

# Oracle Connector

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## Oracle Connector Help

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Help version 1.025

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## Overview

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The Oracle Connector is an application that sends data to an Oracle Database that is configured for MES or MOC processing. The Oracle Connector is tightly integrated with the OPC server, and provides benefits such as installation, configuration, high-efficiency performance, and easy tag browsing. This allows plant process data to be gathered in real-time for analysis, without the need of a third-party collection system.

### MES

Manufacturing Execution System (MES) is an enterprise-level system used for managing the production process.

### MOC

Manufacturing Operations Center (MOC) is a plant-level system used for managing plant operation and synchronizing plant floor data with Enterprise Resource Planning systems. Data is used for long term analysis of plant efficiency.

### Feature Highlights

- User-friendly installation and configuration.
- Flexible triggering completed on a fixed time basis or through trigger conditions.
- Data retention.
- Inclusion of the OPC server Simulator Driver.
- Inclusion of a two-hour demo for evaluation.

### Runtime Performance Features

- Runs as a System Service.
- Logs data directly from the local item list so that there is no need for an external OPC server.
- Error recovery.
- Transaction buffering support (which places updates into a buffer until the connection to the Oracle database is restored).
- Optional automatic configuration backup (which saves the most recent copy of a configuration file).

## Initial Setup Considerations

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### Software Requirements

The following Microsoft Windows operating systems are supported:

- Windows 7
- Windows Server 2008\*
- Windows Vista Business/Ultimate\*
- Windows Server 2003 SP2\*
- Windows XP SP2\*

\*When installed on a 64 bit operating system, the application will run in a subsystem of Windows called Windows-on-Windows 64 bit (WOW64). WOW64 is included on all 64 bit versions of Windows and is designed to make operating systems' differences transparent to users.

### Hardware Requirements

At a minimum, the following hardware is required for the server:

- 2.0 GHz processor.
- 1 GB installed RAM.
- 180 MB available disk space.
- Ethernet card.

At a minimum, the following hardware is required for Oracle:

- 512 MB Physical Memory (RAM).
- 1 GB Swap Space (or twice the size of RAM).
- 400 MB available disk space in /tmp.
- 2 GB available disk space for software files.\*
- 1.2 GB available disk space for database files.

\*This includes 1 GB required for installation.

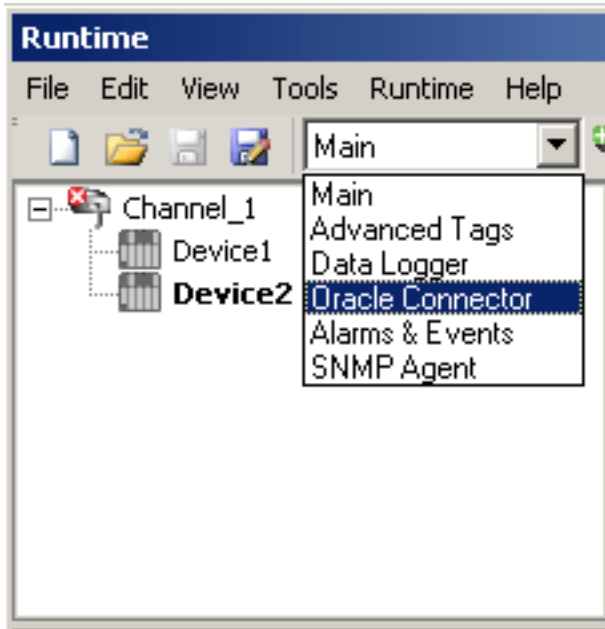
## Oracle Connector Setup

The Oracle Connector configuration defines how a connection will be established in the Oracle database. It also specifies how the items will be pushed to the MES or MOC tables configured in the Oracle database. Although there is one Oracle Connector for each server, multiple connections may be configured to Oracle databases.

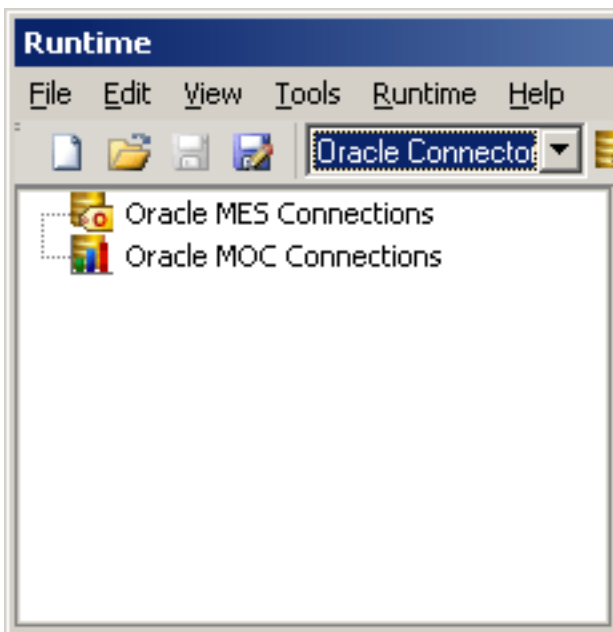
### Launching the Oracle Connector



For information on configuring the Oracle Connector, refer to the instructions below.

1. Open the OPC server. To leverage Oracle connectivity, either open an existing project or create a new project.
2. Next, use the drop-down menu to select Oracle Connector.



Note: The first time an Oracle Connector configuration is created for the server project, the screen will appear as shown below.

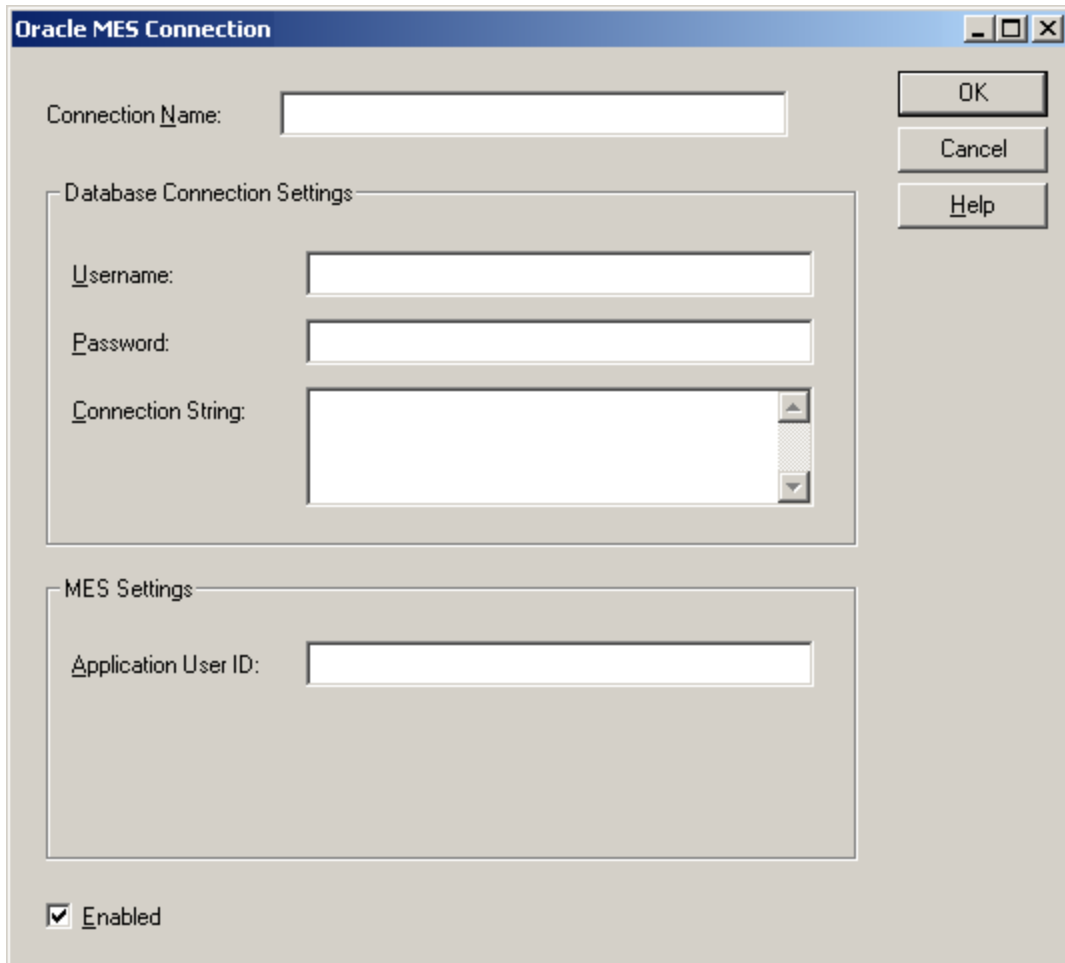


3. To make a new MES connection, right-click on Oracle MES Connections and then select New MES Connection. Alternatively, click the MES icon .
4. To make a new MOC connection, right-click on Oracle MOC Connections and then select New MOC Connection. Alternatively, click the MOC icon .

## Manufacturing Execution System (MES) Configuration

For information on configuring the Manufacturing Execution System (MES), refer to the instructions below.

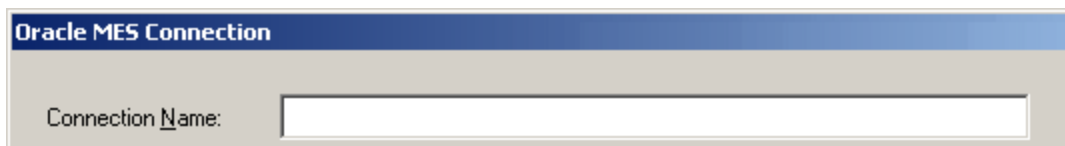
1. To start, right-click on Oracle MES Connections and then select New MES Connection.



The screenshot shows the 'Oracle MES Connection' dialog box. It features a title bar with the text 'Oracle MES Connection' and standard window controls (minimize, maximize, close). The main area contains the following fields and controls:

- Connection Name:** A text input field.
- Database Connection Settings:** A group box containing:
  - Username:** A text input field.
  - Password:** A text input field.
  - Connection String:** A text input field with a scroll bar.
- MES Settings:** A group box containing:
  - Application User ID:** A text input field.
- Enabled:** A checked checkbox.
- Buttons:** 'OK', 'Cancel', and 'Help' buttons are located on the right side of the dialog.

2. In Connection Name, specify a name that is unique across all MOC and MES connections.



This screenshot shows a close-up of the 'Oracle MES Connection' dialog box, specifically the 'Connection Name' field. The title bar 'Oracle MES Connection' is visible at the top. The 'Connection Name' label is followed by an empty text input field.

3. In Username and Password, specify the valid username and password as provided by the Oracle Database Administrator. These are required for connection to the Oracle Database.

Database Connection Settings

Username:

Password:

Connection String:

Help

4. Next, specify the Connection String. For more information, refer to the table below.

Connection String	<p>The connection string is passed to Oracle using the Net Keyword value pair method. A sample string is as follows:</p> <pre>(DESCRIPTION = (ADDRESS_LIST = (ADDRESS = (PROTOCOL = TCP) (HOST = Test Data)(PORT = 1521))))(CONNECT_DATA = (SID = Oracletest) (SERVER = DEDICATED)))</pre> <p>Breakdown of String</p> <ul style="list-style-type: none"> <li>Description</li> <li>Address List</li> <li>Address</li> <li>Protocol = TCP</li> <li>Host = Test Data</li> <li>Port = 1521</li> <li>Address</li> <li>Address List</li> <li>Connect_Data</li> <li>SID = Oracletest</li> <li>Server = Dedicated</li> <li>Connect_Data</li> <li>Description</li> </ul> <p>Note: The SQL URL Connection string method can also be found. For more information on both methods, refer to the Oracle documents and</p>
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5. In Application User ID, specify the station or connection from which the data will be received. This must be a valid User ID as defined in the Oracle MES User Manager.

MES Settings

Application User ID:

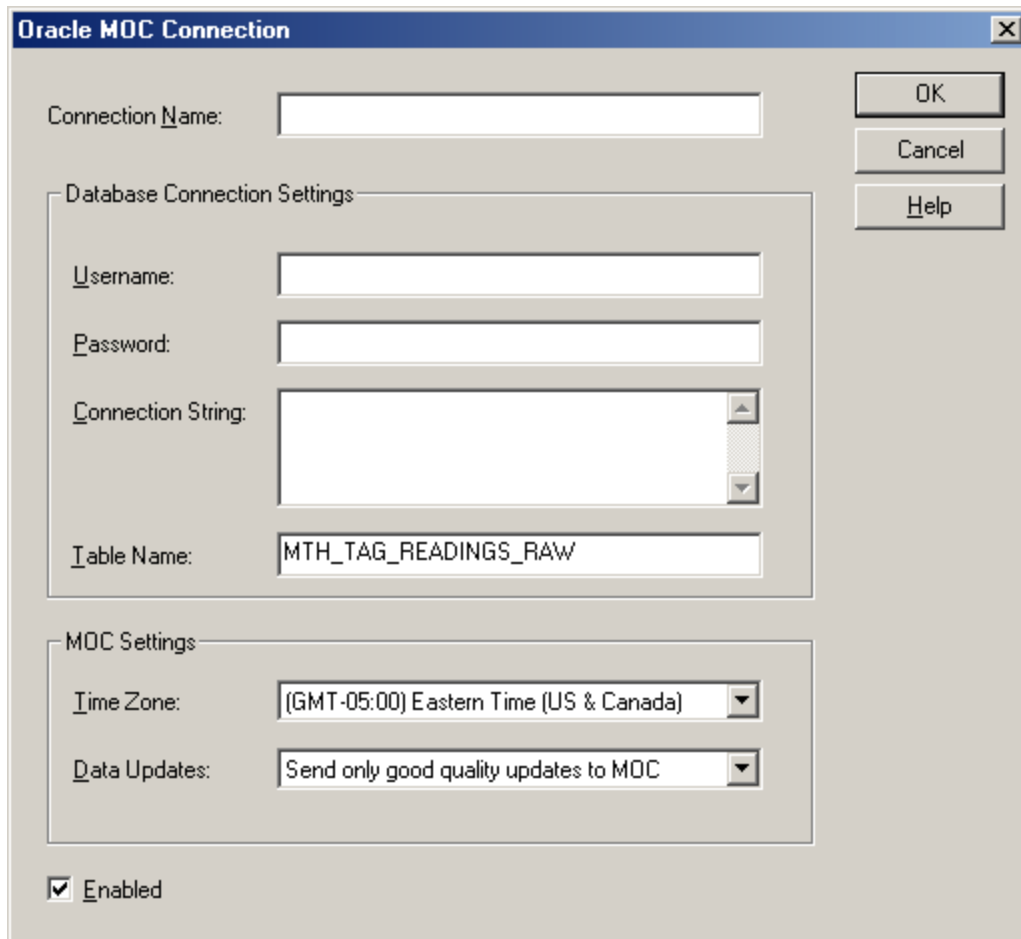
6. Next, check Enabled. If it is not checked, a connection to the database will not be made and data will not be sent to Oracle.



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1. To start, right-click on Oracle MOC Connections and then select New MOC Connection.



Oracle MOC Connection

Connection Name:

Database Connection Settings

Username:

Password:

Connection String:

Table Name:

MOC Settings

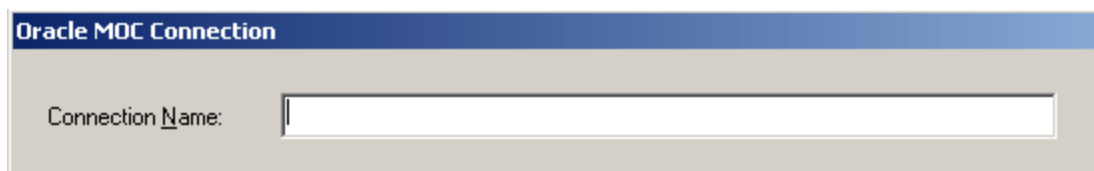
Time Zone:

Data Updates:

Enabled

OK  
Cancel  
Help

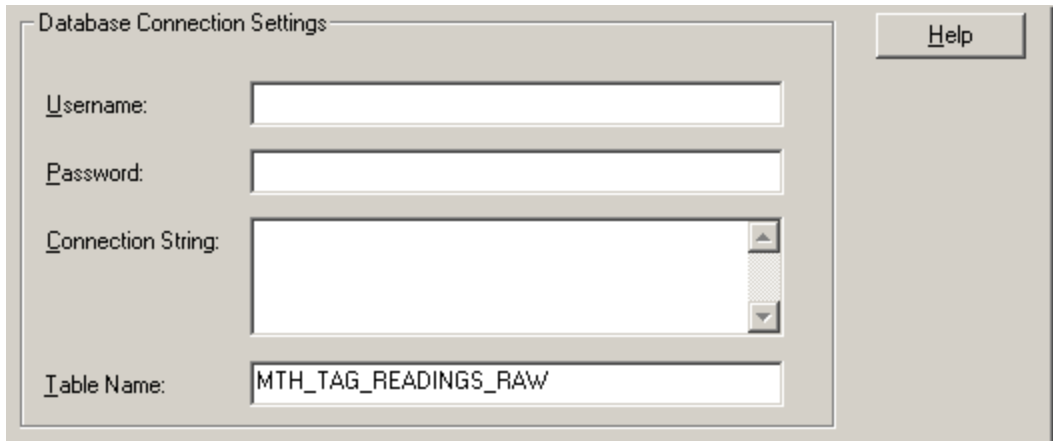
2. In Connection Name, specify a name that is unique across all MOC and MES connections.



Oracle MOC Connection

Connection Name:

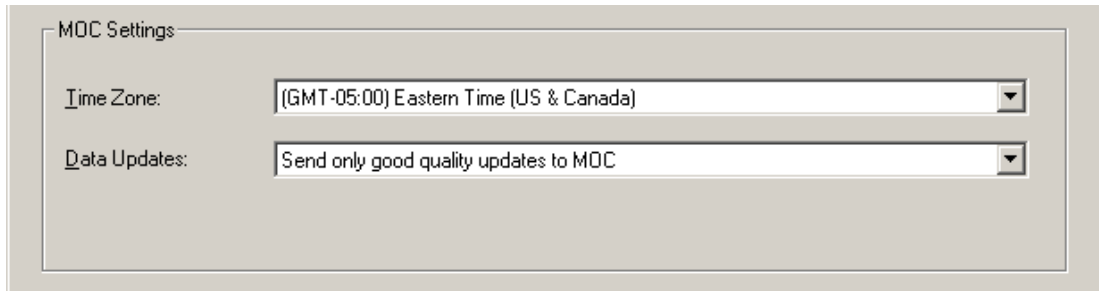
3. In Username and Password, specify the valid username and password as provided by the Oracle Database Administrator. These are required for connection to the Oracle Database.



- Next, specify the Connection String and Table Name parameters. For more information, refer to the table below.

<p>Connection String</p>	<p>The connection string is passed to Oracle using the Net Keyword value pair method. A sample string is as follows:</p> <pre>(DESCRIPTION = (ADDRESS_LIST = (ADDRESS = (PROTOCOL = TCP) (HOST = Test Data) (PORT = 1521)))(CONNECT_DATA = (SID = Oracletest)(SERVER = DEDICATED)))</pre> <p>Breakdown of String</p> <ul style="list-style-type: none"> <li>Description</li> <li>Address List</li> <li>Address</li> <li>Protocol = TCP</li> <li>Host = Test Data</li> <li>Port = 1521</li> <li>Address</li> <li>Address List</li> <li>Connect_Data</li> <li>SID = Oracletest</li> <li>Server = Dedicated</li> <li>Connect_Data</li> <li>Description</li> </ul> <p>Note: The SQL URL Connection string method can also be found. For more information on both methods, refer to the Oracle documents and</p>
<p>Table Name</p>	<p>This parameter specifies the name of the table in the Oracle Database to which the MOC will connect. The table name is limited to thirty characters. The default name is "MTH_TAG_READINGS_RAW".</p> <p>Note: The table must already exist in the database: the connection will not create it.</p>

- In Time Zone, specify the time zone that the server will convert the timestamp to before pushing the data into Oracle. The server timestamps all data stored internally in Coordinated Universal Time (UTC).



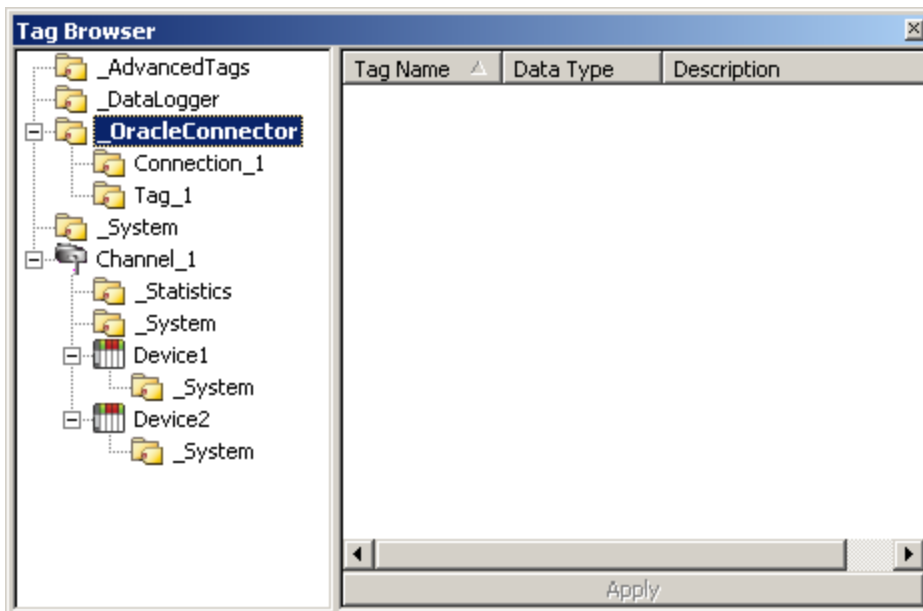
The image shows a dialog box titled "MOC Settings". It contains two dropdown menus. The first dropdown is labeled "Time Zone:" and is set to "(GMT-05:00) Eastern Time (US & Canada)". The second dropdown is labeled "Data Updates:" and is set to "Send only good quality updates to MOC".

6. In

Group ID	Item Name
00001	Channel1.Device 1.Tag1
00001	Channel1.Device 1.Tag2
00002	Channel1.Device 1.Tag3
00003	Channel1.Device 1.Tag1
00003	Channel1.Device 1.Tag2
00004	Channel1.Device 1.Tag3
00005	Channel1.Device 1.Tag1
00005	Channel1.Device 1.Tag2
00006	Channel1.Device 1.Tag3
00007	Channel1.Device 1.Tag1
00007	Channel1.Device 1.Tag2
00008	Channel1.Device 1.Tag3
00009	Channel1.Device 1.Tag1
00009	Channel1.Device 1.Tag2
00010	Channel1.Device 1.Tag3

### Oracle Connector Tag Browser

The Tag Browser opens the server's tag database for browsing.



To select a Server Tag, double-click on it. Alternatively, highlight it and then press Apply. This will return the Server Tag to the connector.

## System Tags

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\_OracleConnector.<connection name>

Tag	Access	Description
_Enabled	Read/Write	1. The connection is connected to Oracle. 2. The connection is attempting to connect to Oracle.
_Error	Read Only	The connection is in an error state.



## Error Descriptions

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The following error/warning messages may be generated. Oracle Connector errors can appear in two places: in message boxes (while editing or creating a connection) or in the server Event Log. Click on the link for a detailed description of the message.

### Oracle Connector General Messages

[A connection with the name <connection name> already exists.](#)

[Attempt to add Oracle Connector client item <item name> failed.](#)

[Error logging on connection <connection name>. Data has been lost. Make sure the oracle connection information and table are correct.](#)

[Failed to initialize Oracle interface <connection name>.](#)

[Failed to register connection <connection name> with the Oracle interface \(unable to access storage-forward file\).](#)

[Failed to uninitialize Oracle interface <connection name>.](#)

[Names must contain one or more characters and cannot contain periods, double quotations or start with an underscore.](#)

[The rate must be within the range of 10 milliseconds and 49 days.](#)

### MOC-Specific Messages

[Failed to register MOC connection <connection name> with the Oracle interface <Oracle error>.](#)

[Failed to register MOC item <item name> on connection <connection name> with the Oracle interface <Oracle error>.](#)

[Failed to send data update for MOC item <item name> on connection <connection name> with the Oracle interface <Oracle error>.](#)

[Failed to unregister MOC connection <connection name> with the Oracle interface <Oracle error>.](#)

[Failed to unregister MOC item <item name> on connection <connection name> with the Oracle interface <Oracle error>.](#)

[Tag <tag name> does not exist or](#)

---

**A connection with the name <connection name> already exists.**

---

Error Type:  
Warning

Possible Cause:

A new connection was created with the same name as one that already exists.

Solution:

Rename the connection with a name unique to all MOC and MES connections.

---

**Attempt to add Oracle Connector client item <item name> failed.**

---

Error Type:  
Warning

Possible Cause:

1. An item referenced in the connector no longer exists in the server project.
2. While saving and editing the project in the XML format, an item referenced in the connector has had its name changed.

Solution:

1. Rename or re-add the item being referenced from the connector.
2. Remove the item reference from the connector.

---

**Error logging on connection <connection name> . Data has been lost. Make sure the oracle connection information and table are correct.**

---

Error Type:  
Error

Possible Cause:

1. The connection to the database was lost.
2. The table no longer exists.

Solution:

1. Verify that the database is still available by connecting an SQL client or by pinging a remote database.
2. Ensure that the table being logged to is available.

Note:

MES connections default to tables "QA\_DEVICE\_DATA\_VALUES" and "QA\_DEVICE\_INFO". MOC connections allow the table name to be configured.

---

**Failed to initialize Oracle interface <connection name> .**

---

Error Type:  
Warning

Possible Cause:

One or more of the required Oracle files may not be installed or may be out of sequence.

Solution:

1. Verify that all required files were installed correctly.
2. Check the returned Oracle Error with the Database Administrator, the Oracle Documentation or the [Oracle Database Errors](#) on the Oracle website.



Failed to register connection < connection name > with the Oracle interface (unable to access storage-forward file).

Error Type:

Error

Possible Cause:

1. Two MES connections are connected to the same database using the same connection string, username, and password.
2. Two MOC connections are connected to the same database using the same connection string, username, and table name.

Solution:

1. For MES connections, only one connection is allowed per database. Combine the MES items for duplicate connections, and then remove the duplicate connections.
2. For MOC connections, only one connection and table pair are allowed per database. Combine the MOC items for duplicate connection and table pairs, and then remove the duplicates.

Notes:

1. If multiple MES connections are desired, use a different username and password for each connection.
2. If multiple MOC connections to a database and table are desired, use a different username and password for each connection.

Failed to uninitialized Oracle interface < connection name > .

Error Type:

Warning

Possible Cause:

1. One or more of the required Oracle files may not be installed or may be out of sequence.
2. The connection to the database may be unresponsive or unrecovered.

Solution:

1. Verify that all required files were properly installed.
2. Check the returned Oracle Error with the Database Administrator, the Oracle Documentation or the [Oracle Database Errors](#) on the Oracle website.

Names must contain one or more characters and cannot contain periods, double quotations or start with an underscore.

Error Type:

Warning

Possible Cause:

Either the connection name was left blank, or it contains one or more reserved characters.

Solution:

Name or rename the connection without any reserved characters.

The rate must be within the range of 10 milliseconds and 49 days.

Error Type:

Warning

Possible Cause:

The Expire Rate of the MES Item was set to less than 10 M/SEC or greater than 49 days.

Solution:

Reset the Expire Rate to be within the range of 10 M/SEC to 49 days.

o no

Failed to register MOC connection <connection name> with the Oracle interface <Oracle error> .

---

Error Type:

Warning

Possible Cause:

1. One or more of the connection string parameters may be incorrect.
  2. One or more of the Oracle Interface Files may not be present.
  3. The Oracle interface
-

Check the returned Oracle Error with the Database Administrator, the Oracle Documentation, or the [Oracle Database Errors](#) on the Oracle website.

Failed to unregister MOC connection <connection name> with the Oracle interface <Oracle error> .

---

Error Type:

Warning

Possible Cause:

1. One or more of the required Oracle files may not be installed or may be out of sequence.
2. The connection to the database may be unresponsive or unrecovered.

Solution:

1. Verify that all required files were installed correctly.
2. Check the returned Oracle Error with the Database Administrator, the Oracle Documentation or the [Oracle Database Errors](#) on the Oracle website.

Failed to unregister MOC item <item name> on connection <connection name> with the Oracle interface <Oracle error> .

---

Error Type:

Warning

Possible Cause:

1. One or more of the required Oracle files may not be installed or may be out of sequence.
2. The connection to the database may be unresponsive or unrecovered.

Solution:

1. Verify that all required files were installed correctly.
2. Check the returned Oracle Error with the Database Administrator, the Oracle Documentation or the [Oracle Database Errors](#) on the Oracle website.

Tag <tag name> does not exist or you are trying to add a dynamic reference which is not allowed for MOC connections.

---

Error Type:

Warning

Possible Cause:

1. An attempt was made to reference a physical PLC address (Dynamic addressing).
2. The user manually entered a tag reference and mistyped it.
3. The user created the server project using an XML editor and referenced tags that did not exist in the Oracle Connector portion of the project file.

Solution:

1. Create a tag for the desired item and then reference the tag correctly.
2. Enter a correct tag reference.

Failed to add MES item <item name> with the Oracle interface <Oracle error> .

---

Error Type:

Warning

Possible Cause:

1. The MES Item Value and Item Info tables do not exist.
2. A timeout has occurred while waiting to add the item.
3. The login does not have the access to add items to the tables.

Solution:

1. Ensure that Oracle MES Package has been installed correctly.
2. Ensure that no table from the Oracle Database has been deleted or removed.
3. Check the returned Oracle Error with the Database Administrator, the Oracle Documentation or the [Oracle Database Errors](#) on the Oracle website.

Failed to delete MES item <item name> with the Oracle interface <Oracle error> .

---

Error Type:

Warning

Possible Cause:

1. The MES Item Value and Item Info tables do not exist.
2. A timeout has occurred while waiting to remove the item.
3. The login does not have the access to add items to the tables.

Solution:

Check the returned Oracle Error with the Database Administrator, the Oracle Documentation or the [Oracle Database Errors](#) on the Oracle website.

Failed to register MES connection <connection name> with the Oracle interface <Oracle error> .

---

Error Type:

Warning

Possible Cause:

1. One or more of the connection string parameters may be incorrect.
2. One or more of the Oracle Interface Files may not be present.
3. The Oracle interface service may have stopped.

Solution:

1. Verify and correct all parameters in the connection string.
2. Verify that all Oracle files have been installed.
3. Check the returned Oracle Error with the Database Administrator, the Oracle Documentation or the [Oracle Database Errors](#) on the Oracle website.



Failed to register MES item <item name> on connection <connection name> with the Oracle interface <Oracle error>.

---

Error Type:

Warning

Possible Cause:

1. The MES "QA\_Device\_Data\_Values" and the "QA\_Device\_Info" tables may not exist.
2. A timeout occurred while waiting to register the item.

Solution:

1. Ensure that the Oracle MES Package has been installed correctly.
2. Ensure that no table from the Oracle Database has been deleted or removed. a s o
3. Check the returned Oracle Error with the Database Administrator, the Oracle Documentation, or the [Oracle Database](#)

Warning

Possible Cause:

1. One or more of the required Oracle files may not be installed or may be out of sequence.
2. The connection to the database may be unresponsive or unrecovered.

Solution:

1. Verify that all required files were installed correctly.
2. Check the returned Oracle Error with the Database Administrator, the Oracle Documentation or the [Oracle Database Error Codes](#) on the Oracle website.

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Tag < tag name> does not exist or you are trying to add a dynamic reference which is not allowed for MOC connections. 19

The rate must be within the range of 10 milliseconds and 49 days. 17