

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

Implementation Guide

Release 12.1

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

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# Preface

Welcome to the Oracle Utilities Customer to Meter Integration to Oracle Utilities Network Management System Implementation 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

Resource	Location
Oracle Utilities Customer to Meter Integration to Oracle Utilities Network Management System documentation	<a href="http://docs.oracle.com/cd/E72219_01/documentation.html">http://docs.oracle.com/cd/E72219_01/documentation.html</a>
Oracle Utilities Customer to Meter documentation	<a href="https://docs.oracle.com/en/industries/energy-water/c2m/">https://docs.oracle.com/en/industries/energy-water/c2m/</a>
Oracle Utilities Customer Cloud Service documentation	<a href="https://docs.oracle.com/en/industries/utilities/customer-cloud-service/">https://docs.oracle.com/en/industries/utilities/customer-cloud-service/</a>
Oracle Utilities Meter Data Management documentation	<a href="https://docs.oracle.com/en/industries/energy-water/meter-data-management/">https://docs.oracle.com/en/industries/energy-water/meter-data-management/</a>
Oracle Utilities Network Management System documentation	<a href="http://docs.oracle.com/cd/E72219_01/documentation.html">http://docs.oracle.com/cd/E72219_01/documentation.html</a>

### Additional Documentation

Resource	Location
SOA Suite 12c (12.2.1.4.0) documentation	Refer to the SOA documentation at: <a href="https://docs.oracle.com/en/middleware/soa-suite/soa/12.2.1.4/">https://docs.oracle.com/en/middleware/soa-suite/soa/12.2.1.4/</a>
Oracle Support	Visit My Oracle Support at <a href="https://support.oracle.com">https://support.oracle.com</a> 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 <a href="http://my.oracle.com/site/tugbu/productsindustry/productinfo/utilities/integration/index.htm">http://my.oracle.com/site/tugbu/productsindustry/productinfo/utilities/integration/index.htm</a>

Resource	Location
Oracle Technology Network (OTN) Latest versions of documents	<a href="http://www.oracle.com/technetwork/index.html">http://www.oracle.com/technetwork/index.html</a>
Oracle University for training opportunities	<a href="http://education.oracle.com/">http://education.oracle.com/</a>
Web Services Security	For more information about Web services security using Oracle Fusion Middleware 12c refer to <a href="https://docs.oracle.com/middleware/12211/cross/webservicetasks.htm">https://docs.oracle.com/middleware/12211/cross/webservicetasks.htm</a> .
Oracle Fusion Middleware 12c (12.2.1.4.0) documentation	Refer to the Oracle applications documentation page: <a href="https://docs.oracle.com/en/middleware/soa-suite/soa/12.2.1.4/">https://docs.oracle.com/en/middleware/soa-suite/soa/12.2.1.4/</a>
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.	<a href="http://docs.oracle.com/middleware/1221/wls/NOTES/toc.htm">http://docs.oracle.com/middleware/1221/wls/NOTES/toc.htm</a>
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
<b>boldface</b>	Boldface type indicates graphical user interface elements associated with an action, or terms defined in text or the glossary.



Convention	Meaning
<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

Term	Description
C2M	Oracle Utilities Customer to Meter
CCB	Oracle Utilities Customer Care and Billing
MDM	Oracle Utilities Meter Data Management
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
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	Service Agreement
SP	Service Point

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<b>Term</b>	<b>Description</b>
XSD	A schema definition file.
Fuzzy Calls	Trouble Calls that are not initially associated with a premise or device
UI	User Interface
US	MDM usage subscription

# Part 1

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## Understanding the Integration

This section provides an overview of the participating applications and information regarding the business processes addressed by this integration. It contains the following chapters:

- [Integration Overview](#)
- [Understanding the Integration Processes](#)

# Chapter 1

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## Integration Overview

This document provides configuration and administration information for the integration between Oracle Utilities Customer to Meter (C2M) and Oracle Utilities Network Management System (NMS).

This chapter includes the following:

- [Prerequisites](#)
- [About the Integration Products](#)
- [Supported Business Processes](#)

## Prerequisites

The following participating applications must be installed, set up, and working properly:

- Oracle Utilities Customer to Meter
- Oracle Utilities Network Management System
- Service Oriented Architecture (SOA)

The latest supported platform information for various Oracle Utilities applications and integration products is available in the *Certification Matrix for Oracle Utilities Products* (Doc ID 1454143.1) on [My Oracle Support](#).

**Note:** This process is only available if Oracle Utilities Customer to Meter integration to Oracle Utilities Network Management Patch 33936395 is installed.

## About the Integration Products

This section provides general information about the functionality and processing of Oracle Utilities Customer to Meter integration to Oracle Utilities Network Management. This integration uses Service-Oriented Architecture (SOA) Suite.

The following products are involved in the integration:

- [Oracle Utilities Customer to Meter](#)
- [Oracle Utilities Network Management System](#)

### Oracle Utilities Customer to Meter

Oracle Utilities Customer to Meter is a next generation customer service and billing application that incorporates a modern meter data management system.

Oracle Utilities Customer to Meter is a central repository for customer information (such as name, address and phone number) that manages all aspects of the utility customer lifecycle including service connections, trouble calls, and outages.

### Oracle Utilities Network Management System

Oracle Utilities Network Management System processes trouble calls from customers and analyzes them to determine probable outage locations. It can generate estimated restoration times (ERTs) that can then be provided back to customers.

Oracle Utilities Network Management System also keeps a history of all of the customer calls that were entered in the system, as well as a history of all events that were known to affect a customer even if the customer did not call in. In addition to responding to unplanned outages and non-outage problems, Oracle Utilities Network Management System can help a utility plan maintenance work or new construction that may impact existing customers. When the detailed switching plans are generated in Oracle Utilities Network Management System, information can be provided to customers about planned outages that will impact them.

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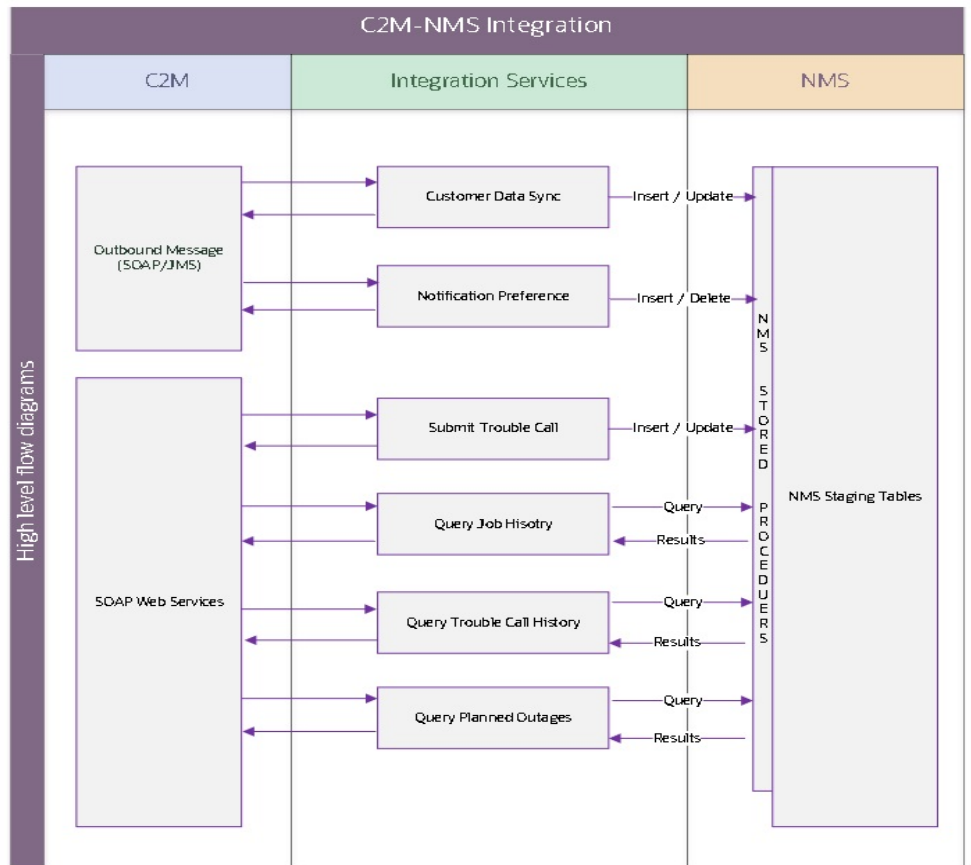
## Supported Business Processes

This integration supports synchronization of customer data and trouble calls from Oracle Utilities Customer To Meter to Oracle Utilities Network Management System. It also supports the ability to query job history, trouble call history and planned outages from Oracle Utilities Customer To Meter.

The following list summarizes the functionality included in the integration:

- **Synchronize customer data:** Customer data is synchronized between Oracle Utilities Customer to Meter and Oracle Utilities Network Management System. To view customer information in the Oracle Utilities Network Management System application, only current information is required to associate customers with service location and supply nodes in the network data model.
- **Send trouble calls to Oracle Utilities Network Management System:** Capture trouble calls created or updated in **Oracle Utilities Customer to Meter** and send to Oracle Utilities Network Management System. The integration handles both trouble calls created for a particular customer with a known service point as well as “fuzzy” calls which are not initially associated with a customer or device.
- **Query trouble calls:** Query trouble calls that were placed by a particular customer or caller in Oracle Utilities Network Management System and display the results in Oracle Utilities Customer to Meter.
- **Query job history:** Query the current or recent Oracle Utilities Network Management System jobs that impact a particular customer and display the results in Oracle Utilities Customer to Meter.
- **Query planned outages:** Query planned outage jobs in Oracle Utilities Network Management System impacting a particular customer and display the results in Oracle Utilities Customer to Meter.
- **Notification Contact Preference:** This asynchronous BPEL process is called by Oracle Utilities Customer Care and Billing to notify Oracle Utilities Network Management System when a communication preference is activated or inactivated for an Oracle Utilities Network Management System specific notification type for an outage, estimated restoration time and power restored notification types.

The following diagram provides a visual representation of the supported business processes:



# Chapter 2

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## Understanding the Integration Processes

This section provides an overview of the business processes facilitated by this integration including:

- [Integration Processes](#)



# Integration Processes

This section provides detailed business process overviews and technical overviews of each of the business processes facilitated by the integration. These include the following:

- [Customer Data Synchronization Process](#)
- [Trouble Call Entry Process](#)
- [Job History Query Process](#)
- [Trouble Call History Query Process](#)
- [Planned Outages Query Process](#)
- [Notification Contact Preference Process](#)

## Customer Data Synchronization Process

The customer data is synchronized in one direction from Oracle Utilities Customer to Meter to Oracle Utilities Network Management System to support the following functionality.

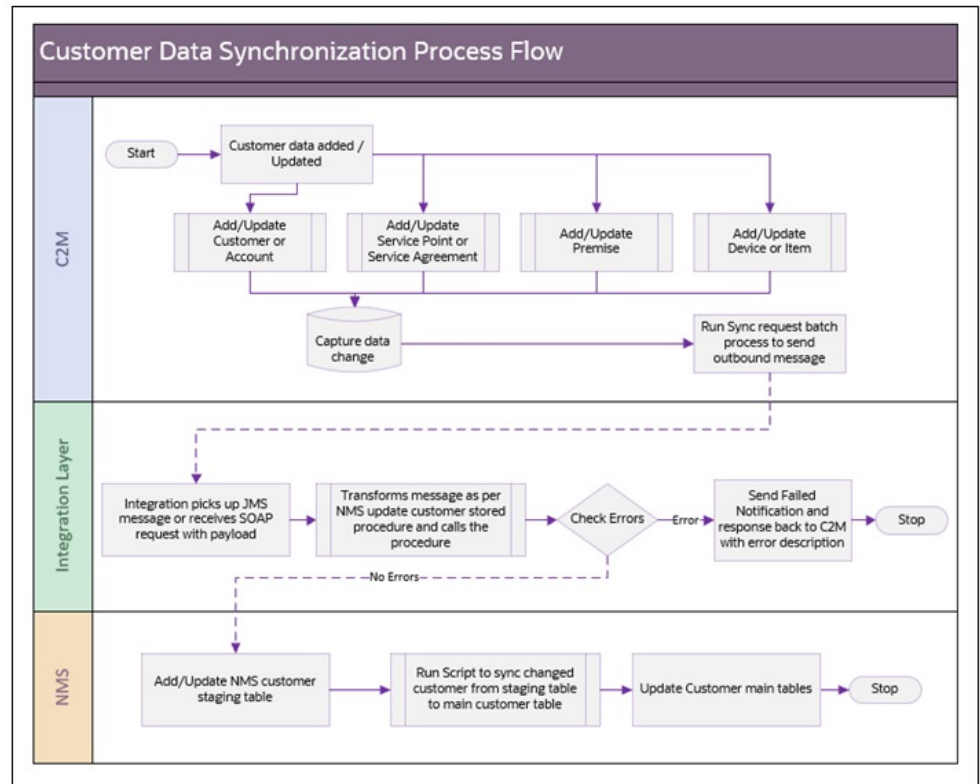
Refer to the [Customer Data Synchronization Process](#) section for message mapping information for this integration point.

### Supported Functionality

This integration point supports the following functionalities:

- Sends customer data from Oracle Utilities Customer to Meter to Oracle Utilities Network Management System.
- Initial Sync (or Full Initial Load) - It is the first load of data to create a Customer Data model in Oracle Utilities Network Management System.
- Incremental Sync - The changes since the last synchronization to the customer information in Oracle Utilities Customer to Meter are sent to Oracle Utilities Network Management System overwriting the last synchronized information.
- Only relevant and current electric customer data which is stored and maintained in Oracle Utilities Customer to Meter and that is needed to create the Oracle Utilities Network Management System customer model is synchronized. This involves getting data from the Person, Account, Premise, Service Point, Facility, Service Agreement, and Device tables in Oracle Utilities Customer to Meter.

The following diagram shows a graphical representation of the Customer Data Synchronization process:



## Creation and Update of Customer Data

Customer information is created and updated in Oracle Utilities Customer to Meter and this application is always the owner of customer data. Customer information must be kept up to date in Oracle Utilities Network Management System so that outage information can be properly synchronized with the appropriate customers and service points.

## Initial Synchronization/Incremental Updates

At the start of the implementation, the current customer data is synchronized from Oracle Utilities Customer to Meter to Oracle Utilities Network Management System by batch processing which is run on initial load from Oracle Utilities Customer to Meter. Oracle Utilities Customer to Meter then keeps the data in sync with Oracle Utilities Network Management System using periodic incremental updates.

Oracle Utilities Customer to Meter sends one message for every customer that needs to be synchronized in Oracle Utilities Network Management System. This message contains the entire customer related data load or updates for the customer relevant to Oracle Utilities Network Management System (person, account, premise, SP, SA, meter/item information).

Only current customer information from Oracle Utilities Customer to Meter is synchronized when the following criteria is satisfied:

- The customer has an *active* or *pending stopped* service agreement (SA)
- The SA has an effective SA/SP link

- The SP linked to the SA is connected and in service

When Oracle Utilities Customer to Meter sends an update to Oracle Utilities Network Management System, the message may contain customer data with meter information or customer data with the item information.

### **Meter Information Updates**

The messages containing the customer data with the meter information are processed and sent over to Oracle Utilities Network Management System.

### **Inactive Customer Data**

When a customer becomes inactive in Oracle Utilities Customer to Meter, this information is sent so that Oracle Utilities Network Management System can mark the customer as inactive. This update only indicates that the customer is inactive, but does not provide details regarding whether the customer is inactive due to disconnection of service, for non-payment or if the customer has moved out.

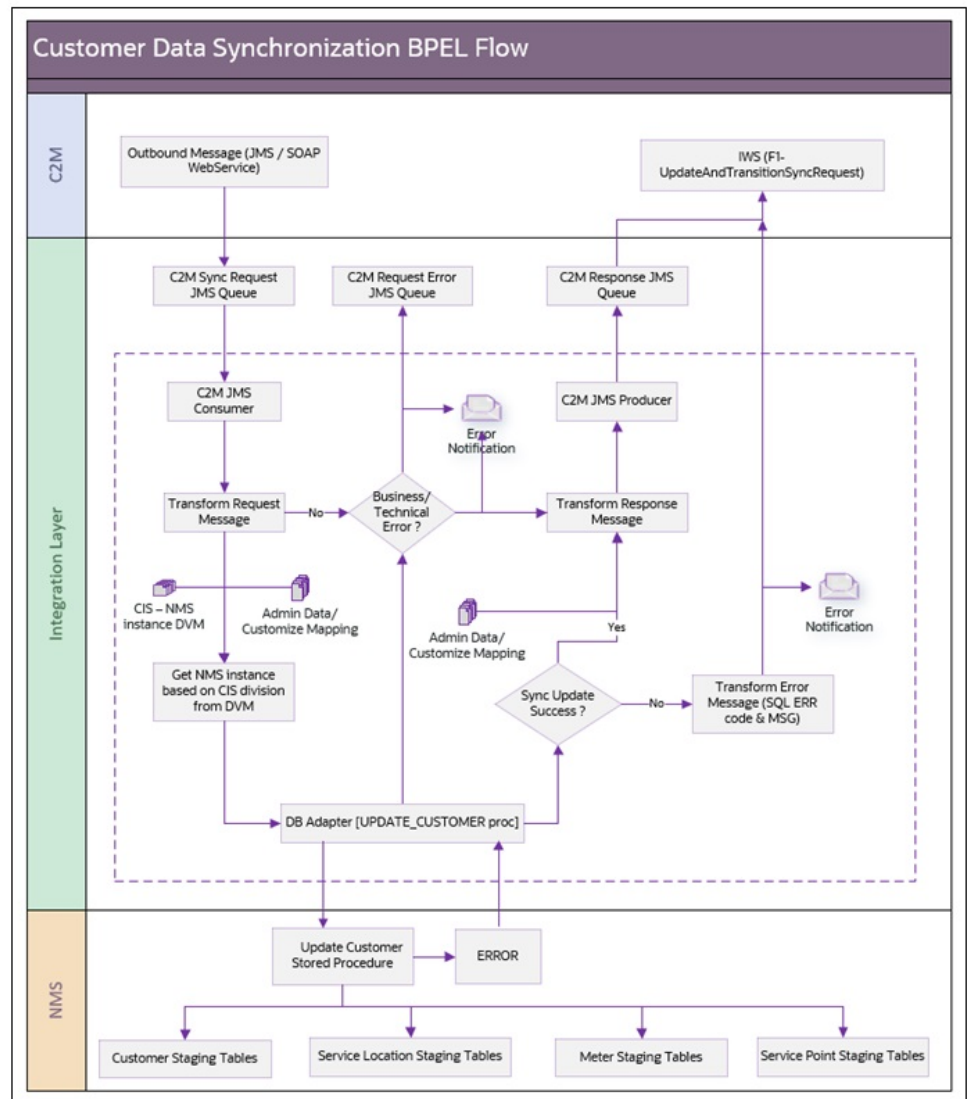
### **Integration Process and Technical Details**

This integration point supports a-synchronous data synchronization from Oracle Utilities Customer to Meter to Oracle Utilities Network Management System with the following processing:

- Oracle Utilities Customer to Meter sends synchronization message to OUC2MOUNMSCustomerSyncJMSWriteSvc integration service. This integration service is exposed as a web service.
- OUC2MOUNMSCustomerSyncJMSWriteSvc integration process sends the synchronization message to Oracle Utilities Customer To Meter Request JMS Queue in the integration layer to consume and process.
- OUC2MOUNMSCustomerSyncEBF integration process consumes messages from the JMS Queue, transforms the message to the equivalent Oracle Utilities Network Management System field format, invokes the Customer Update Stored Procedure to insert/update the customer information in the Oracle Utilities Network Management System and sends the response or error messages to JMS Queues.
- WebLogic JMS queues are used as a queuing mechanism in the integration layer between Oracle Utilities Customer to Meter and BPEL processes. Four JMS queues support this integration.
  - Oracle Utilities Customer to Meter Request Queue - For Oracle Utilities Customer to Meter to add messages to this queue which are picked up by the integration for processing.
  - Oracle Utilities Customer to Meter Response Queue - The business errors in the integration and success or failure of DB insert/update operations are written to this queue.
  - Oracle Utilities Customer to Meter Request Error Queue - The technical errors encountered in the integration request process are written to this queue.

- Oracle Utilities Customer to Meter Response Error Queue - The technical errors encountered when Oracle Utilities Customer to Meter reads the messages from the Oracle Utilities Customer to Meter response queue are written to this queue.
- OUC2MOUNMSCustomerSyncEBF integration BPEL process with the following components processes the message.
  - JMS Consumer reads messages from the Oracle Utilities Customer to Meter request queue.
  - JMS Producer writes to the Oracle Utilities Customer to Meter response queue.
  - Transformation converts the message from the source format to the target format. DVMs are used for the transformation.
  - Error handling and error notification.
  - DB Adapter interacts with the Oracle Utilities Network Management System Database to invoke the Customer Update Stored Procedure to insert/update customer information in the Oracle Utilities Network Management System customer related staging tables.
  - Customization inserts placeholders for custom xsl and calls to pre and post transformation extension points for each transformation.
  - OUC2MOUNMSCustomerSyncJMSReadSvc integration process consumes the message from JMS response queue, and invokes F1-pdateAndTransitionSyncRequest IWS in Oracle Utilities Customer to Meter.
  - In case of any errors, the error message returned by Oracle Utilities Network Management System stored procedure is sent to Oracle Utilities Customer to Meter with the sync request ID associated with it.

In case of success, Oracle Utilities Network Management System store procedure will not return any response. Integration will send the sync request ID back to Oracle Utilities Customer to Meter.



## Assumptions and Constraints

- Device information for each customer or service point must be setup in Oracle Utilities Customer to Meter first before the customer synchronization batch is run. Device ID used in Oracle Utilities Customer to Meter must be in the Oracle Utilities Network Management System Supply Nodes table. Oracle Utilities Customer to Meter stores the device information in the SP Facility record and Oracle Utilities Network Management System stored it in Device ID.
- The Oracle Utilities Customer To Meter Customer Data sync is driven by SP and the data to be synchronized to Oracle Utilities Network Management System can be filtered by SP Type(s). The Oracle Utilities Customer to Meter NMS Sync Integration master configuration filters the data to be synchronized by SP Type. Implementation teams can configure the SP Type(s) that need to be synchronized in the master configuration and only those specified are synchronized over to Oracle Utilities Network Management System. In a multi CIS Division environment supporting separate NMS instances per division,

implementation teams can also configure the SP Type(s) that need to be synchronized by division. If nothing is specified in the master configuration, all SP Types are synchronized over.

**Note:** Refer to the **Data Synchronization** section in the *Oracle Utilities Framework User Guide* for more information.

### Successful Update

When the Oracle Utilities Network Management System tables are successfully updated, the integration layer sends a positive acknowledgment to the Oracle Utilities Customer to Meter response queue for Oracle Utilities Customer to Meter to process.

### Business Process Errors

When a business error is encountered during insert or update of one of the customer related staging tables, the Customer Update Stored Procedure returns an error to the integration layer and a negative acknowledgment is sent to the Oracle Utilities Customer to Meter response queue. Oracle Utilities Customer to Meter fixes the error and resends the message. The Oracle Utilities Network Management System Customer Update Stored Procedure issues a rollback on all successful activities (database operations) that were issued to the tables.

### Technical Errors

When a technical error is encountered the message is sent to the Oracle Utilities Customer to Meter JMS error queue and processing fails. The common technical errors would be if the Oracle Utilities Network Management System database is down or if there are connectivity errors. As mentioned, the integration can be configured to send email notification of errors or to store them in an error table.

### Integration Service

These values are cross referenced in the [Service Configurations](#) section.

Name	Description
OUC2MOUNMSCustomerSyncEBF	<p>C2M-NMS Customer Data Sync BPEL Process</p> <p>This BPEL process reads messages from the request queue and merges the customer data to the NMS Customer Related Staging tables after successful transformation. The BPEL process includes transformations, extensions and error notifications.</p>

## Adapter Services

Name	Description
OUC2MCustomerSyncReqJMS Consumer	C2M Customer Sync Request JMS Consumer  This is the JMS consumer service in BPEL responsible for listening to the C2M Request Queue. This is created as part of the BPEL process.
OUC2MCustomerSyncResponseJMS Producer	C2M Customer Sync Response JMS Producer  This is the JMS producer service in BPEL responsible for adding a response message to the C2M Response Queue. This is created as part of the BPEL process.
OUNMSUpdateCustomerStoredProc	NMS DB Adapter - Update Customer Stored Procedure. This is created as part of the BPEL process.

## JMS Queues

Name	Description
OUC2MCustomerDataSyncRequest	C2M Customer Data Sync Request Queue
OUC2MCustomerDataSyncRequest Error	C2M Customer Data Sync Request Error Queue
OUC2MCustomerDataSyncResponse	C2M Customer Data Sync Response Queue
OUC2MCustomerDataSyncResponse Error	C2M Customer Data Sync Response Error Queue

## Integration Wrapper Services

Composite Name	Description
OUC2MOUNMSCustomerSyncJMS WriteSvc	C2M-NMS Customer Data Sync JMS Write BPEL Process  This BPEL process receives messages from the C2M customer sync outbound message and writes the message to customer sync request JMS queue.
OUC2MOUNMSCustomerSyncJMS ReadSvc	C2M-NMS Customer Data Sync JMS Read BPEL Process  This BPEL process reads messages from the customer sync response JMS queue and sends the message to F1-UpdateAndTransitionSyncRequest IWS in C2M.

## C2M Services

Service Name	Operation Name	Description
F1-UpdateAndTransitionSyncRequestService	F1-UpdateAndTransitionSyncRequest	Update and Transition Master Data Sync Request

## Trouble Call Entry Process

This process is a real-time synchronous interface of the trouble calls created in Oracle Utilities Customer to Meter.

Oracle Utilities Network Management System is the central repository for trouble calls. However, trouble calls may originate in Oracle Utilities Customer to Meter and these trouble calls are sent to Oracle Utilities Network Management System.

### Mapping

Trouble code mapping must be synchronized between the edge applications so that the trouble code sent from Oracle Utilities Customer to Meter is interpreted similarly when the trouble code is received by Oracle Utilities Network Management System. Refer to the Data Mapping section for more details. Refer to the [Trouble Call Entry Process](#) section for message mapping information for this integration point.

### Supported Functionality

The integration point supports the following functionalities:

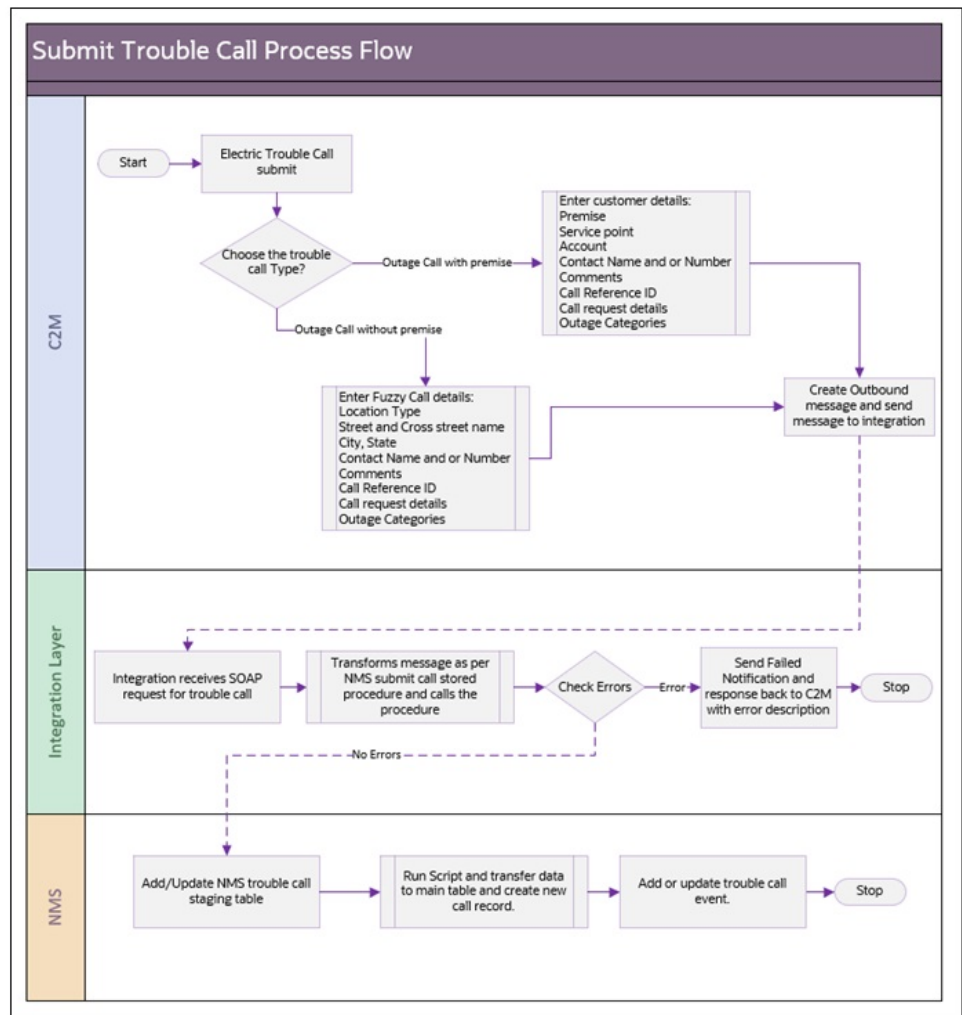
- Transmit to Oracle Utilities Network Management System trouble calls created in Oracle Utilities Customer to Meter. The following types of calls are interfaced:
  - Electric trouble calls for a particular customer (known premise/service point)
  - Fuzzy calls
 

When a fuzzy call is created, at least one of the following call identifiers must be provided:

    - The caller's name
    - The caller's phone number
    - The caller's ID (911 reference ID provided by the caller (911))
    - Location must also be provided. A Location can be a:
      - Street intersection (provide two street names)
      - Street segment (provide a block number and a street name)
      - City and State are optional



The following process diagram shows a graphical representation of the trouble call entry process:



### New Trouble Calls Created in Oracle Utilities Customer to Meter

When a trouble call is created in Oracle Utilities Customer to Meter, the contact name and contact phone passed to Oracle Utilities Network Management System are not always used as the customer name and customer phone stored in the incident record.

If the Generic IVR Adapter, which processes trouble calls received from Oracle Utilities Customer to Meter is run with the 'command line option '-docustquery' for customers that exist in the Oracle Utilities Network Management System Customer Model, the system uses the customer name and customer phone stored in the Oracle Utilities Network Management System customer model rather than the contact name and contact phone coming from Oracle Utilities Customer to Meter.

Make sure that when running the Generic IVR Adapter in Oracle Utilities Network Management System that the command-line option '-docustquery' is not used if you want to store the contact name and contact number from Oracle Utilities Customer to Meter.

For more information on configuring this option, refer to the section [Setting Up Oracle Utilities Network Management System](#) in [Chapter 3](#).

## Updates

The edge applications determine which fields can be updated and which fields are restricted. Depending on the needs of the customer, this decision is implementation specific since some customers are very sensitive about the ability to modify customer reported information so they require new calls to be entered for significant changes to a reported call while some only allow certain fields to be updated. No restrictions are applied as default.

## Updating Phone Numbers

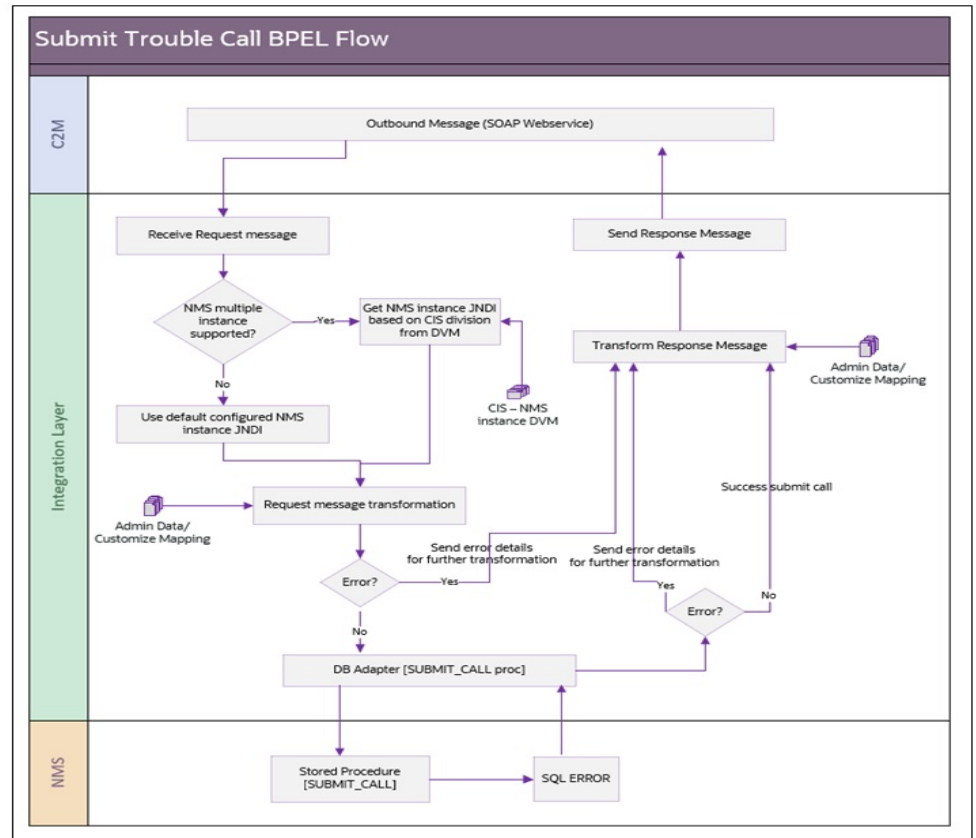
When Oracle Utilities Customer to Meter passes a contact phone to the integration layer, the integration layer removes all delimiters and characters, and only passes the numeric value to Oracle Utilities Network Management System.

## Integration Process and Technical Details

This integration point supports trouble calls created or updated in Oracle Utilities Customer to Meter and sent to Oracle Utilities Network Management System with the following processing:

When a trouble call is created in Oracle Utilities Customer to Meter as a Service Task, a synchronous xml message is sent to the BPEL Process. The BPEL process transforms the message to the equivalent Oracle Utilities Network Management System field format and invokes the Submit Call Stored Procedure to insert/update the trouble call information in the Oracle Utilities Network Management System Trouble Calls table. The BPEL process handles the following:

- Request Message transformation from the source (C2M) to the target (NMS) application format. DVMs are used for the transformation.
- Insert/Update of trouble calls in the Trouble Calls table using a DB Adapter to interact with the Oracle Utilities Network Management System Database to invoke the Oracle Utilities Network Management System trouble calls stored procedure that inserts/updates the trouble call record to the Trouble Calls table.
- Error handling and optional error notification.
- Customization inserts placeholders for custom xsl and calls to pre and post transformation extension points for each transformation.



### Successful Update

When the Oracle Utilities Network Management System tables are successfully updated, the integration layer sends a positive acknowledgment to the Oracle Utilities Customer to Meter response queue.

### Errors

When a business or technical error is encountered, the integration layer synchronously responds with an error to Oracle Utilities Customer to Meter. As mentioned, the integration can be configured to send email notification of errors or to store them in an error table.

## Integration Service

These values are cross referenced in the [Service Configurations](#) section.

Name	Description
OUC2MOUNMSSubmitTroubleCall EBF	C2M-NMS Trouble Call Interface BPEL Process  This is the main BPEL process that transforms the incoming C2M trouble call message to NMS format and inserts or updates the trouble call record in NMS. The BPEL process includes transformations, extensions and error notifications.

## Adapter Services

Name	Description
OUNMSSubmitCallStored Procedure	NMS DB Adapter - Insert Trouble Calls Stored Procedure. This is created as part of the BPEL process.

## Job History Query Process

This process is a real-time synchronous interface from Oracle Utilities Customer to Meter to retrieve job history information from Oracle Utilities Network Management System for a particular customer, location or call identifier and display the results back in Oracle Utilities Customer to Meter.

Refer to the [Job History Query Process](#) section for message mapping information for this integration point.

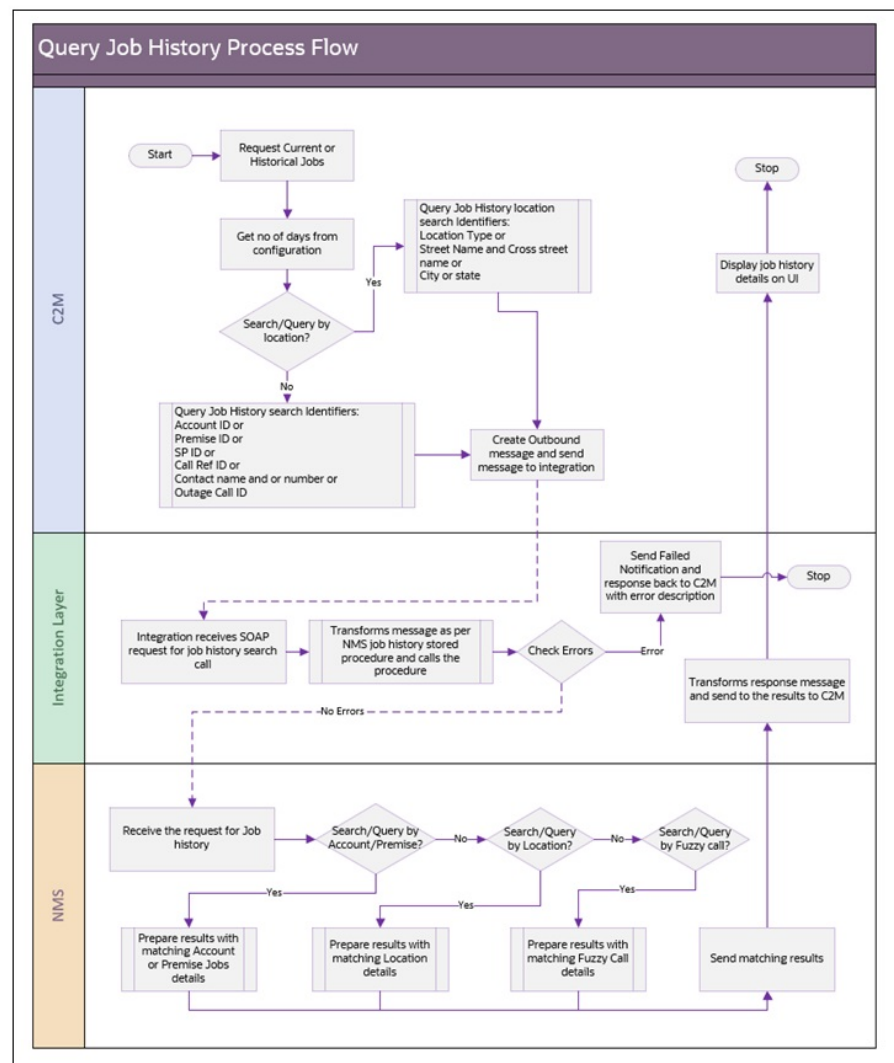
## Supported Functionality

The job history query supports the following functionalities:

- Query and view job history details from Oracle Utilities Customer to Meter using any of the search criteria:
  - **Standard outage job history query for known customers:** Search by IDs:
    - Service Point ID
    - Account ID
    - Premise ID
  - **Nearby Outage Job History Query:** Search by location:
    - **Query by Street Intersection:** The possible inputs to the query are:
      - Street Intersection (street name and cross street)
      - City (optional)
      - State (optional)
    - **Query by Street Segment:** The possible inputs to the query are:
      - Street segment (street name and block number)

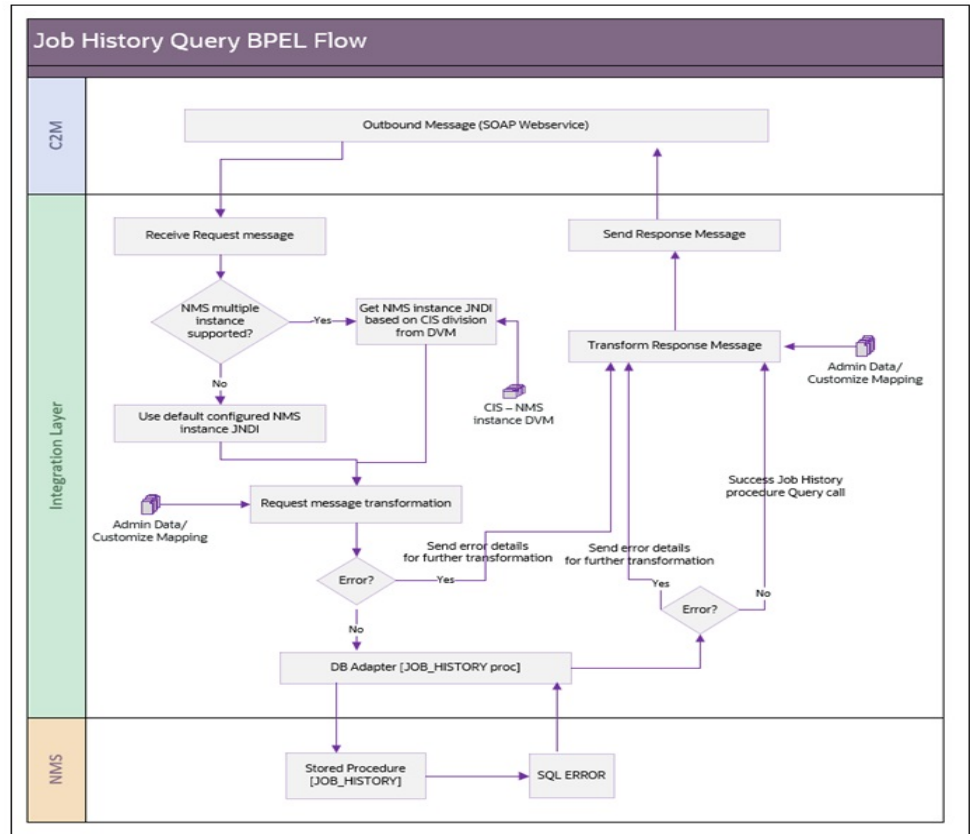
- City (optional)
- State (optional)
- **Fuzzy Call Identifier Query:** This query can find the job details for a fuzzy call that was placed. This requires first looking up the fuzzy call from the Call History using any of the following criteria and finding the associated jobs.
  - Caller's Name
  - Caller's Phone Number
  - Call Reference Identifier Number (911 Call Identifier)
  - External ID (Outage Call ID in Oracle Utilities Customer to Meter or IVR ID)
- Oracle Utilities Customer to Meter default display order of trouble calls with most recent at top.

The following process diagram shows a graphical representation of the job history query process:



## Integration Process and Technical Details

Oracle Utilities Customer to Meter sends the query information in the form of xml messages which are transformed by the integration and sent to Oracle Utilities Network Management System. Oracle Utilities Network Management System responds with the Job History results based on the input criteria that it received. The response is transformed by the integration layer and sent to Oracle Utilities Customer to Meter.



## Assumptions and Constraints

- When searching Job History by contact phone, the integration layer removes all delimiters and characters from the contact phone that Oracle Utilities Customer to Meter and only passes the numeric value to Oracle Utilities Network Management System.
- To make the name search and street name search compatible, a wildcard character (%) must be added at the end of the value. Example. Smith%

## Errors

If the integration layer or Oracle Utilities Network Management System returns a business error while processing the inbound message, an error message is returned in the response message to Oracle Utilities Customer to Meter. As mentioned, the integration can be configured to send email notification of errors or to store them in an error table.

## Integration Service

These values are cross referenced in the [Service Configurations](#) section.

Name	Description
OUC2MOUNMSJobHistoryQuery EBF	<p>Query NMS for the Job History BPEL Process.</p> <p>This is a synchronous BPEL process to transform the incoming C2M message to NMS format and transform the response from NMS back to C2M format.</p> <p>This BPEL process receives the C2M request messages and invoke NMS stored procedure using DB Adapter. The response from NMS is sent as response back to C2M after appropriate transformations.</p>

## Adapter Services

Name	Description
OUC2MOUNMSJobHistoryQueryAdapter Service	<p>Query NMS for the Job History Adapter Service.</p> <p>This is the DB Adapter Service to invoke NMS stored procedure PK_CCB_JOB_HISTORY.</p>

## Trouble Call History Query Process

This process is a real-time synchronous interface from Oracle Utilities Customer to Meter to retrieve trouble call history information from Oracle Utilities Network Management System for a particular customer, location or call identifier and display the results back in Oracle Utilities Customer to Meter.

Refer to the [Trouble Call History Query Process](#) section for message mapping information for this integration point.

## Supported Functionality

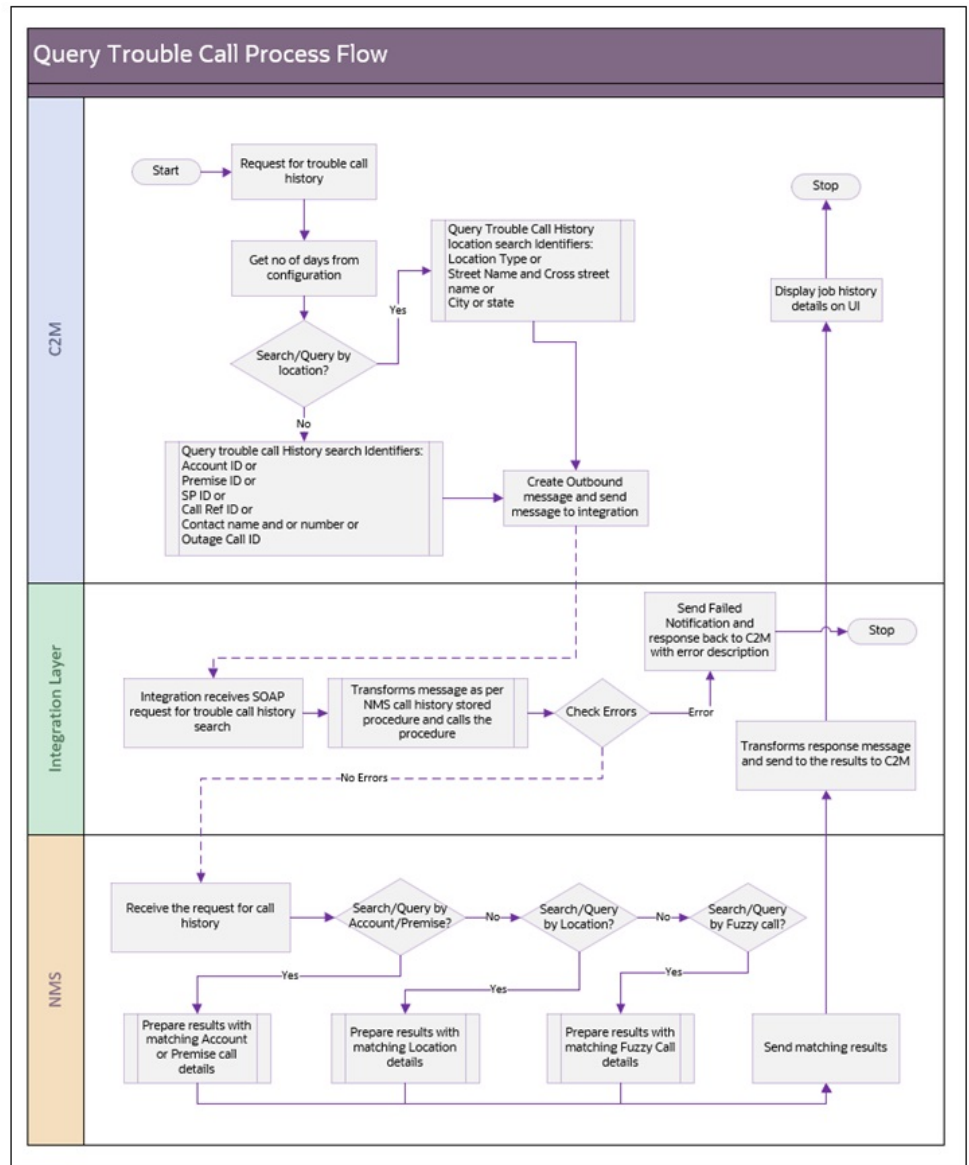
The trouble call history query supports the following functionalities:

- Query and view call history details from Oracle Utilities Customer to Meter using any of the search criteria:
  - **Standard Trouble Calls History Query for known customers:** Search by IDs:
    - Service Point ID
    - Account ID
    - Premise ID

- **Nearby Outage Job History Query:** Search by location:
  - **Query by Street Intersection:** The possible inputs to the query are:
    - Street Intersection (street name and cross street)
    - City (optional)
    - State (optional)
  - **Query by Street Segment:** The possible inputs to the query are:
    - Street segment (street name and block number)
    - City (optional)
    - State (optional)
- **Fuzzy Call Identifier Query.** This query can find the trouble call details for a fuzzy call (calls that are not associated with a customer or with a device in Oracle Utilities Network Management System). Search by call identifiers:
  - Caller's Name
  - Caller's Phone Number
  - Call Identifier Number (911 Call Identifier)
  - External ID (Outage Call ID in Oracle Utilities Customer to Meter or IVR ID)
- Oracle Utilities Customer to Meter default display order of trouble calls with most recent at top.

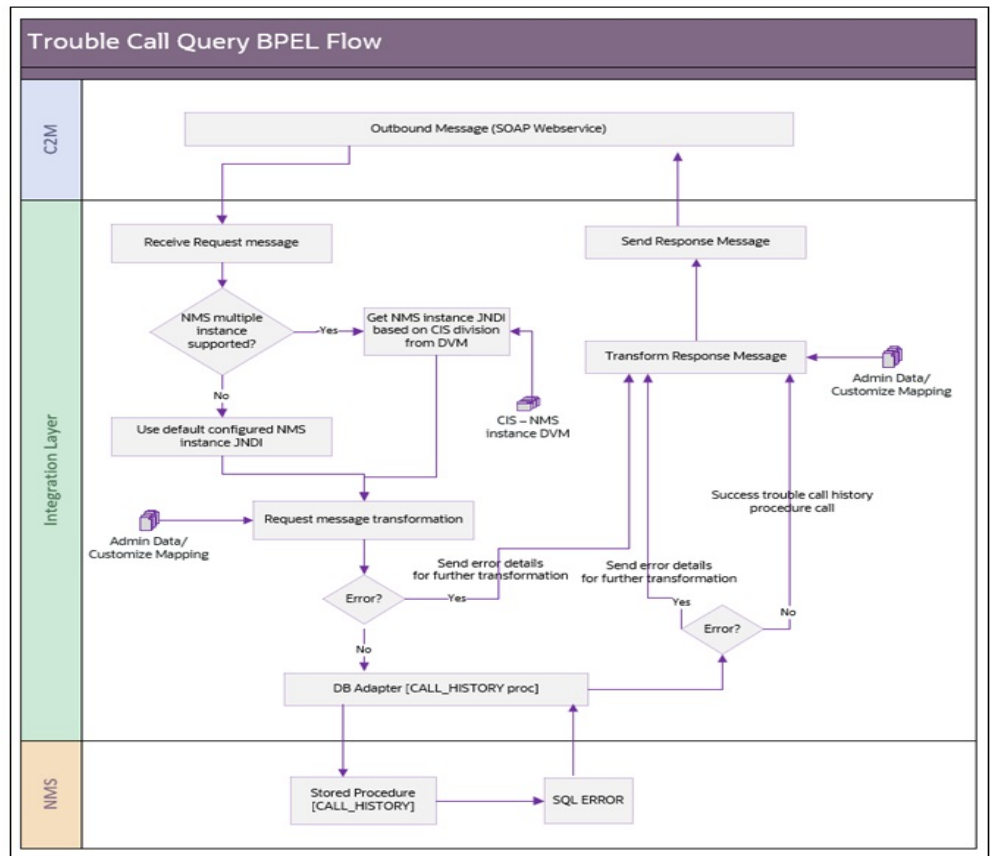


The following process diagram shows a graphical representation of the trouble call history query process:



### Integration Process and Technical Details

Oracle Utilities Customer to Meter sends the query information in the form of xml messages which are transformed by the integration layer and sent to Oracle Utilities Network Management System. Oracle Utilities Network Management System responds with the Trouble Calls History based on the input criteria that it received. The response is transformed by the integration layer and sent to Oracle Utilities Customer to Meter.



### Assumptions and Constraints

- When searching Trouble Call History by contact phone, the integration layer removes all delimiters and characters from the contact phone that Oracle Utilities Customer to Meter passes to the integration and only passes the numeric value to Oracle Utilities Network Management System.
- To make the name search and street name search compatible, a wildcard character (%) must be added at the end of the value. Example. Smith%.

### Errors

If the integration layer or Oracle Utilities Network Management System returns a business error while processing the inbound message, an error message is returned in the response message to Oracle Utilities Customer to Meter. As mentioned, the integration can be configured to send email notification of errors or to store them in an error table.

## Integration Service

These values are cross referenced in the [Service Configurations](#) section.

Name	Description
OUC2MOUNMSCallHistoryQuery EBF	<p>Query NMS for the Trouble Calls History BPEL Process.</p> <p>This is the synchronous BPEL process to transform the incoming C2M message to NMS format and transform the response from NMS back to C2M format.</p> <p>This BPEL process receives the C2M request messages and invoke NMS stored procedure using DB Adapter. The response from NMS is sent as response back to C2M after appropriate transformations.</p>

## Adapter Services

Name	Description
OUC2MOUNMSCallHistoryQueryAdapter Service	<p>Query NMS for the Trouble Calls History Adapter Service.</p> <p>This is the DB Adapter Service to invoke NMS stored procedure PK_CCB.Call_History.</p>

## Planned Outages Query Process

The primary owner of the planned outage data is Oracle Utilities Network Management System.

This process is a real-time synchronous interface from Oracle Utilities Customer to Meter to retrieve planned outages from Oracle Utilities Network Management System for a particular customer and display the results back in Oracle Utilities Customer to Meter.

Refer to the [Planned Outages Query Process](#) section for message mapping information for this integration point.

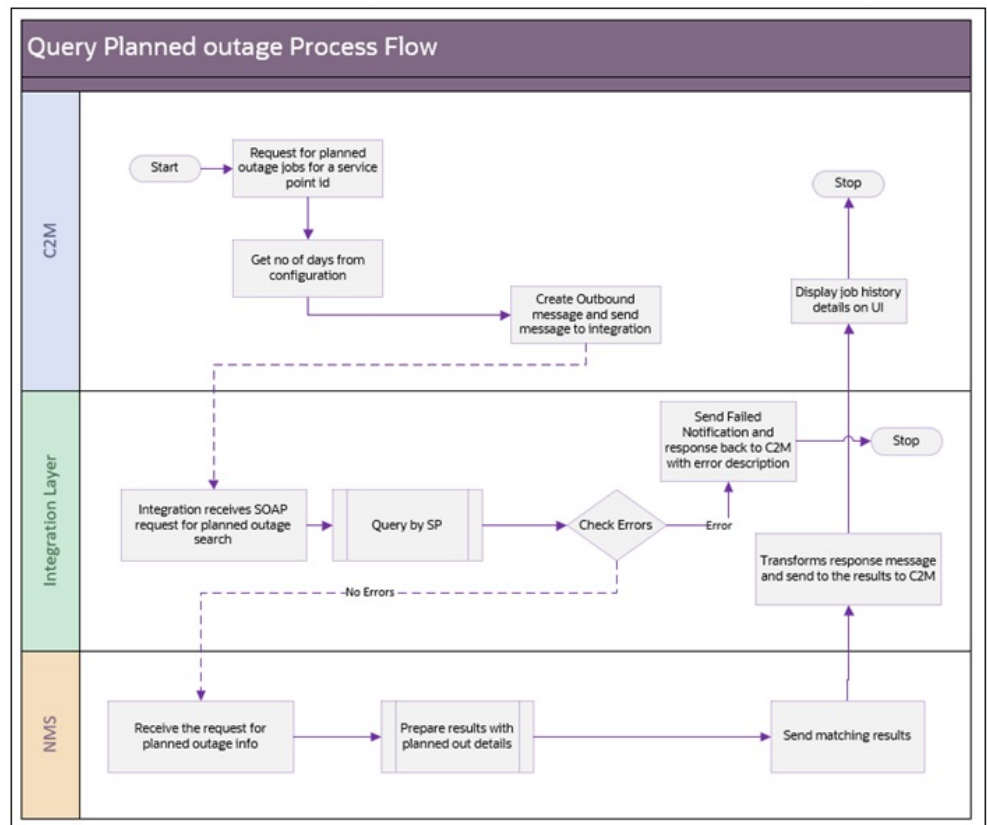
## Supported Functionality

The planned outage query supports the following functionalities:

- Query and view planned outage jobs from Oracle Utilities Customer to Meter given a Service Point.
- Retrieve from Oracle Utilities Network Management System for display in Oracle Utilities Customer to Meter information for future, current and historical planned outages that affects or have affected that service point.

- Whether or not to retrieve all planned outages affecting the customer (past, present, and future), or only “active” ones (current and future, not past) is configurable.

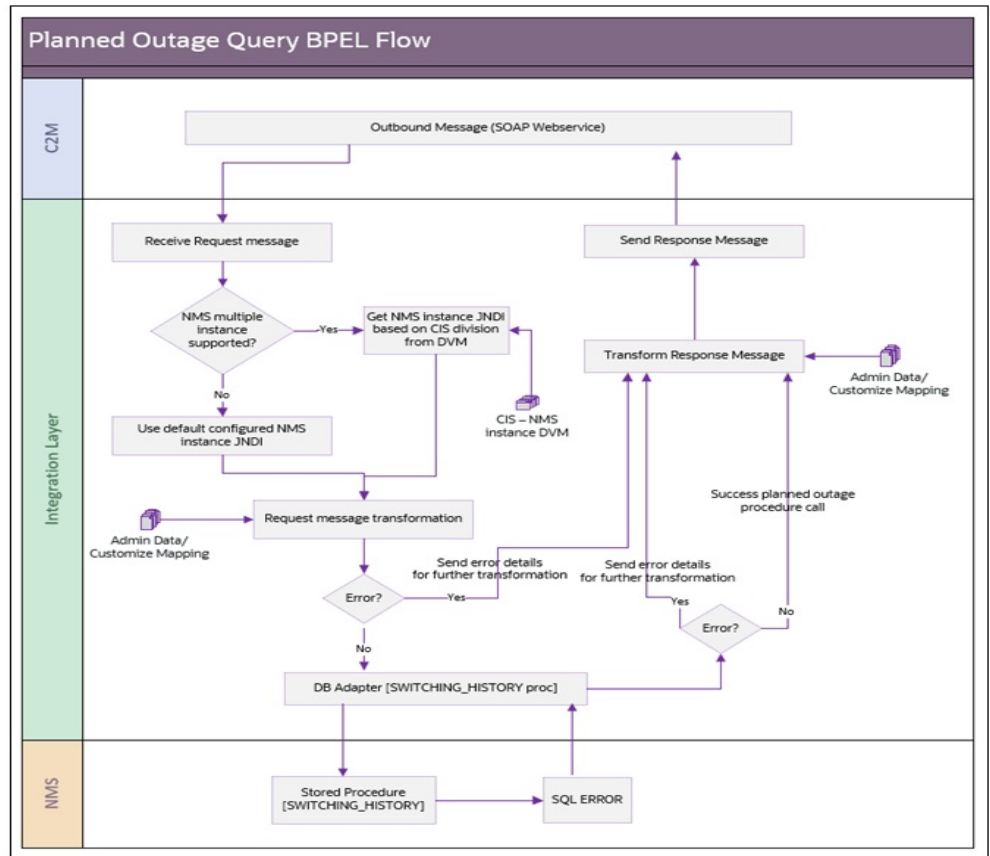
The following process diagram shows a graphical representation of the planned outages query process:



## Integration Process and Technical Details

Oracle Utilities Customer To Meter sends the query information in form of xml messages, which are transformed by the integration and sent to Oracle Utilities Network Management System.

Oracle Utilities Network Management System responds back with the Planned Outage Jobs based on the input criteria that it received. The response is transformed by the integration layer and sent to Oracle Utilities Customer to Meter.



### Errors

If the integration layer or Oracle Utilities Network Management System returns a business error while processing the inbound message, an error message is returned in the Response message to Oracle Utilities Customer to Meter. As mentioned, the integration can be configured to send email notification of errors or to store them in an error table.

### Integration Service

These values are cross referenced in the [Service Configurations](#) section.

Name	Description
OUC2MOUNMSPlannedOutages QueryEBF	Query NMS for the Planned Outage Jobs BPEL Process.
	This is a synchronous BPEL process to transform the incoming C2M message to NMS format and transform the response from NMS back to C2M format.
	This BPEL process receives the C2M request messages and invoke NMS stored procedure using DB Adapter. The response from NMS is sent as response back to C2M after appropriate transformations.

## Adapter Services

Name	Description
OUC2MOUNMSPlannedOutagesQueryAdapter Service	<p>Query NMS for Planned Outages Adapter Service.</p> <p>This is the DB Adapter Service to invoke NMS stored procedure PK_CCB.switching_history.</p>

## Notification Contact Preference Process

This asynchronous BPEL process is called by Oracle Utilities Customer Care and Billing to notify Oracle Utilities Network Management System when a notification preference is activated or inactivated for an Oracle Utilities Network Management System specific notification type for an outage, estimated restoration time and power restored notification types.

Refer to the [Notification Contact Preference Process](#) section for message mapping information for this integration point.

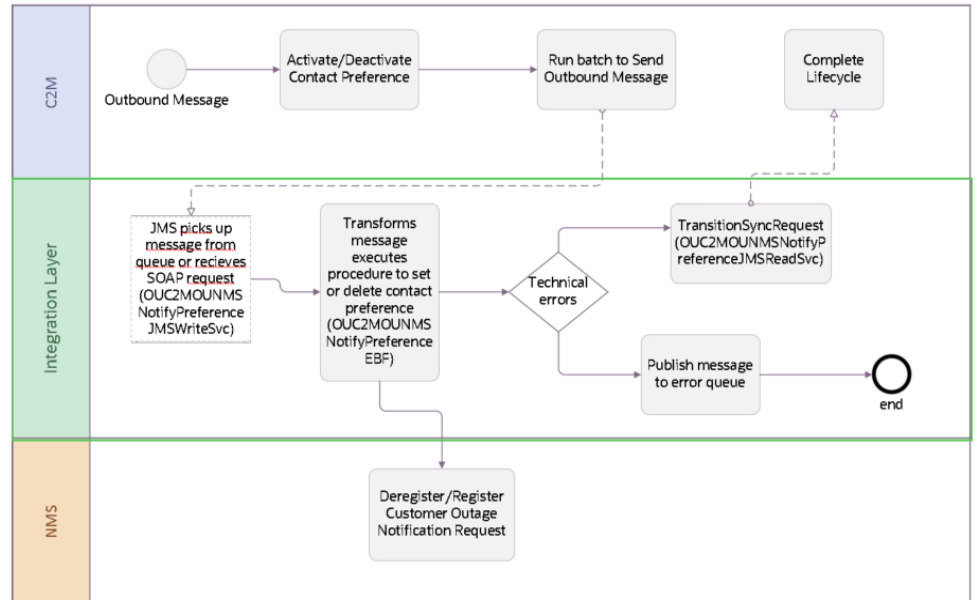
**Note:** These processes are available only if Oracle Utilities Customer to Meter integration to Oracle Utilities Network Management Patch 33936395 is installed.

### Supported Functionality

The implementation configures Oracle Utilities Network Management System notification types for outages, estimated restoration time, or power restoration in Oracle Utilities Customer Care and Billing.

When a communication preference is activated or deactivated for these notification types, Oracle Utilities Customer Care and Billing generates the C1-NTFOUTMSG outbound message, which calls the OUC2MOUNMSNotifyPreferenceEBF BPEL Process. This integration point communicates the notification preference to Oracle Utilities Network Management System for the specific Oracle Utilities Network Management System notification type.

To use this functionality, refer to the notification functionality version requirements for specific edge applications.

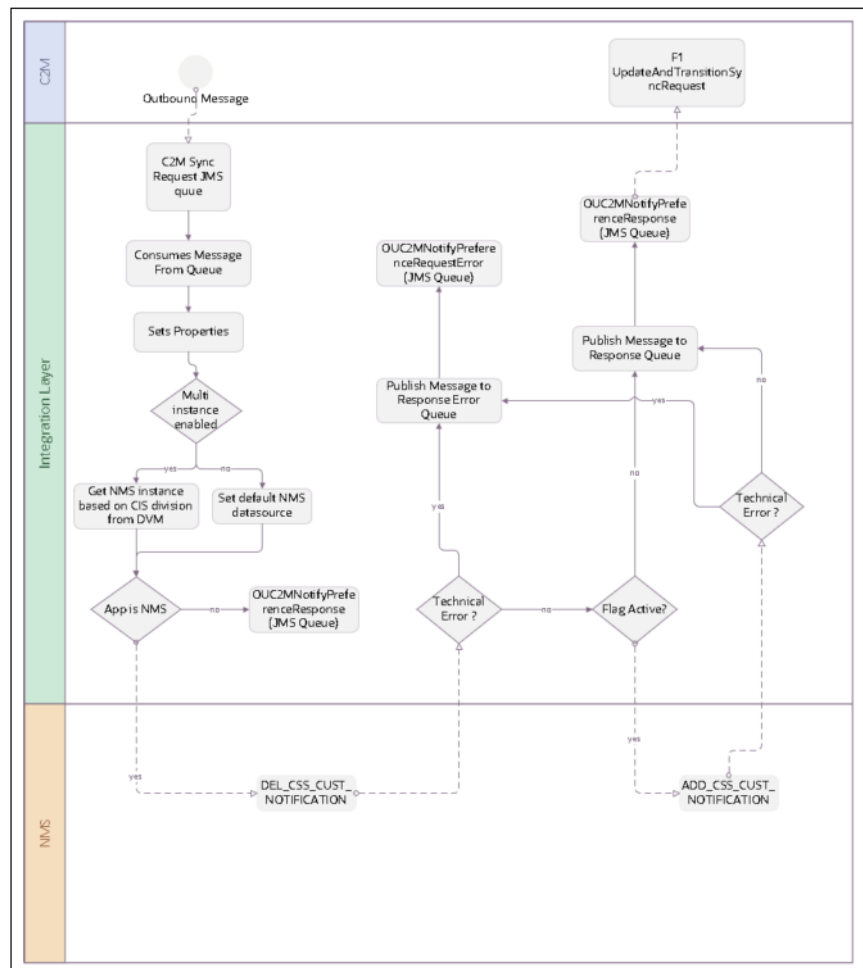


## Integration Process and Technical Details

This integration point supports asynchronous data from Oracle Utilities Oracle Utilities Customer Care and Billing to Oracle Utilities Network Management System with the following processing:

- WebLogic JMS queues are used as a queuing mechanism in the integration layer between Oracle Utilities Customer Care and Billing and BPEL processes. Four JMS queues support this integration:
  - Oracle Utilities CCB Request Queue: For Oracle Utilities Customer Care and Billing to add messages to this queue that are picked up by the integration for processing.
  - Oracle Utilities CCB Response Queue: The business errors in the integration and success or failure of the database delete/insert operations are written to this queue.
  - Oracle Utilities CCB Request Error Queue: The technical errors encountered in the integration request process are written to this queue.
  - Oracle Utilities CCB Response Error Queue: The technical errors encountered when Oracle Utilities Customer to Meter reads the messages from the Oracle Utilities Customer to Meter response queue are written to this queue.
- Oracle Utilities Customer Care and Billing sends messages through outbound message C1-NTFOUTMSG on activation and deactivation of contact preferences for the Oracle Utilities Network Management System Notification types and will trigger OUC2MOUNMSNotifyPreferenceJMSWriteSvc integration service that is exposed as a web service through Oracle Utilities Customer Care and Billing External System Configuration.
- OUC2MOUNMSNotifyPreferenceJMSWriteSvc integration process sends the message to JMS Queue in the integration layer to be consumed and processed.

- OUC2MOUNMSNotifyPreferenceEBF will pull message from JMS queue. It will transform and map the data through out the integration flow equivalent to the Oracle Utilities Network Management System field format.
- The existing notification preference in NMS System Notification type will always be deleted with PK\_MYC\_CSS\_1.DEL\_CSS\_CUST\_NOTIFICATION before setting up a new notification preference since currently update procedure is not currently supported.
- If flag activeInactrive is set to C1AC after deleting the current contact preference will execute PK\_MYC\_CSS\_1.ADD\_CSS\_CUST\_NOTIFICATION pl/sql stored procedure to set new contact preference for NMS System Notification type otherwise if flag is empty will just delete contact preference and will send response or error message to JMS queue.
- OUC2MOUNMSNotifyPreferenceJMSReadSvc integration process consumes the message from JMS response queue and invokes F1-UpdateAndTransitionSyncRequest webservice to complete sincronize request in Oracle Utilities Customer Care and Billing.
- In case of any errors, the error message returned by Oracle Utilities Network Management System stored procedure is sent to JMS Request error queue to be reprocessed. In case of success, Oracle Utilities Network Management System stored procedure will not return any response.





## Technical Errors

When a technical error is encountered, the message is sent back to JMS error queue and reprocessed. The common technical errors would be if the Oracle Utilities Network Management System database is down or if there are connectivity errors. As mentioned, the integration is configured to send email notification errors and to store them on database error table.

## Integration Service

These values are cross-referenced in [Service Configurations](#).

Name	Description
OUC2MNotifyPreferenceReqJMSConsumer	C2M Notify Preference Request JMS Consumer  This is the JMS consumer service in BPEL responsible for listening to the C2M Request Queue. This is created as part of the BPEL process.
OUC2MNotifyPreferenceRespJMSProducer	C2M Notify Preference Response JMS Producer  This is the JMS producer service in BPEL responsible for adding a response message to the C2M Response Queue. This is created as part of the BPEL process.
OUC2MNotifyPreferenceRespErrorJMSProducer	C2M Notify Preference Response Error JMS Producer  This is the JMS producer service in BPEL responsible for adding a response error message to the C2M Response Error Queue. This is created as part of the BPEL process.
OUC2MNotifyPreferenceReqErrorJMSProducer	C2M Notify Preference Request Error JMS Producer  This is the JMS producer service in BPEL responsible for adding a request error message to the C2M Request Error Queue. This is created as part of the BPEL process.
OUNMSCreateNotifPrefStoredProcCall	NMS DB Adapter - Create Notification Preference Stored Procedure. This is created as part of the BPEL process.
OUNMSDeleteNotifPrefStoredProcCall	NMS DB Adapter - Delete Notification Preference Stored Procedure. This is created as part of the BPEL process.

## JMS Queues

Name	Description
OUC2MNotifyPreferenceRequest	C2M Notify Preference Request Queue
OUC2MNotifyPreferenceRequestError	C2M Notify Preference Request Error Queue
OUC2MNotifyPreferenceResponse	C2M Notify Preference Response Queue
OUC2MNotifyPreferenceResponseError	C2M Notify Preference Response Error Queue

## Integration Wrapper Services

Name	Description
OUC2MOUNMSNotifyPreferenceJMSWriteSvc	<p>C2M-NMS Notify Preference JMS Write BPEL Process</p> <p>This BPEL process receives messages from the C2M notification preference outbound message and writes the message to customer sync request JMS queue.</p>
OUC2MOUNMSNotifyPreferenceJMSReadSvc	<p>OUC2MNotifyPreferenceRequest</p> <p>C2M-NMS Notify Preference JMS Read BPEL Process</p> <p>This BPEL process reads messages from the notification preference response JMS queue OUC2MNotifyPreferenceResponse and sends the message to F1-UpdateAndTransitionSyncRequest web service in C2M.</p>

## C2M Services

Service Name	Operation Name	Description
F1-UpdateAndTransitionSyncRequestService	F1-UpdateAndTransitionSyncRequest	Update and Transition Master Data Sync Request

# Part 2

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## Implementation Guidelines

This section provides details on how to configure the participating applications and middleware layer for this integration. It also includes information on error handling, monitoring, customization options, and data mapping.

The section contains the following chapters:

- [Configuration Guidelines](#)
- [Monitoring and Troubleshooting](#)
- [Customization Options](#)

# Chapter 3

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## Configuration Guidelines

This section provides details regarding the configuration settings required for the integration, including:

- [Setting Up Oracle Utilities Customer to Meter](#)
- [Setting Up Oracle Utilities Network Management System](#)
- [Setting Up Oracle Utilities Customer Care and Billing](#)
- [Setting Up the Integration Pack](#)

# Setting Up Oracle Utilities Customer to Meter

The following sections provide details into the Oracle Utilities Customer to Meter configurations needed to facilitate the integration. Some configurations described may be required for general functionality and do not necessarily relate directly to the integration; however these are called out as particularly significant configuration items. The inclusion of such items does not mean that other general items that are not mention do not need to be configured.

For more information on configuring and working with Oracle Utilities Customer to Meter, see the Oracle Utilities Customer to Meter documentation.

At a high-level, you will complete the following steps in Oracle Utilities Customer to Meter to support the integration:

- [Configure Administrative Tables](#)
- [Configure the Sync Request Process](#)
  - [Batch Code](#)
  - [MO Algorithms](#)
  - [MO Algorithms](#)
  - [Maintenance Objects](#)
- [Message Sender for Customer Data Sync](#)
  - [Outbound Message Type](#)
  - [External System](#)

## Configure Administrative Tables

This section describes unique setup issues specifically related to configuring your system for the integration.

- [Characteristic Types](#)
- [Feature Configuration](#)
- [Master Configuration](#)
- [Service Type](#)
- [Device Type](#)

### Characteristic Types

The following characteristic types must be defined to facilitate the integration. For Oracle Utilities Customer Care and Billing and Oracle Utilities Meter Data Management (separate instance) implementations, the Critical Customer characteristic type is defined in Oracle Utilities Meter Data Management. The remaining characteristic types are defined in Oracle Utilities Customer Care and Billing.

Characteristic Type	Guideline	Characteristic Entity Collection	Corresponding DVM
Critical Customer	<ul style="list-style-type: none"> <li>Service Point characteristic used to define the critical customer for the service point.</li> <li>Pre-defined characteristic type</li> <li>The critical customer pre-defined values listed here must be defined in the NMS Sync Integration master configuration, under the Critical Customer Types Characteristics Mapping section.</li> </ul>	Include <i>Service Point</i>	
Location City	<ul style="list-style-type: none"> <li>Characteristic used to identify the location city for an outage without a premise.</li> <li>Adhoc characteristic type</li> </ul>	Include <i>Service Task</i>	N/A
Location State	<ul style="list-style-type: none"> <li>Characteristic used to identify the location state for an outage without a premise.</li> <li>Adhoc characteristic type</li> </ul>	Include <i>Service Task</i>	N/A
Location 1	<ul style="list-style-type: none"> <li>Characteristic used to identify a location used for an outage without a premise. (The location would be either a street name for location type street segment or intersection street1 for location type street intersection).</li> <li>Adhoc characteristic type</li> </ul>	Include <i>Service Task</i>	N/A

Characteristic Type	Guideline	Characteristic Entity Collection	Corresponding DVM
Location 2	<ul style="list-style-type: none"> <li>Characteristic used to identify a location (intersection street2) used to for an outage without a premise if the location type is a street intersection.</li> <li>Adhoc characteristic type</li> </ul>	Include <i>Service Task</i>	N/A
Block Number	<ul style="list-style-type: none"> <li>Characteristic used to identify a block number used for an outage without a premise if the location type is a street segment.</li> <li>Adhoc characteristic type</li> <li>The Block Number adhoc value must be numeric.</li> </ul>	Include <i>Service Task</i>	N/A
Contact Name	<ul style="list-style-type: none"> <li>Characteristic used to identify a contact name used for an outage without a premise.</li> <li>Adhoc characteristic type</li> </ul>	Include <i>Service Task</i>	N/A
Contact Number	<ul style="list-style-type: none"> <li>Characteristic used to identify a contact number used for an outage without a premise.</li> <li>Adhoc characteristic type</li> </ul>	Include <i>Service Task</i>	N/A
Call Identifier	<ul style="list-style-type: none"> <li>Characteristic used to identify a call identifier used for an outage without a premise.</li> <li>Adhoc characteristic type</li> </ul>	Include <i>Service Task</i>	N/A

Characteristic Type	Guideline	Characteristic Entity Collection	Corresponding DVM
Outage Codes 1 - N	<ul style="list-style-type: none"> <li>These characteristics are used to describe the outage problem.</li> <li>Create at least one and up to N pre-defined characteristic type. N being the number of outage codes needed by the implementation.</li> <li>For each characteristic type, define its list of valid values</li> </ul>	Include <i>Service Task</i>	N/A

## Feature Configuration

To create a new feature configuration complete the following:

- [Schema Constants](#)

### Schema Constants

To create new feature configuration with Schema Constants:

- Navigate to **Admin > General > Feature Configuration**.
- Create new feature configuration with **Schema Constants** as the **Feature Type** or select a feature configuration with **Schema Constants** as the **Feature Type** if one already exists.
- Enter required option types and values needed:

Option	Notes
Home Phone Type	The user defined home phone number type code. The Option Value must be set as a valid Phone Number Type defined in the Phone Type table.
Business Phone Type	The user defined business phone number type code. The Option Value must be set as a valid Phone Number Type defined in the Phone Type table.
Device Geographic Type	The user defined device ID geo type code. The Option Value must be set as a valid Geographic Type defined in the Geographic Type table.
Outage Call Contact Name Characteristic Type	The characteristic type code your implementation uses to capture a contact name on a trouble call. The Option Value must be set as a valid Characteristic Type defined in the Characteristic Type table.
Outage Call Contact Number Characteristic Type	The characteristic type code your implementation uses to capture a contact number on a trouble call. The Option Value must be set as a valid Characteristic Type defined in the Characteristic Type table.



Option	Notes
Outage Call Identifier Characteristic Type	The characteristic type code your implementation uses to capture a call identifier on a trouble call. The Option Value must be set as a valid Characteristic Type defined in the Characteristic Type table.
Outage Call Street Name Characteristic Type	The characteristic type code your implementation uses to capture a street name on a trouble call. The Option Value must be set as a valid Characteristic Type defined in the Characteristic Type table.
Outage Call Cross Street Name Characteristic Type	The characteristic type code your implementation uses to capture a cross street name on a trouble call. The Option Value must be set as a valid Characteristic Type defined in the Characteristic Type table.
Outage Call Block Number Characteristic Type	The characteristic type code your implementation uses to capture a block number on a trouble call. The Option Value must be set as a valid Characteristic Type defined in the Characteristic Type table.
Outage Call City Characteristic Type	The characteristic type code your implementation uses to capture a city on a trouble call. The Option Value must be set as a valid Characteristic Type defined in the Characteristic Type table.
Outage Call State Characteristic Type	The characteristic type code your implementation uses to capture a state on a trouble call. The Option Value must be set as a valid Characteristic Type defined in the Characteristic Type table.

## Master Configuration

To create new master configuration with the Oracle Utilities Network Management System integration:

1. Navigate to **Admin > General > Feature Configuration**.
2. Create a new master configuration for the **NMS Outage Integration Master Config** or broadcast the master configuration if one already exists. Refer to the embedded help for more information.  
  
For Oracle Utilities Customer Care and Billing and Oracle Utilities Meter Data Management (separate instance) implementations, this is configured in Oracle Utilities Customer Care and Billing.
3. Create a new master configuration for the **NMS Sync Integration Master Config** or broadcast the master configuration if one already exists. Refer to the embedded help for more information.
4. For Oracle Utilities Customer Care and Billing and Oracle Utilities Meter Data Management (separate instance) implementations, this is configured in Oracle Utilities Meter Data Management.

## Service Type

Every service point type references a service type. The service type defines the type of service you provide to your customer (i.e. electric, water, gas).

The codes defined here must exactly match the values defined in the DVM specified below.

Navigation	Guideline	Corresponding DVM
Admin > General > Service Type	Define your service types	OUC2M_OUNMS_Account Type

### Device Type

Every meter or item references a device type. The device type defines the type of service and common characteristics shared by its meters and items.

The codes defined here must match the values defined in the DVM specified below.

Navigation	Guideline	Corresponding DVM
Admin > Device > Device Type	Define your device types.	OUC2M_OUNMS_MeterType

## Configure the Sync Request Process

The Sync Request Process is used to synchronize customer data from Oracle Utilities Customer to Meter to Oracle Utilities Network Management System.

For Oracle Utilities Customer Care and Billing and Oracle Utilities Meter Data Management (separate instance) implementations, this is configured in Oracle Utilities Meter Data Management.

### Batch Code

This is the batch process to run the sync request. It is a generic batch process that is used for different sync processes. It has a couple of parameters that can be used to control which sync request BOs to process.

Batch	Description
F1-SYNRQ	Sync Request Monitor Process

Batch Parameters	Parameter Description	Value
maintenanceObject	Sync Request maintenance object	F1-SYNC REQ (This is the defaulted value)
isRestrictedByBatch Code	The value of true restricts processing to sync requests whose current state is linked to this batch code.	
restrictToBusiness Object	Enter a business object code here to limit the process to sync requests linked to this business object.	D1-NMSSP CustomerSyncRequest (To run only the NMS customer sync request, populate this value)

Batch Parameters	Parameter Description	Value
restrictToBOStatus	Enter a status code here to limit the process to sync requests in this state.	PENDING (To only process sync request, in Pending status, populate this value)

This is the batch process to run the initial load sync request. It has a couple of parameters that can be used to control which sync request BOs to process.

Batch	Description
D1-NMSSP	NMS SP Customer Sync Initial Load

Batch Parameters	Parameter Description	Value
syncRequestMO	Maintenance Object	D1-SP (This is the defaulted value.)
syncRequestBO	Enter a business object code here to limit the process to sync requests linked to this business object.	D1-NMSSPCustomerSync Request
filterAlgorithm	Enter a filter algorithm here to limit the process to sync requests that should be sent to Oracle Utilities Network Management System.	D1-NMSSPCustomerSync Request (This algorithm filters for eligible service point types as defined in the NMS Sync Integration Master Configuration.)

## MO Algorithms

Configure the MO Audit algorithms. MO Audit algorithms contain the logic to instantiate a sync request (as long as one does not already exist in the initial state for the MO-Primary Keys combination). A generic algorithm F1-GCHG-CDCP comes with the base product and is plugged in on MOs that need to instantiate sync requests for the same MO. This algorithm instantiates the BOs defined in the Sync Request BO MO Option (see Maintenance Objects below). For MOs that need a sync request instantiated for a different MO (For example: changes to the Person or Account MO need to be communicated via an SP sync request) need unique algorithms that contain this logic.

Algorithm Type	Description
D1-CUSCDCSP	This algorithm instantiates SP-based sync request whenever a change to the Contact MO is detected (updating a person record in C2M triggers an internal sync to the contact record, which in turn will trigger this audit algorithm). Define the D1-NMSSPCustomerSyncRequest sync request BO to be instantiated in the algorithm's parameters.
D1-USCDCSP	This algorithm instantiates SP-based sync request whenever a change to the Usage Subscription MO is detected (updating a SA record in C2M triggers an internal sync to the usage subscription record, which in turn will trigger this audit algorithm). Define the D1-NMSSPCustomerSyncRequest sync request BO to be instantiated in the algorithm's parameters.

Algorithm Type	Description
D1-SPIE-CDCP	This algorithm instantiates SP-based sync request whenever a change to the Install Event MO is detected. Define the D1-NMSSPCustomerSyncRequest sync request BO to be instantiated in the algorithm's parameters.
D1-SPDV-CDCP	This algorithm instantiates SP-based sync request whenever a change to the Device MO is detected. Define the D1-NMSSPCustomerSyncRequest sync request BO to be instantiated in the algorithm's parameters.

## Maintenance Objects

Maintenance Objects	Description
D1-CONTACT	Specify the MO Audit algorithm configured in the previous section.
D1-US	Specify the MO Audit algorithm configured in the previous section.
D1-INSTLEVT	Specify the MO Audit algorithm configured in the previous section.
D1-DEVICE	Specify the MO Audit algorithm configured in the previous section.
D1-SP	Specify the generic MO Audit algorithm F1-GCHG-CDCP. Also, specify the D1-NMSSPCustomerSyncRequest BO in the Sync Request BO MO Option.

## Business Objects

Business Object	Description
D1-NMSSPCustomerSyncRequest	<p>This business object defines the behavior of the outbound sync request for NMS. It contains the schema elements monitored and synchronized to NMS.</p> <p>The following must be configured and defined on the NMS Sync Integration master configuration as they are necessary to create the outbound sync request:</p> <ul style="list-style-type: none"> <li>• <b>Outbound Message Type:</b> This contains a reference to the outbound message BO to use. The base package includes BO D1-NMSSPCustomerSyncReqOutMsg for the NMS SP Sync. Refer to the <b>Defining Outbound Message Types</b> section in the user documentation for more information.</li> <li>• <b>External System:</b> This contains the reference to the outbound message type and its corresponding configuration for communicating with the external system. The base package includes the message D1-NMSSPCustomerSyncReqOutMsg.xml. Refer to the <b>External Systems</b> section in the user documentation for more information.</li> <li>• Specify the pre-processing algorithm configured in the previous section.</li> <li>• Specify the time out algorithm as a monitor algorithm on the Awaiting Acknowledgement state for this BO.</li> <li>• Specify the To Do creation algorithm on the Error state for this BO. Depending on the technology used to communicate the sync request to the external system, you may need to create your own enter algorithm and plug it into the Send Request state.</li> </ul>

For more information about the sync request process, the business objects, maintenance objects and other components use for this process, see the **Data Synchronization** section in the *Oracle Utilities Framework User Guide*.

### Message Sender for Customer Data Sync

Perform the following steps to create a real-time Message Sender configured to communicate with the integration layer

1. Navigate to **Admin > Integration > Message Server**.
2. Enter a unique **Message Sender** and **Description**.
3. Populate values:
  - **Invocation Type** - *Real-time*
  - **Message Class** - SOAPSNDR (Sender for real-time HTTP / SOAP messages)
  - **Active** - Select the checkbox
  - **MSG Encoding** - *UTF-8 message encoding*
4. Select the **Context** tab and set values for the following context types:
  - **HTTP Header** = SOAPAction:"process"

- **HTTP Login User** = User ID to access Integration BPEL process
- **HTTP Password** = Password to access Integration BPEL process
- **HTTP Method (POST/GET)** = POST
- **HTTP Timeout** = 60
- **HTTP Transport Method** = SendReceive
- **HTTP URL 1** = Set the URL to be accessed. If the URL value does not fit, use the additional HTTP URL types to set the complete URL. This should point to the Customer Data Sync webservice.

### Message Sender for Submit Trouble Call Interface

Perform the following steps to create a new Message Sender which points to the Trouble Call Interface EBF endpoint URL for the Trouble Call Interface the integration point:

1. Navigate to **Admin >Integration >Message Sender**.
2. Enter a unique Message Sender and Description.
3. Populate values:
  - **Invocation Type** = *Real-time*
  - **Message Class** = *RTHTTPSNDR* (Sender for real-time HTTP messages)
  - **Active** = Select the checkbox
  - **MSG Encoding** = *UTF-8 message encoding*
4. Select the **Context** tab and set values for the following Context Types:
  - **HTTP Login User** - User ID for the URL to be accessed
  - **HTTP Login Password** - Password for the URL to be accessed
  - **HTTP Header** - *SOAPAction: "process"*
  - **HTTP Method (POST/GET)** - *POST*
  - **HTTP Proxy Host** - Set the proxy server name if applicable
  - **HTTP Proxy Port** - Port for the proxy server if applicable
  - **HTTP Transport Method** - *SendReceive*
  - **HTTP Timeout:** 60
  - **HTTP URL 1** - Set the URL to be accessed. If the URL value does not fit, use the additional HTTP URL types to set the complete URL. This should point to the Submit Trouble Call webservice.

For example:

```
http://demoenv/soa-infra/services/C2M-NMS/
OUC2MOUNMSSubmitTroubleCallEBF/
OUC2MOUNMSSubmitTroubleCallEBF_ep
```

## Message Sender for Job History Query

To create the Message Sender configured to communicate with the integration layer:

1. Navigate to **Admin > Integration > Message Sender**.
2. Enter a unique Message Sender and description.
3. Populate values:
  - **Invocation Type** = *Real-time*
  - **Message Class** = *RTHHTTPSNDR* (Sender for real-time HTTP messages)
  - **Active** = Select the checkbox
  - **MSG Encoding** = *UTF-8 message encoding*
4. Select the **Context** tab and set values for the following context types:
  - **HTTP Login User** - User ID for the URL to be accessed
  - **HTTP Login Password** - Password for the URL to be accessed
  - **HTTP Header** - *SOAPAction: "process"*
  - **HTTP Method (POST/GET)** - *POST*
  - **HTTP Proxy Host** - Set the proxy server name if applicable
  - **HTTP Proxy Port** - Port for the proxy server if applicable
  - **HTTP Transport Method** - *SendReceive*
  - **HTTP Timeout**: 60 (put timeout in seconds)
  - **HTTP URL 1** - Set the URL to be accessed. If the URL value does not fit, use the additional HTTP URL types to set the complete URL. This should point to the Query Job History EBF.

For example:

```
http://demoenv/soa-infra/services/C2M-NMS/
OUC2MOUNMSJobHistoryQueryEBF/ouc2mounmsjobhistoryqueryebf_client_ep
```

## Message Sender for Trouble Call History Query

To create Message Sender for Trouble Call History Query:

1. Navigate to **Admin > Integration > Message Sender**.
2. Enter a unique Message Sender and Description.
3. Populate values:
  - **Invocation Type** = *Real-time*
  - **Message Class** = *RTHHTTPSNDR* (Sender for real-time HTTP messages)
  - Select the **Active** checkbox.
  - **MSG Encoding** = *UTF-8 message encoding*
4. Select the **Context** tab and set values for the following Context Types:
  - **HTTP Login User** - User ID for the URL to be accessed
  - **HTTP Login Password** - Password for the URL to be accessed
  - **HTTP Header** - *SOAPAction: "process"*

- **HTTP Method (POST/GET)** - *POST*
- **HTTP Proxy Host** - Set the proxy server name if applicable
- **HTTP Proxy Port** - Port for the proxy server if applicable
- **HTTP Transport Method** - *SendReceive*
- **HTTP Timeout:** 60 (put timeout in seconds)
- **HTTP URL 1** - Set the URL to be accessed. If the URL value does not fit, use the additional HTTP URL types to set the complete URL. This should point to the Query Trouble Call History webservice.

For example:

```
http://demoenv/soa-infra/services/C2M-NMS/
OUC2MOUNMSTroubleCallsQueryEBF/
OUC2MOUNMSTroubleCallsQueryEBF_ep
```

### Message Sender for Planned Outages Query

Create a new Message Sender which points to the Planned Outages Query EBF endpoint URL for Planned Outages Query the integration point.

To create an HTTP sender configured to communicate with the integration layer:

1. Navigate to **Admin > Integration > Message Sender**.
2. Enter a unique Message Sender and Description.
3. Populate values:
  - Invocation Type = *Real-time*
  - Message Class = *RTHTTPSNDNR* (Sender for real-time HTTP messages)
  - Select the **Active** checkbox.
  - MSG Encoding = *UTF-8 message encoding*
4. Select the **Context** tab and set values for the following Context Types:
  - **HTTP Login User** - User ID for the URL to be accessed
  - **HTTP Login Password** - Password for the URL to be accessed
  - **HTTP Header** - *SOAPAction: "process"*
  - **HTTP Method (POST/GET)** - *POST*
  - **HTTP Proxy Host** - Set the proxy server name if applicable
  - **HTTP Proxy Port** - Port for the proxy server if applicable
  - **HTTP Transport Method** - *SendReceive*
  - **HTTP Timeout:** 60 (put timeout in seconds)
  - **HTTP URL 1** - Set the URL to be accessed. If the URL value does not fit, use the additional HTTP URL types to set the complete URL. This should point to the Query Planned Outage webservice.

For example:

```
http://demoenv/soa-infra/services/C2M-NMS/
OUC2MOUNMSPlannedOutagesQueryEBF/
ouccbounmsplannedoutagesqueryebf_client_ep
```



## Message Sender for Notify Contact Preference

To create the Message Sender configured to communicate with the integration layer:

1. Navigate to **Admin > Integration > Message Sender**.
2. Enter a unique Message Sender and a description.
3. Assign the following values to the respective fields:
  - **Invocation Type** = *Real-time*
  - **Message Class** = *RTHTTPSNDR* (Sender for real-time HTTP messages)
  - **Active** = Select the checkbox
  - **MSG Encoding** = *UTF-8 message encoding*
4. Select the **Context** tab and set values for the following context types:
  - **HTTP Login User** - User ID for the URL to be accessed
  - **HTTP Login Password** - Password for the URL to be accessed
  - **HTTP Header** - *SOAPAction: "process"*
  - **HTTP Method (POST/GET)** - *POST*
  - **HTTP Proxy Host** - Set the proxy server name if applicable
  - **HTTP Proxy Port** - Port for the proxy server if applicable
  - **HTTP Transport Method** - *SendReceive*
  - **HTTP Timeout**: 60 (put timeout in seconds)
  - **HTTP URL 1** - Set the URL to be accessed. If the URL value does not fit, use the additional HTTP URL types to set the complete URL. This should point to the Query Job History EBF.

For example:

```
http://demoenv/soa-infra/services/C2M-NMS/
OUC2MOUNMSNotifyPreferenceJMSWriteSvc/
ouc2mounmsnotifypreferencejmswritesvc_client_ep
```

## Outbound Message Type

To create Outbound Message Type:

1. Navigate to **Admin > Integration > Outbound Message Type**.
2. Enter a unique Outbound Message Type and Description.
3. Populate the following values:
  - **Business Object** = *C1-NtfContactPreferenceSync*
  - **Priority** = (choose from the selection)

## Submit Trouble Calls Interface

1. Navigate to **Admin menu > O > Outbound Message Type**.
2. Enter a unique Outbound Message Type and Description.

3. Populate the following values:
  - **Business Object** = C1-NtfContactPreferenceSync (Customer Sync Outbound Message BO)
  - **Priority** = (choose from the selection)

### Query Job History

1. Navigate to **Admin** menu > **O** > **Outbound Message Type**.
2. Enter a unique Outbound Message Type and Description.
3. Populate the following values:
  - **Business Object** = C1-NMSJOBHST (Job History Query Outbound Message BO)
  - **Priority** = (choose from the selection)

### Query Trouble Call History

1. Navigate to **Admin** menu > **O** > **Outbound Message Type**.
2. Enter a unique Outbound Message Type and Description.
3. Populate the following values:
  - **Business Object** = C1-NMSCALHST (Call History Query Outbound Message BO)
  - **Priority** = (choose from the selection)

### Query Planned Outages

1. Navigate to **Admin** menu > **O** > **Outbound Message Type**.
2. Enter a unique Outbound Message Type and Description.
3. Populate the following values:
  - **Business Object** = C1-NMSPLNOUT (Planned Outages Query Outbound Message BO)
  - **Priority** = (choose from the selection)

### Notification Contact Preference

1. Navigate to **Admin** menu > **O** > **Outbound Message Type**.
2. Enter a unique Outbound Message Type and Description.
3. Populate the following values:
  - **Business Object** = C1-NTFOUTMSG (Notification Contact Preference Outbound Message BO)
  - **Priority** = (choose from the selection)

## External System

When you place an XSL file on **Outbound Message Type**, search for the file/managed content entry.

**Note:** The system supports defining XSLs as a managed content record. For backward compatibility, the system supports defining XSL as a file in the file system. This is a system wide setting that is defined using the **Feature Configuration** page. The **Feature Type** is “External Messages” and **Option Type** is “XSL Location”. Set the value to “F1FL” to support XSL in the file system. The file location is configured using a system property. To support XSL in managed content, no option is needed since it is the default. You may explicitly define the “F1MC” value, if required.

To create a new External System for direct integration:

1. Navigate to **Admin** menu > **E** > **External System**.
2. Enter a unique External System and Description.
3. Set **Our Name in Their System** to C2M.
4. Define the Outbound Message Types associated to the integration.
  - For Customer Data Synchronization Outbound Message Type, populate the following values:
    - **Outbound Message Type** = (Outbound Message Type for Customer Data Synchronization)
    - **Processing Method** = *Real-time*
    - **Message Sender** = (Message Sender for Customer Data Synchronization)
    - **Message XSL** = *D1-NMSSPCustomerSyncReqOutMsg.xsl*
    - **Response XSL** =
  - For **Submit Trouble Calls Interface Outbound Message Type**, populate the following values:
    - **Outbound Message Type** = (Outbound Message Type for Trouble Call Interface)
    - **Processing Method** = *Real-time*
    - **Message Sender** = *(Message Sender for Trouble Call Interface)*
    - **Message XSL** = *CDxAddEnvelope-SOAP1-2.xsl*
    - **Response XSL** =
  - For Query Job History Outbound Message Type, populate the following values:
    - **Outbound Message Type** = (Outbound Message Type for Job History Query)
    - **Processing Method** = *Real-time*
    - **Message Sender** = (Message Sender for Job History Query)
    - **Message XSL** = *CDxAddEnvelope-SOAP1-2.xsl*
    - **Response XSL** = *C1-NMSRemoveEnvelopeJobHist.xsl*

- For Query Trouble Call History Outbound Message Type, populate the following values:
  - **Outbound Message Type** = (Outbound Message Type for Trouble Call History Query)
  - **Processing Method** = *Real-time*
  - **Message Sender** = (Message Sender for Trouble Call History Query)
  - **Message XSL** = *CDxAddEnvelope-SOAP1-2.xsl*
  - **Response XSL** = *C1-NMSRemoveEnvelopeCallHist.xsl*
- For Query Planned Outages Outbound Message Type, populate the following values:
  - **Outbound Message Type** = (Outbound Message Type for Planned Outages Query)
  - **Processing Method** = *Real-time*
  - **Message Sender** = (Message Sender for Planned Outages Query)
  - **Message XSL** = *CDxAddEnvelope-SOAP1-2.xsl*
  - **Response XSL** = *C1-NMSRemoveEnvelopePlanOut.xsl*
- For Notification Contact Preference Outbound Message Type, populate the following values:
  - **Outbound Message Type** = C1-NTFOUTMSG (Notify Other Edge App of Notification Pref)
  - **Processing Method** = *Real-time*
  - **Message Sender** = (Message Sender for Notification Contact Preference)
  - **Message XSL** = *CDxAddEnvelope-SOAP1-2.xsl*

## Setting Up Oracle Utilities Network Management System

This section describes how to configure the Oracle Utilities Network Management System to meet the requirements for the integration.

Two components of the Oracle Utilities Network Management System are involved in the integration:

- **PL/SQL package PK\_CCB:** Provides access to the functions of the Oracle Utilities Network Management System required by the integration. It is part of Oracle Utilities Outage Management Standard Edition.

**Note:** The SOA DB adapter currently supports SQL package name and does not support package synonym names. Update the integration adapter (.jca) file with the property name "ProcedureName" (refer the example) accordingly to use the correct NMS package name.

For example: <interaction-spec  
 className="oracle.tip.adapter.db.DBStoredProcedureInteractionSpec"><!--  
 <property name="SchemaName" value="NMSUser"/> --><property  
 name="PackageName"  
 value="BPEL\_OUNMSSUBMITCALLSTOREDPROC"/><property

```
name="ProcedureName" value="XXX$SUBMIT_CALL"/><property
name="GetActiveUnitOfWork" value="false"/>
```

where XXX is the package name installed in the Oracle Utilities Network Management System database.

- **Generic IVR Adapter:** Processes trouble calls received from Oracle Utilities Customer To Meter. It is part of Oracle Utilities Outage Management Standard Edition.

The Generic IVR Adapter has to run with the '-troublecall' command-line option to enable trouble call data flow. The command-line option '-docustquery' should not be used because correct customer information is expected to be received from the Oracle Utilities Customer To Meter system.

For more information on configuring Generic IVR Adapter, see the **Generic IVR Adapter** chapter in *Oracle Utilities Network Management System Adapters Guide*.

## Time Zone Configuration

The TIMEZONE parameter in the CES\_PARAMETERS database table specifies the name of the time zone used by the Oracle Utilities Network Management System backend services and database.

This parameter is used by the PK\_CCB PL/SQL package to convert input data to the correct timezone for storing in the Oracle Utilities Network Management System database and to add timezone information to output data. A list of the time zone region names known to the database can be obtained from the V\$TIMEZONE\_NAME dynamic performance view. Time zone region name should be used instead of a simple offset to ensure that Daylight Savings Time is accounted for.

Example:

```
INSERT INTO CES_PARAMETERS (APP, ATTRIB, VALUE) VALUES ('NMS',
'TIMEZONE', 'America/Chicago');
```

## External ID Prefix

All valid external ID prefix values must be specified using the configuration rule 'callIdPrefix'. If this is not configured, retrieving call and job history by the External ID of a call may not work properly.

External ID prefix is the first few characters of the external ID and is used to identify the system where the trouble call originated (for example, if external ID is '2389583093' then '2' can be the prefix indicating that this call came from Oracle Utilities Customer Care and Billing). It is also used to guarantee that each call has unique external ID value.

For more information on configuring and working with Oracle Utilities Network Management System, see the *Oracle Utilities Network Management System User Guide and Configuration Guide*. The chapter called **Building the System Data Model** in the Configuration Guide contains information about connecting customer data to Oracle Utilities Network Management System electrical model.

# Setting Up Oracle Utilities Customer Care and Billing

This section details the steps to configure various data, messages and catalog for the integration used by Oracle Utilities Customer Care and Billing. It includes the following:

- [System Configuration](#)
- [Notification Type](#)
- [Template Parameters](#)
- [Bill and Collection Event Algorithms](#)
- [Feature Configuration](#)
- [Master Configuration](#)

## System Configuration

To configure the Oracle Utilities Customer Care and Billing setup for the integration:

1. Login to Oracle Utilities Customer Care and Billing.
2. Setup notification types. Refer to the [Notification Type](#) section for details.
3. Setup message sender.
4. Setup an external system. Refer to the [External System](#) section for details.
5. Setup the Bill and Collection Event algorithms. Refer to the [Bill and Collection Event Algorithms](#) section for details.
6. Setup the feature configuration. Refer to the [Feature Configuration](#) section for details.
7. Setup the notification preferences for master configuration and Oracle Utilities Customer Care and Billing Self-Service integration. Refer to the [Master Configuration](#) section for details.

## Notification Type

Follow these steps to define the notification types to be used in the integration process between Oracle Utilities Customer Care and Billing and Oracle Utilities Network Management System:

1. On the **Admin** menu, navigate to the **Notification Type** portal and add the following Oracle Utilities Network Management System notification types used for this integration:
  - Planned Outage Started
  - Outage Started
  - Planned Outage Restored
  - Outage Restored
  - Planned Outage Canceled
  - Outage Canceled
  - Planned Outage Estimated Restoration Time (ERT) Update

- Outage Estimated Restoration Time (ERT) Update
  - Planned Outage Scheduled
2. Add the following Oracle Utilities Customer Care and Billing notification types used for this integration:

### Bill Due Notification

1. On the **Admin** menu, navigate to the **Self-Service Task Type** page. Add a Self-Service Task Type with the following details:
  - Service Task Type Business Object: Bill Due Notification Task Type
  - Related Transaction Object: Bill Due Notification Task
  - Service Task Type Status: Active
  - Service Task Class: Self-Service
2. On the **Admin** menu, navigate to the **Notification Type** page. Add a Notification Type with following details:
  - Notification Type Business Object: Template-Based Subscription Notification Type
  - Notification Type (Legacy): Bill Due Notification
  - Use Service Task: Enabled
  - Service Task Type: Service Task Type created for Bill Due Notification
  - Template Data Algorithms: Bill Information Template Data
  - Person Contact Types
  - Delivery Types:
    - Delivery Type: Email and/or SMS
    - Template Name: Template Name as created in Notification Delivery System.

### Late Payment Notification

1. On the **Admin** menu, navigate to the **Self-Service Task Type** page. Add a Self-Service Task Type with the following details:
  - Service Task Type Business Object: Late Payment Notification Task Type
  - Related Transaction Object: Late Payment Notification Task
  - Service Task Type Status: Active
  - Service Task Class: Self-Service
2. On the **Admin** menu, navigate to the **Notification Type** page. Add a Notification Type with the following details:
  - Notification Type Business Object: Template-Based Subscription Notification Type
  - Notification Type (Legacy): Late Payment Notification
  - Use Service Task: Enabled
  - Service Task Type: Service Task Type created for Late Payment Notification

- Template Data Algorithms: Bill Information Template Data
- Person Contact Types
- Delivery Types
  - Delivery Type: Email and/or SMS
  - Template Name: Template Name as created in Notification Delivery System.

### Invite User Notification

1. On the **Admin** menu, navigate to the **Self-Service Task Type** page. Add a Self-Service Task Type with the following details:
  - Service Task Type Business Object: Web User Invitation Task Type
  - Related Transaction Object: Web User Invitation Task
  - Service Task Type Status: Active
  - Service Task Class: Self-Service
2. On the **Admin** menu, navigate to the **Notification Type** page. Add a Notification Type with the following details:
  - Notification Type Business Object: Template-Based Subscription Notification Type
  - Suppression Criteria: Always Suppressed (C1-ALWY-SUP)
  - Override Delivery Information: Override Guest Delivery Information (C1OVINVGSTDI)
  - Template Data Algorithms: Guest Notification Template Data
  - Person Contact Types
  - Delivery Types:
    - Delivery Type: Email
    - Template Name: Template Name as created in Notification Delivery System.

### Confirm Acceptance Notification

1. On the **Admin** menu, navigate to the **Notification Type** page. Add a DSS-T Notification Type with the following details:
  - Notification Type Business Object: Template-Based Parent Push Notification Type
  - Person Contact Types
  - Delivery Types: Email and/or SMS
2. On the **Admin** menu, navigate to the **Notification Type** page. Add a Notification Type with the following details:
  - Notification Type Business Object: Template-Based Individual Push Notification Type
  - Parent Notification Type: Notification Type created for DSS-T notifications
  - Template Data Algorithms: Guest Notification Template Data



- Delivery Types:
  - Delivery Type: Email and/or SMS
  - Template Name: Template Name as created in Notification Delivery System.

### Collection Notification

1. On the **Admin** menu, navigate to the **Notification Type** page. Add a parent Notification Type with following details:
  - Notification Type Business Object: Template-Based Parent Push Notification Type
  - Person Contact Types
  - Delivery Types: Email and/or SMS
2. On the **Admin** menu, navigate to the **Notification Type** page. Add a Notification Type with following details:
  - Notification Type Business Object: Template-Based Individual Push Notification Type
  - Parent Notification Type: The Parent Notification Type created above
  - Template Data Algorithms: Collection Notification Template Data
  - Delivery Types:
    - Delivery Type: Email and/or SMS
    - Template Name: Template Name as created in Notification Delivery System.

Notification types can be defined as Template-Based Parent/Individual Push, or Template-Based Subscription. Refer to the product-specific online help for more information.

## Template Parameters

Template Data algorithms defined on Notification Types send a set of key/value pairs to the external system. Additional custom Template Data algorithms can be configured on the Notification Type to add more key/value pairs.

Use the following details to configure Notification Templates in Delivery System.

The Template parameters sent by Bill Information Template Data algorithm are:

- BILL\_ID
- BILL\_DT
- BILL\_DUE\_DATE
- AMOUNT\_DUE
- CURRENCY\_CODE
- CURRENCY\_SYMBOL
- MAIN\_ACCOUNT\_ADDRESS
- SERVICE\_ADDRESS

The Template parameters sent by Guest Notification Template Data algorithm are:

- WEB\_USER\_NAME
- OWNER\_FIRST\_NAME
- OWNER\_LAST\_NAME
- GUEST\_FIRST\_NAME
- GUEST\_LAST\_NAME
- GUEST\_EMAIL
- GUEST\_ACCESS\_ROLE
- GUEST\_ACCESS\_ROLE\_DESCR
- MAIN\_ACCOUNT\_ADDRESS
- SERVICE\_ADDRESS

The Template parameters sent by Collection Notification Template Data algorithm are:

- ARREARS\_AMOUNT
- ARREARS\_DATE
- CURRENCY\_CODE
- CURRENCY\_SYMBOL
- MAIN\_ACCOUNT\_ADDRESS
- SERVICE\_ADDRESS

## Bill and Collection Event Algorithms

To define the Post Bill Completion algorithm:

1. On the **Admin** menu, navigate to the **Customer Class** page.
2. On the **Controls** tab, configure the following algorithm:
  - Post Bill Completion: Set Bill Notifications for Self-Service (WX-SSBNOTIFY)

To define the Collection Event algorithm:

1. On the **Admin** menu, navigate to the **Algorithm** page.
2. Add the Collection Event Notification algorithm with the following details:
  - Algorithm Type: Collection Event Notification (C1COLLEVTNOT)
  - Notification Type: Notification Type defined for Collection Event Notification
3. On the **Admin** menu, navigate to **Collection Event Type** for notification.
4. Configure the Collection Event Notification algorithm in the **Collection Event Algorithm** field.

## Feature Configuration

To setup the Invite Guest User and Confirm Acceptance notifications:

1. On the **Admin** menu, navigate to **Feature Configuration**.
2. Add or edit the following as the value for the General System Configuration:
  - Is CX Installed: Y

## Master Configuration

To define the Notification Preferences master configuration:

1. On the **Admin** menu, navigate to the **Master Configuration** portal.
2. Add or edit the Notification Preferences master configuration. Refer to the online and embedded help for more information on defining each section.
3. In the **Edge Application Notification** section, add the notification types defined in the [Notification Type](#) section. For each notification type, indicate Oracle Utilities Network Management System as the **Other Edge Application**, along with the External System and Message Sender that are defined.

The following table shows a sample reference for Edge Application Notification for Oracle Utilities Customer Care and Billing Notifications:

Notification Type	Other Edge Application	External System	Outbound Message Type
Planned Outage Started	Network Management System	NMS	C1-NTFOUTMSG
Outage Started	Network Management System	NMS	C1-NTFOUTMSG
Planned Outage Restored	Network Management System	NMS	C1-NTFOUTMSG
Outage Restored	Network Management System	NMS	C1-NTFOUTMSG

### For Oracle Utilities Customer Care and Billing Notifications

To define the Notification Preferences master configuration:

1. On the **Admin** menu, navigate to the **Master Configuration** portal.
2. Add or edit the Notification Preferences master configuration.
3. In the **Default External Communication** section, add the Default External System and Default Outbound Message Type as defined above for template-based notification messages. External System and Outbound Message Type can also be configured separately for each notification type in the **Override External Communication** section.

To define the Oracle Utilities Customer Care and Billing Self-Service Integration master configuration:

1. On the **Admin** menu, navigate to the **Master Configuration** portal.
2. Add or edit the Oracle Utilities Customer Care and Billing Self-Service Integration master configuration. Refer to the online and embedded help for more information on defining each section.
3. In the **Notification Service Tasks** section, add the following notification types:
  - **Bill Due Notification:** Notification Type defined for Bill Due Notification
  - **Late Payment Notification:** Notification Type defined for Late Payment Notification
4. In the **Guest User Invitation Notification Types** section, add the following notification types:
  - **Invite User:** Notification Type defined for Invite Guest Notification.
  - **Confirm Acceptance:** Notification Type defined for Confirm Acceptance Notification.

## Setting Up the Integration Pack

The following sections describe how to configure the integration pack to meet the requirements for the integration.

To configure the integration you must complete the following:

- [Setting Configuration Properties](#)
- [Setting Domain Value Maps](#)
- [Setting Error Handling for the Integration Layer](#)

## Setting Configuration Properties

Various configurations that apply to the entire integration and specific processes for the integration services are stored in the `OUC2MOUNMSConfigurationProperties.xml` file located under the `apps/C2M-NMS/AIAMetaData/config` directory.

These configurations hold several configurable values that are picked up by the integration at runtime to:

- Set Default values to be used in the integration.
- Activate error handling.

**Note:** Whenever the `OUC2MOUNMSConfigurationProperties.xml` file is updated, the file must be reloaded for updates to be reflected in the applications or services that use the updated properties. You can perform the reload by restarting the SOA server.

The `ConfigurationProperties.xml` file contains two types of configurations:

- Module Configurations are properties shared by multiple integration processes within the integration.
- Service Configurations are properties that are used by a specific BPEL process.

Refer to [Appendix B: Configuration Properties File](#) for more information on the configuration properties file setup.

## Setting Domain Value Maps

Domain value maps (DVMs) are a standard feature of the Oracle SOA Suite which maps codes and other static values across applications. For example: “FOOT” and “FT” or “US” and “USA”.

The DVMs are static in nature, though administrators can add additional maps as needed. The transactional business processes never update DVMs. They only read from them. They are stored in XML files and cached in memory at runtime.

Refer to [Appendix C: Domain Value Maps \(DVMs\)](#) for a listing of the DVMs included for the integration.

To maintain information within the domain value maps:

1. Open a browser and access the SOA Composer application.  
Example: `http://soa_host:soa_managerServer_Port/soa/composer/`
2. Select the relevant DVM you wish to maintain from the **Deployment View** pane.
3. To edit the selected DVM, click **Create Session** in the navigation bar on the top.
4. Once the DVM is modified, click **Save** in the navigation bar. This saves the DVM data for that session.
5. Click **Publish** after updating each DVM. This saves the DVM data in MDS.

## Updating MDS

If new artifacts are created, if extensions or customizations are made on the artifacts, or if changes are made to the DVM /or the `OUC2MOUNMSConfigurationProperties.xml`, you must upload the artifacts to the Oracle Metadata Services (MDS).

The Oracle Metadata Services (MDS) repository contains all the metadata and the contents are stored under `<PRODUCT_HOME>/MDS-Artifacts`. These are uploaded to `<SOA-MDS > apps/C2M-NMS`. This includes specific schemas, WSDLs, DVMs and `OUC2MOUNMSConfigurationProperties.xml`.

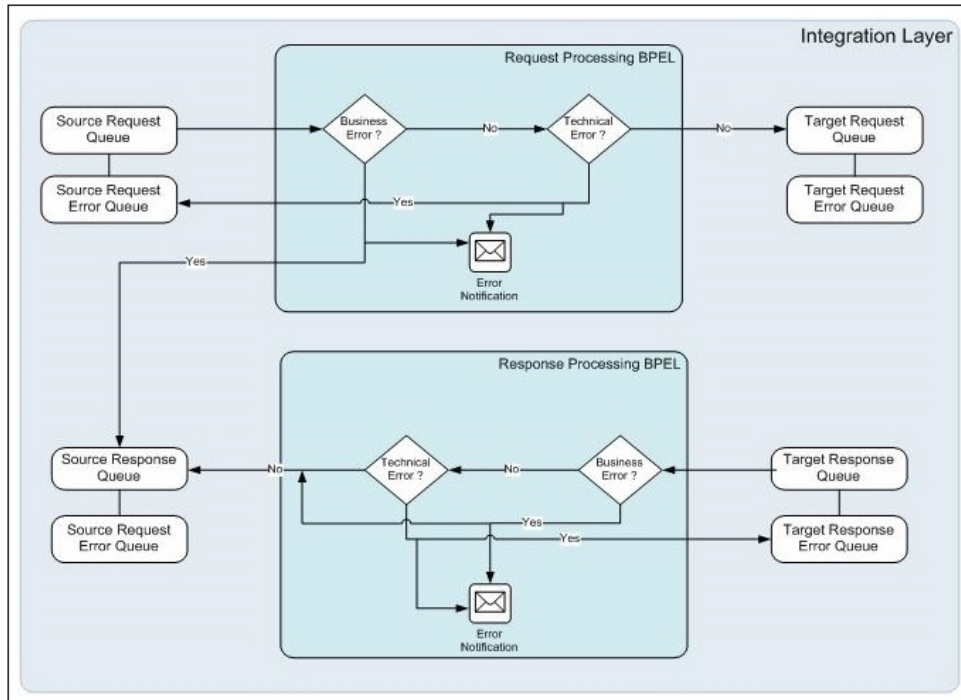
For more information about updating MDS, see the **Deployment of MDS Artifacts** section in the *Oracle Utilities Customer to Meter Integration to Oracle Utilities Network Management System Installation Guide*.

## Setting Error Handling for the Integration Layer

Error handling in the integration is of two types:

- [Asynchronous Processes](#)
- [Synchronous Processes](#)

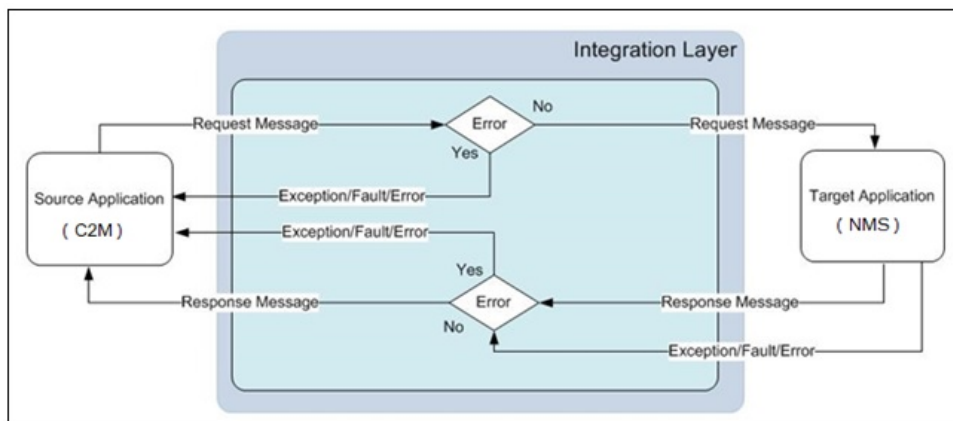
### Asynchronous Processes



The integration includes two types of errors:

- **Business Errors:** Triggered when the DVM lookup values are not found or there is a transformation error in the integration layer. Business errors are sent back to the source application and can be re-tried from there.
- **Technical Errors:** Triggered when there are connectivity issues between queues. Technical errors are sent to the error queue and can be re-tried from integration layer.

### Synchronous Processes



Any exception or error thrown by the integration service is sent back to Oracle Utilities Customer to Meter as a SOAP Fault or exception which will change the outbound message status to be in 'Error'.

Integration service will also send back the exception or SOAP fault received from Oracle Utilities Network Management System to Oracle Utilities Customer to Meter. This will also change the outbound message status to be in 'Error'.

No email notifications for Business and Technical errors will be sent out from the integration service.

## Error Notification Setup

To enable Email notification for C2M-NMS Error Handling module:

1. Login to the **Enterprise Manager** console.
2. Click and expand **SOA**. Right-click **Soa-infra** and navigate to **SOA Administration > Workflow Notification Properties**.
3. Select **EMAIL** from the drop-down list.
4. Enter the email ID in the **From** address.

## INTEGRATION\_ERROR\_STORE

The INTEGRATION\_ERROR\_STORE table is used to store all the error details for each message failure. The table is populated for each integration point based on the BusinessError.NotificationFlag and TechnicalError.NotificationFlag properties for each service in the ConfigurationProperties.xml file.

## INTEGRATION\_ERR\_LOOKUP

The error handling module configuration is governed by the Integration\_err\_lookup table. This table contains processing instructions for each composite. The Error\_Processing\_Parent composite picks data for one composite and calls error\_Processing\_Detail for processing. The configuration in this table is used to process the error records stored in the INTEGRATION\_ERROR\_STORE table.

Column Name	Description	Default/Suggested Values
LookUp_ID	Sequence ID of entry in this table. This is auto generated.	Auto generated
IP_Name	The name of the composite that is processed.  Example: OUC2MOUNMSCustomerSyncEBF	This column is pre populated with the individual enterprise business process name.  Do not modify: Modifying this value will break the code.

Column Name	Description	Default/Suggested Values
Processing_Status	Current status of processing it has to be one of the following.  HALTED (waiting for manual intervention),  NOT REQUIRED  ALIVE	NOT REQUIRED
Run_Flag	Processing flag status, Y or N. Unread value = N, read value =Y	N
Next_Runtime	Next runtime when the error record should be processed for this composite.	SYSDATE+200
Halt_For_Error	Allowed values Y or N.  When set to Y manual intervention is required after one successful error record processing.  When set to N processing continues without halting.	N
RunTime_Interval	Runtime in minutes after which the next error processing should be done.  Example: P10Y0M0DT0H0M0S  Next processing is done after 10 years 0 months 0 days 0 hours 0 minutes and 0 seconds. This value must be updated based on the business requirement. Setting fewer intervals may have impact on performance.	Default: P10Y0M0DT0H0M0S
Email_ID	Email-ID where error notifications are sent.  This value can be different or same for all the composites.	Default: email@email.com



Column Name	Description	Default/Suggested Values
Email_Content_Type	<ul style="list-style-type: none"> <li>• <b>GENERIC:</b> One email is sent for all errors. No detail information is included.</li> <li>• <b>SINGLE:</b> One email is sent for all errors with all details included in the attachment.</li> <li>• <b>MULTIPLE:</b> Multiple emails are sent and each email has information equal to the value specified in the <code>Error_Count_Per_Notification</code> column.</li> </ul> <p>Values are case sensitive and must always be given in upper case.</p>	Default: GENERIC
Email_XSL	XSL to be applied for creating email content that includes subject/body and attachment. Look and feel can be modified here.	<p>Default file is provided for all the composites and present under the xsl folder of composite.</p> <p>Example: xsl/ Transformation_Create_Email.xsl</p> <p>Copy this into the mds folder and enter the mds path in this column for additional configuration.</p>
Error_Count_Per_Processing	<p>A notification is sent after the number of records set here is processed.</p> <p>For example: If this is set to 50 then an email notification containing 50 records is sent after 50 records are created in the error store.</p>	Default: 100
Email_Attachment_Location	<p>Location where the email attachment is created on the server. This value should point to the location/folder where the attachment should be stored. It is used to create the attachment file in the following format:</p> <p>INTEGRATION_ERR_LOOKUP.Email_Attachment_Location + IP_Name + Date (in YYYYMMDDHH24MMSS)</p>	

Column Name	Description	Default/Suggested Values
Email_Attachment_Flag	<ul style="list-style-type: none"> <li>• Y: Send email with attachment. In this case it is not mandatory to have Email_Attachment_Location specified.</li> <li>• N: Send email without attachment but send the attachment location. In this case Email_Attachment_Location has to be specified.</li> </ul> <p>ServerName +INTEGRATION_ERR_LOOKUP.Email_Attachment_Location + IntegrationPoint_Name + Date in YYYYMMDDHH24MMSS.</p>	N
Publish_Human_Task_Flag	<ul style="list-style-type: none"> <li>• Y: Publish human task</li> <li>• N: Don't publish human task</li> </ul> <p>If Halt_For_Error value is set to Y and Publish_Human_Task_Flag is also Y, the human task is published and the user can take action from worklist application.</p>	N
ID_Human_Task	<p>User/Group ID to which human task should be published in case Halt_For_Error is set to Y.</p> <p>This ID must be present in the WebLogic realm pointed by Fusion Middleware.</p>	Weblogic
Last_Updated_Date	Last updated date time	SYSDATE
Purge_Error_Store_Flag	<ul style="list-style-type: none"> <li>• Y: Purge data</li> <li>• N: No purge is required</li> </ul> <p>The process PurgeIntegrationErrorStore is only deployed when following flag purge.process.deploy=true in deploy.properties file is set to true during installation.</p> <p>If flag.purge.process = false, then the value of this column Purge_Error_Store_Flag will always be N.</p>	Default: N

Column Name	Description	Default/Suggested Values
Purge_Processing_Status_Flag	<ul style="list-style-type: none"> <li>• Y: Purge Processing in process</li> <li>• N: Purge processing not happening</li> </ul> <p>The process PurgeIntegrationErrorStore is only deployed when following flag <code>purge.process.deploy=true</code> in <code>deploy.properties</code> file is set to true during installation.</p> <p>If <code>flag.purge.process = false</code>, then the value of this column <code>Purge_Error_Store_Flag</code> will always be N.</p>	Default: N
Purge_Frequency	<p>Number of days after which the data should be purged. This will be in picture format.</p> <p>Example: P10Y0M0DT0H0M0S</p> <p>Next processing will be done after 10 years 0 months 0 days 0 hours 0 minutes and 0 seconds. This value has to be updated based on the business requirement. Setting fewer intervals may have impact on performance.</p> <p>Need to set this value appropriately. It is applicable only when <code>flag.purge.process = true</code> in <code>deploy.properties</code> file during installation and the process <code>PurgeIntegrationErrorStore</code> ID deployed.</p>	Default: P10Y0M0DT0H0M0S
Next_Purge_Date	<p>Next purge date</p> <p>Format: <code>Next_Purge_date + Purge_Frequency</code></p> <p>Applicable only when <code>flag.purge.process = true</code> in <code>deploy.properties</code> file during installation and the process <code>PurgeIntegrationErrorStore</code> ID deployed.</p>	SYSDATE+100
Purge_File_Name	<p>Directory Name where purge file should be stored</p> <p>Applicable only when <code>flag.purge.process = true</code> in <code>deploy.properties</code> file during installation and the process <code>PurgeIntegrationErrorStore</code> ID deployed.</p>	'location on server where purge record should be persisted'

## Primary Key - LookUp\_ID, IP\_Name

To customize error email notifications for individual the integration points, perform the following steps:

1. Use the composite: UpdateIntegrationErrorLookupTable.
2. Enter the following URL into a browser to get the screen that will provide options of updating the contents of the table.  
  
http://<hostname>:<soa server port>/soa-infra/services/C2M-NMS/  
UpdateIntegrationErrorLookupTable/updatesite  
integrationerrorlookuptablebpel\_client\_ep?
3. Expand **WS-Security** and provide authentication information.  
  
This username and password is going to be same as that used for login to WebLogic Enterprise Manager console.
4. Expand the **Payload** section.  
  
This displays several editable text fields.  
  
Only the **ipName** field is mandatory and should be entered as one of the values from INTEGRATION\_ERR\_LOOKUP.IP\_NAME field.  
  
By default, all the checkboxes appearing next to the text fields are selected.
5. Provide values in the text field.  
  
If you do not want to have a particular value updated, do not select the checkbox.

# Chapter 4

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## Monitoring and Troubleshooting

This chapter provides details about monitoring, error handling, and troubleshooting. It discusses the following:

- [Monitoring from the Integration Layer](#)
- [Monitoring from Oracle Utilities Customer to Meter](#)
- [Monitoring from Oracle Utilities Network Management System](#)

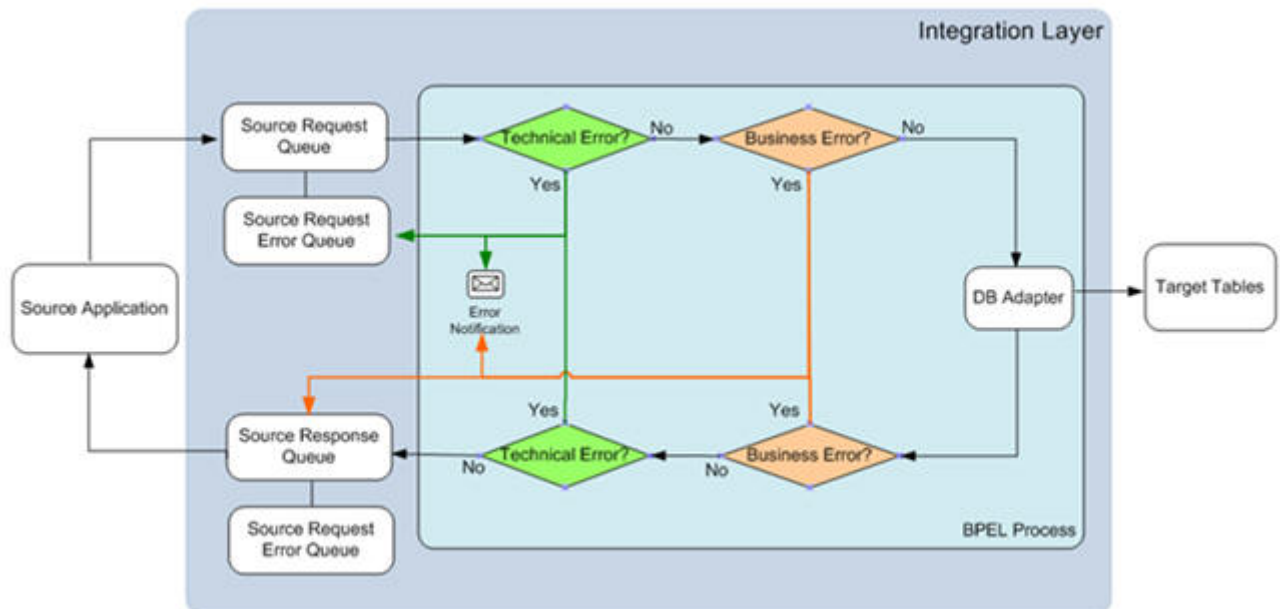
# Monitoring from the Integration Layer

This section provides information on the following:

- [Customer Synchronization](#)
- [Trouble Call Interface Error Handling](#)
- [Online Queries \(Job History/Call History/Planned Outages\) Error Handling](#)

## Customer Synchronization

The following diagram illustrates the Customer Synchronization - Error Handling:



There are two types of errors that can be encountered in the integration:

- **Business Errors** are triggered when business errors are triggered by the application. The business errors are sent back to the source application and can be re-tried from there.
- **Technical Errors** are triggered when there are connectivity issues (database is down, queue is not reachable). The technical errors are sent to the error queue and can be re-tried from the integration layer.

Type of error	Action	Notification Type	Retry
Internal failure in BPEL Process (Technical Error)	Message goes to the request error queue	Email (optional)	From WebLogic Admin Console, move message to the C2M request queue
BPEL cannot reach NMS DB (Technical Error)	Message goes to the request error queue	Email (optional)	From WebLogic Admin Console, move message to the C2M request queue

Type of error	Action	Notification Type	Retry
Error response from NMS DB (Business Error)	Insert a negative ack message to the C2M response queue	Email (optional) and C2M To Do.	User after ensuring that the source of the issue had been fixed can resend the message from C2M.
Empty DVM values in incoming message or the DVM lookup values are not found. (Business Error)	Insert a negative ack message to the C2M response queue	- Email (optional) and C2M To Do	User after ensuring that the source of the issue had been fixed can resend the message from C2M
Any other Technical Error	Message goes to the request error queue	Email (optional)	From WebLogic Admin Console, move message to the C2M request queue

**Note:** A create To Do entry algorithm must be set up in the error status of the Sync Request BO for Oracle Utilities Customer to Meter to create a To Do entry on error.

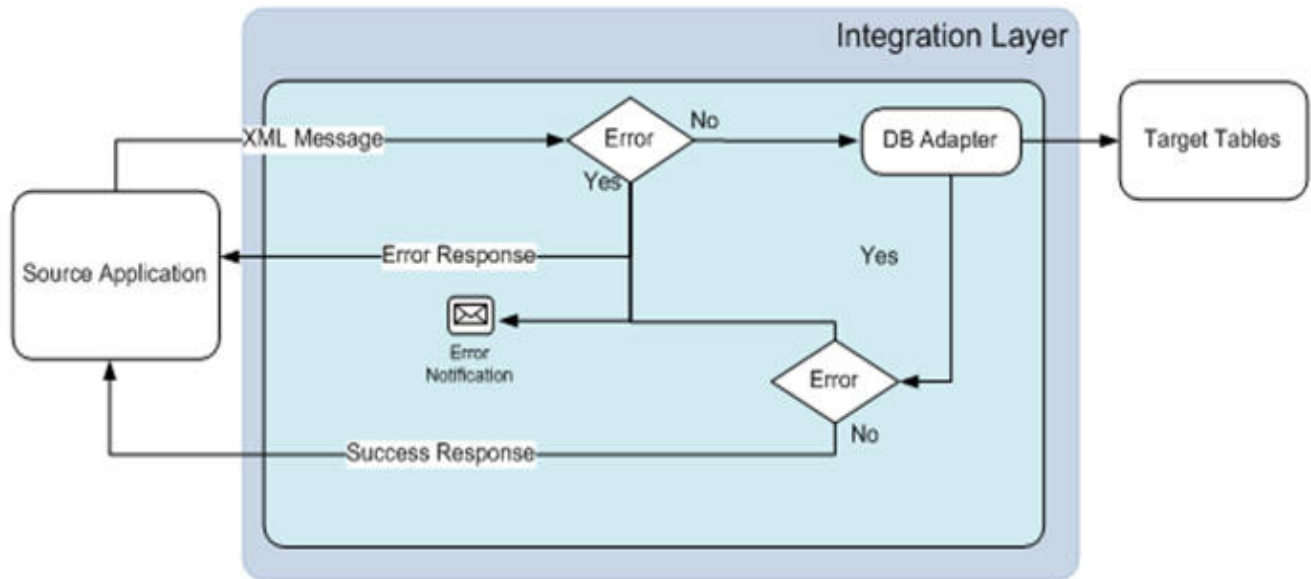
To retry the technical error failure messages:

1. Open a browser and access the WebLogic console for your installation.
2. Navigate to **Services > Messaging > JMS Modules**.
3. Select the **C2M-NMS Integration JMS Module** and it shows all the queues related to the integration.
4. Select the appropriate Error queue and click the **Monitoring** tab. The tab shows the details about the messages in the queue in a table.
5. Select the checkbox in the details table and click **Show Messages**. The messages in the Error queue are displayed.
6. Click **Move** and select the **Move All** option.
7. Select the **C2M-NMS JMS Server** to move the messages and click **Next**.
8. Select the correct parent queue for the error queue from the drop-down list and click **Finish**.
9. This action moves all the messages to the source queue and the integration processes all the messages again.

**Note:** When resending from Oracle Utilities Customer to Meter, the user can either change the status of the existing sync request in error from Error to Pending Sync Request or change data and create a new sync request but also change the status of the existing sync request in error from Error to Discarded.

## Trouble Call Interface Error Handling

The following diagram shows Trouble Calls Interface-Error Handling:



S. No	Type of error	Action	Notification Type	Retry
A1	C2M cannot reach BPEL (Technical Error)	Sync error response to C2M	<ul style="list-style-type: none"> <li>C2M Display Error in the Outage Call UI</li> </ul>	User can resend the message from the Outage Call UI after ensuring that the source of the issue had been fixed.
A2	Internal failure in BPEL (Technical Error)	Sync error response to C2M	<ul style="list-style-type: none"> <li>C2M Display Error in the Outage Call UI</li> <li>Email (optional)</li> </ul>	
A3	BPEL cannot reach NMS database (Technical Error)	Sync error response to C2M	<ul style="list-style-type: none"> <li>C2M Display Error in the Outage Call UI</li> <li>Email (optional)</li> </ul>	
A4	Error response from NMS (Business Error)	Sync error response to C2M	<ul style="list-style-type: none"> <li>C2M Display Error in the Outage Call UI</li> <li>Email (optional)</li> </ul>	
A5	DVM exception (Business Error)	Sync error response to C2M	<ul style="list-style-type: none"> <li>C2M Display Error in the Outage Call UI</li> <li>Email (optional)</li> </ul>	

## Online Queries (Job History/Call History/Planned Outages) Error Handling

Any errors encountered in the integration layer reported back to the Oracle Utilities Customer to Meter synchronously and an error message is displayed in the UI to inform the user that an error was encountered by the external system. No error notification is needed.



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# Monitoring from Oracle Utilities Customer to Meter

This section describes:

- [Oracle Utilities Customer to Meter Error Logs](#)
- [Connection Errors](#)

## Oracle Utilities Customer to Meter Error Logs

For information about errors and notifications, see the Oracle Utilities Customer to Meter documentation.

## Connection Errors

For information about connection errors, see the Oracle Utilities Customer to Meter documentation.

# Monitoring from Oracle Utilities Network Management System

Errors that occur during execution of PL/SQL package, are reported to the integration layer. They are not logged within Oracle Utilities Network Management System.

The Generic IVR Adapter has dedicated the log file where errors are recorded. The name of the log file typically begins with 'IVRAdapter'.

For more information about troubleshooting Oracle Utilities Network Management System, see the chapter **Troubleshooting and Support** in *Oracle Utilities Network Management System Configuration Guide*.

## Monitoring from the Integration

The integration process can be monitored using the following:

- Monitoring the composite instances using [WebLogic SOA Enterprise Manager](#)
- Monitoring the [WebLogic Logs](#)

### WebLogic SOA Enterprise Manager

To configure the Weblogic SOA Enterprise Manager:

1. Login to the WebLogic SOA Server Enterprise Manager.
2. In the left menu, navigate to **SOA > soa-infra > C2M-NMS**.
3. All the composite processes deployed for the integration are available under the partition C2M-NMS.
4. Select the appropriate process to list all the instances for the processes sorted by time of execution.
5. The instances also have the request ID as a part of the display name.

6. Click the appropriate process instance. The respective flow for that process is displayed.
7. The composite flow lists all the activities in the process instance.

**Note:** If the Audit Level is **Off**, no process flow is shown.

## WebLogic Logs

To configure the WebLogic logs:

1. Login to the machine where the SOA Server is installed.
2. The SOA logs are stored in the following path:

<Weblogic installation folder>/user\_projects/domains/<SOA Domain name>/servers/<SOA Server name>/logs

Example: /slot/ems1234/oracle/Middleware/user\_projects/domains/soa\_domain/servers/soa\_server1/logs

# Chapter 5

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## Customization Options

The integration process allows extensibility of transaction messages using the following methods:

- [Pre-Transformation Extension Point](#)
- [Pre-invoke Extension Scope](#)
- [Post-invoke Extension Scope](#)
- [Post-transformation Extension Point](#)
- [Custom Transformations](#)

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## Pre-Transformation Extension Point

The pre transformation extension point is invoked before the main transformation is executed. This transformation will help in transforming the source XML coming as an input to the integration process and helps the implementation to invoke any external web service and transform the input XML.

## Pre-invoke Extension Scope

The pre-invoke extension scope is invoked after the main/request transformation is executed. This transformation aids in converting the source XML that comes in as an input to the integration process and helps the implementation to invoke external web services and/or transform the input XML.

## Post-invoke Extension Scope

The post-invoke extension scope is invoked before the response transformation is executed. This transformation aids in converting the target/response XML that comes as an output of target service invocation and helps the implementation to invoke external web services and/or transform the target/response XML.

## Post-transformation Extension Point

The post transformation extension point is invoked after the response transformation is executed. This transformation will help in transforming the target/response XML that comes as an output of the target service and helps the implementation to invoke any external web service and transform the output XML.

## Custom Transformations

The custom transformations are used to add data to custom elements in the incoming and outgoing messages. The incoming and outgoing messages have custom elements defined in the message. These custom elements will refer to a custom XML schema. The main transformation invokes custom transformation.

Empty custom transformation and custom schemas are shipped with the product. The implementation team can add additional fields in the custom schema and map them using the custom transformations.

Using custom transformations will enable the implementation to define and pass additional data from source system to the target system.

Please note the following regarding implementing custom transformations:

- Each process in the integration has its own XSD file. The messages have custom elements which can be used to pass additional data from one application to another or vice versa.

- Each xsd has a corresponding CustomType xsd in which the complexType elements for each **customElements** tag are defined.
- Some process which does not expect a response back only uses one xsd files while some process that expects a response uses two xsd files, one for the request message and one for the response message.
- To pass additional elements in the **customElements** tag, the corresponding complexType needs to be modified in the customType xsd. Add the additional elements required in the complexType elements (xsd for the Oracle Utilities Customer to Meter application).
- Each process has a main transformation which invokes custom templates. Each main transformation file has a corresponding custom xsl and the custom templates are defined in the custom xsl.
- These custom templates are invoked at the location where each customElements tag is present.
- The custom xsl can be modified to add transformation for the newly added elements in the custom xsd files.
- The custom xsd files for the Oracle Utilities Customer to Meter application are located in the product install home under the directory C2M\_NMS PRODUCT\_HOME/MDS-Artifacts/AIAMetaData/ AIAComponents/ ApplicationObjectLibrary/OUC2M/V1/schemas. The Oracle Utilities Network Management System application does not have custom xsds. Oracle Utilities Network Management System has defined user defined field in there stored procedure to be used for extension.
- The custom xsl files are located in the product install home under the directory C2M\_NMS PRODUCT\_HOME/services/industry/Utilities/EBF/<Process Name>/xsl.
- After updating the xsd and xsl files in the product install home, update MDS using the ant scripts and restart the SOA server.

Refer to the command for MDS update in the installation guide to update MDS.

Example: To modify the Job History Query process to pass another search criteria LandMark.

Example: From Oracle Utilities Customer to Meter to Oracle Utilities Network Management System, perform the following steps:

```
Map requestMessage/location/customElements/landmark element in
C2M to FIELD1 element in NMS.
```

Complete the following steps:

1. Modify OUC2MJobHistoryQueryCustomType.xsd.

```
<xsd:complexType name="locationCustomType">
<xsd:sequence>
<xsd:element name="landmark" type="xsd:string"/>
</xsd:sequence>
<xsd:complexType>
```

2. Modify Transform\_C2M\_to\_NMS\_JobHistoryQuery\_Custom.xsl

```
<xsl:template name="InputParameters_customElements">
<!-- this template is use for Xformation of //InputParameters/
```

```
customElements in Request Message-->
<FIELD1>
<xsl:value-of select="/tns1: requestMessage/ tns1: location/
tns1:customElements/tns1:landmark"/>
</FIELD1>
</xsl:template>
```

# Appendix A

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## Data Mapping

This appendix provides mapping details for each integration point, including the following:

- [Customer Data Synchronization Process](#)
- [Trouble Call Entry Process](#)
- [Job History Query Process](#)
- [Trouble Call History Query Process](#)
- [Planned Outages Query Process](#)
- [Notification Contact Preference Process](#)

# Customer Data Synchronization Process

This section describes data mapping for the following:

- [Customer Data Synchronization Process - Mapping Details](#)
- [Customer Data Synchronization Request Mapping](#)
- [Customer Data Synchronization Response Mapping](#)

## Customer Data Synchronization Process - Mapping Details

The schema details Customer Data Synchronization are as shown in the table below

Oracle Utilities Network Management System field	Oracle Utilities Customer to Meter field	Notes
SERV_POINT_ID		
DEVICE_ID	externalId	Device ID provide must exist in the NMS supply nodes table. From C2M, obtain an external ID from facility.
FEEDER_ID		
ACCOUNT_TYPE	serviceType	Account Type provide must exist in the Account Type Table in NMS. Use DVM OUC2M_OUNMS_ AccountType.
CREATION_TIME		Timestamp for the record's creation. NMS stored procedure will put the current date time on for new records inserted. <b>Not mapped</b> by the integration.
ACTIVE	status	Flag identifying currently active records: Y - For Current Customers N - For Inactive customers From C2M, usageSubscriptionInfo/status is mapped. Use OUC2M_OUNMS_UsageSub_Status DVM.
CUST_ID	cisAccountId	Unique external system generated primary key. C2M Account must be linked to a metered service point via active service agreement.
CUST_ACCOUNT_NUMBER	cisAccountId	



Oracle Utilities Network Management System field	Oracle Utilities Customer to Meter field	Notes
CUST_NAME	name	This is the primary person linked to the account. If it is a Person, it contains the concatenation of last, first and middle names. If it is a business, contains the business name.
CUST_LAST_NAME		
CUST_FIRST_NAME		
CUST_MIDDLE_NAME		
CUST_HOME_AREA_CODE	First 3 numbers of homePhone	Get Area Code from C2M homePhone element. homePhone retrieved from C2M depends on the home phone type defined in C2M feature configuration schema constants.
CUST_HOME_PHONE	From fourth to tenth number of homePhone	Get Phone Number from C2M homePhone element. homePhone retrieved from C2M depends on the home phone type defined in C2M feature configuration schema constants.
CUST_DAY_AREA_CODE	First 3 numbers of businessPhone	Get Area Code from C2M homePhone element. homePhone retrieved from C2M depends on the home phone type defined in C2M feature configuration schema constants.
CUST_DAY_PHONE	From fourth to tenth number of businessPhone	Get Phone Number from C2M homePhone element. homePhone retrieved from C2M depends on the home phone type defined in C2M feature configuration schema constants.
CUST_DAY_PHONE_EXT		This is the extension for the businessPhone.
CUST_ADDRESS1		
CUST_ADDRESS2		
CUST_ADDRESS3		
CUST_ADDRESS4		
CUST_CITY		
CUST_STATE		
CUST_POSTCODE1		
CUST_POSTCODE2		
CUST_UDF1	userDefinedField1	Person/Contact user Defined Field

Oracle Utilities Network Management System field	Oracle Utilities Customer to Meter field	Notes
CUST_UDF2	userDefinedField2	Person/Contact user Defined Field
CUST_UDF3	userDefinedField3	Person/Contact user Defined Field
CUST_UDF4	userDefinedField4	Person/Contact user Defined Field
SERV_PREMISE_ID	cisPremiseId	Unique external system generated primary key.
SERV_ACCOUNT_NUMBER	cisAccountId	Account number linked to the premise ID.
SERV_LIFE_SUPPORT	lifeSupportSensitiveLoad	The C2M premise life support/sensitive load field. Use DVM OUC2M_OUNMS_LifeSupportIndicator.
SERV_ADDRESS1		
SERV_ADDRESS2		
SERV_ADDRESS3		
SERV_ADDRESS4		
SERV_CITY		
SERV_STATE		
SERV_CITY_STATE	Concatenate city, state	The delimiter that the integration uses for concatenation will always be (,) comma.
SERV_POSTCODE1	postal	
SERV_POSTCODE2		
SERV_A_PRIORITY		Set of 26 Service Priorities are available for configuration. Kindly refer the C2M feature configuration to configure the service priorities for Critical, Medial, Key or other services (A to Z).
SERV_B_PRIORITY		
SERV_C_PRIORITY		
SERV_D_PRIORITY		

Oracle Utilities Network Management System field	Oracle Utilities Customer to Meter field	Notes
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SERV\_E\_PRIORITY

SERV\_F\_PRIORITY

SERV\_G\_PRIORITY

SERV\_H\_PRIORITY

SERV\_I\_PRIORITY

SERV\_J\_PRIORITY

SERV\_K\_PRIORITY

SERV\_L\_PRIORITY

SERV\_M\_PRIORITY

SERV\_N\_PRIORITY

SERV\_O\_PRIORITY

SERV\_P\_PRIORITY

SERV\_Q\_PRIORITY

SERV\_R\_PRIORITY

SERV\_S\_PRIORITY

SERV\_T\_PRIORITY

SERV\_U\_PRIORITY

SERV\_V\_PRIORITY

SERV\_W\_PRIORITY

SERV\_X\_PRIORITY

SERV\_Y\_PRIORITY

Oracle Utilities Network Management System field	Oracle Utilities Customer to Meter field	Notes
SERV_Z_PRIORITY		
SERV_UDF1	userDefinedField1	Service location user defined field
SERV_UDF2	userDefinedField2	Service location user defined field
SERV_UDF3	userDefinedField3	Service location user defined field
SERV_UDF4	userDefinedField4	Service location user defined field
METER_ID	meterId	From C2M Device Table
METER_NUMBER	badgeNumber	From C2M Device Table
METER_TYPE	meterType	From C2M Device Table OUC2M_OUNMS_MeterType DVM
METER_MANUFACTURER	Manufacturer	From C2M Device Table Use OUC2M_OUNMS_Manufacturer DVM
METER_UDF1	userDefinedField1	Meter user defined field
METER_UDF2	userDefinedField2	Meter user defined field
METER_UDF3	userDefinedField3	Meter user defined field
METER_UDF4	userDefinedField4	Meter user defined field
SP_UDF1	userDefinedField1	Service point User Defined Field
SP_UDF2	userDefinedField2	Service point User Defined Field
SP_UDF3	userDefinedField3	Service point User Defined Field
SP_UDF4	userDefinedField4	Service point User Defined Field

# Customer Data Synchronization Request Mapping

Mapping details for Customer Data Synchronization Request are shown in the table below:

OUC2M Customer SP Sync Request Message			OUNMS Create/Update Customer Stored Procedure		
Element Name	Parent Element	Type	Element Name	DVM Name	Comments
sendDetails		OuterMostTag	P_CUST		
syncRequestId	sendDetails	Field			
contactInfo	sendDetails	Group			
usageSubscriptionInfo	sendDetails	Group			
servicePointInfo	sendDetails	Group			
facilityInfo	sendDetails	Group			
meterInfo	sendDetails	Group			
itemInfo	sendDetails	Group			
contactId	contactInfo	Field			
cisPersonId	contactInfo	Field			
name	contactInfo	Field	CUST_NAME		
homePhone	contactInfo	Field	CUST_HOME_AREA_CODE		
			CUST_HOME_PHONE		
businessPhone	contactInfo	Field	CUST_DAY_AREA_CODE		
			CUST_DAY_PHONE		
customerUDFs	contactInfo	Group			
userDefinedField1	customerUDFs	Field	CUST_UDF1		

OUC2M Customer SP Sync Request Message			OUNMS Create/Update Customer Stored Procedure		
Element Name	Parent Element	Type	Element Name	DVM Name	Comments
userDefinedField2	customerUDFs	Field	CUST_UDF2		
userDefinedField3	customerUDFs	Field	CUST_UDF3		
userDefinedField4	customerUDFs	Field	CUST_UDF4		
usId	usageSubscriptionInfo	Field			
status	usageSubscriptionInfo	Field	ACTIVE	OUC2M_OUNMS _UsageSub_Status	
cisSAId	usageSubscriptionInfo	Field			
cisAccountId	usageSubscriptionInfo	Field	CUST_ID  CUST_ACCOUNT_ NUMBER  SERV_ACCOUNT_ NUMBER		
spId	servicePointInfo	Field			
spType	servicePointInfo	Field			
Division	servicePointInfo	Field			
cisSPId	servicePointInfo	Field	SERV_POINT_ID		
cisPremiseId	servicePointInfo	Field	SERV_PREMISE_ID		
facilityId	servicePointInfo	Field			
lifeSupportSensitiveLoad	servicePointInfo	Field	SERV_LIFE_SUPPORT		
country	servicePointInfo	Field			

OUC2M Customer SP Sync Request Message			OUNMS Create/Update Customer Stored Procedure		
Element Name	Parent Element	Type	Element Name	DVM Name	Comments
addressLine1	servicePointInfo	Field	CUST_ADDRESS1		
			SERV_ADDRESS1		
addressLine2	servicePointInfo	Field	CUST_ADDRESS2		
			SERV_ADDRESS2		
addressLine3	servicePointInfo	Field	CUST_ADDRESS3		
			SERV_ADDRESS3		
addressLine4	servicePointInfo	Field	CUST_ADDRESS4		
			SERV_ADDRESS4		
number1	servicePointInfo	Field			
number2	servicePointInfo	Field			
inCityLimit	servicePointInfo	Field			
city	servicePointInfo	Field	CUST_CITY		
			SERV_CITY		
geographic	servicePointInfo	Field			
county	servicePointInfo	Field			
state	servicePointInfo	Field	CUST_STATE		
			SERV_STATE		
postal	servicePointInfo	Field	CUST_POSTCODE1		
			SERV_POSTCODE1		

OUC2M Customer SP Sync Request Message			OUNMS Create/Update Customer Stored Procedure		
Element Name	Parent Element	Type	Element Name	DVM Name	Comments
criticalCustomerTypes	servicePointInfo	Group			
servicePointUDFs	servicePointInfo	Group			
serviceLocationUDFs	servicePointInfo	Group			
serviceType	servicePointInfo	Field	ACCOUNT_TYPE	OUC2M_OUNMS _AccountType	
criticalCustomerTypeA	criticalCustomerTypes	Field	SERV_A_PRIORITY	OUC2M_OUNMS _Serv_A_Priority	
criticalCustomerTypeB	criticalCustomerTypes	Field	SERV_B_PRIORITY	OUC2M_OUNMS _Serv_B_Priority	
criticalCustomerTypeC	criticalCustomerTypes	Field	SERV_C_PRIORITY	OUC2M_OUNMS _Serv_C_Priority	
criticalCustomerTypeD	criticalCustomerTypes	Field	SERV_D_PRIORITY	OUC2M_OUNMS _Serv_D_Priority	
criticalCustomerTypeE	criticalCustomerTypes	Field	SERV_E_PRIORITY	OUC2M_OUNMS _Serv_E_Priority	
criticalCustomerTypeF	criticalCustomerTypes	Field	SERV_F_PRIORITY	OUC2M_OUNMS _Serv_F_Priority	
criticalCustomerTypeG	criticalCustomerTypes	Field	SERV_G_PRIORITY	OUC2M_OUNMS _Serv_G_Priority	
criticalCustomerTypeH	criticalCustomerTypes	Field	SERV_H_PRIORITY	OUC2M_OUNMS _Serv_H_Priority	
criticalCustomerTypeI	criticalCustomerTypes	Field	SERV_I_PRIORITY	OUC2M_OUNMS _Serv_I_Priority	
criticalCustomerTypeJ	criticalCustomerTypes	Field	SERV_J_PRIORITY	OUC2M_OUNMS _Serv_J_Priority	



OUC2M Customer SP Sync Request Message			OUNMS Create/Update Customer Stored Procedure		
Element Name	Parent Element	Type	Element Name	DVM Name	Comments
criticalCustomerTypeK	criticalCustomerTypes	Field	SERV_K_PRIORITY	OUC2M_OUNMS_Serv_K_Priority	
criticalCustomerTypeL	criticalCustomerTypes	Field	SERV_L_PRIORITY	OUC2M_OUNMS_Serv_L_Priority	
criticalCustomerTypeM	criticalCustomerTypes	Field	SERV_M_PRIORITY	OUC2M_OUNMS_Serv_M_Priority	
criticalCustomerTypeN	criticalCustomerTypes	Field	SERV_N_PRIORITY	OUC2M_OUNMS_Serv_N_Priority	
criticalCustomerTypeO	criticalCustomerTypes	Field	SERV_O_PRIORITY	OUC2M_OUNMS_Serv_O_Priority	
criticalCustomerTypeP	criticalCustomerTypes	Field	SERV_P_PRIORITY	OUC2M_OUNMS_Serv_P_Priority	
criticalCustomerTypeQ	criticalCustomerTypes	Field	SERV_Q_PRIORITY	OUC2M_OUNMS_Serv_Q_Priority	
criticalCustomerTypeR	criticalCustomerTypes	Field	SERV_R_PRIORITY	OUC2M_OUNMS_Serv_R_Priority	
criticalCustomerTypeS	criticalCustomerTypes	Field	SERV_S_PRIORITY	OUC2M_OUNMS_Serv_S_Priority	
criticalCustomerTypeT	criticalCustomerTypes	Field	SERV_T_PRIORITY	OUC2M_OUNMS_Serv_T_Priority	
criticalCustomerTypeU	criticalCustomerTypes	Field	SERV_U_PRIORITY	OUC2M_OUNMS_Serv_U_Priority	
criticalCustomerTypeV	criticalCustomerTypes	Field	SERV_V_PRIORITY	OUC2M_OUNMS_Serv_V_Priority	
criticalCustomerTypeW	criticalCustomerTypes	Field	SERV_W_PRIORITY	OUC2M_OUNMS_Serv_W_Priority	

OUC2M Customer SP Sync Request Message			OUNMS Create/Update Customer Stored Procedure		
Element Name	Parent Element	Type	Element Name	DVM Name	Comments
criticalCustomerTypeX	criticalCustomerTypes	Field	SERV_W_PRIORITY	OUC2M_OUNMS_Serv_X_Priority	
criticalCustomerTypeY	criticalCustomerTypes	Field	SERV_W_PRIORITY	OUC2M_OUNMS_Serv_Y_Priority	
criticalCustomerTypeZ	criticalCustomerTypes	Field	SERV_W_PRIORITY	OUC2M_OUNMS_Serv_Z_Priority	
userDefinedField1	servicePointUDFs	Field	SP_UDF1		
userDefinedField2	servicePointUDFs	Field	SP_UDF2		
userDefinedField3	servicePointUDFs	Field	SP_UDF3		
userDefinedField4	servicePointUDFs	Field	SP_UDF4		
userDefinedField1	serviceLocationUDFs	Field	SERV_UDF1		
userDefinedField2	serviceLocationUDFs	Field	SERV_UDF2		
userDefinedField3	serviceLocationUDFs	Field	SERV_UDF3		
userDefinedField4	serviceLocationUDFs	Field	SERV_UDF4		
facilityId	facilityInfo	Field			
facilityType	facilityInfo	Field			
externalId	facilityInfo	Field	DEVICE_ID		
meterId	meterInfo	Field	METER_ID		If meterinfo exists send meterId to METER_ID.
badgeNumber	meterInfo	Field	METER_NUMBER		If meterinfo exists, send badgeNumber to METER_NUMBER.
serialNumber	meterInfo	Field			

OUC2M Customer SP Sync Request Message			OUNMS Create/Update Customer Stored Procedure		
Element Name	Parent Element	Type	Element Name	DVM Name	Comments
MeterType	meterInfo	Field	METER_TYPE	OUC2M_OUNMS _ MeterType	
manufacturer	meterInfo	Field	METER_ MANUFACTURER	OUC2M_OUNMS _ Manufacturer	
MeterUDFs	meterInfo	Group			
userDefinedField1	meterUDFs	Field	METER_UDF1		
userDefinedField2	meterUDFs	Field	METER_UDF2		
userDefinedField3	meterUDFs	Field	METER_UDF3		
userDefinedField4	meterUDFs	Field	METER_UDF4		
itemId	itemInfo	Field	METER_ID		If itemId exists, send it to METER_ID.
badgeNumber	itemInfo	Field	METER_NUMBER		
serialNumber	itemInfo	Field			
itemType	itemInfo	Field	METER_TYPE	OUC2M_OUNMS _ MeterType	
manufacturer	itemInfo	Field	METER_ MANUFACTURER	OUC2M_OUNMS _ Manufacturer	

## Customer Data Synchronization Response Mapping

Mapping details for Customer Data Synchronization Response are shown in the table below:

OUC2M Customer SP Sync Request Message OUNMS Create/Update Customer Stored Procedure Output			OUC2M F1-UpdateAndTransitionSyncRequest Message		
Element Name	Parent Element	Type	Element Name	DVM Name	Comments
sendDetails		OuterMost Tag	F1- UpdateAndTransitionSync Request		
syncRequestId	sendDetails	Field	syncRequestId		
OutputParameters		Outermost Tag			
P_ERR_NO	OutputParameters	Field			
			exceptionInfo		
			messageCategory		Send C2M.Generic.MessageCategory property value defined in OUC2MOUNMSConfigurationProperties.x ml file.
			messageNumber		Send C2M.Generic.MessageNumber property value defined in OUC2MOUNMSConfigurationProperties.x ml file.
P_ERR_MSG	OutputParameters	Field	comments		
			messageParameters		
			parameterSequence		'1'
P_ERR_MSG	OutputParameters	Field	messageParameterValue		

# Trouble Call Entry Process

This section describes data mapping for the following:

- [Trouble Call Entry Process - Mapping Details](#)
- [Trouble Call Request Message Mapping](#)

## Trouble Call Entry Process - Mapping Details

The schema details Trouble Call Entry are as shown in the table below

Oracle Utilities Network Management System field	Oracle Utilities Customer to Meter Message Element	Notes
call_source_ID		Integration will get the default value from the configuration properties file and map it to the NMS Call Source ID.  Trouble calls can be created from different external systems like C2M, IVR or web call entry. Each external system sending trouble calls to NMS will have a unique call_source_ID. This determines where the trouble call originated and makes sure the external ID passed to NMS is unique. NMS prefixes this value to the external ID to make it unique.
service_point_ID	spId	
external_ID	outageCallId	C2M passes the Outage Call ID
account_number	accounted	Customer's account ID
trouble_code	outageCodes	Trouble code mapping setup between C2M and NMS must be the same.  In NMS, the total length of the string is the total number of distinct groups in the SRS_TROUBLE_CODES table.  In C2M, it is the Number of Outage Code Characteristic.
call_time	callDateTime	

Oracle Utilities Network Management System field	Oracle Utilities Customer to Meter Message Element	Notes
callback_flag	callbackRequested	In NMS, the possible values include: '0' - callback not requested '1' - callback requested Defaults to '1' if no value is provided. If Y or N are passed to NMS: 'Y' is translated to '1'. 'N' is translated to '0' Use DVM OUC2M_OUNMS_CallBackIndicator to translate C2M value to NMS value.
callback_before_time	callbackDateTime	
alt_phone	callbackNumber	When the integration populates this field, it should strip off all delimiters and only pass the numeric values.
phone	contactNumber	If trouble call is related to an SP, C2M pass customer phone. If fuzzy call, C2M pass the caller's phone. When the integration populates this field, it should strip off all delimiters and only pass the numeric values.
first_name	contactName	If trouble call is related to an SP, the integration maps it to the main person on the account. If fuzzy call, the integration maps it to the caller's name.
addr_street	address1 or location1	If trouble call is related to an SP, the integration maps it to the customer's premise address1. If fuzzy call, the integration maps it to location1 (It must contain a street name or free format location description).
addr_cross_street	location2	If fuzzy call, check locationType value. If Street Intersection, populate with location2 (It must contain a cross street).
addr_building	blockNumber	If fuzzy call, check locationType value. If Street Segment, populate with blockNumber (it must contain a number).
addr_city_state	city state or locationCity locationState	If trouble call is related to an SP, C2M pass the premise city and state. Concatenation of City, State. If fuzzy call, C2M pass the location city and location state. Concatenation of Location City, Location State. The delimiter provided by the integration is always comma (.). If city or state is blank, no delimiter (,) is needed.

Oracle Utilities Network Management System field	Oracle Utilities Customer to Meter Message Element	Notes
call_ID	callIdentifier	This is the call identifier's external reference ID (i.e. 911 Reference Number).
call_taker	userFirstName userLastName	The name of the user who created the outage call also known as trouble call. Integration will concatenate First name <space> Last Name.
call_comment	Comments	
meet_type	meetType	In NMS, 1 if new appointment is set and '0' - default value for all other type jobs. Valid Values: 0 - for non-meet calls 1 - create new meet 2 - reschedule existing meet 3- cancel existing meet C2M gets the value from FA Char. Use DVM OUC2M_OUNMS_MeetType to translate C2M value to NMS value.
meet_time	meetDateTime	C2M will populate meetDateTime only if meet type = 1.
cancel_flag	Y or null (base on Status)	If Status is Canceled, the integration populate this field with Y, otherwise it is null. Use DVM OUC2M_OUNMS_CallCancelIndicator to translate C2M value to NMS value. outageCallAction The possible values in NMS are: 0 - insert new call 1 - update existing call
update_flag	outageCallAction	Use DVM OUCC_OUNMS_NewCallIndicator to translate C2M value to NMS value.
device_ID	transformerId	May be null if trouble call is not related to a specific SP. In C2M from SP Geo Code for Device.

**Note:** For fuzzy calls, if Location is a street intersection, the mapping of the location from C2M to NMS will be p\_customer\_address = location1 (street name) and addr\_cross\_street (cross street). If Location is a street segment, the mapping of the location from C2M to NMS will be p\_customer\_address = location1 (street name) and addr\_building (block number, this must only be a numeric value).

If Location is other (free format description), the mapping of the location from C2M to NMS will be customer address = location1 (location description). All DateTime coming from C2M will be converted to the ISO8601 format which is YYYY-MM-DDHH:MM:SS.

## Trouble Call Request Message Mapping

Mapping details for Trouble Call Request Message are shown in the table below:

Oracle Utilities Customer to Meter Trouble Call Request Message			Oracle Utilities Network Management System Trouble Call Stored Procedure Input		
Element Name	Parent Element	Type	Element Name	DVM Name	Comments
requestMessage		OutermostTag			
outageCallId	requestMessage	Field	external_ID		
spId	requestMessage	Field	service_point_ID		
premiseId	requestMessage	Field			
accounted	requestMessage	Field	account_ID		
contactName	requestMessage	Field	first_name		
contactNumber	requestMessage	Field	Phone		
callIdentifier	requestMessage	Field	call_ID		
callDateTime	requestMessage	Field	call_time		
OutageCallAction	requestMessage	Field	update_flag	OUC2M_OUNMS_NewCallIndicator	
Status	requestMessage	Field	cancel_flag	OUC2M_OUNMS_CallCancelIndicator	
faComments	requestMessage	Field	call_comment		
userId	requestMessage	Field			
userFirstName	requestMessage	Field	call_taker		
userLastName	requestMessage	Field	call_taker		
country	requestMessage	Field			
addressLine1	requestMessage	Field	addr_street		
addressLine2	requestMessage	Field			



**Oracle Utilities Customer to Meter Trouble Call Request Message**
**Oracle Utilities Network Management System Trouble Call Stored Procedure Input**

Element Name	Parent Element	Type	Element Name	DVM Name	Comments
addressLine3	requestMessage	Field			
addressLine4	requestMessage	Field			
houseType	requestMessage	Field			
number1	requestMessage	Field			
number2	requestMessage	Field			
inCityLimit	requestMessage	Field			
city	requestMessage	Field	city_state		
geographic	requestMessage	Field			
county	requestMessage	Field			
state	requestMessage	Field	city_state		
postal	requestMessage	Field			
locationType	requestMessage	Field			
blockNumber	requestMessage	Field	addr_building		
location1	requestMessage	Field	addr_street		
location2	requestMessage	Field	addr_cross_street		
locationCity	requestMessage	Field	addr_city_state		
locationState	requestMessage	Field	addr_city_state		
meetDateTime	requestMessage	Field	meet_time		
meetType	requestMessage	Field	meet_type	OUC2M_OUNMS_MeetType	
outageCodes	requestMessage	Field	trouble_code		

**Oracle Utilities Customer to Meter Trouble Call Request Message****Oracle Utilities Network Management System Trouble Call Stored Procedure Input**

<b>Element Name</b>	<b>Parent Element</b>	<b>Type</b>	<b>Element Name</b>	<b>DVM Name</b>	<b>Comments</b>
transformerId	requestMessage	Field	device_ID		
callbackRequested	requestMessage	Field	callback_flag	OUC2M_OUNMS_ CallBackIndicator	
callbackDateTime	requestMessage	Field	callback_before_time		
callbackNumber	requestMessage	Field	alt_phone		
customElements	requestMessage				

# Job History Query Process

This section describes data mapping for the following:

- [Job History Query Request Message Mapping](#)
- [Job History Query Response Message Mapping](#)

## Job History Query Request Message Mapping

The schema details Job History Query Request are as shown in the table below:

Oracle Utilities Customer to Meter Request Message Elements			Oracle Utilities Network Management System Field		
Element Name	Parent Element	Type	Element Name	DVM Name	Comments
<jobHistoryRequest>		OutermostTag			
	spId	Field	CID		
	premiseId	Field	PREMISEID		
	accountId	Field	ACCOUNTNUMBER		
	location	Field			
	cityStreet	Field	CITY		
	state	Field	STATE		
	intersection	Field			
	street1	Field	STREET1		
	street2	Field	STREET2		
	intersection	Field			
	segment	Field			
	Street	Field	STREET1		
	Number	Field	BLOCKNUMBER		

Oracle Utilities Customer to Meter Request Message Elements			Oracle Utilities Network Management System Field		
Element Name	Parent Element	Type	Element Name	DVM Name	Comments
	Segment	Field			
	Location	Field			
	externalId	Field	EXTERNALID		
	callIdentifierId	Field	CALLID		
	callerName	Field	CALLERNAME		
	callerPhoneNumber	Field	CALLERPHONE		
			P_CMP_DAYS		
</jobHistoryRequest>					

## Job History Query Response Message Mapping

The schema details Job History Query Response are as shown in the table below:

Oracle Utilities Customer to Meter Response Message Elements			Oracle Utilities Network Management System Field		
Element Name	Parent Element	Type	Element Name	DVM Name	Comments
<jobHistoryRequest>		OutermostTag			
<jobHistory>					
	spId	Field	CID		
	jobStartDateTime	Field	BEGIN_TIME		
	troubleLocation	Field	TROUBLE_LOCATION		
	estimatedRestoration DateTime	Field	EST_REST_TIME		
	actualRestoration DateTime	Field	RESTORE_TIME		

Oracle Utilities Customer to Meter Response Message Elements			Oracle Utilities Network Management System Field		
Element Name	Parent Element	Type	Element Name	DVM Name	Comments
	ertType_Source	Field	EST_SOURCE OUC2M_OUNMS_ETR		
	eventStatus	Field	STATUS	OUC2M_OUNMS_Status	
	alarmState	Field	ALARM_STATE	OUC2M_OUNMS_Alarm_State	
	customersAffected	Field	NUM_CUST_OUT		
	jobId	Field	EVENT_IDX		
	operatorComment	Field	OPERATOR_COMMENT		
	deviceClass	Field	DEVCLS_NAME		
	troubleDescription	Field	TROUBLE_CODE		
	feeder	Field	FEEDER_NAME		
	primaryCause	Field	CAUSE	OUC2M_OUNMS_Cause	
	actionTakenDescription	Field	DESCRIPTION	OUC2M_OUNMS_Error_Code	
	referralGroup	Field	REFERRAL_GROUP		
		Field	P_ERR_NO	OUC2M_OUNMS_Error_Code	
		Field	P_ERR_MSG		
		Field	UDF1		
		Field	UDF2		
		Field	UDF3		
		Field	UDF4		
		Field	UDF5		
	</jobHistory>	Field			

Oracle Utilities Customer to Meter Response Message Elements			Oracle Utilities Network Management System Field		
Element Name	Parent Element	Type	Element Name	DVM Name	Comments
<exceptionInfo>	<messageCategory/>				
	<messageNumber/>	Field			
	<comments/>	Field			
	<messageParms>	Field			
	<parmSequence/>	Field			
	<messageParmValue/>	Field			
	</messageParms>	Field			
</exceptionInfo>					
</jobHistoryResponse>					

# Trouble Call History Query Process

This section describes data mapping for the following:

- [Trouble Call History Query Request Message Mapping](#)
- [Trouble Call History Query Response Message Mapping](#)

## Trouble Call History Query Request Message Mapping

The mapping details for Trouble Call History Query request are as shown in the table below:

Oracle Utilities Customer to Meter Request Message Elements			Oracle Utilities Network Management System Field		
Element Name	Parent Element	Type	Element Name	DVM Name	Comments
<callHistoryRequest>		OutermostTag			
	spId	Field	CID		
	premiseId	Field	PREMISEID		
	accountId	Field	ACCOUNTNUMBER		
	location	Field			
	cityStreet	Field	CITY		
	state	Field	STATE		
	intersection	Field			
	street1	Field	STREET1		
	street2	Field	STREET2		
	intersection	Field			
	segment	Field			
	Street	Field	STREET1		
	Number	Field	BLOCKNUMBER		

Oracle Utilities Customer to Meter Request Message Elements			Oracle Utilities Network Management System Field		
Element Name	Parent Element	Type	Element Name	DVM Name	Comments
	Segment	Field			
	Location	Field			
	externalId	Field	EXTERNALID		
	callIdentifierId	Field	CALLID		
	callerName	Field	CALLERNAME		
	callerPhoneNumber	Field	CALLERPHONE		
			P_NUM_DAYS		
</callHistoryRequest>					

## Trouble Call History Query Response Message Mapping

The mapping details for Trouble Call History Query response are as shown in the table below:

Oracle Utilities Customer to Meter Request Message Elements			Oracle Utilities Network Management System Field		
Element Name	Parent Element	Type	Element Name	DVM Name	Comments
<callHistoryRequest>		OutermostTag			
<callHistory>					
	seq	Field	NUMB		
	spId	Field	CID		
	callDate	Field	INPUT_TIME		
	location	Field			
	complaintDescription	Field			
	callComments	Field			





Oracle Utilities Customer to Meter Request Message Elements			Oracle Utilities Network Management System Field		
Element Name	Parent Element	Type	Element Name	DVM Name	Comments
	<parmSequence/>				
	<messageParmValue/>				
	</messageParms>				
	</exceptionInfo>				
	</callHistoryResponse>				

# Planned Outages Query Process

This section describes data mapping for the following:

- [Planned Outages Query Request Message Mapping](#)
- [Planned Outages Query Response Message Mapping](#)

## Planned Outages Query Request Message Mapping

The mapping details for Planned Outages Query request are as shown in the table below:

Oracle Utilities Customer to Meter Request Message Elements			Oracle Utilities Network Management System Field		
Element Name	Parent Element	Type	Element Name	DVM Name	Comments
<plannedOutages Request>		OutermostTag			
	spId	Field	CID		
	showAllPlannedOutages	Field			
			P_NUM_DAYS		
</plannedOutagesRequest>					

## Planned Outages Query Response Message Mapping

The mapping details for Planned Outages Query response are as shown in the table below:

Oracle Utilities Customer to Meter Request Message Elements			Oracle Utilities Network Management System Field		
Element Name	Parent Element	Type	Element Name	DVM Name	Comments
<plannedOutages Response>					
<plannedOutages>					
	planClass		PLANCLASS		

Oracle Utilities Customer to Meter Request Message Elements			Oracle Utilities Network Management System Field		
Element Name	Parent Element	Type	Element Name	DVM Name	Comments
	outageNumber	planNumber	PLANNUMBER		
	plannedStartDateTime	plannedStartDateTime	START_DATE		
	plannedEndDateTime	plannedEndDateTime	FINISH_DATE		
	plannedOutageSatus	state	STATE		
	workDistrict	workDistrict	WORKDISTRICT		
	workLocation	workLocation	WORKLOCATION		
	workDescription	workDescription	WORKDESCRIPTION		
		errorCode	P_ERR_NO		
		errorMessage	P_ERR_MSG		
		userDefinedField1	UDF1		
		userDefinedField2	UDF2		
		userDefinedField3	UDF3		
		userDefinedField4	UDF4		
		userDefinedField5	UDF5		
		userDefinedField6	UDF6		
		userDefinedField7	UDF7		
		userDefinedField8	UDF8		
		userDefinedField9	UDF9		
		userDefinedField10	UDF10		
<plannedOutages>					
<exceptionInfo>	<messageCategory/>	<messageCategory/>			

Oracle Utilities Customer to Meter Request Message Elements			Oracle Utilities Network Management System Field		
Element Name	Parent Element	Type	Element Name	DVM Name	Comments
	<messageNumber/>	<messageNumber/>			
	<comments/>	<comments/>			
	<messageParms>	<messageParms>			
	<parmSequence/>	<parmSequence/>			
	<messageParmValue/>	<messageParmValue/>			
	</messageParms>	</messageParms>			
	/exceptionInfo>				
	</plannedOutages Response>				

# Notification Contact Preference Process

This section describes data mapping for the following:

- [Notification Contact Preference Request Message Mapping](#)
- [Notification Contact Preference Response Message Mapping](#)

## Notification Contact Preference Request Message Mapping

Mapping details for Notification Contact Preference Data Synchronization Request are shown in the table below:

Oracle Utilities Customer to Meter Request Message Elements OUC2M Notification SP Sync Request Message			Oracle Utilities Network Management System Field OUNMS Create/Update Notification Stored Procedure		
Element Name	Parent Element	Type	Element Name	DVM Name	Comments
sendDetails		OuterMostTag	P_CUST		
syncRequestId	sendDetails				
accountId	sendDetails		CUSTOMER_ACCOUNT		
notificationType	sendDetails		NOTIFICATION_TYPE	OUC2M_OUNMS_ NotificationType.dvm	
notificationEdgeApp	sendDetails				
activeInactive	sendDetails				
division	sendDetails				
customElements	sendDetails				

## Notification Contact Preference Response Message Mapping

Mapping details for Notification Contact Preference Data Synchronization Response are shown in the table below:

OUC2M Notification SP Sync Request Message OUNMS Create/Update Notification Stored Procedure			OUC2M F1- UpdateAndTransitionSyncRequestMessage		
Element Name	Parent Element	Type	Element Name	DVM Name	Comments
sendDetails		OuterMostTag	F1- UpdateAndTransitionSync Request		
syncRequestId	sendDetails		syncRequestId		
OutputParameters		OuterMostTag			
P_ERR_NO	OutputParameters	Field			
			exceptionInfo		
			messageCategory		Send C2M.Generic.MessageCategory property value defined in OUC2MOUNMSConfigurationProperti es.x ml file.
			messageNumber		Send C2M.Generic. MessageNumber property value defined in OUC2MOUNMSConfigurationProperti es.x ml file.
P_ERR_MSG	OutputParameters	Field	comments		
			messageParameters		
			parameterSequence		'1'
P_ERR_MSG	OutputParameters	Field	messageParameterValue		

# Appendix B

## Configuration Properties File

This section lists the configurations stored in the OUC2MOUNMSConfigurationProperties.xml file located under the apps/C2M-NMS/AIAMetaData/config directory.

**For information** about modifying configuration properties, refer to the “[Setting Configuration Properties](#)” section in [Chapter 3: Configuration Guidelines](#).

Two types of configuration properties are managed in the configuration files:

- [Module Configurations](#): Module configurations are the properties that are shared by multiple processes within this integration.
- [Service Configurations](#): Service configurations are the properties that are used by a specific ABCS.

### Module Configurations

Module Configurations have application level properties used by all the SOA composites.

Module Name	Property Name	Default / Shipped Value	Description
C2M-NMS	C2M.Generic.MessageCategory	11114	This is the message category that the integration uses for C2M error messages.
C2M-NMS	C2M.GenericBusinessException.MessageNumber	11001	This is the message number the integration uses for Generic C2M error.
C2M-NMS	C2M.GenericDVMException.MessageNumber	11401	This is the message number the integration uses for DVM error.
C2M-NMS	NMS.MultipleInstance	false	This is the property to enable support for single or multiple NMS instance. Default value is false and false means integration support with single C2M integration and single NMS instance. Please refer the installation to configure multiple NMS instance.
C2M-NMS	SOA-INFRA.AuditLevel	ON	This property needs to be set to OFF if the Audit Level is set to off for the BPEL processes. If this is set to OFF the Error Handling does not use the composite and component instance IDs to log the error message.
C2M-NMS	ErrorHandling.GenericEmailID		This property is used to set the administrator email ID for the errorhandling process to send out an email in case of a critical failure where even the Errorhandling process fails.



Module Name	Property Name	Default / Shipped Value	Description
C2M-NMS	DVM.OUC2M_OUNMS_ETR_SOURCE .ThrowException	false	<p>This flag indicates if an error is triggered when the DVM lookup value is not found for DVM OUC2M_OUNMS_ETR_SOURCE.</p> <p>If set to true, the integration triggers a DVM exception error to the initiating application.</p> <p>If set to false, the integration does not trigger any exception and instead passes the source application value as the default value to the target application.</p>
C2M-NMS	NMS.CCBCallSourceID	CC	Source ID is required for NMS to identify the source system.
C2M-NMS	DVM.OUC2M_OUNMS_Job_History_Status .ThrowException	false	<p>This flag indicates if an error is triggered when the DVM lookup value is not found for DVM OUC2M_OUNMS_Job_History_Status.</p> <p>If set to true, the integration triggers a DVM exception error to the initiating application.</p> <p>If set to false, the integration does not trigger any exception and instead passes the source application value as the default value to the target application.</p>
C2M-NMS	DVM.OUC2M_OUNMS_Alarm_State .ThrowException	false	<p>This flag indicates if an error is triggered when the DVM lookup value is not found for DVM OUC2M_OUNMS_Alarm_State.</p> <p>If set to true, the integration triggers a DVM exception error to the initiating application.</p> <p>If set to false, the integration does not trigger any exception and instead passes the source application value as the default value to the target application.</p>
C2M-NMS	DVM.OUC2M_OUNMS_CALL_STATUS .ThrowException	false	<p>This flag indicates if an error is triggered when the DVM lookup value is not found for DVM OUC2M_OUNMS_CALL_STATUS.</p> <p>If set to true, the integration triggers a DVM exception error to the initiating application.</p> <p>If set to false, the integration does not trigger any exception and instead passes the source application value as the default value to the target application.</p>
C2M-NMS	DVM.OUC2M_OUNMS_CallBackIndicator .ThrowException	false	<p>This flag indicates if an error is triggered when the DVM lookup value is not found for DVM OUC2M_OUNMS_CallBackIndicator.</p> <p>If set to true, the integration triggers a DVM exception error to the initiating application.</p> <p>If set to false, the integration does not trigger any exception and instead passes the source application value as the default value to the target application.</p>

Module Name	Property Name	Default / Shipped Value	Description
C2M-NMS	DVM.OUC2M_OUNMS_MeetType .ThrowException	false	<p>This flag indicates if an error is triggered when the DVM lookup value is not found for DVM.</p> <p>If set to true, the integration triggers a DVM exception error to the initiating application.</p> <p>If set to false, the integration does not trigger any exception and instead passes the source application value as the default value to the target application.</p>
C2M-NMS	DVM.OUC2M_OUNMS_NewCallIndicator .ThrowException	false	<p>This flag indicates if an error is triggered when the DVM lookup value is not found for DVM.</p> <p>If set to true, the integration triggers a DVM exception error to the initiating application.</p> <p>If set to false, the integration does not trigger any exception and instead passes the source application value as the default value to the target application.</p>
C2M-NMS	DVM.OUC2M_OUNMS_CallCancelIndicator .ThrowException	false	<p>This flag indicates if an error is triggered when the DVM lookup value is not found for DVM.</p> <p>If set to true, the integration triggers a DVM exception error to the initiating application.</p> <p>If set to false, the integration does not trigger any exception and instead passes the source application value as the default value to the target application.</p>
C2M-NMS	DVM.OUC2M_OUNMS_AccountType .ThrowException	false	<p>This flag indicates if an error is triggered when the DVM lookup value is not found for DVM.</p> <p>If set to true, the integration triggers a DVM exception error to the initiating application.</p> <p>If set to false, the integration does not trigger any exception and instead passes the source application value as the default value to the target application.</p>
C2M-NMS	DVM.OUC2M_OUNMS_MeterType .ThrowException	false	<p>This flag indicates if an error is triggered when the DVM lookup value is not found for DVM.</p> <p>If set to true, the integration triggers a DVM exception error to the initiating application.</p> <p>If set to false, the integration does not trigger any exception and instead passes the source application value as the default value to the target application.</p>
C2M-NMS	DVM.OUC2M_OUNMS_Serv_C_Priority .ThrowException	false	<p>This flag indicates if an error is triggered when the DVM lookup value is not found for DVM.</p> <p>If set to true, the integration triggers a DVM exception error to the initiating application.</p> <p>If set to false, the integration does not trigger any exception and instead passes the source application value as the default value to the target application.</p>

Module Name	Property Name	Default / Shipped Value	Description
C2M-NMS	DVM.OUC2M_OUNMS_Serv_D_Priority .ThrowException	false	This flag indicates if an error is triggered when the DVM lookup value is not found for DVM.  If set to true, the integration triggers a DVM exception error to the initiating application.  If set to false, the integration does not trigger any exception and instead passes the source application value as the default value to the target application.
C2M-NMS	DVM.OUC2M_OUNMS_Serv_K_Priority .ThrowException	false	This flag indicates if an error is triggered when the DVM lookup value is not found for DVM.  If set to true, the integration triggers a DVM exception error to the initiating application.  If set to false, the integration does not trigger any exception and instead passes the source application value as the default value to the target application.
C2M-NMS	DVM.OUC2M_OUNMS_LifeSupportIndicator .ThrowException	false	This flag indicates if an error is triggered when the DVM lookup value is not found for DVM.  If set to true, the integration triggers a DVM exception error to the initiating application.  If set to false, the integration does not trigger any exception and instead passes the source application value as the default value to the target application.
C2M-NMS	DVM.OUC2M_OUNMS_ErrorCode .ThrowException	false	This flag is not used by the integration.
C2M-NMS	DVM.OUC2M_OUNMS_LifeSupportIndicator _FALSE_VALUE	0	This is the NMS value for life support if it is false.
C2M-NMS	DVM.OUC2M_OUNMS_LifeSupportIndicator _TRUE_VALUE	1	This is the NMS value for life support if it is true. This value is used to verify that the CCB life support value in the premise info or person info is true then the NMS value has to be set to true.

# Service Configurations

Service Configuration properties are specific to SOA composites. These are used to make changes in specific composite behavior.

Service Name	Property Name	Default / Shipped Value or System ID of Initiating System	Description
<b>Customer Data Synchronization Process</b>			
OUCCBOUNMSCustomerDataSyncReq EBF	BusinessError.NotificationFlag	true	If set to true, the business error notification is sent via email.
	TechnicalError.NotificationFlag	true	If set to true, the technical error notification is sent via email.
OUC2MOUNMSCustomerSyncJMSRead Svc	OUC2M.F1-UpdateAndTransitionSyncRequest.Endpoint.URL	https://C2M_HOST:PORT/C2M_ContextRoot/F1-UpdateAndTransitionSyncRequest	The C2M Endpoint URL for F1 Update and Transition Sync.
<b>Trouble Call Entry Process</b>			
OUC2MOUNMSTroubleCallInterfaceEBF	Default.SystemID	OU_C2M_01	Initiating system ID
	Extension.PreXformC2MtoNMS	False	If set to true, the pre transformation extension service is invoked.
	Extension.PostXformC2MtoNMS	False	If set to true, the post transformation extension service is invoked.
	NMS.C2MCallSourceID	2	Define unique call source ID for C2M. <ul style="list-style-type: none"> <li>• This C2M call source ID indicates that the trouble call was created in C2M.</li> <li>• This will also ensure that the external ID in the trouble calls table will have a unique value. NMS will prefix the call source ID to the external ID coming from C2M.</li> </ul>

Service Name	Property Name	Default / Shipped Value or System ID of Initiating System	Description
	C2M.LocationType.StreetIntersection	C1IS	<p>C2M uses the location type to determine whether a street intersection or street segment was populated for the location of a fuzzy call.</p> <p>This is the C2M Location Type value for Street Segment.</p> <p>Location Type coming from C2M is not mapped to NMS.</p> <p>It is only used by the integration for the mapping of the cross street or block number.</p>
	C2M.LocationType.StreetSegment	C1SS	<p>C2M uses the location type to determine whether a street intersection or street segment was populated for the location of a fuzzy call.</p> <p>This is the C2M Location Type value for Street Intersection.</p> <p>Location Type coming from C2M is not mapped to NMS.</p> <p>It is only used by the integration for the mapping of the cross street or block number.</p>
	BusinessError.NotificationFlag	false	If set to true, the business error notification is sent via email.
	TechnicalError.NotificationFlag	false	If set to true, the technical error notification is sent via email.
<b>Job History Query Process</b>			
OUC2MOUNMSJobHistoryQuery	Default.SystemID	OU_C2M_01	Initiating system ID.
	Extension.PreXformC2MtoNMS	false	If set to true, the pre transformation extension service is invoked.
	Extension.PostXformC2MtoNMS	false	If set to true, the post transformation extension service is invoked.

Service Name	Property Name	Default / Shipped Value or System ID of Initiating System	Description
	Extension.PreXformNMStoC2M	false	If set to true, the pre transformation extension service is invoked.
	Extension.PostXformNMStoC2M	false	If set to true, the post transformation extension service is invoked.
	NMS.NumberOfDaysOfHistory	60	Define the Number of Days Of Job History to return.
	BusinessError.NotificationFlag	true	If set to true, the business error notification is sent via email.
	TechnicalError.NotificationFlag	true	If set to true, the technical error notification is sent via email.
<b>Trouble Call History Query Process</b>			
OUC2MOUNMSTroubleCallsQueryEBF	Default.SystemID	OU_C2M_01	Initiating system ID.
	Extension.PreXformC2MtoNMS	false	If set to true, the pre transformation extension service is invoked.
	Extension.PostXformC2MtoNMS	false	If set to true, the post transformation extension service is invoked.
	Extension.PreXformNMStoC2M	false	If set to true, the pre transformation extension service is invoked.
	Extension.PostXformNMStoC2M	false	If set to true, the post transformation extension service is invoked.
	NMS.NumberOfDaysOfHistory	60	Define the Number of Days Of Call History to return
	BusinessError.NotificationFlag	true	If set to true, the business error notification is sent via email.
	TechnicalError.NotificationFlag	true	If set to true, the technical error notification is sent via email.
<b>Planned Outages Query Process</b>			
OUC2MOUNMSPlannedOutagesQuery EBF	Default.SystemID	OU_C2M_01	Initiating system ID.

Service Name	Property Name	Default / Shipped Value or System ID of Initiating System	Description
	Extension.PreXformC2MtoNMS	false	If set to true, the pre transformation extension service is invoked.
	Extension.PostXformC2MtoNMS	false	If set to true, the post transformation extension service is invoked.
	Extension.PreXformNMStoC2M	false	If set to true, the pre transformation extension service is invoked.
	Extension.PostXformNMStoC2M	false	If set to true, the post transformation extension service is invoked.
	NMS.NumberOfDaysOfHistory	10	Define the Number of Days Of Planned Outages to return.
	BusinessError.NotificationFlag	true	If set to true, the business error notification is sent via email.
	TechnicalError.NotificationFlag	true	If set to true, the technical error notification is sent via email.







# Appendix C

## Domain Value Maps (DVMs)

The following table lists the DVMs included for the integration.

**For information** on creating DVMs refer to the “[Setting Domain Value Maps](#)” section in [Chapter 3: Configuration Guidelines](#).

**For more information** about on working with DVMs, see the section “Working with Domain Value Maps” in Oracle Fusion Middleware Developing SOA Applications with Oracle SOA Suite documentation.

DVM	Integration Points	Description	C2M/NMS Values
OUC2M_OUNMS_AccountType	Customer Data Synchronization	DVM mapping for C2M Service Type Code to the to NMS Account Type.	OUC2M_ServiceType - This contains the valid C2M values for 'Service Type'.  OUNMS_AccountType - This contains the valid NMS values for 'Account Type'.
OUC2M_OUNMS_Alarm_State	Job History Query	DVM mapping for Alarm State Code	OUC2M_Alarm_State - This contains the valid C2M values for 'Alarm State'. These values are obtained from C2M lookup C1_ALARM_STATE_FLG.  OUNMS_Alarm_State - This contains the valid NMS values for 'Alarm State'.
OUC2M_OUNMS_Call_Status	Trouble Call History Query	DVM mapping for Call Status Code	OUC2M_Call_Status - This contains the valid C2M values for 'Call Status'. These values are obtained from C2M lookup C1_CALL_STATUS_FLG.  OUNMS_Call_Status - This contains the valid NMS values for 'Call Status'.
OUC2M_OUNMS_CallBackIndicator	Trouble Call Interface	DVM mapping for Call Back Indicator	OUC2M_CallbackRequested - This contains the valid C2M values for 'Callback Requested'.  OUNMS_CallbackFlag - This contains the valid NMS values for 'Callback Flag'.

DVM	Integration Points	Description	C2M/NMS Values
OUC2M_OUNMS_CallCancelIndicator	Trouble Call Interface	DVM mapping for Call Cancel Indicator	OUC2M_Status - This contains the valid C2M values for 'Call Cancel'.  OUNMS_CallCancelFlag - This contains the valid NMS values for 'Call Cancel Flag'.
OUC2M_OUNMS_Cause	Job History Query	DVM mapping for Cause Code	OUC2M_Cause - This contains the valid C2M values for 'Cause'.  OUNMS_CauseFlag - This contains the valid NMS values for 'Cause Flag'.
OUC2M_OUNMS_ETR_Source	Job History Query	DVM mapping for ETR Source Code	OUC2M_ETR_Source - This contains the valid C2M values for 'ETR Source'. These values are obtained from C2M lookup C1_ETR_SOURCE_FLG.  OUNMS_ETR_Source - This contains the valid NMS values for 'ETR Source'.
OUC2M_OUNMS_Job_History_Status	Job History Query	DVM mapping for Job History Status Code	OUC2M_Job_History_Status - This contains the valid C2M values for 'ETR Source'. These values are obtained from C2M lookup C1_ETR_SOURCE_FLG  OUNMS_Job_History_Status - This contains the valid NMS values for 'Job History Status'.
OUC2M_OUNMS_LifeSupportIndicator	Customer Data Synchronization	DVM mapping for Life Support Indicator	OUC2M_LifeSupportIndicator - This contains the valid C2M values for 'Life Support Indicator'.  OUNMS_LifeSupportIndicator - This contains the valid NMS values for 'Life Support Indicator'.
OUC2M_OUNMS_MeetType	Trouble Call Interface	DVM mapping for Meet Type Code	OUC2M_MeetType - This contains the valid C2M values for 'Meet Type'.  OUNMS_MeetType - This contains the valid NMS values for 'Meet Type'.
OUC2M_OUNMS_MeterType	Customer Data Synchronization	DVM mapping for Meter Type Code	OUC2M_MeterType - This contains the valid C2M values for 'Meter Type'.  OUNMS_MeterType - This contains the valid NMS values for 'Meet Type'.
OUC2M_OUNMS_NewCallIndicator	Trouble Call Interface	DVM mapping for New Call Indicator	OUC2M_OutageCallAction - This contains the valid C2M values for 'Outage Call Action Flag'. These values are obtained from C2M lookup C1_OUTCALL_ACT_FLG.  OUNMS_UpdateExistingFlag - This contains the valid NMS values for 'Update Existing Flag'.

DVM	Integration Points	Description	C2M/NMS Values
OUC2M_OUNMS_Serv_C_Priority	Customer Data Synchronization	DVM mapping for Critical Priority Code	OUC2M_Serv_C_Priority - This contains the valid C2M values for 'Serv C Priority'.  OUNMS_Serv_C_Priority - This contains the valid NMS values for 'Serv C Priority'
OUC2M_OUNMS_Serv_D_Priority	Customer Data Synchronization	DVM mapping for Medical Priority Code	OUC2M_Serv_D_Priority - This contains the valid C2M values for 'Serv D Priority'.  OUNMS_Serv_D_Priority - This contains the valid NMS values for 'Serv D Priority'
OUC2M_OUNMS_Serv_K_Priority	Customer Data Synchronization	DVM mapping for Key Priority Code	OUC2M_Serv_K_Priority - This contains the valid C2M values for 'Serv K Priority'.  OUNMS_Serv_K_Priority - This contains the valid NMS values for 'Serv K Priority'
OUC2M_OUNMS_Instance	Customer Data Sync Submit trouble call Query Job history Query trouble call Planned outage	DVM mapping for Key Priority Code	OUC2M_CISDivision - This contains the valid C2M CIS division.  OUNMS_JNDIInstance - This contains the valid JNDI value pointing to NMS instance for the CIS division. The value should be within double quotes.  For example "eis/DB/NMSJDBCDataSource"
OUC2M_OUNMS_Serv_A_Priority	Customer Data Synchronization	DVM mapping for Key Priority Code	OUC2M_Serv_A_Priority - This contains the valid C2M values for 'Serv A Priority'.  OUNMS_Serv_A_Priority - This contains the valid NMS values for 'Serv A Priority'
OUC2M_OUNMS_Serv_B_Priority	Customer Data Synchronization	DVM mapping for Key Priority Code	OUC2M_Serv_B_Priority - This contains the valid C2M values for 'Serv B Priority'.  OUNMS_Serv_B_Priority - This contains the valid NMS values for 'Serv B Priority'

DVM	Integration Points	Description	C2M/NMS Values
OUC2M_OUNMS_Serv_E_Priority	Customer Data Synchronization	DVM mapping for Key Priority Code	OUC2M_Serv_E_Priority - This contains the valid C2M values for 'Serv E Priority'.  OUNMS_Serv_E_Priority - This contains the valid NMS values for 'Serv E Priority'
OUC2M_OUNMS_Serv_F_Priority	Customer Data Synchronization	DVM mapping for Key Priority Code	OUC2M_Serv_F_Priority - This contains the valid C2M values for 'Serv F Priority'.  OUNMS_Serv_F_Priority - This contains the valid NMS values for 'Serv F Priority'
OUC2M_OUNMS_Serv_G_Priority	Customer Data Synchronization	DVM mapping for Key Priority Code	OUC2M_Serv_G_Priority - This contains the valid C2M values for 'Serv G Priority'.  OUNMS_Serv_G_Priority - This contains the valid NMS values for 'Serv G Priority'
OUC2M_OUNMS_Serv_H_Priority	Customer Data Synchronization	DVM mapping for Key Priority Code	OUC2M_Serv_H_Priority - This contains the valid C2M values for 'Serv H Priority'.  OUNMS_Serv_H_Priority - This contains the valid NMS values for 'Serv H Priority'
OUC2M_OUNMS_Serv_I_Priority	Customer Data Synchronization	DVM mapping for Key Priority Code	OUC2M_Serv_I_Priority - This contains the valid C2M values for 'Serv I Priority'.  OUNMS_Serv_I_Priority - This contains the valid NMS values for 'Serv I Priority'
OUC2M_OUNMS_Serv_J_Priority	Customer Data Synchronization	DVM mapping for Key Priority Code	OUC2M_Serv_J_Priority - This contains the valid C2M values for 'Serv J Priority'.  OUNMS_Serv_J_Priority - This contains the valid NMS values for 'Serv J Priority'
OUC2M_OUNMS_Serv_L_Priority	Customer Data Synchronization	DVM mapping for Key Priority Code	OUC2M_Serv_L_Priority - This contains the valid C2M values for 'Serv L Priority'.  OUNMS_Serv_L_Priority - This contains the valid NMS values for 'Serv L Priority'

DVM	Integration Points	Description	C2M/NMS Values
OUC2M_OUNMS_Serv_M_Priority	Customer Data Synchronization	DVM mapping for Key Priority Code	OUC2M_Serv_M_Priority - This contains the valid C2M values for 'Serv M Priority'.  OUNMS_Serv_M_Priority - This contains the valid NMS values for 'Serv M Priority'
OUC2M_OUNMS_Serv_N_Priority	Customer Data Synchronization	DVM mapping for Key Priority Code	OUC2M_Serv_N_Priority - This contains the valid C2M values for 'Serv N Priority'.  OUNMS_Serv_N_Priority - This contains the valid NMS values for 'Serv N Priority'
OUC2M_OUNMS_Serv_O_Priority	Customer Data Synchronization	DVM mapping for Key Priority Code	OUC2M_Serv_O_Priority - This contains the valid C2M values for 'Serv O Priority'.  OUNMS_Serv_O_Priority - This contains the valid NMS values for 'Serv O Priority'
OUC2M_OUNMS_Serv_P_Priority	Customer Data Synchronization	DVM mapping for Key Priority Code	OUC2M_Serv_P_Priority - This contains the valid C2M values for 'Serv P Priority'.  OUNMS_Serv_P_Priority - This contains the valid NMS values for 'Serv P Priority'
OUC2M_OUNMS_Serv_Q_Priority	Customer Data Synchronization	DVM mapping for Key Priority Code	OUC2M_Serv_Q_Priority - This contains the valid C2M values for 'Serv Q Priority'.  OUNMS_Serv_Q_Priority - This contains the valid NMS values for 'Serv Q Priority'
OUC2M_OUNMS_Serv_R_Priority	Customer Data Synchronization	DVM mapping for Key Priority Code	OUC2M_Serv_R_Priority - This contains the valid C2M values for 'Serv R Priority'.  OUNMS_Serv_R_Priority - This contains the valid NMS values for 'Serv R Priority'
OUC2M_OUNMS_Serv_S_Priority	Customer Data Synchronization	DVM mapping for Key Priority Code	OUC2M_Serv_S_Priority - This contains the valid C2M values for 'Serv S Priority'.  OUNMS_Serv_S_Priority - This contains the valid NMS values for 'Serv S Priority'

DVM	Integration Points	Description	C2M/NMS Values
OUC2M_OUNMS_Serv_T_Priority	Customer Data Synchronization	DVM mapping for Key Priority Code	OUC2M_Serv_T_Priority - This contains the valid C2M values for 'Serv T Priority'.  OUNMS_Serv_T_Priority - This contains the valid NMS values for 'Serv T Priority'
OUC2M_OUNMS_Serv_U_Priority	Customer Data Synchronization	DVM mapping for Key Priority Code	OUC2M_Serv_U_Priority - This contains the valid C2M values for 'Serv U Priority'.  OUNMS_Serv_U_Priority - This contains the valid NMS values for 'Serv U Priority'
OUC2M_OUNMS_Serv_V_Priority	Customer Data Synchronization	DVM mapping for Key Priority Code	OUC2M_Serv_V_Priority - This contains the valid C2M values for 'Serv V Priority'.  OUNMS_Serv_V_Priority - This contains the valid NMS values for 'Serv V Priority'
OUC2M_OUNMS_Serv_X_Priority	Customer Data Synchronization	DVM mapping for Key Priority Code	OUC2M_Serv_X_Priority - This contains the valid C2M values for 'Serv X Priority'.  OUNMS_Serv_X_Priority - This contains the valid NMS values for 'Serv X Priority'
OUC2M_OUNMS_Serv_Y_Priority	Customer Data Synchronization	DVM mapping for Key Priority Code	OUC2M_Serv_Y_Priority - This contains the valid C2M values for 'Serv Y Priority'.  OUNMS_Serv_Y_Priority - This contains the valid NMS values for 'Serv Y Priority'
OUC2M_OUNMS_Serv_Z_Priority	Customer Data Synchronization	DVM mapping for Key Priority Code	OUC2M_Serv_Z_Priority - This contains the valid C2M values for 'Serv Z Priority'.  OUNMS_Serv_Z_Priority - This contains the valid NMS values for 'Serv Z Priority'

