Oracle Utilities Customer To Meter Integration to Oracle Utilities Network Management System

Installation Guide

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Oracle Utilities Customer To Meter Integration to Oracle Utilities Network Management System Installation Guide, Release 12.1

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Preface

Welcome to the Oracle Utilities Customer To Meter Integration to Oracle Utilities Network Management System Installation Guide.

The preface includes the following:

- Audience
- Documentation and Resources
- Documentation Accessibility
- Conventions
- Abbreviations

Audience

This document is intended for anyone implementing the Oracle Utilities Customer to Meter Integration to Oracle Utilities Network Management System. It can also be used as a reference for anyone implementing Oracle Utilities Customer Cloud Service Integration to Oracle Utilities Network Management System, or Oracle Utilities Customer Care and Billing and Oracle Utilities Meter Data Management (separate instance) Integration to Oracle Utilities Network Management System.

Important! For Oracle Utilities Customer Care and Billing and Oracle Utilities Meter Data Management (separate instance) implementations, this document assumes that the direct integration has been configured.

Documentation and Resources

For more information regarding this integration, foundation technology and the edge applications, refer to the following documents:

Product Documentation

Topic	Description
Oracle Utilities Customer To Meter Integration to Oracle Utilities Network Management System documentation	
Oracle Utilities Network Management System documentation	Refer to the Oracle Utilities applications documentation page: http://docs.oracle.com/cd/E72219_01/documentation.html
Oracle Utilities Customer To Meter documentation	
Oracle Utilities Meter Data Management documentation	
Oracle Utilities Customer Cloud Service documentation	

Additional Documentation

Resource	Location
SOA Suite 12c (12.2.1.4.0) documentation	Refer to the SOA documentation at: http://www.oracle.com/technetwork/middleware/soasuite/documentation/index.html https://docs.oracle.com/en/middleware/soa-suite/soa/12.2.1.4/
Oracle Support	Visit My Oracle Support at https://support.oracle.com regularly to stay informed about updates and patches. Access the support site for the Edge Application Certification Matrix for Oracle Utilities Products (Doc ID 1454143.1) or refer to the Oracle Utilities Integrations page at http://my.oracle.com/site/tugbu/productsindustry/productinfo/utilities/integration/index.htm
Oracle Technology Network (OTN) Latest versions of documents	http://www.oracle.com/technetwork/index.html
Oracle University for training opportunities	http://education.oracle.com/
Web Services Security	For more information about Web services security using Oracle Fusion Middleware 12c refer to https://docs.oracle.com/middleware/12211/cross/webservicestasks.htm.
Oracle Fusion Middleware 12c (12.2.1.4.0) documentation	Refer to the Oracle applications documentation page: https://docs.oracle.com/en/middleware/soa-suite/soa/12.2.1.4/
Oracle Fusion Middleware "What's New In Oracle WebLogic Server" **Section**: Standards Support, Supported Configurations and WebLogic Server Compatibility, Database Interoperability For additional information on the type of database to use.	http://docs.oracle.com/middleware/1221/wls/NOTES/toc.htm
Instructions on installing this integration on non-Windows/ Linux platforms	Refer to Oracle Support Knowledge Article ID 1349320.1

Documentation Accessibility

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

Access to Oracle Support
Oracle customers have access to electronic support for the hearing impaired. Visit:
http://www.oracle.com/pls/topic/lookup?ctx=acc&id=info or http://www.oracle.com/pls/topic/lookup?ctx=acc&id=trs

Conventions

The following text conventions are used in this document:

Convention	Meaning
boldface	Boldface type indicates graphical user interface elements associated with an action, or terms defined in text or the glossary.
italic	Italic type indicates book titles, emphasis, or placeholder variables for which you supply particular values.
monospace	Monospace type indicates commands within a paragraph, URLs, code in examples, text that appears on the screen, or text that you enter.

Abbreviations

The following terms and acronyms are used throughout this guide.

Application Names

Term	Expanded Form
C2M	Oracle Utilities Customer To Meter
NMS	Oracle Utilities Network Management System

General Terms

Term	Description
DVM	Domain Value Map
BPEL	Business Process Execution Language
MDS	Metadata Store
EBF	Enterprise Business Flow
JMS	Java Message Service
JMS Queue	A staging area that contains messages those have been sent and are waiting to be read. The JMS Queues are available on the WebLogic Application Server.

Term	Description
SOA	Service-Oriented Architecture - Software modules provided as services can be integrated or used by several applications using SOA, even if their respective architectures are substantially different. Rather than defining an API, SOA defines the interface in terms of protocols and functionality.
Edge applications	Applications involved in the integration - Oracle Utilities Customer Care and Billing (CCB) and Oracle Utilities Network Management System (NMS).
SOAP	Simple Object Access Protocol is a protocol specification for exchanging structured information in the implementation of Web Services in computer networks.
SA	CCB Service Agreement
SP	CC&B Service Point
XSD	A schema definition file
Fuzzy Calls	Trouble Calls that are not initially associated with a customer or device
UI	User Interface

Chapter 1

Integration Overview

This chapter provides information on prerequisites for installing the integration between Oracle Utilities Customer To Meter and Oracle Utilities Network Management System. It includes the following:

- Supported Source Application Versions
- Integration Pack Software Requirements

Supported Source Application Versions

This integration supports the following applications:

- Oracle Utilities Customer To Meter

- Oracle Utilities Network Management System

- Service Oriented Architecture (SOA)

Refer to the *Certification Matrix for Oracle Utilities Products* (Document ID 1454143.1) on My Oracle Support for current/supported application version details.

Integration Pack Software Requirements

The following software and platforms must be installed and configured before the integration package can be installed.

- Participating Applications

- Oracle SOA/WebLogic Server

Refer to the *Certification Matrix for Oracle Utilities Products* (Document ID 1454143.1) on My Oracle Support for current/supported application version details.

Participating Applications

- Oracle Utilities Customer To Meter installed on an Oracle database with the latest supported service pack

- Oracle Utilities Network Management System installed on an Oracle database with the latest supported service pack

Oracle SOA/WebLogic Server

- Oracle SOA suite 12c with Oracle Enterprise Manager 12.2.1.4.0 on WebLogic Server 12.2.1.4.0

Chapter 2

Installation

This section describes the settings and requirements for a successful installation of the Oracle Utilities Customer To Meter integration to Oracle Utilities Network Management System including:

- Pre-Installation Tasks
- Installation Steps
- Post-Installation Checklist
- Configuring Edge Applications
- Security Policies

Pre-Installation Tasks

The following tasks should be completed before you install the integration package:

1. Verify that Oracle SOA Suite 12c is installed and running.
   For more information, refer to the documentation at http://www.oracle.com/technetwork/middleware/soasuite/documentation/index.html.

2. Login to the **WebLogic Server Administration** console to confirm there are no changes in **Pending Activation** status.

   Complete this step to verify that the WebLogic Server is in a healthy state. If any items are in **Pending Activation** status, then there is likely an issue on the server. All issues must be resolved before you can proceed with the installation.

3. Start **Node Manager**, if not already running.

4. Restart the **WebLogic Managed s**erver and the **WebLogic Admin** server.

5. Verify that the **Weblogic Admin Server**, **Managed Server**, and **Node Manager** are up and running.

   > Note: The syntax for PRODUCT_HOME changes depending on whether you are installing on Linux or Windows. The following sections refer to this as $PRODUCT_HOME/ in Linux and as %PRODUCT_HOME%\ in Windows. In general, note that the forward slash (/) is used as the path separator on Linux and the back slash (\) is used on Windows.

   > Excusing any inadvertent syntax errors in this guide, these conventions should be followed for all commands depending on your operating system.

   > Also, as installation commands and arguments are lengthy, please copy the installation commands in a text file and verify that the command is formatted correctly without any syntax or formatting errors.

Installation Steps

To install the integration:

1. Download the installation C2M-NMS.zip file from Oracle Software Delivery Cloud (http://edelivery.oracle.com/).

   > **Note**: For specific instructions about installing this integration on non-Windows/Linux platforms, refer to Oracle Support Knowledge article ID 1349320.1. (The process described refers specifically to the C2M-MDM integration, however it applies to any integration being installed on alternate platforms).

2. Extract the zip file to get the installation folder. This folder includes subfolders such as bin, config, Install, MDS-Artifacts, and services.

3. Verify that the environment variables for Linux and Windows operating systems.

Variable	Example
MW_HOME	XXX/Middleware

Variable	Example
SOA_HOME	XXX/Middleware/soa
ORACLE_HOME	XXX/Middleware/soa
PRODUCT_HOME	The product installation folder. Example: PRODUCT_HOME=/scratch/PRODUCT_HOMES/C2M-NMS

The commands indicated in the readme file (setWLSEnv.sh on Linux and setWLSEnv.bat on Windows) set the environment variables used for executing the installation scripts.

Below is an example to set up environment variables in a typical installation:

Linux

```
export MW_HOME=/Oracle/Middleware/soa
export SOA_HOME=$MW_HOME/soa
export PRODUCT_HOME=/Product_Homes/C2M-NMS
source $MW_HOME/wlserver/server/bin/setWLSEnv.sh
```

Windows

```
SET MW_HOME=C:\Oracle\Middleware\soa
SET SOA_HOME=%MW_HOME%\soa
SET PRODUCT_HOME=C:\Product_Homes\C2M-NMS
cd %MW_HOME%/wlserver/server/bin/
setWLSEnv.cmd
```

Also note the following:

- PRODUCT_HOME/install/util/ant folder contains all the ant build scripts.

- PRODUCT_HOME/bin/InstallBuild.xml is used to install C2M-NMS integration code.

- PRODUCT_HOME/bin/UnInstallBuild.xml is used to uninstall C2M-NMS integration code.

- PRODUCT_HOME/bin/DeployUndeployUtility.xml is used to deploy/ undeploy individual composite/ MDS folder and then restart the managed server.

Note: The installation process may take several minutes to complete.

4. Install the integration. This section provides additional detail to supplement those steps.

    a. Update the **InstallProperties.xml** and **OUC2MOUNMSConfigurationProperties.xml** files with appropriate values.

       - InstallProperties.xml
         File location: $PRODUCT_HOME/config

       - OUC2MOUNMSConfigurationProperties.xml
         File location: $PRODUCT_HOME/MDS-Artifacts/C2M-NMS/ AIAMetaData/config

    For detailed instructions on various properties, refer to Chapter 5: Installation Properties.

b. Navigate to the product home directory/bin folder.

```
cd $PRODUCT_HOME/bin (linux)
cd %PRODUCT_HOME%\bin (windows)
```

c. Execute the following commands:

Linux:

```
ant -f InstallBuild.xml installDB -
DInstallProperties=$PRODUCT_HOME/config/InstallProperties.xml |
tee idb.log
ant -f InstallBuild.xml installWL -DinstallJMSWrappers=true  -
DInstallProperties=$PRODUCT_HOME/config/InstallProperties.xml
| -l iwl.log
ant -f InstallBuild.xml installSOA -
DInstallProperties=$PRODUCT_HOME/config/InstallProperties.xml |
tee isoa.log
```

Windows:

```
ant -f InstallBuild.xml installDB -
DInstallProperties=%PRODUCT_HOME%/config/InstallProperties.xml
-l idb.log
ant -f InstallBuild.xml installWL -
DInstallProperties=%PRODUCT_HOME%/config/InstallProperties.xml
-l iwl.log
ant -f InstallBuild.xml installSOA -
DInstallProperties=%PRODUCT_HOME%/config/InstallProperties.xml
-l isoa.log
```

The `installDB` commands perform the followings tasks:

- Create the Error Handling user for the integration.

- Create the Error Handling tables and Error Lookup tables.

- Insert the seed data that is used for Error Handling scenarios that occur during the BPEL flow instances.

The `installWL` commands perform the following tasks:

- Create the JDBC DataSource for the ErrorHandling Module.

- Create an outbound connection pool instance for the database by updating the DBAdapter_C2M-NMS.rar file.

- Create JMS server/JMS module/JMS connection pool/JMS persistence store/JMS queues and assigns the error queues to the interface queues.

- Create JMS outbound connections to both Oracle Utilities Network Management System and Oracle Utilities Customer To Meter by updating the JMSAdapter_C2M-NMS.rar file.

- Create the csf key for the integration.

The `installSOA` commands perform the following tasks:

- Update the MDS repository with all artifacts.

- Create the application partition where the composites are deployed.
  For example: C2M-NMS

- Compile and deploy all composites.

Note that configureUMSEmailProperties in the InstallBuild.xml can be uncommented if you have the Email SMTP server configured at the Organization level and corresponding port is enabled to provide outbound email notifications.

Post-Installation Checklist

After running the installation scripts, you must complete the following tasks to finalize the installation:

1. Review the logs under $MW_HOME/user_projects/domains/soa_domain/ servers/<managed_server>/logs to check for deployment errors.

2. Verify that all JDBC resources were created.
    Refer to the Verifying JDBC Configuration section for instructions.

3. Verify that all the composites in the Enterprise Manager are deployed.
    Refer to the Verifying Composites in Enterprise Manager section for instructions.

4. Verify that the user messaging service is active.
    Refer to the Verifying the User Messaging Service List section for instructions.

5. Verify that the security policies are attached.
    Refer to the Verifying the Attached Policies from Enterprise Manager section for details.

Verifying JDBC Configuration

To verify the JDBC configuration:

1. Open the **WebLogic Admin** console.

2. Navigate **Home** > **Deployments**.

3. Verify that **DBAdapter_C2M-NMS.rar** is deployed and is in **Active** state.

4. Verify the connection factory details to ensure the connection-factory location matches with the one defined in the JCA files:

    a. Click the **DBAdapter_C2M-NMS** link on the **Deployments** table.

    b. Click the **Configuration** tab and click **Outbound Connection Pools**.

    c. Expand **javax.resource.cci.ConnectionFactory** to check eis/DB/C2M-NMSErrorHandling, eis/DB/NMS connection factory instance.

5. Check to make sure the database details are correct for below data sources:

    Error Handling Data Source:

    a. On the left pane, click the **Services** > **Data Sources**.

    b. Click the **C2M-NMSEHDS** data source link to verify that the **JNDI Name** is "jdbc/C2M-NMSEHDS".

    c. Click the **Connection Pool** tab to check the **URL** and **Properties**.

    d. Click **Monitoring** > **Testing**, select the target server, and then click **Test Data Source**.
        Verify that the data source has been configured successfully.

NMS Data Source:

a. On the left pane, click the **Services** >**Data Sources**.

b. Click the **NMSJDBCDatasource** data source link to verify that the **JNDI Name** is jdbc/NMSJDBCDatasource.

c. Click the **Connection Pool** tab to check the **URL** and **Properties**.

d. Click **Monitoring** > **Testing**, select the target server, and then click **Test Data Source**.
Verify that the data source has been configured successfully.

6. Test the datasource for correct configurations:

a. Click the **Monitoring** > **Testing** tab.

b. Select the target server (**SOA Managed** server) and click **Test Data Source**.

c. Verify that the data source has been configured successfully.

JMS Configuration Checklist

This section includes the components to be verified as part of verifying the configuration checklist.

- Verifying JMS Server
- Verifying JMS Persistent Store
- Verifying JMS Module
- JMS Queues Details
- JMS Error Queue Assignment
- JMS Adapter Outbound Connection Pool

Verifying JMS Server

1. Verify whether **C2MNMSFJS JMS Server** is created.

On the **Left** pane, select **Services** > **Messaging** > **JMS Servers** and check for the presence of **CCBNMSFJS server**.

Verifying JMS Persistent Store

1. Verify whether the **C2MNMSFileStore Persistent Store** is created.

a. On the **Left** pane, select the **Services** > **Persistent Store** and check for the presence of C2MNMSFileStore.

b. Verify that the **JMSFileStorePath** is correct and the directory exists with this name with write permission by clicking on **C2MNMSFileStore**.

Directory: Product_Home/C2M-NMS

Synchrounous Write Policy: Direct-Write

Verifying JMS Module

Verify whether the C2MNMSFJM JMS module and destinations are created:

a. On the **Left** pane, select **Services** > **Messaging** > **JMS Modules**.

b. Click the **C2MNMSFJM JMS** module to verify that all the below four queues are created and they are associated to the correct subdeployment and the correct target (CCBNMSFJS JMS server).

- OUC2MCustomerDataSyncRequest
- OUC2MCustomerDataSyncRequestError
- OUC2MCustomerDataSyncResponse
- OUC2MCustomerDataSyncResponseError

c. Make sure all queues are populated with the server option assigned to it and target server mapped.

JMS Queues Details

a. On the **Left** pane, select **Services** > **Messaging** > **JMS Modules** > **C2MNMSFJM** > **OUC2MCUstomerDataSyncRequest** or any other queue.

b. Select the **Monitoring** tab.

If the **JMSMODULENAME!JMSQUEUENAME** row is not present in the **Destinations** table, there were problems with the installation.

JMS Error Queue Assignment

There are two destination queues and another two corresponding error queues associated for the destination queues. Here C2MNMSCustomerDataSyncRequest is the regular destination queue and C2MNMSCustomerDataSyncRequestError is the corresponding error queue.

Perform the following steps:

a. On the **Left** pane, select **Services** > **Messaging** > **JMS Modules** > **C2MNMSFJM** -> **OUC2MCustomerDataSyncRequest**.

b. Check for the RedeliveryLimit set to 0, ExpirationPolicy to Redirect and Error Destination to corresponding Error Queue.

c. Select the **Delivery Failure** option with the redirect and ErrorQueue assigned in it.

JMS Adapter Outbound Connection Pool

Complete the following steps:

a. On the **Left** pane, select the **Deployments,** click **JMS Adapter** and select the **Configuration** tab.

b. Under the **Outbound Connection Pools** tab, in the **Outbound Connection Pool Configuration** table, expand **oracle.tip.adapter.jms.IJmsConnectionFactory** and verify for the presence of **eis/wls/OUC2MQueue** connection pool instance.

Verifying Composites in Enterprise Manager

To verify that all composites are deployed and in the active state:

1. Verify the **C2M-NMS** partition was created with all the composites are deployed.

2. Login to the Enterprise Manager.

3. On the **Left** pane, expand **SOA** > **soa-infra** > **C2M-NMS partition** and check all the below composites are deployed, and are in the active state.

   - ErrorHandling [1.0]

   - ErrorHandlingHumanIntervention [1.0]

   - ErrorProcessingDetail [1.0]

   - ErrorProcessingMaster [1.0]

   - OUC2MOUNMSCustomerSyncEBF [1.0]

   - OUC2MOUNMSJobHistoryQueryEBF [1.0]

   - OUC2MOUNMSPlannedOutagesQueryEBF [1.0]

   - OUC2MOUNMSTroubleCallInterfaceEBF [1.0]

   - OUC2MOUNMSTroubleCallsQueryEBF [1.0]

   - PurgeIntegrationErrorStore [1.0]

   - UpdateIntegrationErrorLookupTable [1.0]

   - OUC2MOUNMSCustomerSyncJMSWriteSvc

   - OUC2MOUNMSCustomerSyncJMSReadSvc

Verifying the User Messaging Service List

To verify the user messaging service list:

1. In the WebLogic Administration console, navigate to **Deployments**.

2. Verify that the **usermessagingdriver-email** email driver is **Active**.

3. If not, navigate to **usermessagingdriver-email** > **Targets <managed server>**.

   Example: soa_server1

   Select **Yes** and click **Activate Changes**.

4. In the WebLogic Enterprise Manager console, navigate to **soa-infra [managed server]**.

5. Right-click the soa-infra [managed server] node, select **SOA Administration**, and then select **Workflow Properties**.

6. Verify that the **Notification Mode** under **Workflow Properties** is set to **Email**.

7. Navigate to the **User Messaging Service** node, and select the **usermessagingserver [managed server]** entry.

   Example: usermessagingserver (soa_server1).

   Notice that the e-mail driver is already enabled.

Verify that the name is set to usermessagingdriver-C2MNMS, **Driver Type** is set to "e-mail" and **Configuration Level** is set to "Domain".

8. Click **Configure Driver** to check the e-mail driver properties and view the specific configuration details as shown in the below.
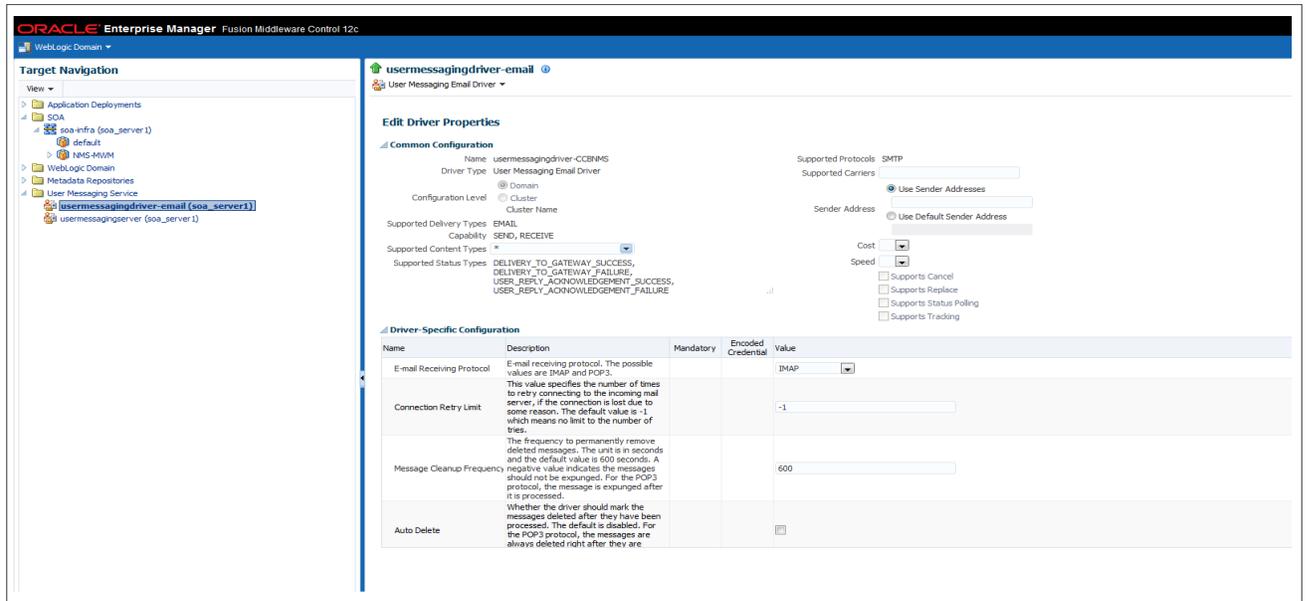
Verifying the Attached Policies from Enterprise Manager

To verify the policies attached to the web services that each BPEL process is using:

1. Login to **Enterprise Manager**.

2. Expand **SOA** > **soa-infra** > **C2M-NMS partition**.

   Example: Select **OUC2MOUNMSCustomerSyncJMSReadSvc**, scroll down to the **Services and References** section in the **Dashboard** tab.

3. Click the service and select the **Policies** tab.

4. Verify that the web service reference is calling a C2M web service and is linked to an appropriate client policy.

5. Verify that the service policy is attached where appropriate.

6. Repeat this process for other composites randomly to verify that the appropriate policies are attached as mentioned in the Installation Properties file. Refer to the Security Policies section for more information.

Configuring Edge Applications

Configure the Oracle Utilities Customer To Meter and Oracle Utilities Network Management System installation to point to the integration according to the guidelines in the *Oracle Utilities Customer To Meter Integration to Oracle Utilities Network Management System Implementation Guide*.

Security Policies

When a composite needs to invoke an edge application web service, an appropriate security policy should be attached to the reference web service of the composite.

- Invoking edge application XAI Service

    When calling an edge application XAI service, the security policy to attach to the reference web service of the composite is oracle/wss_http_token_client_policy.

- Invoking edge application Inbound Web Service (IWS)

    When calling an edge application Inbound Web Service (IWS), the security policy to attach to the reference web service of the composite is dependent on the annotation specified in the IWS wsdl.

    - If a security policy annotation is specified in the edge application's Inbound Web Service, use the policy specified.

        Example 1: The policy defined in the IWS wsdl is UsernameToken, meaning that oracle/wss_username_token_client_policy should be attached to the composite's reference web service.

```
<wsp:UsingPolicy wssutil:Required="true"/>
- <ns0:Policy wssutil:Id="UsernameToken">
  - <ns1:SupportingTokens>
    - <ns0:Policy>
      - <ns1:UsernameToken ns1:IncludeToken="http://docs.oasis-open.org/ws-sx/ws-securitypolicy/200512/IncludeToken/AlwaysToRecipient">
        - <ns0:Policy>
            <ns1:WssUsernameToken10/>
          </ns0:Policy>
      </ns1:UsernameToken>
    </ns0:Policy>
  </ns1:SupportingTokens>
</ns0:Policy>
```

Example 2: The policy defined in the IWS wsdl is Https-BasicAuth xml meaning that HTTP Basic Authentication over SSL Including Timestamp is required. The oracle/wss_http_token_over_ssl_client_policy should be attached to the composite's reference web service.

```
<wsp:UsingPolicy wssutil:Required="true"/>
- <ns0:Policy wssutil:Id="Wssp1.2-2007-Https-BasicAuth.xml">
  - <ns1:TransportBinding>
    - <ns0:Policy>
      - <ns1:TransportToken>
```

- If no security policy annotation is specified in the edge application's Inbound Web Service and the edge application is using Framework 4.3.0.2.0, a default security policy oracle/wss_http_token_over_ssl_client_policy will be used by the edge application's Inbound Web Service. The default policy can be changed in the edge application's Feature Configuration Menu.

    Refer to the specific edge application implementation guide for more information.

- If the edge application is using Framework 4.2.0, a security policy annotation has to be specified in the edge application's Inbound Web Service. In this version of framework, there is no default security policy specified. oracle/

wss_http_token_client_policy has to be specified in the edge application's Inbound Web Service security policy annotation.

Chapter 3

Deploying/Undeploying Individual Composites

This section describes how to deploy/undeploy individual composites for incremental builds or patches. It includes the following sections:

- Undeploying Composites
- Deploying Individual Composites

Undeploying Composites

If the composite being deployed involves changes made to the MDS artifacts, you must first undeploy the composite.

To undeploy the composite:

1. Open a command prompt and execute the following commands for Linux and Windows respectively.

   Set the environment variables as described above in the installation steps.

   Linux

   ```
   cd $PRODUCT_HOME/bin
   ant -f DeployUndeployUtility.xml -DInstallProperties=$PRODUCT_HOME/
   config/InstallProperties.xml UnDeployComposite
   ```

   Windows

   ```
   cd %PRODUCT_HOME%\bin
   ant -f DeployUndeployUtility.xml -
   DInstallProperties=%PRODUCT_HOME%\
   config\InstallProperties.xml UnDeployComposite
   ```

2. Validate the following parameters when prompted with default values during deployment. Press ENTER to use the default value.

   - **Composite Name**: Name of the composite to be undeployed to SOA server. This parameter does not have a default value.

   - **Composite Folder Location**: The folder name should be an absolute path, beginning with <PRODUCT_HOME>/services/industry/Utilities/<EBF>.

     For example: If you are planning to undeploy the composite from <PRODUCT_HOME>/services/industry/Utilities/EBF, then pass <PRODUCT_HOME>/services/industry/Utilities/EBF to this property.

   - The default value for this property is <PRODUCT_HOME>**/services/industry/Utilities/EBF**, as most of the business-specific composites reside in this folder.

   - **SOA Partition Name**: The SOA partition name from where the composite should be undeployed.

3. Press **Enter** to use the default value.

Deploying Individual Composites

To deploy individual composites:

1. Open a Command prompt, and execute the following commands for Linux and Windows respectively.

   Linux

   ```
   cd $PRODUCT_HOME/bin
   ant -f DeployUndeployUtility.xml -DInstallProperties=$PRODUCT_HOME/
   config/InstallProperties.xml DeployComposite
   ```

Windows

```
cd %PRODUCT_HOME%\bin
ant -f DeployUndeployUtility.xml -
DInstallProperties=%PRODUCT_HOME%\
config\InstallProperties.xml DeployComposite
```

2. Validate the following parameters when prompted with default values during deployment. Press ENTER to use the default value.

   • **Composite Name:** Name of the composite to be deployed to SOA server. This parameter does not have a default value.

   • **Composite Folder Location**: The folder name should be an absolute path beginning with <PRODUCT_HOME>/services/industry/Utilities/<EBF>.

     Example: If you are planning to deploy the composite from <PRODUCT_HOME>/services/industry/Utilities/EBF, pass <PRODUCT_HOME>/services/industry/Utilities/EBF to this property.

     If you are planning to deploy the composite from Error Handling then <PRODUCT_HOME>/services/industry/Utilities/Utility, pass <PRODUCT_HOME>/services/industry/Utilities/Utility to this property.

   • The default value for this property is <PRODUCT_HOME>/services/ industry/Utilities/EBF. Most of the business-specific composites reside in this folder.

   • **SOA Partition Name**: The SOA partition name to which the composite should be deployed. Enter the composite name to be deployed from the partition.

     Example: OUC2MOUNMSCustomerSyncEBF

3. Press **Enter** to use the default value. Refer to Verifying Composites in Enterprise Managerto review the composites for this integration.

Chapter 4

Metadata Store (MDS) Artifacts

Individual Metadata Store (MDS) folders may need to be undeployed, deployed or updated for incremental builds or patches. This section describes the following:

- Undeploying the MDS Folder
- Deploying the MDS Folder
- Update MDS

Please note the following:

- You can only use the indicated commands to perform folder-level undeployment, deployment or update. The commands do not support file-level actions.

- Validate the **MDS Folder Name** parameter when prompted with default values during undeployment or deployment. Press ENTER to use the default value.

- The **MDS Folder Name** represents the name of the folder to be deployed or undeployed from MDS repository. The folder name should be a relative path inside **<PRODUCT_HOME>/MDS-Artifacts** beginning with C2M-NMS.

  Refer to the Home Directory image in the Installation chapter for a reference.

- The folder includes an MDS-Artifacts subfolder which contains all the files that can be deployed to MDS.

  Example: To undeploy <PRODUCT_HOME>/MDS-Artifacts/C2M-NMS/ AIAMetaData/dvm pass C2M-NMS/AIAMetaData/dvm as the **MDS Folder Name**.

Undeploying the MDS Folder

To undeploy a particular folder from MDS:

1. Open a command prompt and execute the following commands for Linux and Windows respectively. These commands undeploy a folder under PRODUCT_HOME/MDS-Artifacts from the MDS repository.

   Linux
   ```
   cd $PRODUCT_HOME/bin
   ant -f DeployUndeployUtility.xml -DInstallProperties=$PRODUCT_HOME/
   config/InstallProperties.xml UnDeployMDS
   ```

   Windows
   ```
   cd %PRODUCT_HOME%\bin
   ant -f DeployUndeployUtility.xml -
   DInstallProperties=%PRODUCT_HOME%\
   config\InstallProperties.xml UnDeployMDS
   ```

2. Pass the folder name to be undeployed.
   Validate the **MDS Folder Name** parameter when prompted with default values.

3. Press ENTER to use the default value.

Deploying the MDS Folder

Perform the following steps to deploy the MDS folder:

1. Open a command prompt and execute the following commands in Linux and Windows respectively:

   Linux

   ```
   cd $PRODUCT_HOME/bin
   ant -f DeployUndeployUtility.xml -DInstallProperties=$PRODUCT_HOME/
   config/InstallProperties.xml DeployMDS
   ```

   Windows

   ```
   cd %PRODUCT_HOME%\bin
   ant -f  DeployUndeployUtility.xml -
   DInstallProperties=%PRODUCT_HOME%\
   config\InstallProperties.xml DeployMDS
   ```

2. Validate the **MDS Folder Name** parameter when prompted with default values during deployment. Press ENTER to use the default value.

DVM Changes

When new DVM values are added to a DVM file, the DVM folder must be updated in MDS. This command will not only deploy the files that were changed but the whole DVM folder.

- Pass **/AIAMetaData/dvm** as the **MDS Folder Name** and the entire DVM folder will deploy to MDS.

- When the DVMs are updated from the SOA composer, verify that the values are updated in the /MDS-Artifacts/C2M-NMS/AIAMetaData/dvm folder.

  If not, the changes made from the composer will be overridden by the PRODUCT_HOME values.

Custom Schema Changes

If custom elements are added to either or both of the edge application schemas, the ApplicationObjectLibrary folder must be updated in MDS.

Do one of the following:

- Pass C2M-NMS**/AIAMetaData/AIAComponents/ ApplicationObjectLibrary** to deploy the schema folders, or

- Pass C2M-NMS**/AIAMetaData/AIAComponents/ ApplicationObjectLibrary/**OUC2M to deploy only the C2M schema folder, or

- Replace to deploy only the schema folder.

Update MDS

If there is any change in the endpoints of the participating applications, references of those endpoints in the integration have to be updated to point to the correct URIs. In order to make the changes, update the $PRODUCT_HOME/config/ InstallProperties.xml file with the correct edge application details and updateMDS.

1. Open a command prompt and execute the following commands to update MDS.

   Linux

   ```
   ant -f InstallBuild.xml updateMDS -
   DInstallProperties=$PRODUCT_HOME/config/InstallProperties.xml |
   tee $PRODUCT_HOME/bin/updatemds.log
   ```

   Windows

   ```
   ant -f InstallBuild.xml updateMDS -
   DInstallProperties=%PRODUCT_HOME%/config/InstallProperties.xml -l
   %PRODUCT_HOME%/bin/updatemds.log
   ```

   This command performs the following tasks:

   - Updates the edge application endpoint URIs in ConfigurationProperties.xml file

   - Updates the edge application endpoint URIs in Application Object Library directory $PRODUCT_HOME/MDS-Artifacts/OUC2M/AIAMetaData/ AIAComponents/ApplicationObjectLibrary/<ApplicationFolder>

     Example: C2M-NMS/MDS-Artifacts/C2M-NMS/AIAMetaData/ AIAComponents/ApplicationObjectLibrary/OUC2M/V1/wsdls

2. Restart the managed server to verify the changes.

Chapter 5

Installation Properties

This section includes a list of applicable installation properties and end point URL configuration.

Make sure that you follow XML editing standards while editing the InstallProperties.xml file. All XML elements need to be closed properly. The XML element in the InstallProperties.xml file does not contain any attribute.

Login to the WebLogic console to cross verify the values being entered for these properties. Also ensure that the values are relevant to the server where the integration product is to be installed. The build may fail due to inappropriate values.

> **Note**: If the dbuser.createflag is set to false, the schema needed for integration error handling will not be automatically created by the install and will need to be created manually prior to running the installation. When creating the user manually, grant connect and resource to the user.

Installation Properties

The table below lists the properties available in the InstallProperties.xml file along with their usage. The default values are specified wherever applicable.

Property (XPath Representation)	Description	Example
SOA Information		
<config>		
<config><modulename>	Name of the integration module.	Default: C2M-NMS Do not change this value.
C2M Application Information		
<C2M-NMS><C2M><protocol>	The protocol on which the application is accessible.	http or https
<C2M-NMS><C2M><host>	The host name of Oracle Utilities Customer To Meter server application.	C2M_HOST.yourdomain.com
<C2M-NMS><C2M><port>	The port number of Oracle Utilities Customer To Meter application.	C2M_PORT_NO Example: 1961

Property (XPath Representation)	Description	Example
<C2M-NMS><C2M><contextRoot>	The context root of the application.	C2M_CONTEXT_ROOT _NAME • ouaf/XAIApp/xaiserver (for XAI services) • ouaf/webservices (for IWS services)
<C2M-NMS><C2MB><policy>	The security policy that C2M accepts when invoking it's web service.	Use oracle/ wss_http_token_client_policy for XAI services or refer to the Security Policies section for more information when invoking IWS services.
<C2M-NMS><C2M><ApplicationUsername>	The login user name of the application.	C2MUSER
<C2M-NMS><C2M><ApplicationPassword>	The login password of the application.	C2MPWD
NMS Application Information		
<C2M-NMS><NMS><ApplicationUsername>	The login user name of the application.	NMSUSER
<C2M-NMS><NMS><ApplicationPassword>	The login password of the application.	NMSPWD
<C2M-NMS><NMS><dba.dbusername>	NMS Database Admin Username	NMSSYSDBUSER
<C2M-NMS><NMS><dba.dbuserpassword>	NMS Database Admin Password	NMSSYSDBPWD
<C2M-NMS><NMS><dbusername>	NMS Database username	NMSDBUSER
<C2M-NMS><NMS><dbuserpassword>	NMS Database User password	NMSDBPWD
<C2M-NMS><NMS><dbhostname>	NMS Application DB hostname	NMS_HOST.yourdomain.com
<C2M-NMS><NMS><dbportnumber>	NMS Application DB portnumber	NMS_DB_PORT_NO
<C2M-NMS><NMS><dbsid>	NMS Application DB system ID	NMS11GR2DB02
<policy>	The security policy that NMS accepts when invoking it's web service.	Use oracle/ wss_http_token_client_policy for XAI services or refer to the Security Policies section for more information when invoking IWS services.
Workflow Notification Properties		
<C2M-NMS><WorkFlow.Notification> <from.emailid>	Email ID which should be set in the "From" property of Workflow Notification bean.	Admin.user@yourdomain.com
<C2M-NMS><WorkFlow.Notification> <mode>	Type of notification mode	EMAIL
SOA Admin Server		
<SOA><AdminServer><hostname>	Host name of the server where admin server hosting SOA suite is installed.	adminserver.example .oracle.com

Property (XPath Representation)	Description	Example
\<SOA>\<AdminServer>\<portnumber>	Port number the admin server (hosting SOA suite) is listening to.	7001
\<SOA>\<AdminServer>\<servername>	Admin server name (hosting SOA suite)	Admin Server
\<SOA>\<AdminServer>\<username>	User name used to log in as an Admin server (hosting SOA suite) administrator.	weblogic
\<SOA>\<AdminServer>\<password>	Password used to log in as an Admin server (hosting SOA suite) administrator.	xxxxxx
\<SOA>\<AdminServer>\<domainname>	WebLogic domain name hosting SOA suite.	soa_domain
SOA Managed Server		
\<SOA>\<ManagedServer>\<hostname>	Host name of the server where managed server (hosting SOA suite) is installed.	managedserver.example.oracle.com
\<SOA>\<ManagedServer>\<portnumber>	Port number the managed server (hosting SOA suite) is listening to.	8001
\<SOA>\<ManagedServer>\<servername>	Managed server name (hosting SOA suite)	Managedserver1
\<SOA>\<ManagedServer>\<username>	User name used to log in to managed server (hosting SOA suite) as an administrator.	weblogic
\<SOA>\<ManagedServer>\<password>	Password used to log in to managed server (hosting SOA suite) as an administrator.	xxxx
Oracle HTTP Server Information		In a non-cluster environment these properties would be same as \<ManagedServer> values
\<SOA>\<OHS>\<hostname>	The host name of the Oracle HTTP Server.	Oracle http server where cluster is managed
\<SOA>\<OHS>\<portnumber>	The port number of the Oracle HTTP Server.	Example: 7777
\<SOA>\<OHS>\<servernames>	The list of server names that are defined as Managed Servers/Clusters.	In multiple managed servers, provide comma separated values. Example: soa_server1, soa_server2
\<SOA>\<OHS>\<Protocol>	The protocol on which the application is accessible.	http
MDS DB Information		
\<SOA>\<mdsconfig>\<mdsdbusername>	User name used to log in to MDS schema.	XXX_MDS

Property (XPath Representation)	Description	Example
<SOA><mdsconfig><mdsdbuserpassword>	Password used to log in to MDS schema.	****
<SOA><mdsconfig><mdsdbhostname>	Host name of the server hosting the database containing MDS schema.	Db.hostname.oracle.com
<SOA><mdsconfig><mdsdbportnumber>	Port number of the database containing MDS schema.	1521
<SOA><mdsconfig><mdsdbsid>	SID of the database containing MDS schema.	SID
JMS Information		
<SOA><JMS><serverName>	The JMS server name	Default: C2MNMSFJS Do not change.
<SOA><JMS><ModuleName>	The JMS module name	Default: C2MNMSFJM
<SOA><JMS><SubDeploymentName>	The Subdeployment name	Default: C2MNMSFileSubDeployment Do not change.
<SOA><JMS><SubDeploymentName><JMSServerTarget>	The SOA Managed Server Target for JMS server.	soa_server1 For cluster environment, give only one managed server name under the cluster
<SOA><JMS><SubDeploymentName>SOA<JMSModuleTargets>	The JMS Module targeted SOA managed servers/Clusters.	soa_cluster For cluster environment give comma separated managed server names under the cluster or multiple cluster names
<SOA><JMS><PersitentStoreName>	The file store persistence details.	Default: C2MNMSFileStore
<SOA><JMS><PersitentStoreType>	JMS persistent store type (FileStores or DBStore). Deployment script supports a file	Default: FileStores
<SOA><JMS><PersistentStoreFilename>	Directory path name where the file based persistent store should be created.	/opt/SOA12c/Product_Homes/C2M-NMS
<SOA><JMS><JMSCFName>	The file name of the ConnectionFactory.	C2MNMSCF
<SOA><JMS><JMSCFJNDI>	The JNDI file name of the ConnectionFactory.	jms/C2M-NMS/C2MNMSCF
Email Information		
<SOA><EMAIL><MailAccessProtocol>	The protocol of the Mail Access.	IMAP
<SOA><EMAIL><OutgoingDefaultFromAddr>	The email address from which the outgoing mails are sent.	mail.id@yourdomain.com
<SOA><EMAIL><OutgoingMailServer>	The mail server name from where the mails are sent.	host.yourdomain.com

Property (XPath Representation)	Description	Example
<SOA><EMAIL><OutgoingMailServerPort>	The port number of the outgoing mail server.	465
<SOA><EMAIL><OutgoingMailServerSecurity>	The security for the outgoing mail server.	SSL
<SOA><EMAIL><OutgoingUsername>	The user name of the outgoing email.	mail.id@ yourdomain.com
<SOA><EMAIL><Outgoingpassword>	The password of the outgoing email.	Your password
<SOA><EMAIL><IncomingMailServer>	The mail server name where mail is received.	host.yourdomain.com
<SOA><EMAIL><IncomingUserIDs>	Incoming user IDs	mail.id@ yourdomain.com
<SOA><EMAIL><IncomingUserPasswords>	Incoming passwords	Your password
<SOA><EMAIL><applicationName>	The application for which the UMS configuration is considered.	C2MNMS
<SOA><EMAIL><capability>	Sets the driver's capability to send or receive messages.	For 12c, the values are SEND, RECEIVE, and BOTH
Error Handling Database Information		
<EH><dba.dbusername>	User name used to log in as a database administrator (DBA). This database hosts the schema required for the integration.	system
<EH><dba.dbuserpassword>	Password used to log in as a database administrator (DBA). This database hosts the schema required for the integration.	xxxxxx
<EH><dbusername>	User name to log in to the error handling schema for the integration. This User can be automatically created by the install (set dbuser.createflag to true) or manually outside the install process.	C2MNMSUSER
<EH>dbuserpassword>	Password to log in to the error handling schema for the integration.	xxxxxx
<EH><dbuser.createflag>	If set to true, the db user can be automatically created by the install. If this value is set to false, the schema needed for integration error handling will not be automatically created by the install and will need to be created manually prior to running the installation. When creating the user manually, grant connect and resource to the user.	true
<EH><dbhostname>	The DB Hostname of the error handling schema for the integration.	host.yourdomain.com

Property (XPath Representation)	Description	Example
<EH><dbportnumber>	The DB Port of the error handling schema for the integration.	1521
<EH><dbsid>	The DB SID of the error handling schema for the integration.	INTFMWPD

End Point URL Configuration

File name: OUC2MOUNMSConfigurationProperties.xml

File location: $PRODUCT_HOME/MDS-Artifacts/C2M-NMS/AIAMetaData/config

While updating the End Point URL in file OUC2MOUNMSConfigurationProperties.xml, replace C2M_HOST.yourdomain.com:C2M_PORT_NO with actual C2M_HOST.yourdomain.com, C2M_PORT_NO in the ServiceConfiguration for OUC2MOUNMSCustomerSyncJMSReadSvc.

Example:

```
<ServiceConfiguration
serviceName="OUC2MOUNMSCustomerSyncJMSReadSvc">
    <Property name="OUC2M.F1-
UpdateAndTransitionSyncRequest.Endpoint.URL">https://
C2M_HOST.yourdomain.com:C2M_PORT_NO/ouaf/webservices/F1-
UpdateAndTransitionSyncRequest</Property>
  </ServiceConfiguration>

  <ServiceConfiguration
serviceName="OUC2MOUNMSCustomerSyncJMSReadSvc">
    <Property name="OUC2M.F1-
UpdateAndTransitionSyncRequest.Endpoint.URL">https://
xxxx.oraclevcn.com:9000/ouaf/webservices/F1-
UpdateAndTransitionSyncRequest</Property>
  </ServiceConfiguration>
```

Chapter 6

Troubleshooting

This section provides information regarding issues that may arise during installation.

Password Expiry for Database

If a password expires or is changed, credential issues may arise with the Meta Data Store (MDS) or with an integration specific database. To fix this issue, perform the following steps:

1. Reset or unlock the password for the corresponding database (MDS or integration specific database).

2. Change the password for the data source for which the password is changed/or locked from the WebLogic Administration console.

3. Change the password in the **InstallationProperties.xml** for the database instance (this helps only while reinstalling).

4. Perform the following steps to find the **adf-config.xml** file that is generated during installation.
   The file is generally located at $PRODUCT_HOME/install/util/template/.

   a. Identify the correct "metadata-store-usage" from the "meta-data-namespaces" element by the path mentioned above.

   b. In the "metadata-store-usage" element, find the element property with the attribute value as "jdbc-password" for the "name" attribute.

   c. Change the password for the value attribute in the property element.

Chapter 7

Uninstalling the Integration

This section provides steps for:

- Uninstalling the Integration
- Uninstalling the UsageMessagingDriver-Email

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Uninstalling the Integration

This section describes how to uninstall the integration.

> **Note**: It is recommended to take a backup of PRODUCT_HOME before uninstalling.

To uninstall the integration:

1. Restart the WebLogic Admin server and the SOA server.

2. Set the environment variables. For instructions refer to the Installation Steps section.

3. The uninstallation process is divided into three steps. Execute the commands in each of those steps.

   a. Execute the following commands at the command prompt.

   - Undeploy all the composites from the Enterprise Manager partition.

   - Delete the partition.

   - Undeploy the MDS artifacts.

   Linux

   ```
   cd $PRODUCT_HOME/bin
   ant -f UnInstallBuild.xml uninstallSOA -
   DInstallProperties=$PRODUCT_HOME/config/InstallProperties.xml -
   l uninstallSOA.log
   ```

   Windows

   ```
   cd %PRODUCT_HOME%\bin
   ant -f UnInstallBuild.xml uninstallSOA -
   DInstallProperties=%PRODUCT_HOME%\
   config\InstallProperties.xml-l uninstallSOA.log
   ```

   b. Execute the following commands at the command prompt:

   - Undeploy the database outbound connection pool.

   - Delete the JDBC data source for the Error Handling module.

   - Delete the JDBC data source for the NMS application.

   - Remove the work flow notification that is created.

   - Delete the JMS artifacts.

   Linux

   ```
   cd $PRODUCT_HOME/bin
   ant -f UnInstallBuild.xml uninstallWL - DInstallProperties=
   $PRODUCT_HOME/config/InstallProperties.xml l uninstallWL.log
   ```

   Windows

   ```
   cd %PRODUCT_HOME%\bin
   ant -f UnInstallBuild.xml uninstallWL -
   DInstallProperties=%PRODUCT_HOME%\
   config\InstallProperties.xml -l uninstallWL.log
   ```

   After executing these commands, bounce the managed server and admin server manually.

c. Execute the following commands at the command prompt:

Linux

```
cd $PRODUCT_HOME/bin
ant -f UnInstallBuild.xml uninstallDB -
DInstallProperties=$PRODUCT_HOME/config/InstallProperties.xml -
l uninstallDB.log
```

Windows

```
cd %PRODUCT_HOME%\bin
ant -f UnInstallBuild.xml uninstallDB -
DInstallProperties=%PRODUCT_HOME%\
config\InstallProperties.xml -l uninstallDB.log
```

These commands drop the database objects created for the Error Handling module and the artifacts created for the integration.

After a successful uninstall, all JDBC resources and the C2M-NMS partition created during installation are deleted.

Uninstalling the UsageMessagingDriver-Email

To uninstall the UsageMessagingDriver:

1. Open the **Enterprise Manager** console.

2. Expand the **Usage Message Service.**

3. Right-click on the **usermessagingdriver-email**.

4. Select the **Email Driver Properties** menu item.

5. In the **Email Driver Properties** table, find the row with the instance set as "usermessagingdriver-[integration]" or "usermessagingdriver-UGBUEMAIL".

6. Click **Delete**.

7. Click **Yes** in the confirmation dialog box.

Chapter 8

Configuring Multiple NMS Instances

This chapter describes the steps to configure a single Oracle Utilities Customer To Meter instance and the multiple Oracle Utilities Network Management System instances. It includes the following:

- Overview
- Creating/Configuring Additional NMS Instance Data Source and JNDI
- Updating the NMS Instance DVM
- Updating the AIAConfiguration Properties File

Overview

By default, the integration is configured to support only a single Oracle Utilities Customer To Meter instance and a single Oracle Utilities Network Management System instance. The integration uses Oracle Utilities Customer To Meter CIS division to route to multiple Oracle Utilities Network Management System instance if the integration is configured to support multiple Oracle Utilities Network Management System instances.

To configure multiple Oracle Utilities Network Management System instances, a JDBC Datasource needs to be created manually pointing to second Oracle Utilities Network Management System instance. Also the C2M-NMS-DBAdapter needs to be updated to configure the JNDI for second Oracle Utilities Network Management System instance. Once the JDBC and JNDI is created on SOA WebLogic server, JDBC and JNDI info needs to supply to the integration using DVM (OUC2M_OUNMS_Instance) and AIAConfiguration properties (OUC2MOUNMSConfigurationProperties.xml) to support multiple Oracle Utilities Network Management System instances.

Repeat these steps to configure additional Oracle Utilities Network Management System instances for a specific Oracle Utilities Customer To Meter CIS division.

Creating/Configuring Additional NMS Instance Data Source and JNDI

This section describes the steps to create and configure additional Oracle Utilities Network Management System instance data source and JNDI.

> **Note**: It is recommended to take a backup of PRODUCT_HOME before uninstalling.

To create an Oracle Utilities Network Management System instance data source:

1. Navigate to http://soaservername:portnumber/console.

2. Login using the required credentials to open the **Home** page.

3. Under **Domain Structure**, select **Services** > **Data Sources**. The **Summary of JDBC Data Sources** page is displayed.

4. Click **New** > **Generic Data Store**. The **Create a New JDBC Data Source** page is displayed.

5. Enter the following values for the properties to be used to identify the new JDBC data source.

   Name: NMSinstance2
   JNDI Name: jdbc/nmsinstance2
   Database Type: Oracle

6. Retain the default value for the database driver.

7. Click **Next**. The **Create a New JDBC Data Source Transaction Options** page is displayed.

8. Click **Next**. The **Create a New JDBC Data Source Connection Properties** page is displayed.

9. Enter the database connection properties in the **Connection Properties** page and click **Next**. The **Create a New JDBC Data Source Test Database Connection** page is displayed.

10. Click **Test Configuration** to test the database availability and the connection properties you provided. A message stating that the connection test succeeded is displayed on the **Create a New JDBC Data Source Test Database Connection** page.

11. Click **Next**. The **Create a New JDBC Data Source Select Targets** page is displayed.

12. Select a target and click **Finish**. The data source is created.

13. After a successful uninstall, all JDBC resources and the C2M-NMS partition created during installation are deleted.

To configure the JNDI for multiple Oracle Utilities Network Management System instances:

1. Under **Domain Structure**, click **Deployments**.The **Summary of Deployments** page is displayed.

2. Click **C2M-NMSDbAdapter** from the **Deployments** list. The **Settings for DbAdapter** page is displayed.

3. Navigate to **Configuration** > **Outbound Connection Pools** tab. The **Outbound Connection Pool Configuration Table** is displayed.

4. Click **New**.

5. Select **javax.resource.cci.ConnectionFactory** and click **Next**. The **Create a New Outbound Connection** page is displayed.

6. In the **JNDI Name:** field, enter "eis/DB/NMSInstance2". Click **Finish**.

   The JNDI name specified in this step must match the value with database connection that need to create in jDeveloper.

7. Click the newly created outbound connection.

8. In the **Properties** field, enter the value for xADataSourceName as "jdbc/ nmsinstance2" created previously.

9. Save the changes.

10. Under **Domain Structure**, click **Deployments**. The **Summary of Deployments** page is displayed.

11. Select the **C2M-NMSDbAdapter** checkbox and click **Update**. The **Update Application Assistant** page is displayed.

12. Select **Redeploy this application** and click **Finish**.

Updating the NMS Instance DVM

To update the Oracle Utilities Network Management System instance DVM:

1. Navigate to the SOA composer.

2. Select the OUC2M_CISDivision dmv.

3. Change the default CIS division to customer specific configured CIS division.

4. Add a new entry for multiple Oracle Utilities Network Management System instances and the JNDI details.

   Refer to the sample DVM with multiple Oracle Utilities Network Management System instances. Make sure the JNDI is mentioned in double quotes.

   DVM Name: OUC2M_OUNMS_Instance

OUC2M_CISDivision	OUNMS_JNDIInstance
OH	"eis/DB/NMSJDBCDataSource"
CA	"eis/DB/NMSInst2JDBCDataSource"

Updating the AIAConfiguration Properties File

To update the AIAConfiguration properties file:

1. Navigate to the AIAMetaData/config folder and open the AIAConfiguration properties file (OUC2MOUNMSConfigurationProperties.xml).

2. Modify the value of **NMS.MultipleInstance** to "true" to support multiple Oracle Utilities Network Management System instances.

   Example: <Property name="NMS.MultipleInstance">true</Property>

3. Restart the SOA servers.