

**Oracle Utilities Customer Care and Billing
Integration to Oracle Utilities Network
Management System**

Installation Guide

Release 12.1

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Oracle Utilities Customer Care and Billing Integration to Oracle Utilities Network Management System,
Release 12.1 Installation Guide

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Primary Author: Oracle Corporation UGBU Documentation

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Preface

This document is intended for anyone implementing the Oracle Utilities Customer Care and Billing Integration to Oracle Utilities Network Management System.

Documentation and Resources

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

Product Documentation

Topic	Description
Integration documentation:	
Oracle Utilities Customer Care and Billing Integration to Oracle Utilities Network Management System Release Notes	
Oracle Utilities Customer Care and Billing Integration to Oracle Utilities Network Management System Implementation Guide	Refer to the Oracle Utilities applications documentation page: http://docs.oracle.com/cd/E72219_01/documentation.html
Oracle Utilities Customer Care and Billing Integration to Oracle Utilities Network Management System Installation Guide	
Edge application documentation:	
Oracle Utilities Network Management System	
Oracle Utilities Smart Grid Gateway	

Additional Documentation

Resource	Location
SOA Suite 12c documentation	Refer to the SOA documentation at: http://www.oracle.com/technetwork/middleware/soasuite/documentation/index.html
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/webservicetasks.htm .
Oracle Fusion Middleware 12c documentation	Refer to the Oracle applications documentation page: http://docs.oracle.com/en/middleware/
Oracle Fusion Middleware “What's New In Oracle WebLogic Server” Section: Standards Support, Supported Configurations and WebLogic Server Compatibility, Database Interoperability	http://docs.oracle.com/middleware/1221/wls/NOTES/toc.htm
For additional information on the type of database to use.	
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>.

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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.
<i>italic</i>	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

CC&B	Oracle Utilities Customer Care and Billing (CC&B)
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

Term	Description
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
SOA	Service-Oriented Architecture – Software modules that are 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	The applications that are involved in the integration - CC&B and NMS.
SOAP	Simple Object Access Protocol is a protocol specification for exchanging structured information in the implementation of Web Services in computer networks.
SA	CC&B Service Agreement
SP	CC&B Service Point
XAI	XML Application Integration. A CCB utility used to configure the system transfer information between CCB and external applications using XML. XAI exposes system business objects as a set of XML based web services. The service can be invoked via different methods (such as Hypertext Transfer Protocol (HTTP) or Java Message Service (JMS)). Consequently, any application or tool that can send and receive XML documents can now access the rich set of system business objects.
XSD	A schema definition file.
Fuzzy Calls	Trouble Calls that are not initially associated with a customer or device
UI	User Interface

Chapter 1

Overview

This section provides information on prerequisites for installation of the Oracle Utilities Customer Care and Billing Integration to Oracle Utilities Network Management System.

Integration Pack Software Requirements

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

Participating Applications

- Oracle Utilities Customer Care and Billing 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 12.1.3 on WebLogic Server 12.1.3.

Note: This integration does not require AIA Foundation Pack to be installed.

Note: Refer to the Oracle Utilities product Certification Matrix (referenced in the [Documentation and Resources](#) section) for the most up to date supported edge application versions.

Chapter 2

Installation

This section describes the settings and requirements for a successful installation of the Oracle Utilities Customer Care and Billing 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** server 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

Complete the following to install:

1. Download the installation CCB-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 CCB-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. Download and apply patch 23295348.

- a. Refer to the **Readme.txt** file and **PatchInstallInstructions.txt** files included with the patch for more information and installation instructions. The following sub-steps provide more information related to the steps included in the Readme file.

Note: As indicated in the Readme.txt file, you must define or populate the values in the Install Properties xml file prior to installing the integration. Refer to Step 1 in the **PatchInstallInstructions.txt** file included in the patch download.

Refer to the [Installation Properties](#) chapter for information about individual properties.

- b. Verify the environment variables for Linux and Windows OS:

Variable	Example
Linux and Windows OS	
PATCH_HOME	XXX/23295348
MW_HOME	XXX/Middleware
SOA_HOME	XXX/Middleware/soa
ORACLE_HOME	XXX/Middleware/soa
PRODUCT_HOME	The product installation folder. Example: PRODUCT_HOME=/scratch/PRODUCT_HOMES/ CCB-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/CCB-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\CCB-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 CCB-NMS integration code.
- PRODUCT_HOME/bin/UnInstallBuild.xml is used to uninstall CCB-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.

Follow the guidelines in step 4 in the **PatchInstallInstructions.txt** file included in the patch download. This section provides additional detail to supplement those steps.

The `installDB` commands perform the following 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 ErrorHandler Module.
- Create an outbound connection pool instance for the database by updating the DBAdapter_CCB-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 Smart Grid Gateway by updating the JMSAdapter_CCB-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: CCB-NMS.
- Compile and deploy all composites.

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 [Verifying JDBC Configuration](#) for instructions.
3. Verify that all the composites in the Enterprise Manager are deployed.
Refer to [Verifying Composites in Enterprise Manager](#) for instructions.
4. Verify that the user messaging service is active.
Refer to [Verifying the User Messaging Service List](#) for instructions.
5. Verify that the security policies are attached.
Refer to [Verifying the Attached Policies from Enterprise Manager](#).

Verifying JDBC Configuration

Verify the JDBC configuration by perform the following steps:

1. Open the **Weblogic Admin** console.
2. Navigate **Home > Deployments**.
3. Verify that **DBAdapter_CCBNMS.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 by following these steps:
 - a. Click the **DBAdapter_CCBNMS** link on the **Deployments** table.
 - b. Click the **Configuration** tab, and then click **Outbound Connection Pools**.
 - c. Expand **javax.resource.cci.ConnectionFactory** to check `eis/DB/CCB-NMSErrorHandling`, `eis/DB/NMS` connection factory instance.
5. Check to ensure 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 **CCB-NMSEHDS** data source link to verify that the **JNDI Name** is `jdbc/CCB-NMSEHDS`.
 - c. Click the **Connection Pool** subtab to check the **URL** and **Properties**.
 - d. Click **Monitoring**, click **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** subtab to check the **URL** and **Properties**.
 - d. Click **Monitoring**, click **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 by following these steps:
 - a. Click the **Monitoring** tab, and then click the **Testing** tab.
 - b. Select the target server (**SOA Managed** server), and then click **Test Data Source**. }
Verify that the data source has been configured successfully.

JMS Configuration Checklist

Verification of JMS Server

1. Verify whether **CCBNMSFJS JMS Server** is created:
On the **Left** pane, select the **Services > Messaging > JMS Servers** and check for the presence of **CCBNMSFJS** server.

Verification of JMS Persistent Store

1. Verify whether the **CCBNMSFileStore Persistent Store** is created:
 - a. On the **Left** pane, select the **Services > Persistent Store** and check for the presence of **CCBNMSFileStore**.
 - b. Verify that the **JMSFileStorePath** is correct and the directory exists with this name with write permission by clicking on **CCBNMSFileStore**.

Directory: Product_Home/CCB-NMS

Synchronous Write Policy: Direct-Write

Verification of JMS Module

Verify whether the **CCBNMSFJM JMS** module and destinations are created:

- a. On the **Left** pane, select **Services > Messaging > JMS Modules**.
- b. Click on the **CCBNMSFJM 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).
 - OUCCBCustomerDataSyncRequest
 - OUCCBCustomerDataSyncRequestError
 - OUCCBCustomerDataSyncResponse
 - OUCCBCustomerDataSyncResponseError
 - OUNMSNotificationRequest
 - OUNMSNotificationRequestError

- c. Ensure all the 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 > CCBNMSFJM > OUCCBCustomerDataSyncRequest** or any other queue
- b. Select the **Monitoring** tab.
- c. Verify that the screen appears exactly as below.

Name	Type	JNDI Name	Subdeployment	Targets
CCBNMSCF	Connection Factory	jms/CCB-NMS/CCBNMSCF	CCBNMSFileSubDeployment	CCBNMSFJ35
OUCCBCustomerDataSyncRequest	Uniform Distributed Queue	jms/CCB-NMS/OUCCBCustomerDataSyncRequest	CCBNMSFileSubDeployment	CCBNMSFJ35
OUCCBCustomerDataSyncRequestError	Uniform Distributed Queue	jms/CCB-NMS/OUCCBCustomerDataSyncRequestError	CCBNMSFileSubDeployment	CCBNMSFJ35
OUCCBCustomerDataSyncResponse	Uniform Distributed Queue	jms/CCB-NMS/OUCCBCustomerDataSyncResponse	CCBNMSFileSubDeployment	CCBNMSFJ35
OUCCBCustomerDataSyncResponseError	Uniform Distributed Queue	jms/CCB-NMS/OUCCBCustomerDataSyncResponseError	CCBNMSFileSubDeployment	CCBNMSFJ35
OUNMSNotificationRequest	Uniform Distributed Queue	jms/CCB-NMS/OUNMSNotificationRequest	CCBNMSFileSubDeployment	CCBNMSFJ35
OUNMSNotificationRequestError	Uniform Distributed Queue	jms/CCB-NMS/OUNMSNotificationRequestError	CCBNMSFileSubDeployment	CCBNMSFJ35

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 CCBNMSCustomerDataSyncRequest is the regular destination queue and CCBNMSCustomerDataSyncRequestError is the corresponding error queue.

Perform the following steps:

- a. On the **Left** pane, select **Services > Messaging > JMS Modules > CCBNMSFJM -> OUCCBCustomerDataSyncRequest**.
- 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** and click on **JMS Adapter** and select the **Configuration** tab.
- b. Verify **eis/wls/OUCCBNMSQueue** JMS Adapter Outbound Connection Pool is created.
- c. In the **Outbound Connection Pool Configuration** table, expand **oracle.tip.adapter.jms.IJmsConnectionFactory** and verify for the presence of **eis/wls/OUCCBNMSQueue** connection pool instance.

Outbound Connection Pool Configuration Table

Groups and Instances	Connection Factory Interface
oracle.tip.adapter.jms.IJmsConnectionFactory	oracle.tip.adapter.jms.IJmsConnectionFactory
eis/wls/OUCCBNMSQueue	oracle.tip.adapter.jms.IJmsConnectionFactory

Verifying Composites in Enterprise Manager

To verify that all composites are deployed and in the active state, complete the following steps:

1. Verify the **CCB-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 > CCB-NMS partition** and check all the below composites are deployed, and are in the active state.
 - ErrorHandler [1.0]
 - ErrorHandlerHumanIntervention [1.0]
 - ErrorProcessingDetail [1.0]
 - ErrorProcessingMaster [1.0]
 - OUCCBOUNMSCustomerSyncEBF [1.0]
 - OUCCBOUNMSJobHistoryQueryEBF [1.0]
 - OUCCBOUNMSPlannedOutagesQueryEBF [1.0]
 - OUCCBOUNMSTroubleCallInterfaceEBF [1.0]
 - OUCCBOUNMSTroubleCallsQueryEBF [1.0]
 - OUCCBOUNMSNotifyPreferenceEBF
 - OUCCBCreateNotificationEBF
 - OUNMSNotificationInboundEBF
 - PurgeIntegrationErrorStore [1.0]
 - UpdateIntegrationErrorLookupTable [1.0]

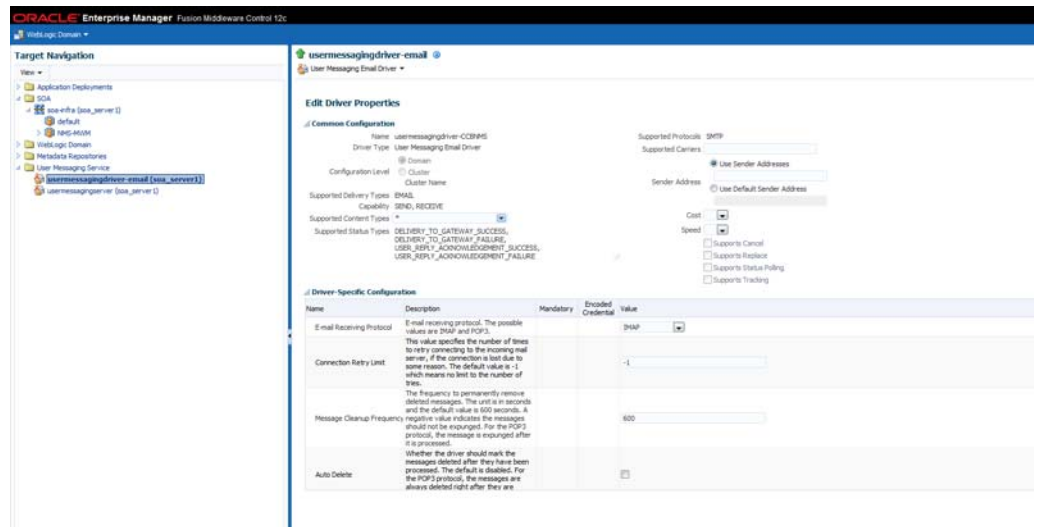
Verifying the User Messaging Service List

To verify the user messaging service list, follow these steps:

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>**.
For 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. For example: usermessagingserver (soa_server1).
Notice that the e-mail driver is already enabled.

Verify that the name is set to `usermessagingdriver-CCBNMS`, 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 figure below.



Verifying the Attached Policies from Enterprise Manager

Follow these steps to verify the policies attached to the web services that each BPEL process is using:

1. Log in to **Enterprise Manager**.
2. Expand **SOA** -> **soa-infra** -> **CCB-NMS** partition.
Example: Choose **OUCCBCreateNotificationEBF**, scroll down to the **Services and References** section in the **Dashboard** tab.
3. Click on the service and select the **Policies** tab.

The screenshot shows the 'Policies' tab for the 'OUCCBCreateNotificationEBF [1.0]' service. The table below lists the attached policies:

Policy Name	Attached To	Policy Reference Status	Category	Total Violations	Security Violations			
					Authenticator	Authorization	Confidentiality	Integrity
oracle/wss_http_token_over_ssl_client_policy	CCBCreateNotificationServ	Disable	Security	0	0	0	0	0
oracle/Utilities_wss_http_token_client_policy_OPT_ON	ErrorHandlingService	Disable	Security	0	0	0	0	0

4. Verify that the web service reference is calling a CCB web Service and is linked to a 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 Oracle Utilities Customer Care and Billing and Oracle Utilities Network Management System installation to point to the Integration according to the guidelines in the *Oracle Utilities Customer Care and Billing 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, follow these steps:

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 follow these steps:

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>.

For example: If you are planning to deploy the composite from <PRODUCT_HOME>/services/industry/Utilities/EBF, then 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, then 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. For example: OUCCBOUNMSCustomerSyncEBF
3. Press **Enter** to use the default value. Refer to [Verifying Composites in Enterprise Manager](#) to 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 CCB-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.

For example: To undeploy **<PRODUCT_HOME>/MDS-Artifacts/CCB-NMS/AIAMetaData/dvm** pass **CCB-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.
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/CCB-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 `CCB-NMS/AIAMetaData/AIAComponents/ApplicationObjectLibrary` to deploy the schema folders, or
- Pass `CCB-NMS/AIAMetaData/AIAComponents/ApplicationObjectLibrary/OUCCB` to deploy only the CCB schema folder, or
- Replace `with` to deploy only the `schema` folder.

Concrete WSDL Changes for Extensions

If an extension service needs to be called by a process and the concrete WSDL is updated, the `ExtensionServiceLibrary` folder must be updated in MDS.

Do one of the following:

- Pass `CCB-NMS/AIAMetaData/ApplicationObjectLibrary/ExtensionServiceLibrary` to deploy the extension service library folders, or
- Pass `/AIAMetaData/ApplicationObjectLibrary/` to deploy only the extension library folder, or
- Replace `with` to deploy only the `extension service library`.

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/OUCCB/AIAMetaData/AIAComponents/ApplicationObjectLibrary/<ApplicationFolder>`
Example: `CCB-NMS/MDS-Artifacts/CCB-NMS/AIAMetaData/AIAComponents/ApplicationObjectLibrary/OUCCB/V1/wsdl`
2. Restart the managed server to see the changes take effect.

Chapter 5

Installation Properties

This section includes a listing of applicable installation properties.

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.

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

Installation Properties

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

Property (XPath Representation)	Description	Example
<CCB-NMS><CCB><contextRoot>	The context root of the application.	CCB_CONTEXT_ROOT_NAME <ul style="list-style-type: none"> ouaf/XAIApp/xaiserver (for XAI services) ouaf/webservices (for IWS services)
<CCB-NMS><CCB><policy>	The security policy that CCB accepts when invoking it's webservice.	Use oracle/wss_http_token_client_policy for XAI services or refer to the Security Policies section for more information when invoking IWS services.
<CCB-NMS><CCB><ApplicationUsername>	The login user name of the application.	CCBUSER
<CCB-NMS><CCB><ApplicationPassword>	The login password of the application.	CCBPWD
NMS Application Information		
<CCB-NMS><NMS><ApplicationUsername>	The login user name of the application.	NMSUSER
<CCB-NMS><NMS><ApplicationPassword>	The login password of the application.	NMSPWD
<CCB-NMS><NMS><dba.dbusername>	NMS Database Admin Username	NMSSYSDBUSER
<CCB-NMS><NMS><dba.dbuserpassword>	NMS Database Admin Password	NMSSYSDBPWD
<CCB-NMS><NMS><dbusername>	NMS Database username	NMSDBUSER
<CCB-NMS><NMS><dbuserpassword>	NMS Database User password	NMSDBPWD
<CCB-NMS><NMS><dbhostname>	NMS Application DB hostname	NMS_HOST.yourdomain.com
<CCB-NMS><NMS><dbportnumber>	NMS Application DB portnumber	NMS_DB_PORT_NO
<CCB-NMS><NMS><dbsid>	NMS Application DB system ID	NMS11GR2DB02
<policy>	The security policy that NMS accepts when invoking it's webservice.	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		
<CCB-NMS><WorkFlow.Notification><from.emailid>	Email ID which should be set in the "From" property of Workflow Notification bean.	Admin.user@yourdomain.com
<CCB-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

Property (XPath Representation)	Description	Example
MDS DB Information		
<SOA><mdsconfig><mdsdbusername>	User name used to log in to MDS schema.	XXX_MDS
<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:: CCBNMSFJS Do not change.
<SOA><JMS><ModuleName>	The JMS module name.	Default:: CCBNMSFJM
<SOA><JMS><SubDeploymentName>	The Subdeployment name.	Default: CCBNMSFileSubDeployment 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> <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><PersistantStoreName>	The file store persistence details.	Default: CCBNMSFileStore
<SOA><JMS><PersistantStoreType>	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/CCB-NMS
<SOA><JMS><JMSCFName>	The file name of the ConnectionFactory.	CCBNMSCF
<SOA><JMS><JMSCFJNDI>	The JNDI file name of the ConnectionFactory.	jms/CCB-NMS/CCBNMSCF
Email Information		

Property (XPath Representation)	Description	Example
<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
<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.	CCBNMS
<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.	CCBNMSUSER
<EH>dbuserpassword>	Password to log in to the error handling schema for the integration.	xxxxxx

Property (XPath Representation)	Description	Example
<EH><dbuser.createflag>	<p>If set to true, the db user can be automatically created by the install.</p> <p>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.</p>	true
<EH><dbhostname>	The DB Hostname of the error handling schema for the integration.	host.yourdomain.com
<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

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](#)

Uninstalling the Integration

This section describes how to uninstall the integration.

Note: It is recommended to take a back up of PRODUCT_HOME before uninstalling.

To uninstall the integration follow these steps:

1. Restart the WebLogic Admin server and the SOA server.
2. Set the environment variables as mentioned above in the [Installation Steps](#).
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 the commands mentioned above, 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 CCB-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.