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

Implementation Guide

Release 14.1

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Oracle Utilities Customer to Meter Integration to Oracle Utilities Network Management System Implementation Guide, Release 14.1

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Preface

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

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

The preface includes the following:

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	https://docs.oracle.com/en/industries/energy-water/integrations-index.html
Oracle Utilities Customer to Meter documentation	https://docs.oracle.com/en/industries/energy-water/c2m/index.html
Oracle Utilities Customer Cloud Service documentation	https://docs.oracle.com/en/industries/utilities/customer-cloud-service/index.html
Oracle Utilities Meter Data Management documentation	https://docs.oracle.com/en/industries/energy-water/meter-data-management/index.html
Oracle Utilities Network Management System documentation	https://docs.oracle.com/en/industries/energy-water/network-management-system/index.html

Additional Documentation

Resource	Location
SOA Suite 14c (14.1.2) documentation	Refer to the SOA documentation at: https://docs.oracle.com/en/middleware/soa-suite/soa/14.1.2/index.html
My Oracle Support	Visit My Oracle Support regularly to stay informed about product updates and patches. Refer to the Certification Matrix for Oracle Utilities Products (Doc ID 1454143.1) on My Oracle Support to determine if support for newer versions of the listed products is included.

Resource	Location
Oracle Help Center for latest documentation	Visit the Oracle Utilities Integrations page at: https://docs.oracle.com/en/industries/energy-water/cloud-integrations/index.html
Oracle University for training opportunities	http://education.oracle.com/
Web Services Security	For more information about web services security using Oracle Fusion Middleware, refer to: https://docs.oracle.com/en/middleware/fusion-middleware/14.1.2/develop-secure-web-services-tasks.html
Oracle Fusion Middleware 14c (14.1.2) documentation	Refer to the Oracle applications documentation page at: https://docs.oracle.com/en/middleware/soa-suite/soa/14.1.2/index.html
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.	https://docs.oracle.com/en/middleware/fusion-middleware/weblogic-server/14.1.2/notes/whatsnew.html#NOTES107
Instructions on installing this integration on non-Windows/ Linux platforms	Refer to the Knowledge Article ID 1349320.1 on My Oracle Support.

Documentation Accessibility

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

Access to Oracle Support

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

Conventions

The following text conventions are used in this document:

Convention	Meaning
boldface	Boldface type indicates graphical user interface elements associated with an action, or terms defined in text or the glossary.

Convention	Meaning
italic	Italic type indicates book titles, emphasis, or placeholder variables for which you supply particular values.
`monospace`	Monospace type indicates commands within a paragraph, URLs, code in examples, text that appears on the screen, or text that you enter.

Abbreviations

The following terms and acronyms are used throughout this guide.

Application Names

Term	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 - CCB 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

Term	Description
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

Chapter 1

Integration Overview

This chapter includes the following:

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.

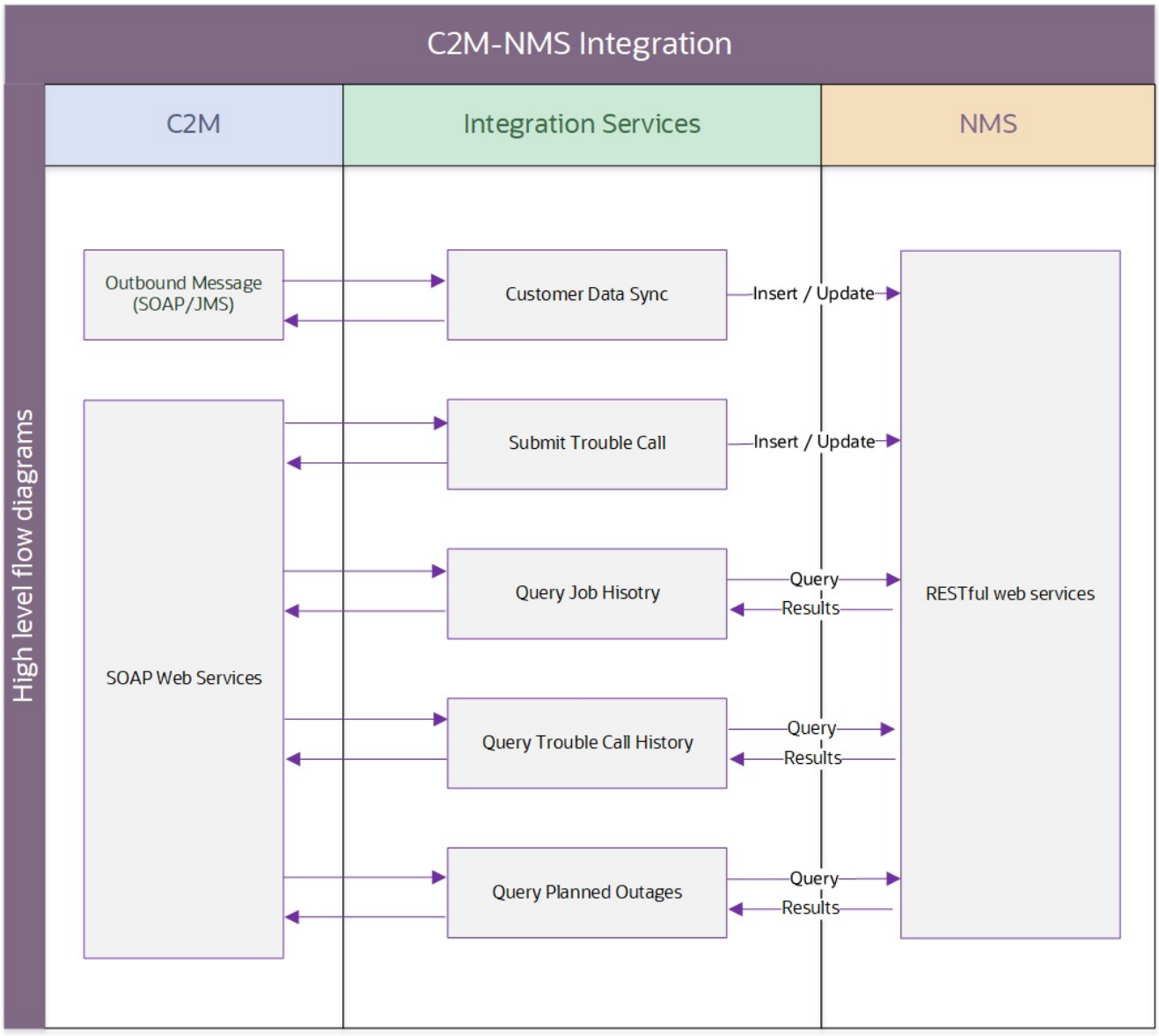
Supported Business Processes

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.

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



Chapter 2

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

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.

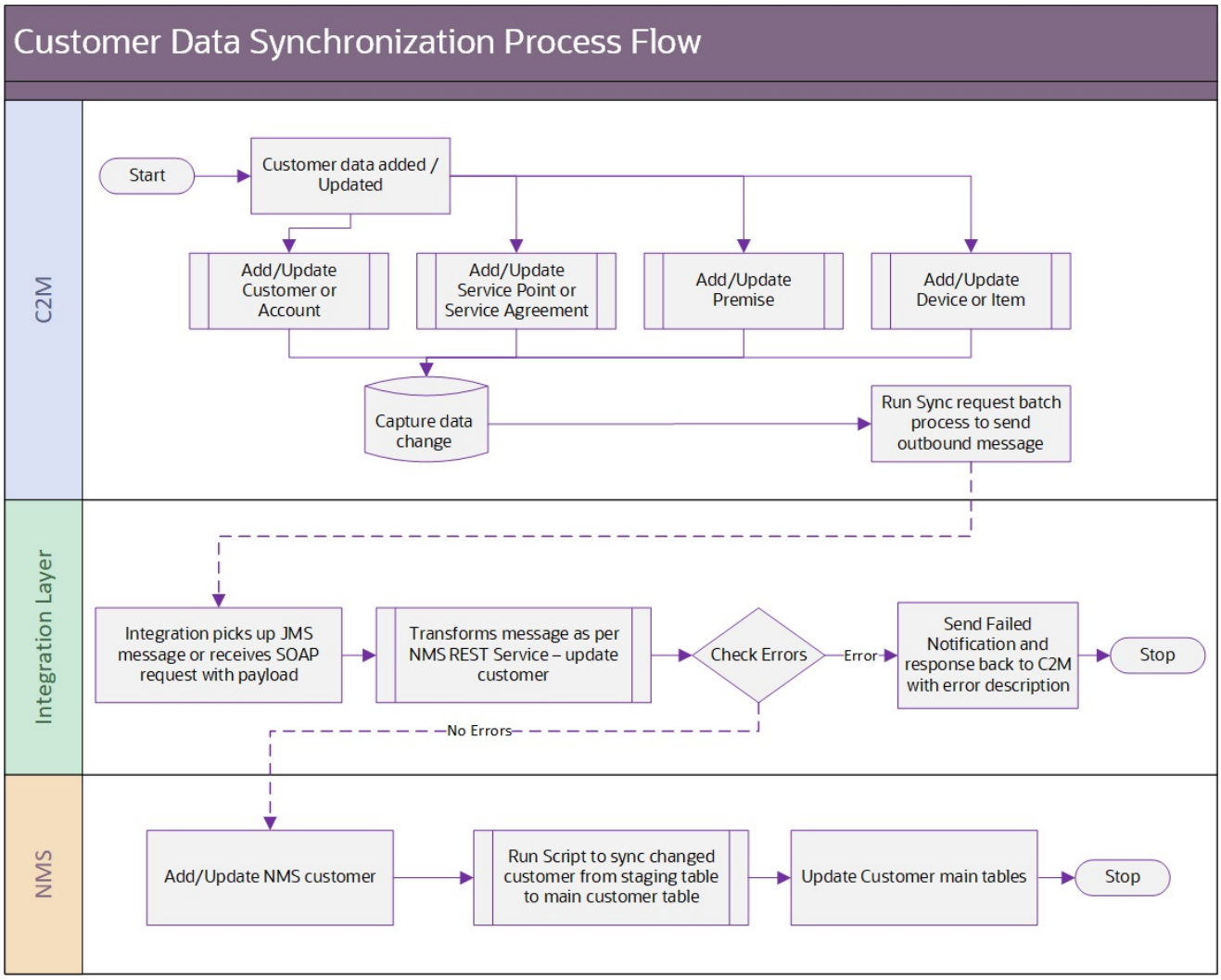
Refer to the Customer Data Synchronization Process section for message mapping information for this integration point.

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

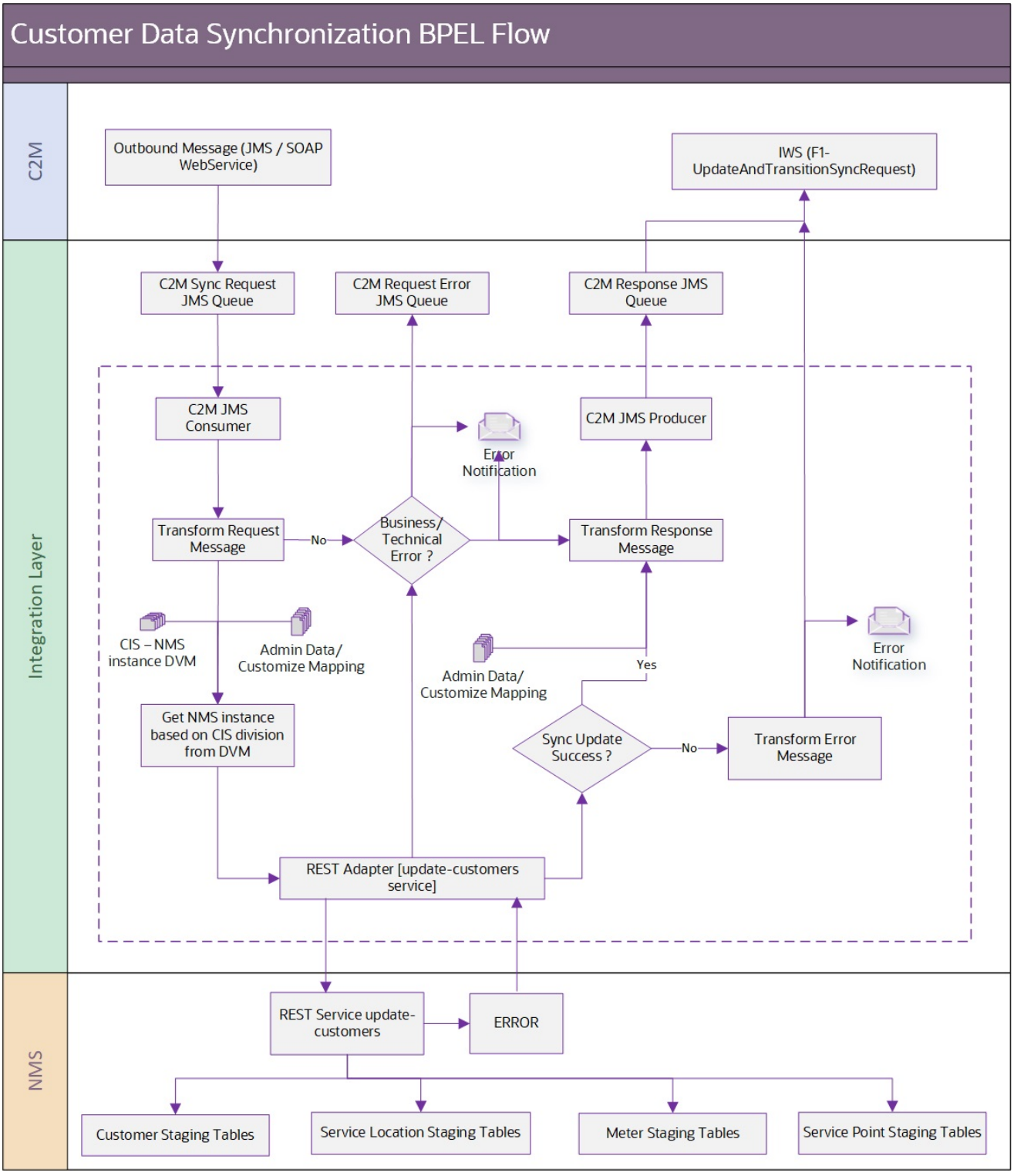
This integration point supports a-synchronous data synchronization from Oracle Utilities Customer to Meter to Oracle Utilities Network Management System with the following processing:

- 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 REST service 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 request service 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.
  - Rest Adapter interacts with the Oracle Utilities Network Management System REST service to invoke update-customers to insert/update customer information in the Oracle Utilities Network Management System customer related.
  - 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 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 update-customers REST service 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 synchronization 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 Oracle Utilities Network Management System 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 Application 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 the execution to insert or update one of the customer related data, the customer-update service 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 service issues a rollback on all successful activities that were issued.

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 is down or if there are connectivity errors.

Integration Service

These values are cross referenced in the Service Configurations section.

Name	Description
OUC2MOUNMSCustomerSyncEBF	C2M-NMS Customer Data Sync BPEL Process 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.

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.
OUCCBOUNMSUpdateCustomersRest AdapterRef	NMS REST Adapter - update-customer service. 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.

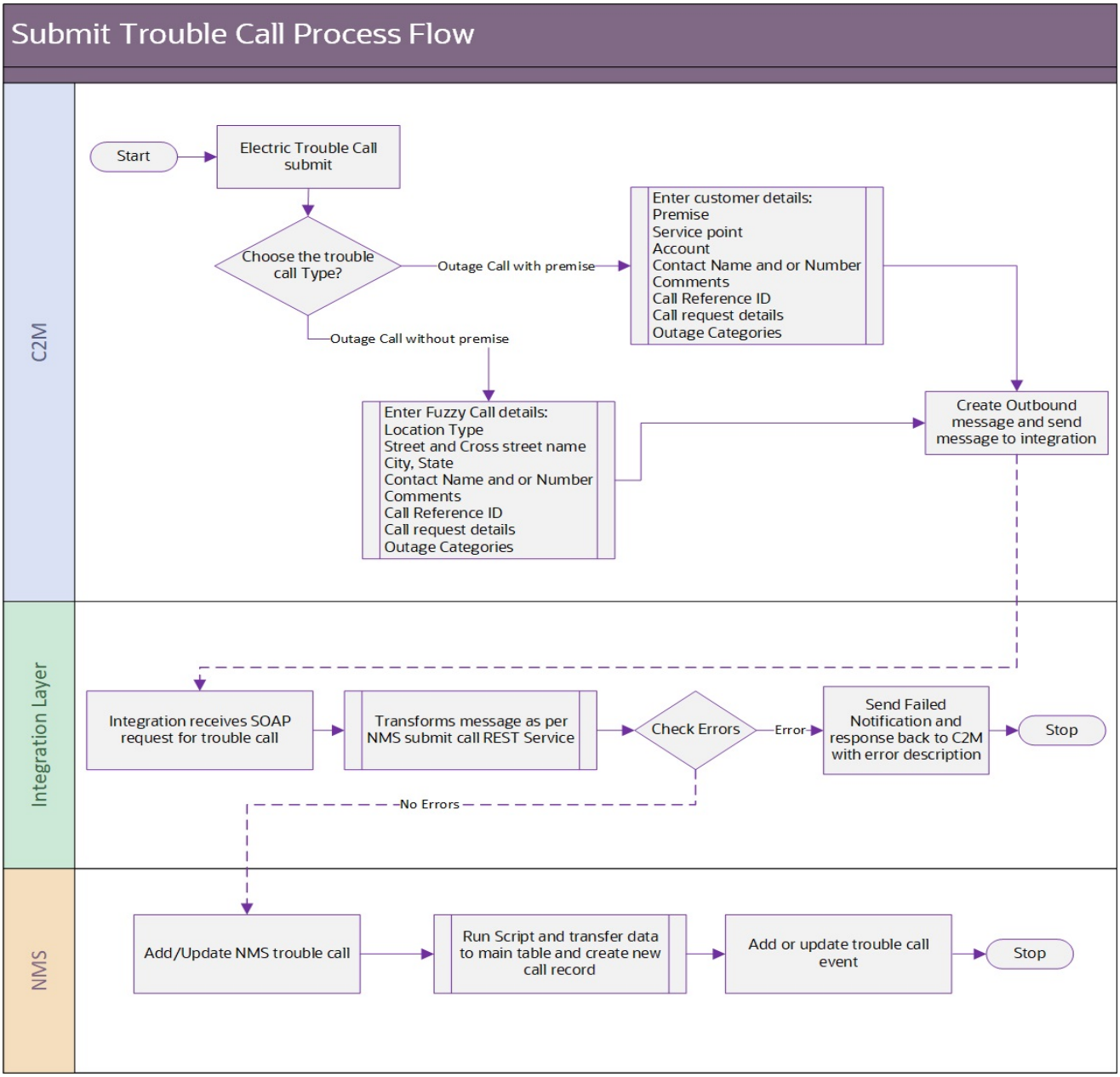
Supported Functionality

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 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.

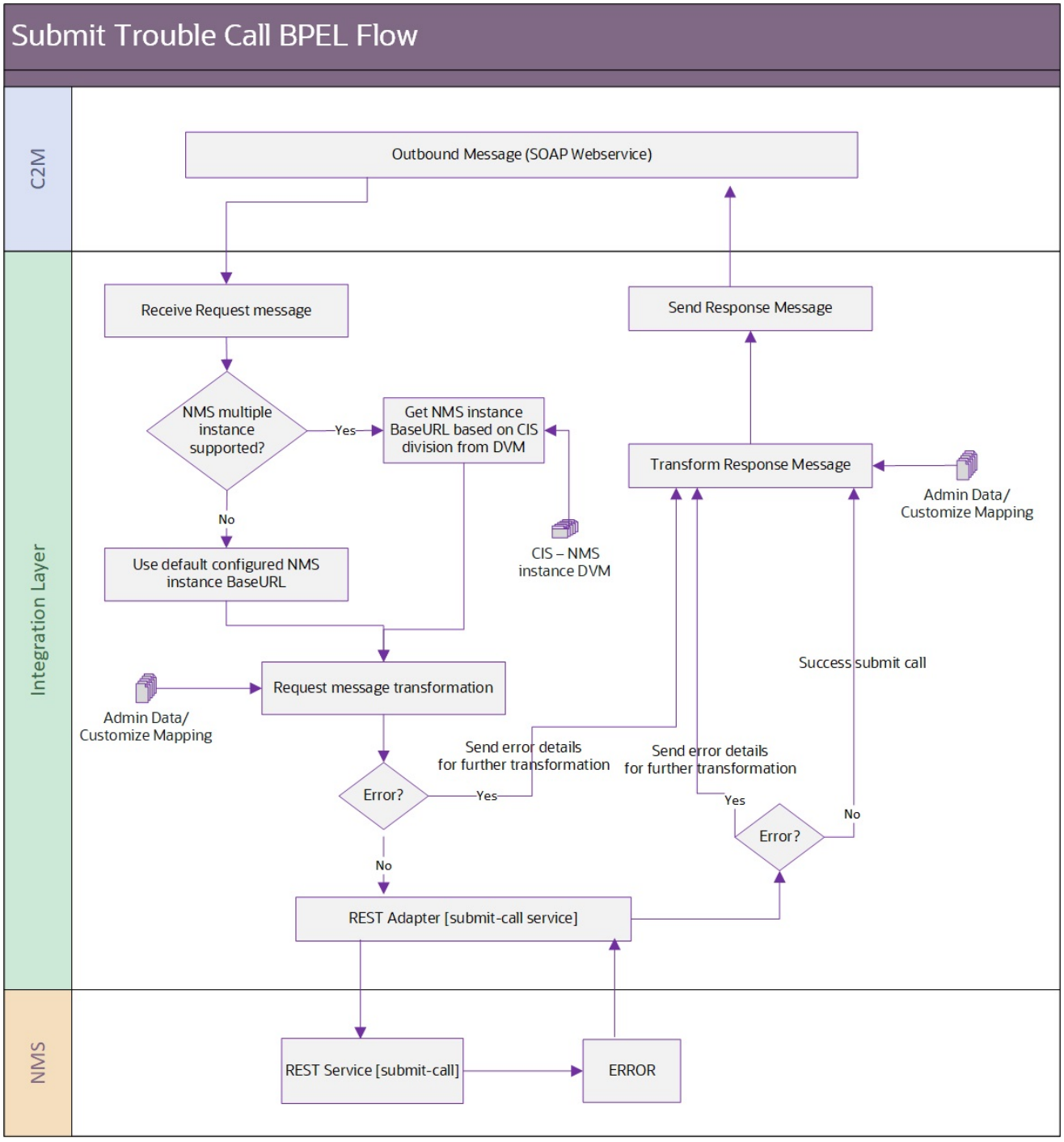
Integration Process and Technical Details

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 REST Service 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 REST Adapter to interact with the Oracle Utilities Network Management System to invoke the Oracle Utilities Network Management System trouble calls Rest Service submit-calls that inserts/updates the trouble call record to the Trouble Calls table.

- 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.

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
OUCCBOUNMSSubmitTrouble CallRestAdapterRef	NMS REST Adapter: Insert Trouble Calls using NMS Rest API submit-calls. 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.

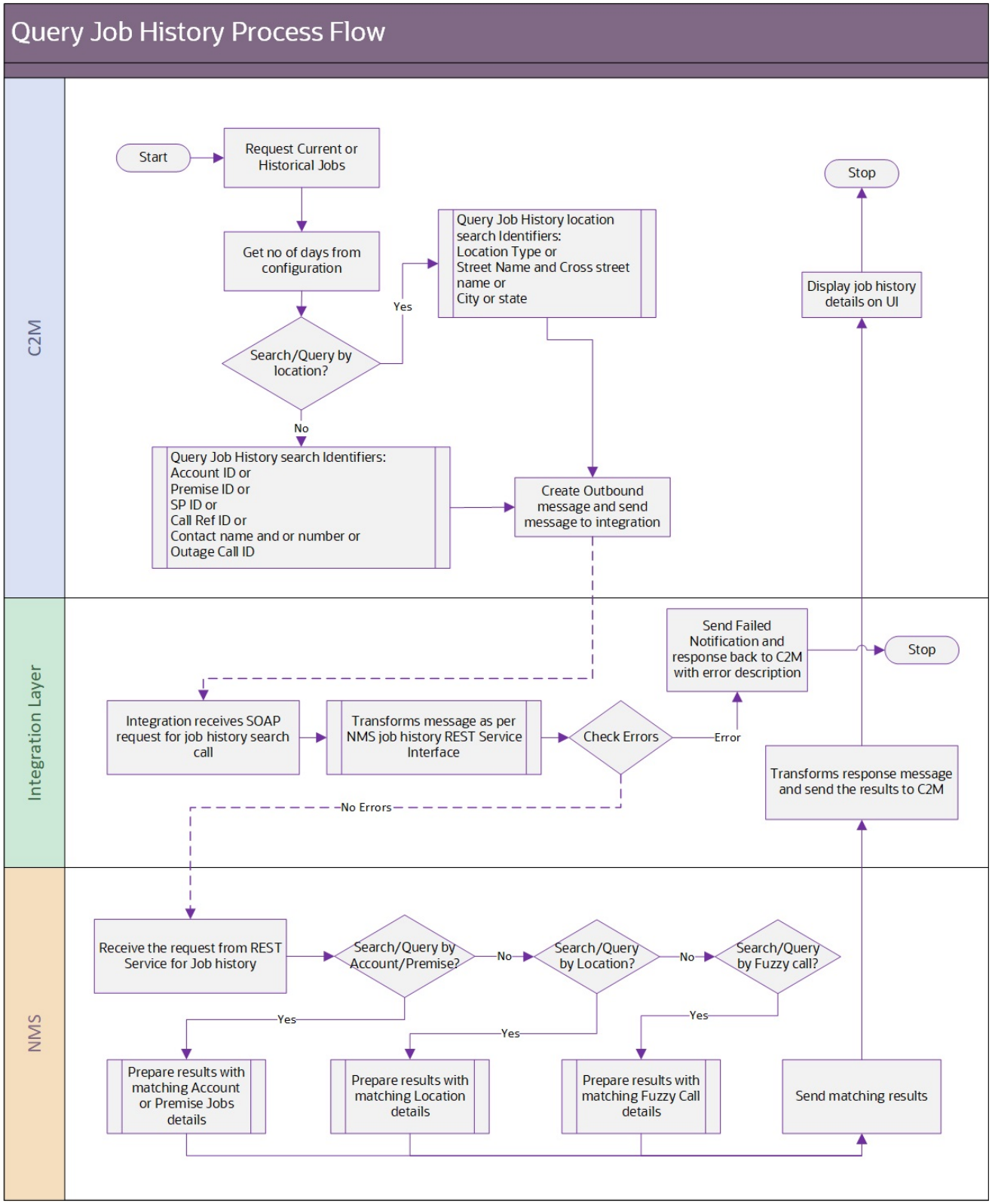
Supported Functionality

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)

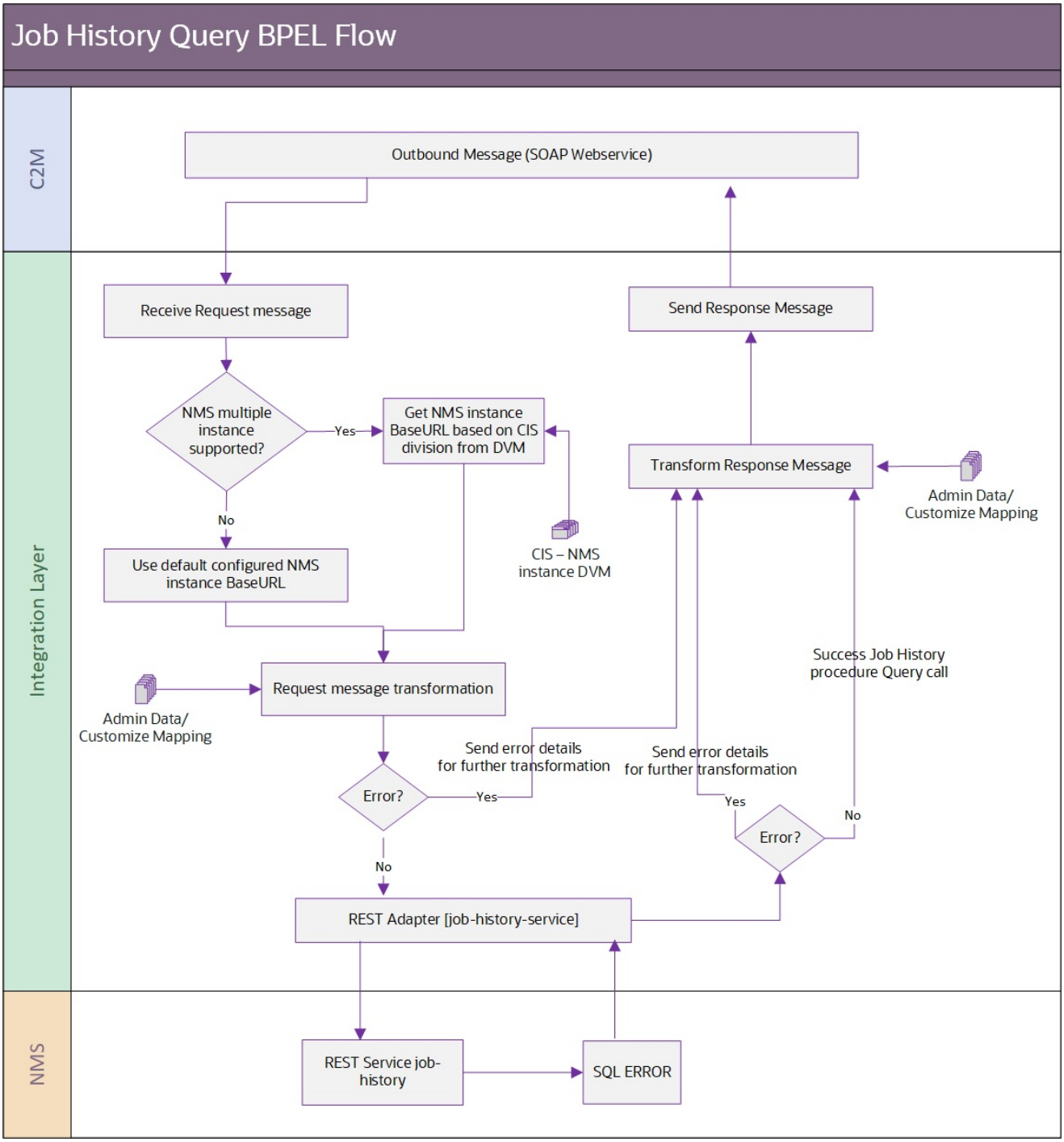
        - City (optional)
        - State (optional)
      - **Query by Street Segment**: The possible inputs to the query are:
        - Street segment (street name and block number)
        - City (optional)
        - State (optional)
    - **Fuzzy Call Identifier Query**: This query can find the job details 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.

Integration Service

These values are cross referenced in the Service Configurations section.

Name	Description
OUC2MOUNMSJobHistoryQuery EBF	Query NMS for the Job History 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 REST Service job-history using REST Adapter. The response from NMS is sent as response back to C2M after appropriate transformations.

Adapter Services

Name	Description
OUC2MOUNMSJobHistoryQueryRestAdapterReference	Query NMS job-history. This is the REST Adapter Service to invoke job-history from NMS.

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.

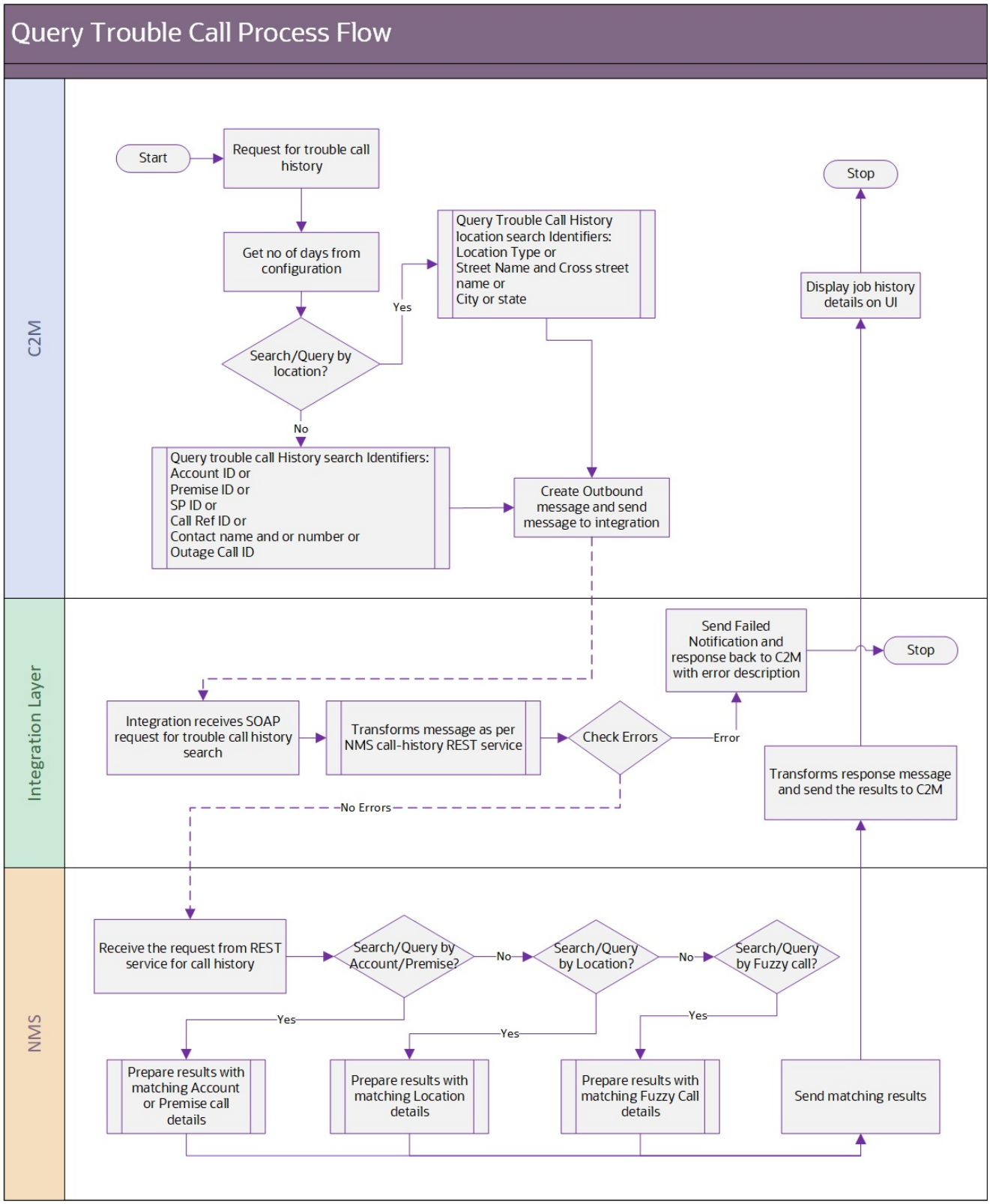
Refer to the Trouble Call History Query Process section for message mapping information for this integration point.

Supported Functionality

The trouble call history query supports the following functionalities:

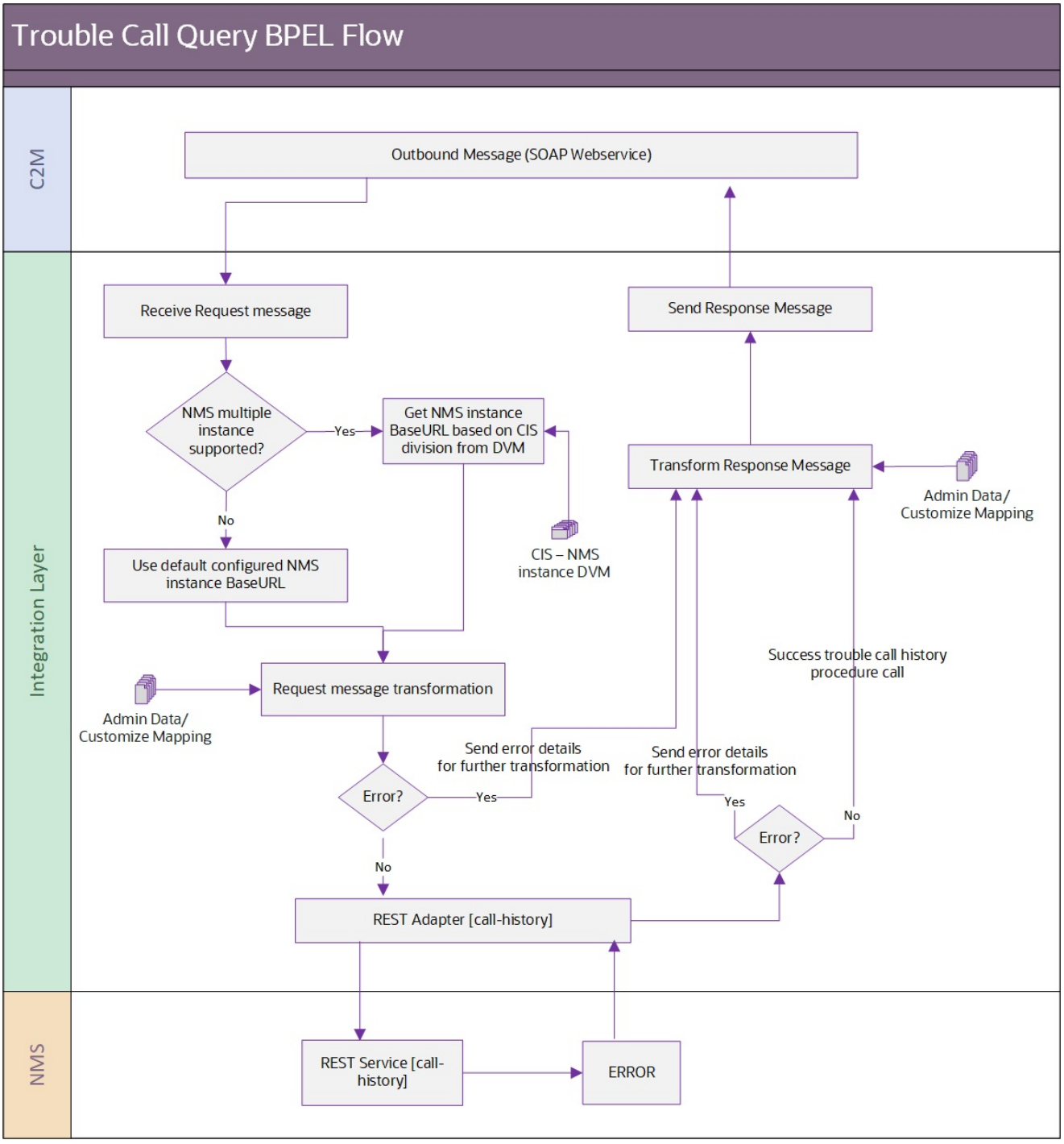
- Query and view call history details from Oracle Utilities Customer to Meter using any of the search criteria:
  - **Standard Trouble Calls History Query for known customers**: Search by IDs:
    - Service Point ID
    - Account ID
    - Premise ID
  - **Nearby Outage Job History Query**: Search by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

Integration Service

These values are cross referenced in the Service Configurations section.

Name	Description
OUC2MOUNMSCallHistoryQuery EBF	Query NMS for the Trouble Calls History BPEL Process. 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. This BPEL process receives the C2M request messages and invoke NMS REST call-history service using REST Adapter. The response from NMS is sent as response back to C2M after appropriate transformations.

Adapter Services

Name	**Description**
OUCCBOUNMSCallHisoryQueryRest AdapterRef	Query NMS for the Trouble Calls History. This is the REST Adapter to invoke NMS call-history service.

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.

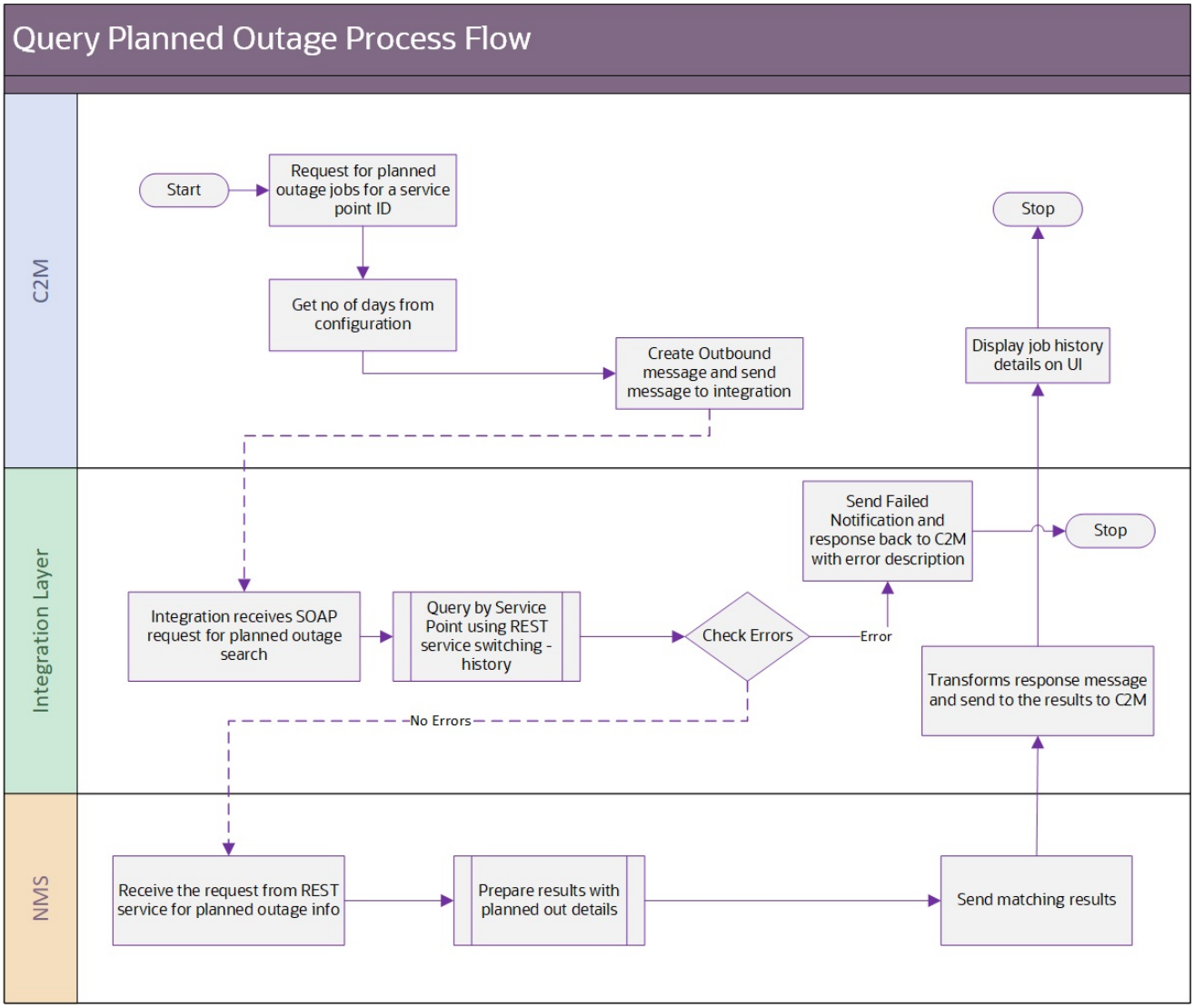
Refer to the Planned Outages Query Process section for message mapping information for this integration point.

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.

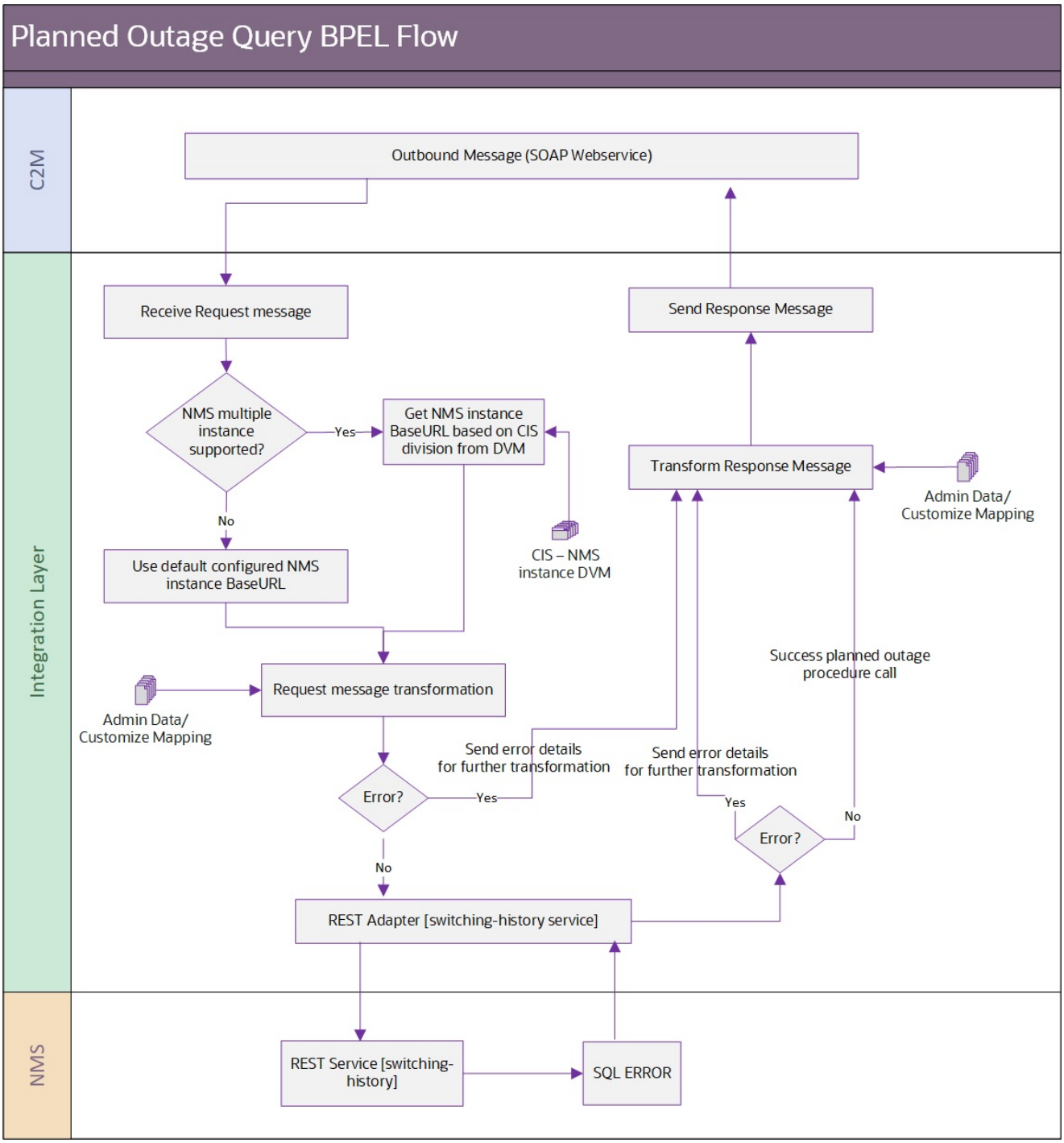
The following process diagram shows a graphical representation of the planned outages query process:



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.

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 Rest service using REST Adapter. The response from NMS is sent as response back to C2M after appropriate transformations.

Adapter Services

Name	Description
OUCCBOUNMSPlannedOutagesQueryRestAdapterRef	Query NMS for Planned Outages Adapter Service. This is the REST Adapter to invoke NMS Rest switching-history service.

Chapter 3

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 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 mentioned 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 on Oracle Help Center.

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

- Configuring Admin Data
- Configuring Administrative Tables
- Configuring the Sync Request Process
- Message Sender for Customer Data Sync
- Outbound Message Types
- External System

Configuring Admin Data

To configure the Oracle Utilities Customer to Meter setup for the integration:

1. Login to Oracle Utilities Customer to Meter.
2. Configure the administrative tables. Refer to the Configuring Administrative Tables section.
3. Configure the Sync Request process. Refer to the Configuring the Sync Request Process section.
4. Create message senders. Refer to the Message Sender for Customer Data Sync section for details.
5. Create outbound message types. Refer to the Outbound Message Types section for details.
6. Create an external system. Refer to the External System section for details.

Configuring 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 to Meter 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 to Meter.

Characteristic Type	Guideline	Characteristic Entity Collection	Corresponding DVM
Critical Customer	• Service Point characteristic used to define the critical customer for the service point. • Pre-defined characteristic type • 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.	Include *Service Point*	
Location City	• Characteristic used to identify the location city for an outage without a premise. • Adhoc characteristic type	Include *Service Task*	N/A
Location State	• Characteristic used to identify the location state for an outage without a premise. • Adhoc characteristic type	Include *Service Task*	N/A
Location 1	• 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). • Adhoc characteristic type	Include *Service Task*	N/A

Characteristic Type	Guideline	Characteristic Entity Collection	Corresponding DVM
Location 2	• Characteristic used to identify a location (intersection street2) used to for an outage without a premise if the location type is a street intersection. • Adhoc characteristic type	Include *Service Task*	N/A
Block Number	• Characteristic used to identify a block number used for an outage without a premise if the location type is a street segment. • Adhoc characteristic type • The Block Number adhoc value must be numeric.	Include *Service Task*	N/A
Contact Name	• Characteristic used to identify a contact name used for an outage without a premise. • Adhoc characteristic type	Include *Service Task*	N/A
Contact Number	• Characteristic used to identify a contact number used for an outage without a premise. • Adhoc characteristic type	Include *Service Task*	N/A
Call Identifier	• Characteristic used to identify a call identifier used for an outage without a premise. • Adhoc characteristic type	Include *Service Task*	N/A

Characteristic Type	Guideline	Characteristic Entity Collection	Corresponding DVM

Outage Codes 1 - N	• These characteristics are used to describe the outage problem.
	  • Create at least one and up to N pre-defined characteristic type. N being the number of outage codes needed by the implementation.
	  • For each characteristic type, define its list of valid values
		Include *Service Task*	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:

1. Navigate to **Admin** > **General** > **Feature Configuration**.
2. 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.
3. 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.

   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_AccountType

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

Configuring 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 (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.

Algorithm Type	Description
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.
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	This business object defines the behavior of the outbound sync request for NMS. It contains the schema elements monitored and synchronized to NMS. The following must be configured and defined on the NMS Sync Integration master configuration as they are necessary to create the outbound sync request: • Outbound Message Type: 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 **Defining Outbound Message Types** section in the user documentation for more information. • External System: 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.xsl. Refer to the **External Systems** section in the user documentation for more information. • Specify the pre-processing algorithm configured in the previous section. • Specify the time out algorithm as a monitor algorithm on the Awaiting Acknowledgement state for this BO. • 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.

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 Application Framework User Guide*. The documentation is available on Oracle Help Center.

Message Sender for Customer Data Sync

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
   - 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.

  Example:

  http://demoenv/soa-infra/services/C2M-NMS/OUC2MOUNMSCustomerSyncJMSWriteSvc/ouc2mounmscustomersyncjmswritesvc_client_ep
- **Message Namespace URI**: http://ouaf.oracle.com/schemas/f1bo/D1-NMSSPCustomerSyncReqOutMsg

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**: SOAPSNDR
   - **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 for the URL to be accessed
   - **HTTP Login Password:** Password for the URL to be accessed
   - **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 Submit Trouble Call webservice.

     Example:

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

- **Message Namespace URI**: http://xmlns.oracle.com/OUCCB/Message

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**: SOAPSNDR
   - **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 for the URL to be accessed
   - **HTTP Login Password**: Password for the URL to be accessed
   - **HTTP Method (POST/GET)**: *POST*
   - **HTTP Timeout**: 60 (put timeout in seconds)
   - **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 Query Job History EBF.

     Example: http://demoenv/soa-infra/services/C2M-NMS/
     OUC2MOUNMSJobHistoryQueryEBF/
     ouc2mounmsjobhistoryqueryebf_client_ep
   - **Message Namespace URI**: http://xmlns.oracle.com/OUCCB/Message

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 the following values:
   - **Invocation Type**: *Real-time*
   - **Message Class**: SOAPSNDR
   - Select the **Active** 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 for the URL to be accessed
- **HTTP Login Password**: Password for the URL to be accessed
- **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 Query Trouble Call History webservice.

  Example: http://demoenv/soa-infra/services/C2M-NMS/OUC2MOUNMSTroubleCallsQueryEBF/OUC2MOUNMSTroubleCallsQueryEBF_ep
- **Message Namespace URI**: http://xmlns.oracle.com/OUCCB/Message

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: SOAPSNDR
   - Select the **Active** 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 for the URL to be accessed
   - **HTTP Login Password**: Password for the URL to be accessed
   - **HTTP Method (POST/GET)**: *POST*
   - **HTTP Timeout**: 60 (put timeout in seconds)
   - **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 Query Planned Outage webservice.

     Example: http://demoenv/soa-infra/services/C2M-NMS/OUC2MOUNMSPlannedOutagesQueryEBF/ouccbounmsplannedoutagesqueryebf_client_ep
   - **Message Namespace URI**: http://xmlns.oracle.com/OUCCB/Message

Outbound Message Types

Create an Outbound Message Type for each integration service initiated from Oracle Utilities Customer to Meter (Customer Data Sync, Submit Trouble Call, Job History Query, and Planned Outages Query).

Customer Sync 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**: NMS-MDSYNC (Customer Sync Outbound Message BO)
   - **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-NMSOUTCAL (Submit Calls Outbound Message BO)
   - **Priority**: (choose from the selection)

Query Job History 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-NMSJOBHST (Job History Query Outbound Message BO)
   - **Priority**: (choose from the selection)

Query Trouble Call History 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-NMSCALHST (Call History Query Outbound Message BO)
   - **Priority**: (choose from the selection)

Query Planned Outages 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-NMSPLNOUT (Planned Outages Query Outbound Message BO)
- **Priority**: (choose from the selection)

External System

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)
     - **Date/Time Format XSL**: XSD
     - **Namespace Option**: Configured on Sender
     - **Message 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)*
     - **Date/Time Format XSL**: XSD
     - **Namespace Option**: Configured on Sender
     - **Message 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)
     - **Date/Time Format XSL**: XSD
     - **Namespace Option**: Configured on Sender
     - **Message XSL**:

- **Response 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)
  - **Date/Time Format XSL**: XSD
  - **Namespace Option**: Configured on Sender
  - **Message XSL**:
  - **Response 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)
  - **Date/Time Format XSL**: XSD
  - **Namespace Option**: Configured on Sender
  - **Message XSL**:
  - **Response 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.

- **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 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

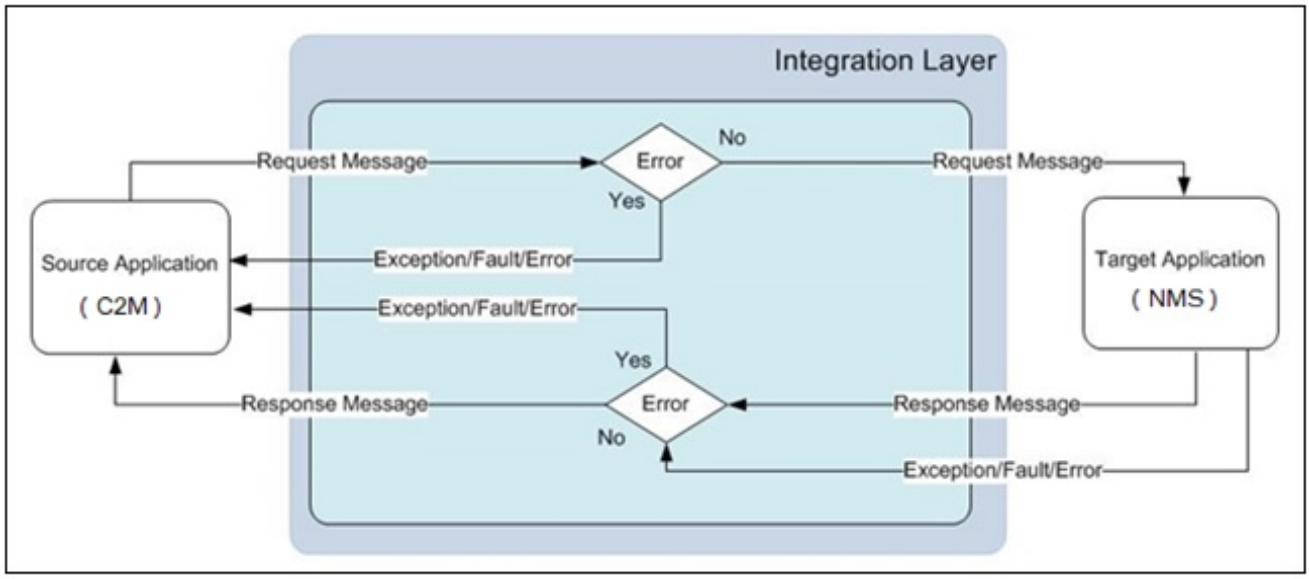
If new artifacts are created, if extensions or customizations are made on the artifacts, or if changes are made to the DVM /or the OUC2MOUNMSConfigurationProperties.xml, you must upload the artifacts to the Oracle Metadata Services (MDS).

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

The following process diagram shows error handling in the integration:



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.

Chapter 4

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

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.

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.

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 on Oracle Help Center.

Connection Errors

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

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*. The documentation is available on Oracle Help Center.

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

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

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 Oracle Utilities Customer to Meter to FIELD1 element in Oracle Utilities Network Management System.

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

Configuration Properties

This appendix 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.
C2M-NMS	DVM.OUC2M_OUNMS_ETR_SOURCE.ThrowException	false	This flag indicates if an error is triggered when the DVM lookup value is not found for DVM OUC2M_OUNMS_ETR_SOURCE. 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	NMS.CCBCallSourceID	CC	Source ID is required for NMS to identify the source system.
C2M-NMS	DVM.OUC2M_OUNMS_Job_History_Status.ThrowException	false	This flag indicates if an error is triggered when the DVM lookup value is not found for DVM OUC2M_OUNMS_Job_History_Status. 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.

Module Name	Property Name	Default/ Shipped Value	Description
C2M-NMS	DVM.OUC2M_OUNMS_Alarm_State.ThrowException	false	This flag indicates if an error is triggered when the DVM lookup value is not found for DVM OUC2M_OUNMS_Alarm_State. 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_CALL_STATUS.ThrowException	false	This flag indicates if an error is triggered when the DVM lookup value is not found for DVM OUC2M_OUNMS_CALL_STATUS. 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_CallBackIndicator.ThrowException	false	This flag indicates if an error is triggered when the DVM lookup value is not found for DVM OUC2M_OUNMS_CallBackIndicator. 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_MeetType.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_NewCallIndicator.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.

Module Name	Property Name	Default/ Shipped Value	Description
C2M-NMS	DVM.OUC2M_OUNMS_CallCancelIndicator.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_AccountType.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_MeterType.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_C_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_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.

Module Name	Property Name	Default/ Shipped Value	Description
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. It 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.
C2M-NMS	NMS.OUNMS_BaseURL	https://NMS_HOST.yourdomain.com:NMS_PORT_NO	The Default Base Endpoint URL for NMS REST Service instance applies for single or multi-instance.

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
Customer Data Synchronization Process			
OUCCBOUNMSCustomerDataSyncReqEBF	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.
OUC2MOUNMSCustomerSyncJMSReadSvc	OUC2M.F1-UpdateAndTransitionSyncRequest.Endpoint.URL	https://C2M_HOST:PORT/C2M_ContextRoot/F1-UpdateAndTransitionSyncRequest	The C2M Endpoint URL for F1 Update and Transition Sync.
Trouble Call Entry Process			
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. • This C2M call source ID indicates that the trouble call was created in C2M. • 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.

Service Name	Property Name	Default / Shipped Value or System ID of Initiating System	Description
	C2M.LocationType.StreetIntersection	C1IS	C2M uses the location type to determine whether a street intersection or street segment was populated for the location of a fuzzy call. This is the C2M Location Type value for Street Segment. Location Type coming from C2M is not mapped to NMS. It is only used by the integration for the mapping of the cross street or block number.
	C2M.LocationType.StreetSegment	C1SS	C2M uses the location type to determine whether a street intersection or street segment was populated for the location of a fuzzy call. This is the C2M Location Type value for Street Intersection. Location Type coming from C2M is not mapped to NMS. It is only used by the integration for the mapping of the cross street or block number.
	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.
Job History Query Process			
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.
	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.

Service Name	Property Name	Default / Shipped Value or System ID of Initiating System	Description
	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.
Trouble Call History Query Process			
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.
Planned Outages Query Process			
OUC2MOUNMSPlannedOutagesQueryEBF	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	10	Define the Number of Days Of Planned Outages to return.

Service Name	Property Name	Default / Shipped Value or System ID of Initiating System	Description
	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 B

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'.

DVM	Integration Points	Description	C2M/NMS Values
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'.
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_BaseURL - This contains the valid baseURL value pointing to the NMS instance for the CIS Division. Example: https:// NMS_HOST.yourdomain.com:NMS_PORT_NO
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'

DVM	Integration Points	Description	C2M/NMS Values
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'
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'

Appendix C

Data Mapping

This appendix provides mapping details for the following integration point:

- Customer Data Synchronization Process
- Trouble Call Entry Process
- Job History Query Process
- Trouble Call History Query Process
- Planned Outages Query 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	Oracle Utilities Customer to Meter	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. **Not mapped** 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	
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.

Oracle Utilities Network Management System	Oracle Utilities Customer to Meter	Notes
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		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
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		

Oracle Utilities Network Management System	Oracle Utilities Customer to Meter	Notes
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		
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		

Oracle Utilities Network Management System	Oracle Utilities Customer to Meter	Notes
SERV_X_PRIORITY		
SERV_Y_PRIORITY		
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		Comments
Element Name	**Parent Element**	**Type**	**Element Name**	**DVM Name**	
sendDetails		OuterMostTag	P_CUST		
syncRequestId	sendDetails	Field			

OUC2M Customer SP Sync Request Message			OUNMS Create/Update Customer Stored Procedure		Comments
Element Name	**Parent Element**	**Type**	**Element Name**	**DVM Name**	
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		
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			

OUC2M Customer SP Sync Request Message			OUNMS Create/Update Customer Stored Procedure		Comments
Element Name	**Parent Element**	**Type**	**Element Name**	**DVM Name**	
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			
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			

OUC2M Customer SP Sync Request Message			OUNMS Create/Update Customer Stored Procedure		Comments
Element Name	**Parent Element**	**Type**	**Element Name**	**DVM Name**	
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		
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	

OUC2M Customer SP Sync Request Message			OUNMS Create/Update Customer Stored Procedure		Comments
Element Name	**Parent Element**	**Type**	**Element Name**	**DVM Name**	
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	
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	

OUC2M Customer SP Sync Request Message			OUNMS Create/Update Customer Stored Procedure		Comments
Element Name	**Parent Element**	**Type**	**Element Name**	**DVM Name**	
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	
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		

OUC2M Customer SP Sync Request Message			OUNMS Create/Update Customer Stored Procedure		Comments
Element Name	**Parent Element**	**Type**	**Element Name**	**DVM Name**	
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			
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**		**Comments**
Element Name	**Parent Element**	**Type**	**Element Name**	**DVM Name**	
sendDetails		OuterMost Tag	F1-UpdateAndTransitionSyncRequest		
syncRequestId	sendDetails	Field	syncRequestId		
OutputParameters		Outermost Tag			
P_ERR_NO	OutputParameters	Field			
			exceptionInfo		
			messageCategory		Send C2M.Generic.MessageCategory property value defined in OUC2MOUNMSConfigurationProperties.xml file.
			messageNumber		Send C2M.Generic.MessageNumber property value defined in OUC2MOUNMSConfigurationProperties.xml 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).

Oracle Utilities Network Management System field	Oracle Utilities Customer to Meter Message Element	Notes
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.
call_ID	callIdentifier	This is the call identifier's external reference ID (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.

Oracle Utilities Network Management System field	Oracle Utilities Customer to Meter Message Element	Notes
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 Oracle Utilities Customer to Meter to Oracle Utilities Network Management System 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 Oracle Utilities Customer to Meter to Oracle Utilities Network Management System 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 Oracle Utilities Customer to Meter to Oracle Utilities Network Management System will be customer address = location1 (location description). All DateTime coming from Oracle Utilities Customer to Meter 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		Comments
Element Name	**Parent Element**	**Type**	**Element Name**	**DVM Name**	
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	OUCC_OUNMS_NewCallIndicator	

Oracle Utilities Customer to Meter Trouble Call Request Message			Oracle Utilities Network Management System Trouble Call Stored Procedure Input		Comments
Element Name	**Parent Element**	**Type**	**Element Name**	**DVM Name**	
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			
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		

Oracle Utilities Customer to Meter Trouble Call Request Message			Oracle Utilities Network Management System Trouble Call Stored Procedure Input		Comments
Element Name	**Parent Element**	**Type**	**Element Name**	**DVM Name**	
meetType	requestMessage	Field	meet_type	OUC2M_OUNMS_MeetType	
outageCodes	requestMessage	Field	trouble_code		
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		Comments
Element Name	**Parent Element**	**Type**	**Element Name**	**DVM Name**	
<jobHistoryRequest>		OutermostTag			
	spId	Field	CID		
	premiseId	Field	PREMISEID		
	accountId	Field	ACCOUNTNUMBER		
	location	Field			
	cityStreet	Field	CITY		

Oracle Utilities Customer to Meter Request Message Elements			Oracle Utilities Network Management System Field		Comments
Element Name	**Parent Element**	**Type**	**Element Name**	**DVM Name**	
	state	Field	STATE		
	intersection	Field			
	street1	Field	STREET1		
	street2	Field	STREET2		
	intersection	Field			
	segment	Field			
	Street	Field	STREET1		
	Number	Field	BLOCKNUMBER		
	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		Comments
Element Name	**Parent Element**	**Type**	**Element Name**	**DVM Name**	
<jobHistoryRequest>		Outermost Tag			
<jobHistory>					
	spId	Field	CID		
	jobStartDateTime	Field	BEGIN_TIME		

Oracle Utilities Customer to Meter Response Message Elements			Oracle Utilities Network Management System		Comments
Element Name	**Parent Element**	**Type**	**Element Name**	**DVM Name**	
	troubleLocation	Field	TROUBLE_LOCATION		
	estimatedRestorationDateTime	Field	EST_REST_TIME		
	actualRestorationDateTime	Field	RESTORE_TIME		
	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		
	opearatorComment	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		

Oracle Utilities Customer to Meter Response Message Elements			Oracle Utilities Network Management System		Comments
Element Name	**Parent Element**	**Type**	**Element Name**	**DVM Name**	
		Field	UDF4		
		Field	UDF5		
</jobHistory>		Field			
<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		Comments
Element Name	**Parent Element**	**Type**	**Element Name**	**DVM Name**	
<callHistoryRequest>		OutermostTag			
	spId	Field	CID		

Oracle Utilities Customer to Meter Request Message Elements			Oracle Utilities Network Management System		Comments
Element Name	**Parent Element**	**Type**	**Element Name**	**DVM Name**	
	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		
	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		Comments
Element Name	**Parent Element**	**Type**	**Element Name**	**DVM Name**	
<callHistoryRequest>		OutermostTag			
<callHistory>					
	seq	Field	NUMB		
	spId	Field	CID		
	callDate	Field	INPUT_TIME		
	location	Field			
	complaintDescription	Field			
	callComments	Field			
	issuer	Field			
	referenceNumber	Field			
	contactName	Field			
	callStatus	Field	ACTIVE OUC2M_OUNMS_Call_Status		
	callId	Field	GENERAL_AREA		
			P_ERR_NO		
			P_ERR_MSG		
			UDF1		
			UDF2		
			UDF3		
			UDF4		
			UDF5		

Oracle Utilities Customer to Meter Request Message Elements			Oracle Utilities Network Management System Field		Comments
Element Name	**Parent Element**	**Type**	**Element Name**	**DVM Name**	
</callHistory>					
<exceptionInfo>	<messageCategory/>				
	<messageNumber/>				
	<comments/>				
	<messageParms>				
	<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		Comments
Element Name	**Parent Element**	**Type**	**Element Name**	**DVM Name**	
<plannedOutagesRequest>		OutermostTag			
	spId	Field	CID		
	showAllPlannedOutages	Field			
			P_NUM_DAYS		

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

Oracle Utilities Customer to Meter Request Message Elements			Oracle Utilities Network Management System		Comments
Element Name	**Parent Element**	**Type**	**Element Name**	**DVM Name**	
		userDefinedField3	UDF3		
		userDefinedField4	UDF4		
		userDefinedField5	UDF5		
		userDefinedField6	UDF6		
		userDefinedField7	UDF7		
		userDefinedField8	UDF8		
		userDefinedField9	UDF9		
		userDefinedField10	UDF10		
<plannedOutages>					
<exceptionInfo>	<messageCategory/>	<messageCategory/>			
	<messageNumber/>	<messageNumber/>			
	<comments/>	<comments/>			
	<messageParms>	<messageParms>			
	<parmSequence/>	<parmSequence/>			
	<messageParmValue/>	<messageParmValue/>			
	</messageParms>	</messageParms>			
/exceptionInfo>					
</plannedOutagesResponse>					