left panel, expand **Resources > JDBC**, and then click **JDBC providers**. The JDBC providers panel is displayed on the right.
- ii. In the Scope drop-down list, select **Node=<nodeID>, Server=server1**.
- iii. Under Preferences, click **New**. The Create a new JDBC Provider window is displayed.
  - In the Database type drop-down list, select **Oracle**. The Provider type is populated with **Oracle JDBC Driver**.
  - In the Implementation type drop-down list, select **Connection pool data source**. The Name and Description fields are populated with Oracle JDBC Driver.
- i. Click **Next**. The Enter database class path information window is displayed.
- ii. If you have selected the Oracle database option in the last step, type

the location of the `ojdbc8.jar` file. If you are using Oracle Database 19.3, copy `ojdbc8.jar` in `$ORACLE_HOME/19c/lib`.

- iii. Click **Next**. The Summary window is displayed. Review the information.
  - iv. Click **Finish**. The Oracle JDBC Driver is listed under Preferences and a message is displayed with the Save and Review options.
  - v. Click the **Save** link to save changes to the master configuration.
- b. Specify Security Details
- i. In the left panel, expand **Security** and click **Global security**. The Global security panel is displayed on the right.
  - ii. Under Authentication, expand **Java Authentication and Authorization Service** and click the **J2C authentication data** link.
  - iii. Under Preferences, click **New**. The General Properties window is displayed.
  - iv. In the Alias, User ID, and Password fields, type the database alias name, its user ID, and password respectively. The Description field is optional.
  - v. Click **Apply**, and then click **OK**. The database Alias is listed under Preferences and a message is displayed with the Save and Review options.
  - vi. Click the **Save** link to save changes to the master configuration.
- c. Specify Data Source Details
- i. In the left panel, expand **Resources > JDBC**, and then click **Data sources**. The data source panel is displayed on the right.
  - ii. In the Scope drop-down list, select **Node=<nodeID>**, **Server=server1**.
  - iii. Under Preferences, click **New**. The Create a data source window is displayed.
  - iv. Enter the **Data source name** and **JNDI name**.
  - v. Click **Next**. The Select JDBC provider window is displayed.
  - vi. Select either of the following two options:

- **Create a new JDBC provider**
  - **Select an existing JDBC provider:** After you select this option, the existing JDBC providers are displayed in the drop-down list. You can select it from the list.
- vii. Click **Next**. The Enter database specific properties for the data source window is displayed.
- In the Value field, enter the database connection URL. For example, for Oracle database: `jdbc:oracle:thin:@ machinename or ipaddress:portnumber. INSTANCENAME`.
  - In the Data store helper class name drop-down list, select the appropriate data store helper class name. For example, **Oracle11g data store helper**.
- viii. Click **Next**. The Setup security aliases window is displayed.
- In the Component-managed authentication alias drop-down list, select the alias.
  - In the Mapping-configuration alias drop-down list, select **DefaultPrincipleMapping**.
  - In the Container-managed authentication alias drop-down list, select **alias**.
- ix. Click **Next**. The Summary window is displayed. Review the information.
- x. Click **Finish**. The data source is listed in the Preferences section and a message is displayed with the Save and Review options.
- xi. Click the **Save** link to save changes to the master configuration.

**i** **Note:** You must save the data source name before testing its connection, else an error message is displayed.

- xii. Under Preferences, select the *Data Source name* and click **Test Connection** to test the connection.  
A Connection Successful message is displayed.

**i** **Note:** Navigate to **Data sources > DataSourceName > Connection pool properties** to set the Maximum connections to 50 and the connection timeout to 7200.

## Configuring EMS over SSL on Application Servers

*To configure EMS over SSL, configure the application servers.*

Application Server	Steps
WebSphere Application Server	<ol style="list-style-type: none"> <li>1. Stop the application server.</li> <li>2. Copy the following JAR files from <code>\$EMS_HOME/lib</code> to <code>\$WAS_HOME/lib/ext</code> folder: <ul style="list-style-type: none"> <li>• <code>slf4j-api-1.4.2.jar</code></li> <li>• <code>slf4j-simple-1.4.2.jar</code></li> </ul> </li> <li>3. Copy the <code>server_root.cert.pem</code> certificate from <code>\$EMS_HOME/samples/certs</code> folder.</li> <li>4. In WebSphere Application Server, perform the following steps: <ol style="list-style-type: none"> <li>a. Under Server Infrastructure, expand Java and Process Management and click the Process definition link.</li> <li>b. On the Configuration tab, under Additional Properties, click the Java Virtual Machine link.</li> <li>c. On the Configuration tab, in the Generic JVM arguments field, enter the following JVM arguments: <div style="border: 1px solid #ccc; padding: 10px; margin: 10px 0;"> <pre style="background-color: #f0f8ff; padding: 5px;">-Dcom.tibco.tibjms.naming.security_protocol=ssl</pre> </div> </li> </ol> </li> </ol>

Application Server	Steps
JBoss WildFly Application Server	<div style="border: 1px solid #ccc; padding: 10px; margin-bottom: 10px;"> <pre style="background-color: #f0f8ff; padding: 5px;">-Djsse.providerClass=com.ibm.jsse2.IBMJSSEProvider2  -Dcom.tibco.tibjms.ssl.expected_hostname=server  -Dcom.tibco.tibjms.ssl.enable_verify_host_name=false  -Dcom.tibco.tibjms.ssl.enable_verify_host=false  -Dcom.tibco.tibjms.ssl.trusted=/local/vsadmin/server_root.cert.pem</pre> </div> <p>Enter these arguments in a single line, separated by a single space.</p> <ol style="list-style-type: none"> <li>5. Log in to the Configurator and navigate to <b>InitialConfig &gt; Member1 &gt; Security Provider &gt; IBM</b> <ul style="list-style-type: none"> <li>• Change the value of SSL Protocol Handler Package property from:com.ibm.net.ssl.internal.www.protocolto com.ibm.net.ssl.www2.protocol</li> <li>• Change the value of SSL Provider property from:com.ibm.jsse.JSSEProvider to com.ibm.jsse2.IBMJSSEProvider2</li> </ul> </li> <li>1. Create a module with name as com.tibco.mdm in JBoss WildFly application server - 26.0.0 version. For information about creating modules, see <a href="#">Module Creation</a>.</li> <li>2. Copy the following JAR files in this module (inside the main directory) from \$EMS_HOME/lib <ul style="list-style-type: none"> <li>• slf4j-api-1.4.2.jar</li> <li>• slf4j-simple-1.4.2.jar</li> </ul> </li> <li>3. Copy the following JAR files in this module. The JAR files are available in the classpath of the JBoss WildFly application server or</li> </ol>

Application Server	Steps
--------------------	-------

in JAVA\_HOME\jre\lib directory:

- jsse.jar
- jce.jar

4. Update the module.xml file as follows:

```
<module xmlns="urn:jboss:module:1.3" name="com.tibco.mdm">  
  
<resources>  
  
<resource-root path="slf4j-api-1.4.2.jar"/>  
  
<resource-root path="slf4j-simple-1.4.2.jar"/>  
  
<!-- if these 2 JARS copied in the module then add -->  
  
<resource-root path="jsse.jar"/>  
  
<resource-root path="jce.jar"/>  
  
</resources>  
  
<dependencies>  
  
<module name="javax.api" />  
  
<module name="javax.jms.api" />  
  
<module name="javax.resource.api" />
```

Application Server	Steps
--------------------	-------

```
<!-- These are required for EMS with SSL -->
```

```
<system export="true">
```

```
<paths>
```

```
<path name="sun/security/ssl" />
```

```
<path name="com/sun/net/ssl/internal/ssl" />
```

```
<path name="sun/security/util" />
```

```
<path name="sun/security/validator" />
```

```
<path name="sun/security/provider" />
```

```
<path name="javax/net/ssl" />
```

```
<path name="sun/net/www/protocol/https" />
```

```
</paths>
```

```
</system>
```

```
</dependencies>
```

5. Add the global module in subsystem section `<subsystem xmlns="urn:jboss:domain:ee:4.0">` in `JBOSS_HOME/standalone/configuration/standalone.xml`.

**Application  
Server****Steps**

```
<subsystem xmlns="urn:jboss:domain:ee:4.0">  
  
  <global-modules>  
  
    <module name="com.tibco.mdm" slot="main"/>  
  
  </global-modules>  
  
</subsystem>
```

OR

Add a dependency in jboss-deployment-structure.xml in ECM.ear/META-INF in dependency section:

```
<dependencies>  
  
  <system export="true">  
  
    <paths>  
  
      <path name="com/sun/net/ssl/internal/ssl" />  
  
    </paths>  
  
  </system>  
  
  <module name="com.tibco.mdm"/>
```

Application Server	Steps
	<div style="border: 1px solid #ccc; padding: 10px;"><pre style="background-color: #e6f2ff; padding: 5px; margin-bottom: 5px;">&lt;/dependencies&gt;</pre></div> <p>6. Add the following in the JVM arguments in <code>\$JBOSS_HOME/bin/standalone.conf.bat</code></p> <div style="border: 1px solid #ccc; padding: 10px;"><pre style="background-color: #e6f2ff; padding: 5px; margin-bottom: 5px;">-Dcom.tibco.tibjms.ssl.enable_verify_host_name=false</pre><pre style="background-color: #e6f2ff; padding: 5px; margin-bottom: 5px;">-Dcom.tibco.tibjms.ssl.enable_verify_host=true</pre><pre style="background-color: #e6f2ff; padding: 5px; margin-bottom: 5px;">-Dcom.tibco.tibjms.ssl.expected_hostname=server</pre><pre style="background-color: #e6f2ff; padding: 5px; margin-bottom: 5px;">-Dcom.tibco.tibjms.ssl.trusted=\$EMS_HOME/samples/certs/server_root.cert.pem</pre></div>

Specify the values for the TIBCO EMS configuration properties in the Configurator.

1. Log in to the Configurator.
2. Navigate to **Queue Setup > Messaging Cluster > TIBCO EMS**.  
Change the value of Localhost Server Connection String property to `ssl://hostname:portno`
3. Navigate to **Bus Setup > Cluster > TIBCO EMS**.
4. Change the value of Localhost Server Connection String property to `ssl://hostname:portno`

#### What to do next

1. Start the application server.
2. Log in to TIBCO MDM.

TIBCO MDM starts running on SSL.

## Deploying TIBCO MDM on WebSphere Application Server

After configuring TIBCO MDM with WebSphere Application Server, deploy TIBCO MDM.

### Procedure

1. In the left panel, expand **Applications** and click **New Application**. The New Application panel is displayed on the right.
2. Under Install a New Application, click the **New Enterprise Application** link. The Preparing for the application installation window is displayed.
3. Under Path to the new application, click **Browse**. The Choose File to Upload window is displayed.
4. Browse to the path of the ECM.ear file located in \$MQ\_HOME. Click **Next**.

**i Note:** If you have a ECM.ear file located at the remote location, you can select the file path using the Remote file system option.

5. Under How do you want to install the application?, select the **Detailed - Show all installation options and parameters** option, and then click **Next**. The Application Security Warnings are displayed.
6. Click **Continue**. The Install New Application window is displayed with the Select installation options window.
7. Click **Next**. The Map modules to servers window is displayed. Verify that Cluster and servers are properly selected.
8. Click **Next**. The Provide JSP reloading options for Web modules window is displayed.
9. Click **Next**. The Map shared libraries window is displayed.
10. Click **Next**. The Map shared library relationships window is displayed.
11. Click **Next**. The Initialize parameters for servlets window is displayed.
12. Click **Next**. The Provide JNDI names for beans window is displayed. Verify that all JNDI names are pre-populated.

13. Click **Next**. The Map virtual hosts for Web modules window is displayed.
14. Click **Next**. The Map context roots for Web modules window is displayed.
15. Click **Next**. The Map JASPI provider window is displayed.
16. Click **Next**. The Ensure all unprotected 2.x methods have the correct level of protection window is displayed with installation options summary.
17. Click **Next**. The Metadata for modules window is displayed.
18. Click **Next**. The Display module build Ids window is displayed.
19. Click **Next**. The Summary window is displayed.
20. Click **Finish**.
21. After installing, click **Save**.

After a successful startup, a confirmation message is displayed in the log file located at \$WAS\_HOME/logs.

**i** **Note:** You can also verify if the application is installed successfully using the following URL: `http://hostname:port_number/eml/Login`, For example: `http://localhost:9081/eml/Login`

## Setting Class Loader Policy

After deploying TIBCO MDM on Websphere Application Server, set the class loader policy.

### Procedure

1. In the left panel, expand **Servers > Server Types** and click **WebSphere application servers**.  
The Application servers panel is displayed on the right.
2. Under Preferences, click *servername*.  
For example, **server1**. The **Configuration** tab is displayed.
3. Under Applications, click the **Installed applications** link.
4. Under Preferences, click the *application name*. For example, **ECM**.
5. Under Detail Properties, click the **Class loading and update detection** link.

The **Configuration** tab is displayed.

6. Under **Class Loader order**, select the **Classes loaded with local class loader first (parent last)** option.
7. Under **WAR class loader policy**, ensure that the **Class loader for each WAR file in application** option is selected.
8. Click **Apply**, and then click **OK**.

The class loader policy settings are saved a message is displayed with the **Save** and **Review** options.

9. Click the **Save** link to save changes to the master configuration.

## Specifying MIME Types

After setting the class loader policy to parent last, configure the MIME types.

### Procedure

1. In the left panel, expand **Environment** and click **Virtual Hosts**. The **Virtual Hosts** panel is displayed on the right.
2. Under **Preferences**, click the virtual host link where ECM is installed. For example, **default\_host**. The **Configuration** tab is displayed.
3. Under **Additional Properties**, click the **MIME Types** link. A list of MIME types is displayed.
4. Under **Preferences**, click the **New** button. The **Configuration** tab is displayed.
5. Under **General Properties**,
  - In the **MIME Type** field, enter **application/xml**.
  - In the **Extensions** field, enter **xslt**.
6. Click the **OK** button. A message is displayed with the **Save** and **Review** options.
7. Click the **Save** link to save changes to the master configuration.

## Enabling Cookies

TIBCO MDM uses a cookie to keep track of menus selected by the user. The business sensitive information stored in the cookies should be kept confidential and sent only over


a secure link. Make cookies secure by requiring them to be transmitted only over secure links and to the appropriate location.

### Procedure

1. In the left panel, expand **Servers > Server Types** and click **WebSphere application servers**. The Application servers panel is displayed on the right.
2. Under Preferences, click *servername*. The **Configuration** tab is displayed.
3. Under Container Settings, expand **Web Container Settings** and click the **Web container** link. The **Configuration** tab is displayed.
4. Under Additional Properties, click the **Session management** link. The **Configuration** tab is displayed.
5. Under General Properties, click the **Enable cookies** check box. The **Configuration** tab for Cookies is displayed.
6. For the JSESSIONID cookie property, enter the domain and path in the Cookie domain and Cookie path fields for which session tracking cookie should be sent.
7. Click the **Restrict cookies to HTTPS sessions** check box to restrict session cookies to HTTPS sessions.
8. Click the **OK** button. A message is displayed with the Save and Review options.
9. Click the **Save** link to save changes to the master configuration.

## Enabling URL Rewriting

You need to enable URL rewriting to send web service requests with JessionID and if the installation does not support cookies.

 **Note:** TIBCO MDM recommends that cookies are enabled.

### Procedure

1. In the left panel, expand **Servers > Server Types** and click **WebSphere application servers**. The Application servers panel is displayed on the right.
2. Under Preferences, click *servername*. The **Configuration** tab is displayed.
3. Under Container Settings, click the **Session management** link. The **Configuration**

tab is displayed.

4. Under General Properties,
  - Select the **Enable cookies** and **Enable URL rewriting** check boxes.
5. Click the **OK** button. A message is displayed with the Save and Review options.
6. Click the **Save** link to save changes to the master configuration.

## Troubleshooting with WebSphere Application Server

Resolve the errors that you may come across while working with the WebSphere Application Server.

### *Troubleshooting with WebSphere Application Server*

Issue	Description	Solution
Error Creating Catalogs and Data Sources After Installation	<ul style="list-style-type: none"> <li>• Error during catalog creation through the UI.</li> <li>• Catalog attributes not defined.</li> <li>• Error during data source creation through the UI.</li> <li>• Data source -1 could not be loaded.</li> </ul>	<p>Using the WebSphere Administrative Console, select <b>Servers &gt; Application Servers &gt; server1 &gt; Container Services &gt; ORB Service</b>, then select the <b>Pass by Reference</b> check box.</p> <p><b>Background Information:</b> If these errors are seen while creating data sources and catalogs, the WebSphere configuration may be incorrect. In WebSphere, the ORB Service should have the <b>Pass by Reference</b> check box selected.</p> <p>You can also check this value by viewing the WebSphere configuration <code>server.xml</code> file for your application server. Look at the following XML element and check if the <b>noLocalCopies</b> attribute is set to true:</p> <pre>\$WAS_HOME/profiles/&lt;profile name&gt;/config/cells/&lt;cell name&gt;/nodes/&lt;node name&gt;/servers/server1/server.xml&lt;services xmi:type="orb:ObjectRequestBroker" xmi:id="ObjectRequestBroker_&lt;id&gt;" enable="true" requestTimeout="180" requestRetriesCount="1"</pre>

Issue	Description	Solution
		<pre>requestRetriesDelay="0" connectionCacheMaximum="240" connectionCacheMinimum="100" commTraceEnabled="false" locateRequestTimeout="180" forceTunnel="never" noLocalCopies="true"&gt;</pre>
<p>Login Screen Not Visible and Logs Show “Naming service not available” Error</p>	<p>The Naming service not available error is displayed in the log file and the Login page is not visible.</p>	<p>This usually happens when a wrong IOP port number is specified in the Configurator. When WebSphere starts, in the SystemOut.log, you should see the following output:</p> <pre>[7/27/04 15:28:28:451 PDT] 7b04ccd1 HttpTransport A SRVE0171I: Transport http is listening on port 9,083. [7/27/04 15:28:28:503 PDT] 7b04ccd1 RMIConnectorC A ADMC0026I: RMI Connector available at port 2810</pre> <p>In this example, the 2810 port number should be used for the JNDI Naming Service URL property in the Configurator (<b>Application Server &gt; WEBSPPHERE</b>).</p>
<p>Cannot Log In After Installation</p>	<p>You have the login page and your seed data is good but you cannot log in.</p>	<p>This means your security provider is invalid. You can fix this by changing your security provider class name in the Configurator. The default security provider is SUN. If you are using WebSphere Application Server, select IBM as the security provider.</p>
<p>Enabling Memory Allocation Trace</p>	<p>Memory allocation tracing may be requested by TIBCO Customer Support for analysis of certain problems.</p>	<p>Set up the tracing as follows:</p> <p><b>Environment &gt; WebSphere Variables.</b> Select the server.</p> <p>Create the following environment entries:</p>

Issue	Description	Solution
Enabling Garbage Collection Data Logging	If you are experiencing memory usage issues, TIBCO Customer Support may request for collection of garbage collection statistics.	<div style="background-color: #e6f2ff; padding: 5px;"> <p>IBM_MALLOCTRACE - set value as 1  MALLOC_TRACE - set value to  \$WAS_HOME/profiles/&lt;profilename&gt;/logs/server1/mt  race.log</p> </div> <p>Substitute the absolute directory name for \$WAS_HOME.</p>
Failed Reflecting Values Error	The IWAV0002E Failed reflecting values warning is displayed when TIBCO MDM is installed on WebSphere Application Server.	<p>To enable garbage collection data collection, change the JVM settings as follows:</p> <p><b>Servers &gt; Application Server &gt; &lt;servername&gt; &gt; Server Infrastructure &gt; Java and Process Management &gt; Process Definition &gt; Java Virtual Machine.</b>Select the <b>Verbose garbage collection</b> check box against it.</p> <p>The garbage collection data is stored in  \$WAS_HOME/profiles/&lt;profilename&gt;/logs/server1/native_stderr.log</p>
Incorrect Startup Message Error	When TIBCO MDM is deployed on the WebSphere Application Server, if for some reason the TIBCO MDM application does not start up because of initialization	None. If the user in such a scenario hits the TIBCO MDM login page URL, initialization errors may be listed on that page.

Issue	Description	Solution
	errors, the WebSphere Application Server UI still shows the application status as Started.	
The TIBCO MDM server failed to start	The TIBCO MDM server failed to start and showed the following error message: java.lang.NoClassDefFoundError: javax.jms.JMSContext exception	<ol style="list-style-type: none"> <li>1. Navigate to \$EMS_HOME/lib directory.</li> <li>2. Copy the jms-2.0.jar file.</li> <li>3. Navigate to \$MQ_HOME/ECM.ear and place the jms-2.0.jar file.</li> <li>4. Navigate to \$MQ_HOME/ECM.ear/EML.war/META-INF directory.</li> <li>5. Open the MANIFEST.MF file and append the &lt;space&gt; jms-2.0.jar file name.</li> <li>6. Save the MANIFEST.MF file.</li> <li>7. Deploy the updated ECM.ear file in the WebSphere application server.</li> <li>8. Restart the WebSphere application server.</li> </ol>
An exception on the WebSphere Application Server startup	The WebAppNotLoadedException occurs on the WebSphere Application Server startup	After deploying TIBCO MDM on Websphere Application Server, ensure that the <b>Class loader for each WAR file in application</b> option is selected by the class loader policy. For information, see the "Setting Class Loader Policy" section in <i>TIBCO MDM Installation and Configuration</i> .

# Configuring IBM HTTP Web Server with WebSphere

Install the web server, if not already present. You can configure IBM HTTP server for WebSphere Application Server.

For WebSphere Application Server, the plug-in file is at `$WAS_HOME/config/cells/plugin-cfg.xml`.

## Procedure

1. Copy the plug-in file (`plugin-cfg.xml`) to any location on the computer where the web server is installed and specify its path in the `httpd.conf` file with an entry: `<WebSpherePluginConfig /path/plugin-cfg.xml`. You need read write permissions to modify this configuration file.
2. Configure access for the web server to the plugin library specified by `LoadModule ibm_app_server_http_module`.

For details about configuring web servers, see the WebSphere Information Center online documentation.

**i Note:** If for security reasons, you need to prevent server information (such as, Web Server and Application Server versions) from being transmitted in the header file, perform the following steps:

- a. Edit the `httpd.conf` file in the Web Server conf directory. For example,

In the `/opt/IBMHttpServer/conf/httpd.conf` file add the following line:

```
ServerTokens Prod
```

- b. Restart the web server and application server.

## Performing Postinstallation Tasks for Typical Installation

You need to merge third party libraries with `ECM.ear` that you have created for the WebSphere and WebLogic application servers and manually copy TIBCO EMS libraries

that are not shipped with the product due to Licensing restrictions.

## Procedure

1. Merge Third Party Libraries with ECM.ear.
  - a. Go to \$MQ\_HOME/build/custom.
  - b. Execute customUtil.bat or customUtil.sh-mergeExternalLibrary.  
This command creates the thirdPartyLibrary folder in \$MQ\_HOME.
  - c. Copy the consolidated third party JAR file (ThirdParty.jar) to this folder and enter y to proceed for merging. For information about creating a consolidated JAR file, see [Creating a Consolidated JAR File with Third-Party Libraries](#).  
Continue and complete the script. The updated ECM.ear is placed in \$MQ\_HOME.
2. Copy EMS Libraries.
  - a. Copy the tibjms.jar and jms-2.0.jar from \$EMS\_HOME/lib to \$MQ\_HOME/lib/external directory.



**Warning:** If you do not copy the tibjms.jar and jms-2.0.jar files in \$MQ\_HOME/lib/external directory, the utilities do not work.

## Troubleshooting with Typical Installation

If you encounter an issue while installing TIBCO MDM, you may resolve the issues by completing the common troubleshooting procedures.

### *Troubleshooting with Typical Installation*

Issue	Description	Solution
Display Cannot be Opened	The UNIX installer terminates with the following error message:	If you run the UNIX installer in a graphical mode, your local display has to be specified to the server. This local display needs to have a X Windows client installed. The local display is typically indicated to the server by specifying the DISPLAY environment variable. For example, on a bash shell: export DISPLAY=client host name:0.0

Issue	Description	Solution
	Could not open display	<p>The X windows client also requires that the connection from the server is authorized. To enable the authorization, see the X Windows client documentation. On many X Windows clients, the authorization can be granted by using the Xhost command. For example:</p> <p>Xhost +</p>
Installer Terminates	The installer terminates without any error message.	<p>The installer creates a detailed time stamped log file in one of the following places:</p> <ul style="list-style-type: none"> <li>• If TIBCO_HOME did not exist at install time, the log file is created in the temp directory of the user in a.TIBCO sub folder.</li> <li>• If TIBCO_HOME exists, the log file is created in the \$TIBCO_HOME/log folder.</li> </ul> <p>Check the log file for any errors and then contact TIBCO Technical Support.</p> <p>You can also run the installer with the installer log enabled using the -is:log option. For example:</p> <pre>./TIBCOUniversalInstaller-lnx-x86.bin -is:javahome -is:log path/log.dat</pre>

# TIBCO Documentation and Support Services

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For information about this product, you can read the documentation, contact TIBCO Support, and join [TIBCO Community](#).

## How to Access TIBCO Documentation

Documentation for TIBCO products is available on the [Product Documentation website](#), mainly in HTML and PDF formats.

The [Product Documentation website](#) is updated frequently and is more current than any other documentation included with the product.

## Product-Specific Documentation

Documentation for TIBCO® MDM is available on the [TIBCO® MDM Product Documentation](#) page.

## How to Contact Support for TIBCO Products

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- To create a Support case, you must have a valid maintenance or support contract with a Cloud Software Group entity. You also need a username and password to log in to the [product Support website](#). If you do not have a username, you can request one by clicking **Register** on the website.

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