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

Implementation Guide

Release 12.1

E18346-03

February 2017
(Updated July 2017)

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

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Preface

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

Documentation and Resources

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

Product Documentation

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

Additional Documentation

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

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Conventions

The following text conventions are used in this document:

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

CC&B	Oracle Utilities Customer Care and Billing (CC&B)
NMS	Oracle Utilities Network Management System

General Terms

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

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

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XSD	A schema definition file.
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Part 1

Understanding the Integration

This section provides an overview of the participating applications and information regarding the business processes addressed by this integration.

This section contains the following chapters:

Chapter 1

Integration Overview

This document provides configuration and administration information for the integration between Oracle Utilities Customer Care and Billing (CCB), and Oracle Utilities Network Management System (NMS).

- Prerequisites
- About the Integration Products
- Supported Business Processes

Prerequisites

All participating applications must be installed, set up, and working properly.

Notification Functionality Version Requirements

The following version requirements for the processes and functionality related to notifications (Notify Communication Preference Process, the Notification Inbound Process, and the Create Notification Process):

- Oracle Utilities Customer Care and Billing version 2.5.0.2 is required for notification functionality.
- Oracle Utilities Network Management System: The PK_MYC_CSS pl/sql package , MYC_CSS_PARAM_VIO_TEXT and MYC_CSS_PARAM_VIO_TEXT_VIEW required for the Notification functionality require version 1.11.0.4.

About the Integration Products

This section provides general information about the functionality and processing of Oracle Utilities Customer Care and Billing Integration to Oracle Utilities Network Management. This is an AIA Direct Integration using Service-Oriented Architecture (SOA) Suite and does not require the AIA Foundation Pack to be installed.

The following products are involved in the integration:

- Oracle Utilities Customer Care and Billing
- Oracle Utilities Network Management System

Oracle Utilities Customer Care and Billing

Oracle Utilities Customer Care and Billing is a central repository for customer information - such as, name, address, phone number, and so on which manages all aspects of the utility customer lifecycle including service connections, trouble calls, and outages.

Oracle Utilities Customer Care and Billing also supports sending notifications and the maintenance of communication preference for notification types owned by Oracle Utilities Customer Care and Billing and other edge applications such as Oracle Utilities Network Management System and Oracle Utilities Meter Data Management.

> Note: Refer to the Abbreviations section for current application version details.

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. The system also acts as the central repository for outage and outage restoration information and can generate outage and outage restoration notifications for customers who have these types of notifications configured.

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.

> Note: Refer to the Abbreviations section for current application version details.

Supported Business Processes

This integration supports synchronization of customer data and trouble calls from Oracle Utilities Customer Care and Billing 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 Care and Billing.

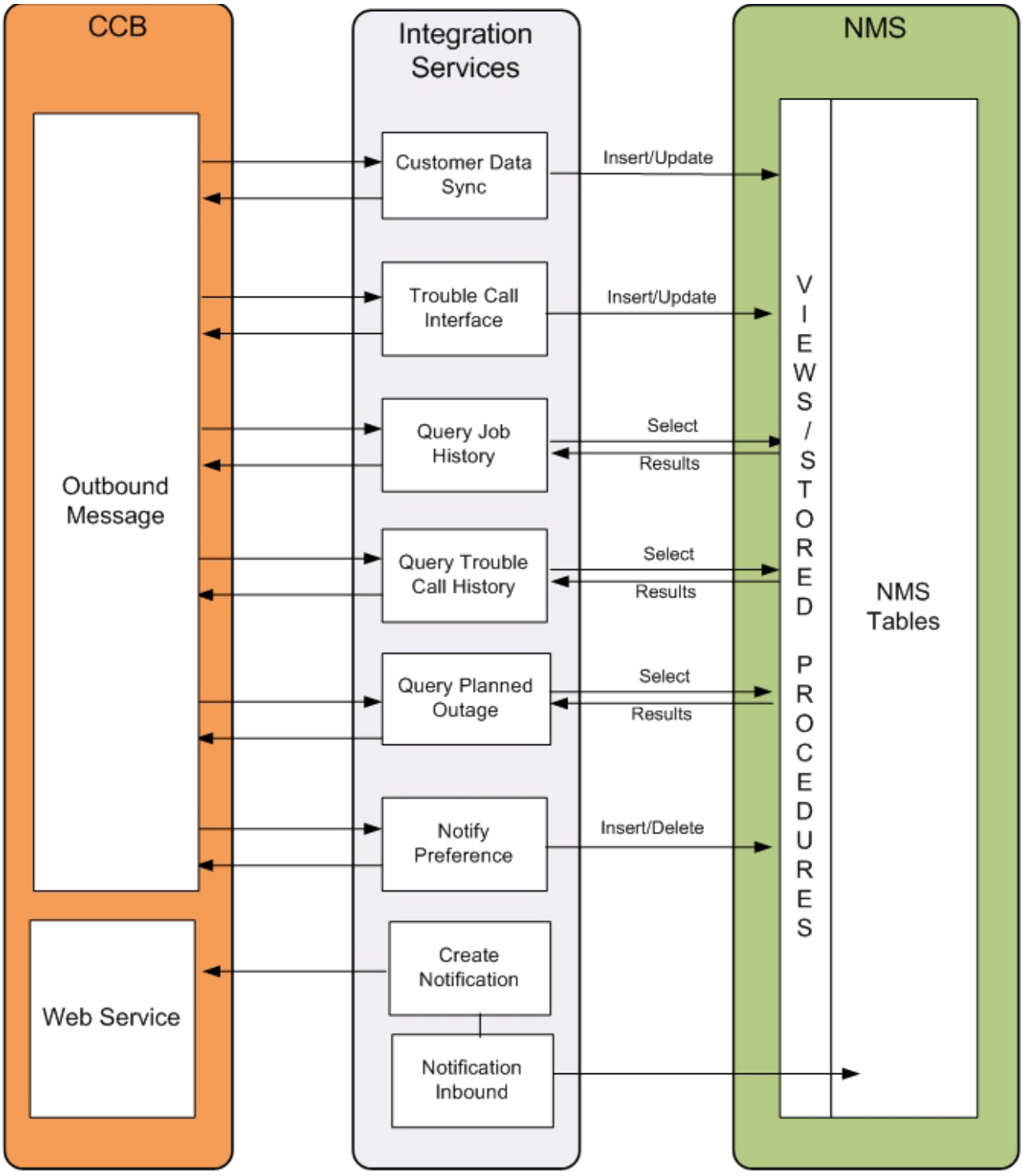
The following list summarizes the functionality included in the integration:

- **Synchronize data**: Customer data is synchronized between Oracle Utilities Customer Care and Billing 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 Care and Billing 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 Care and Billing.
- **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 Care and Billing.
- **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 Care and Billing.
- **Notifications**: Oracle Utilities Customer Care and Billing supports the maintenance of communication preferences for notifications owned by other edge applications such as Oracle Utilities Network Management System. Oracle Utilities Network Management System is notified when a communication is activated or inactivated for notification types that are set up as owned by Oracle Utilities Network Management System. Oracle Utilities Customer Care and Billing supports an inbound service to generate notifications when other edge applications detect a triggered event for a notification.

The following diagram provides a visual representation of these processes:



All Supported Business Processes

Chapter 2

Understanding the Integration Processes

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

General Processing

Email Notifications

No email notification or error stores are delivered as default for any of the integration points. However, the implementation team can choose to enable these functions for customer data sync and trouble calls interface by modifying the configuration properties.

DVM Lookups

For customer data sync and trouble calls interface integration points, each DVM lookup which is configured in the integration layer has a corresponding DVM exception switch defined in the configuration file. The DVM exception switch determines whether or not the BPEL Process triggers a business error when the following DVM scenarios are encountered:

- When the value coming from Oracle Utilities Customer Care and Billing is not found in the DVM lookup.
- When the value coming from Oracle Utilities Customer Care and Billing is found, but it does not have an equivalent Oracle Utilities Network Management System conversion value (null).

If the DVM exception switch is set to true, BPEL process triggers a business error when a conversion error is encountered. Otherwise, the original value from Oracle Utilities Customer Care and Billing is mapped to Oracle Utilities Network Management System.

For all the query integration points, there are no corresponding DVM exception switches for the DVM lookup configured in the integration. When the DVM scenarios described above is encountered, the original value from Oracle Utilities Customer Care and Billing is mapped to Oracle Utilities Network Management System.

Integration Processes

This section provides detailed business process overviews and technical overviews of each of the business processes facilitated by this 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
- Notify Communication Preference Process
- Notification Inbound Process
- Create Notification Process

Customer Data Synchronization Process

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

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

Supported Functionality

This integration point supports the following functionalities:

- Sends data from Oracle Utilities Customer Care and Billing 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 Care and Billing 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 Care and Billing 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, Meter and Item tables in Oracle Utilities Customer Care and Billing.

The following process diagram shows a graphical representation of the customer data synchronization process:

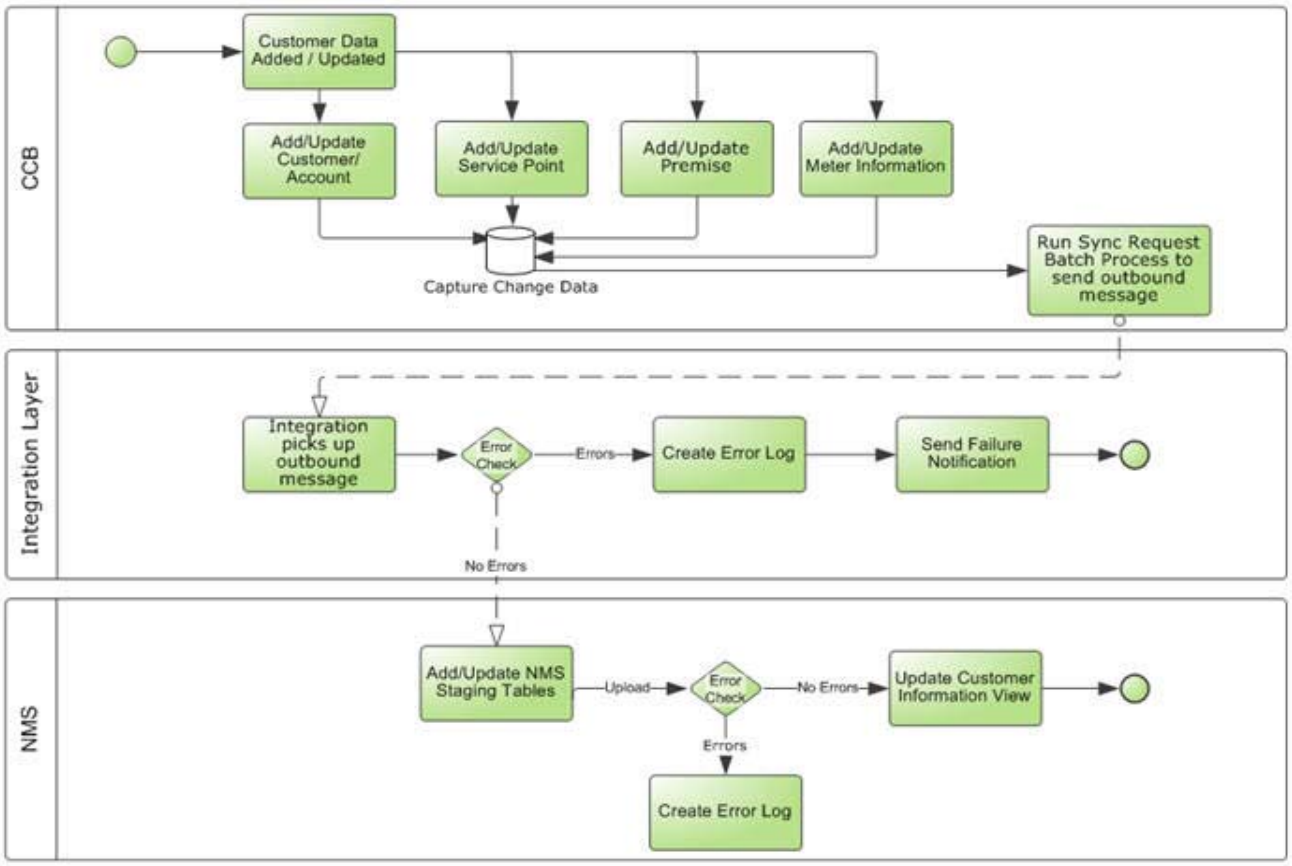


Diagram 2: Customer Data Synchronization Business Process

Creation and Update of Customer Data

Customer information is created and updated in Oracle Utilities Customer Care and Billing 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 Care and Billing to Oracle Utilities Network Management System by batch processing which is run on initial load from Oracle Utilities Customer Care and Billing. Oracle Utilities Customer Care and Billing then keeps the data in sync with Oracle Utilities Network Management System using periodic incremental updates.

Oracle Utilities Customer Care and Billing 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 (i.e. person, account, premise, sp, meter/ item information).

Only current customer information from Oracle Utilities Customer Care and Billing 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 Care and Billing 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.

Item Information or Null Information Updates

Messages containing customer data with the item information or with no meter or item information trigger an error since item information updates and null updates are not supported. Clients can configure the integration to support these types of updates by setting the appropriate customization flag to "true." For item information, the information must be manually mapped from Oracle Utilities Customer Care and Billing to Oracle Utilities Network Management.

Inactive Customer Data

When a customer becomes inactive in Oracle Utilities Customer Care and Billing, 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 Care and Billing to Oracle Utilities Network Management System with the following processing:

- Oracle Utilities Customer Care and Billing sends the synchronization message to an Oracle Utilities Customer Care and Billing Request JMS Queue for the integration layer to consume and process.
- The integration layer receives messages from the JMS Queue, transforms the message to the equivalent Oracle Utilities Network Management System field format, invokes the Customer Update Stored Procedure to insert/update the customer information in the Oracle Utilities Network Management System and sends the response or error messages to JMS Queues.
    - Weblogic JMS queues are used as a queuing mechanism in the integration layer between Oracle Utilities Customer Care and Billing and BPEL processes. Four JMS queues support this integration.
        - Oracle Utilities Customer Care and Billing Request Queue - For Oracle Utilities Customer Care and Billing to add messages to this queue which are picked up by the integration for processing.

- Oracle Utilities Customer Care and Billing Response Queue - The business errors in the integration and success or failure of DB insert/update operations are written to this queue.
- Oracle Utilities Customer Care and Billing Request Error Queue - The technical errors encountered in the integration request process are written to this queue.
- Oracle Utilities Customer Care and Billing Response Error Queue - The technical errors encountered when Oracle Utilities Customer Care and Billing reads the messages from the Oracle Utilities Customer Care and Billing response queue are written to this queue.

- A BPEL process with the following components processes the message. This BPEL process is not exposed as a web service.
  - JMS Consumer reads messages from the Oracle Utilities Customer Care and Billing request queue.
  - JMS Producer writes to the Oracle Utilities Customer Care and Billing response queue.
  - Transformation converts the message from the source format to the target format. DVMs are used for the transformation.
  - Error handling and error notification.
  - DB Adapter interacts with the Oracle Utilities Network Management System Database to invoke the Customer Update Stored Procedure to insert/update customer information in the Oracle Utilities Network Management System customer related staging tables.
  - Customization inserts placeholders for custom xsl and calls to pre and post transformation extension points for each transformation.

The JMS consumer and BPEL process are configured to participate in a global transaction so that the BPEL process can issue rollback and commits on the queue. The BPEL process issues rollbacks on the queue when technical errors are encountered (Oracle Utilities Network Management System database is down. or connectivity issues) and the message is moved to the corresponding error queue.

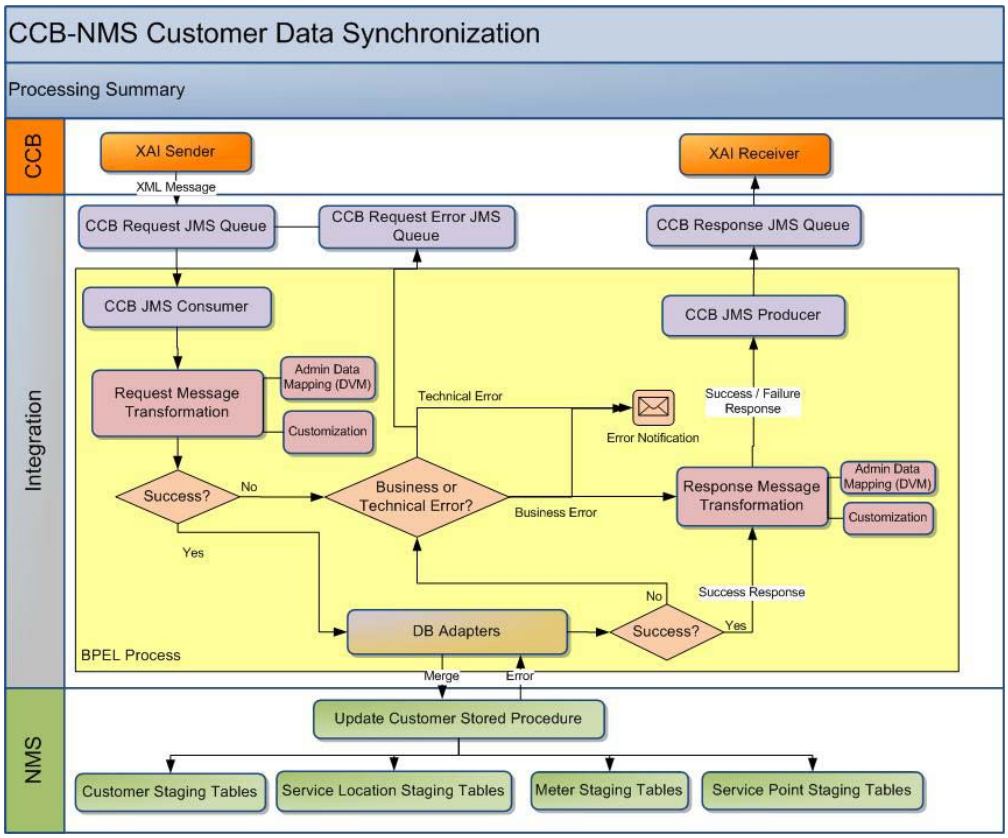


Diagram 3: Technical Process for the Customer Data Synchronization Business Process

Assumptions and Constraints

- Device information for each customer or service point must be setup in Oracle Utilities Customer Care and Billing first before the customer synchronization batch is run. Device ID used in Oracle Utilities Customer Care and Billing must be in the Oracle Utilities Network Management System Supply Nodes table. Oracle Utilities Customer Care and Billing stores the device information in the SP Geo Type and Oracle Utilities Network Management System stored it in Device ID.
- The Oracle Utilities Customer Care and Billing Customer Data sync is driven by SP and the data to be synchronized to Oracle Utilities Network Management System can be filtered by SP Type(s). The Oracle Utilities Network Management System Customer Data Sync BO Pre-processing algorithm filters the data to be synchronized by SP Type. Implementation teams can configure the SP Type(s) that need to be synchronized in the algorithm parameters and only those specified are synched over to Oracle Utilities Network Management System. If nothing is specified in the algorithm parameters, all SP Types are synched over.

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

Successful Update

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

Business Process Errors

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

Technical Errors

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

Integration Service

These values are cross referenced in the Service Configurations section.

Name	Description
OUCCBOUNMSCustomerDataSyncReq EBF	CCB-NMS Customer Data Sync Request BPEL Process. This BPEL process reads messages from the CCB 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
OUCCBCustomerSyncReqJMSConsumer	CCB Customer Sync Request JMS Consumer. This is the JMS consumer service in BPEL responsible for listening to the CCB Request Queue. This is created as part of the BPEL process.
OUCCBCustomerSyncResponseJMSProducer	CCB Customer Sync Response JMS Producer. This is the JMS producer service in BPEL responsible for adding a response message to the CCB Response Queue. This is created as part of the BPEL process.
OUNMSUpdateCustomerStoredProc	NMS DB Adapter - Update Customer Stored Procedure. This is created as part of the BPEL process.

JMS Queues

Name	Description
OUCCBCustomerDataSyncRequest	CCB Customer Data Sync Request Queue
OUCCBCustomerDataSyncRequestError	CCB Customer Data Sync Request Error Queue
OUCCBCustomerDataSyncResponse	CCB Customer Data Sync Response Queue
OUCCBCustomerDataSyncResponseError	CCB Customer Data Sync Response Error Queue

Trouble Call Entry Process

This process is a real time synchronous interface of the trouble calls created in Oracle Utilities Customer Care and Billing.

Oracle Utilities Network Management System is the central repository for trouble calls. However, trouble calls may originate in Oracle Utilities Customer Care and Billing and these trouble calls is 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 Care and Billing is interpreted similarly when the trouble code is received by Oracle Utilities Network Management System. Please refer to the Data Mapping section for more details. Refer to the Trouble Call Process - Mapping Details 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, updated or canceled in Oracle Utilities Customer Care and Billing. The following types of calls are interfaced:
  - Electric trouble calls for a particular customer (known premise/service point): This includes entering the meeting time for the job site appointments when there needs to be a planned outage to perform non-utility work at a location, such as tree removal near a power line or house painting.
  - 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 (i.e. 911 reference ID provided by the caller (911)).
    - Location must also be provided. A Location can be a:
      - Street intersection (provide two street names)
      - Street segment (provide a block number and a street name)
      - City and State are optional

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

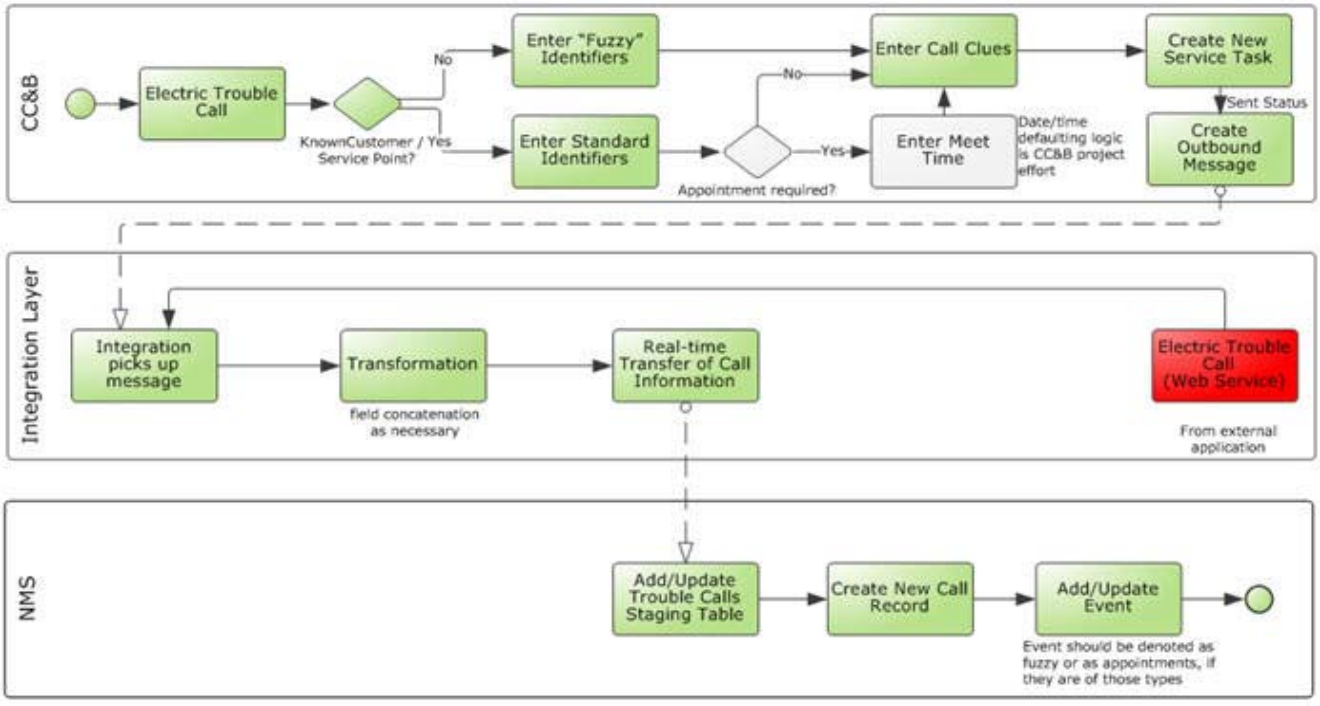


Diagram 4: Trouble Call Entry Business Process

New Trouble Calls Created in Oracle Utilities Customer Care and Billing

When a trouble call is created in Oracle Utilities Customer Care and Billing, 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 Care and Billing 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 Care and Billing.

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 Care and Billing.

> 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 Care and Billing 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 Care and Billing and sent to Oracle Utilities Network Management System with the following processing:

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

- Request Message transformation from the source (CCB) to the target (NMS) application format. DVM's are used for the transformation.
- Insert/Update of trouble calls in the Trouble Calls table using a DB Adapter to interact with the Oracle Utilities Network Management System Database to invoke the Oracle Utilities Network Management System trouble calls stored procedure that inserts/updates the trouble call record to the Trouble Calls table.
- Error handling and optional error notification.

- Customization inserts placeholders for custom xsl and calls to pre and post transformation extension points for each transformation.

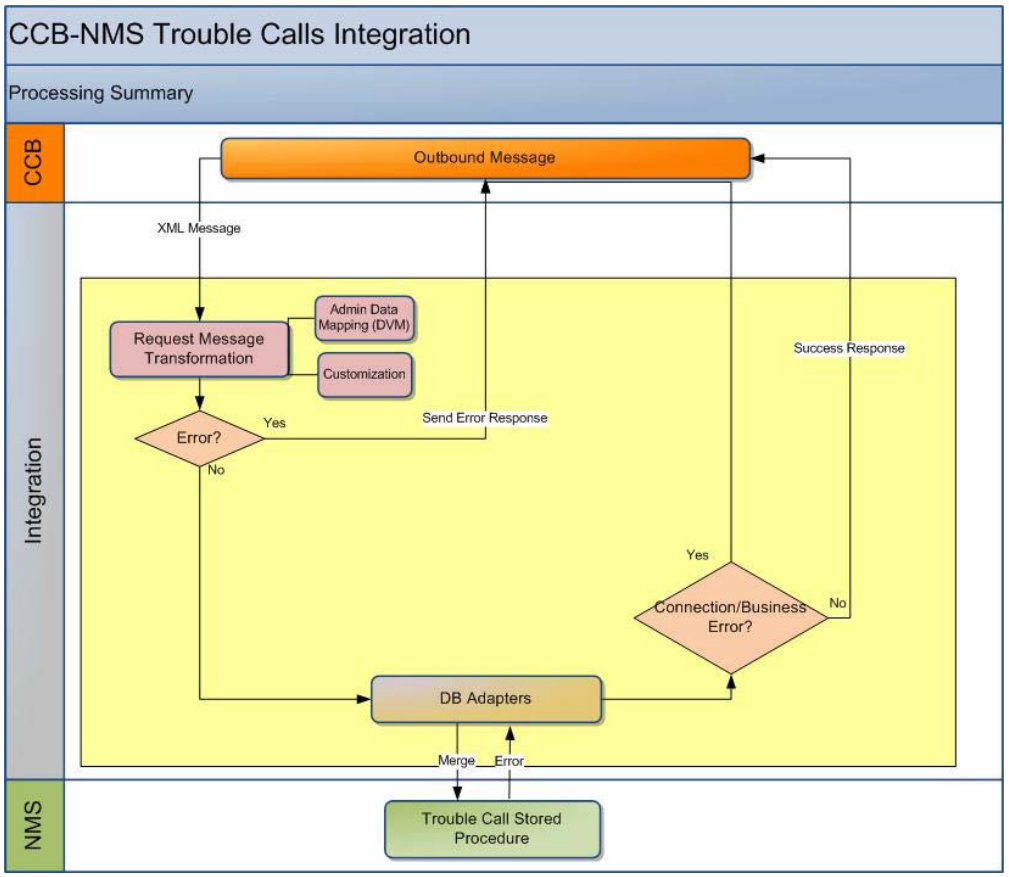


Diagram 5: Technical Process for the Trouble Call Interface Business Process

Successful Update

When the Oracle Utilities Network Management System tables are successfully updated, the integration layer sends a positive acknowledgement to the Oracle Utilities Customer Care and Billing response queue.

Errors

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

Integration Service

These values are cross referenced in the Service Configurations section.

Name	Description
OUCCBOUNMSTroubleCallInterfaceEBF	CCB-NMS Trouble Call Interface BPEL Process. This is the main BPEL process that transforms the incoming CCB 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
OUNMSSubmitCallStoredProcedure	NMS DB Adapter - Insert Trouble Calls Stored Procedure. This is created as part of the BPEL process.

Job History Query Process

This process is a real-time synchronous interface from Oracle Utilities Customer Care and Billing 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 Care and Billing.

Refer to the Job History Query Process - Mapping Details 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 Care and Billing 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 Identifier Number (911 Call Identifier)
  - External ID (Outage Call ID in Oracle Utilities Customer Care and Billing or IVR ID)

- Oracle Utilities Customer Care and Billing default display order of trouble calls with most recent at top.
- The amount of history to be retrieved is restricted by the number of days defined in the integration layer.

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

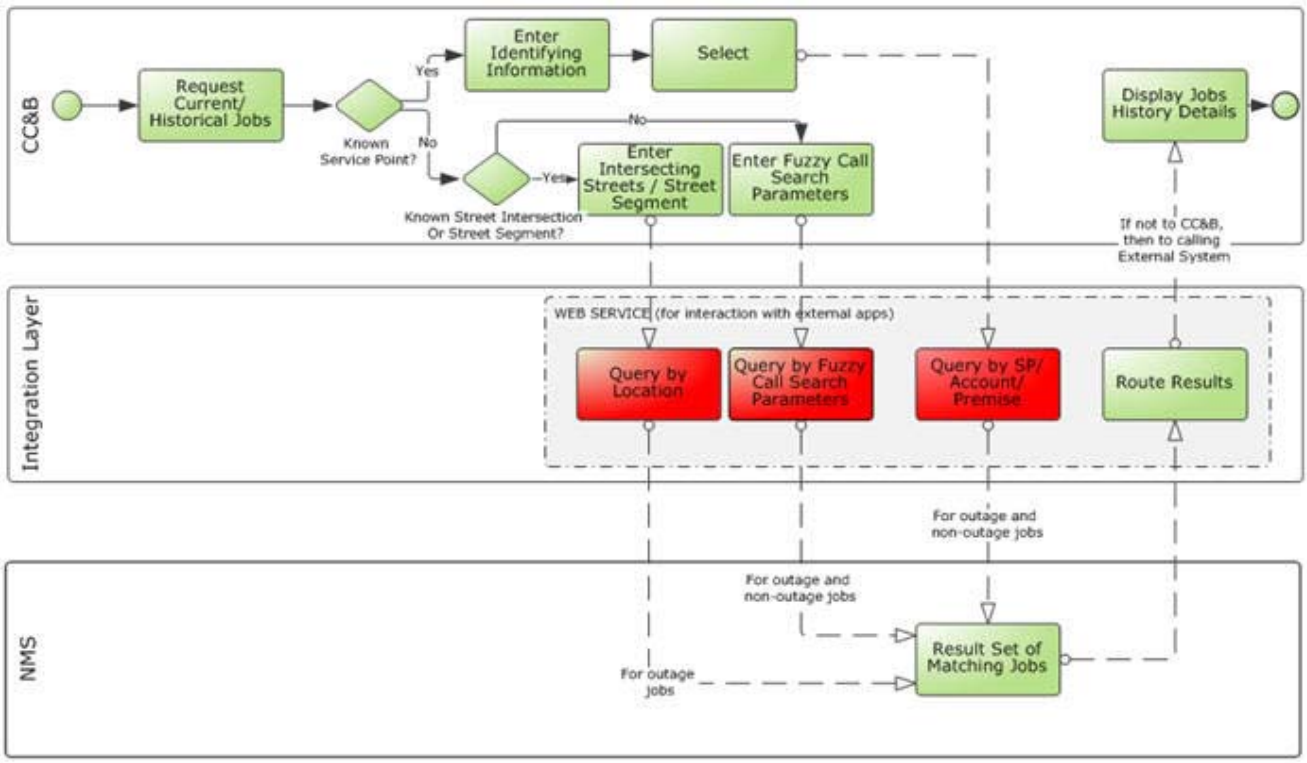


Diagram 6: Job History Query Business Process

Integration Process and Technical Details

Oracle Utilities Customer Care and Billing 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 Care and Billing.

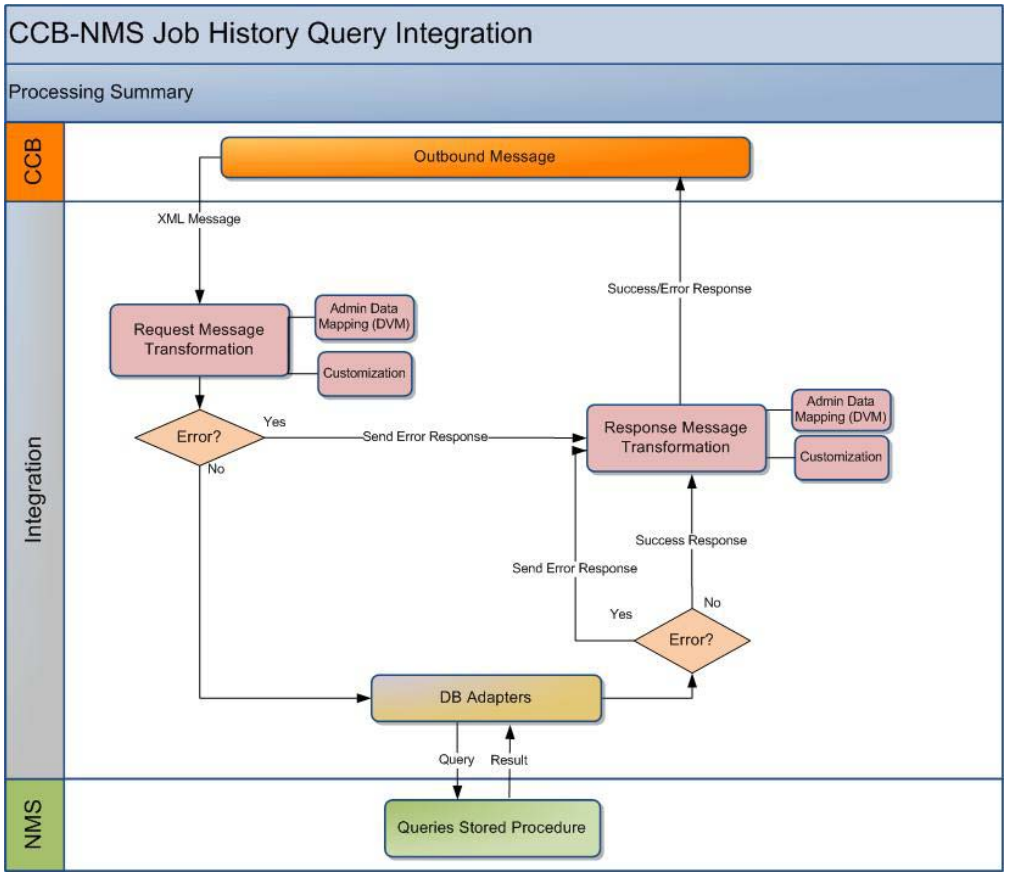


Diagram 7: Technical Process for the Job History Query Business Process

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 Care and Billing 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%.

Number of Days to Retrieve

The number of days of job history to retrieve from Oracle Utilities Network Management System is configurable form the integration layer. It is defined in the configuration properties file, service name = OUCCBOUNMSJobHistoryQuery and property name = NMS.NumberOfDaysOfHistory. This value is sent to Oracle Utilities Network Management System for use as the filter when the records are being returned to Oracle Utilities Customer Care and Billing.

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 Care and Billing. As mentioned, the integration can be configured to send email notification of errors or to store them in an error table.

Integration Service

These values are cross referenced in the Service Configurations section.

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

Adapter Services

Name	Description
OUCCBOUNMSJobHistoryQueryAdapterService	Query NMS for the Job History Adapter Service. This is the DB Adapter Service to invoke NMS stored procedure PK_CCB.JOB_HISTORY.

Trouble Call History Query Process

This process is a real-time synchronous interface from Oracle Utilities Customer Care and Billing 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 Care and Billing.

Refer to the Trouble Call History Query Process - Mapping Details 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 Care and Billing 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 Care and Billing or IVR ID)
- Oracle Utilities Customer Care and Billing default display order of trouble calls with most recent at top.
- The amount of history to be retrieved is restricted by the number of days defined in the integration layer.

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

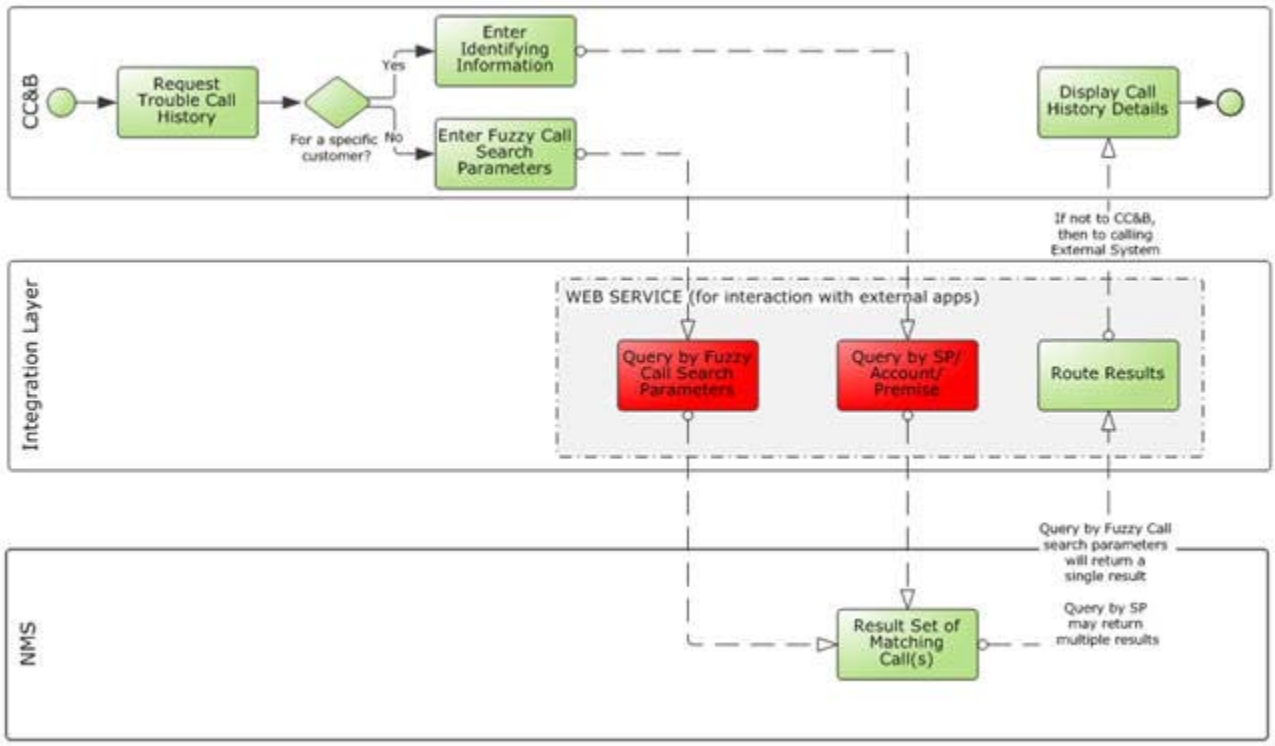


Diagram 8: Trouble Call History Query Business Process

Integration Process and Technical Details

Oracle Utilities Customer Care and Billing 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 Care and Billing.

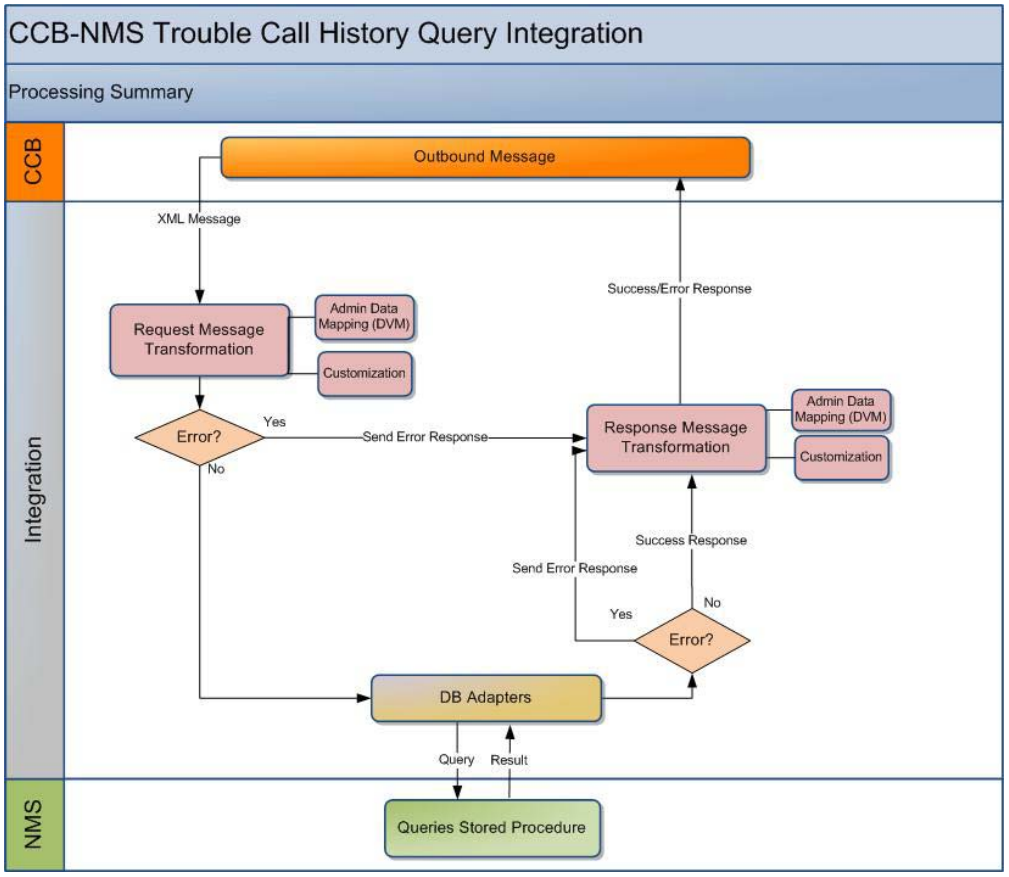


Diagram 9: Technical Process for the Trouble Call History Query Business Process

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 Care and Billing 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%.

Number of Days to Retrieve

The number of days of trouble call history to retrieve from Oracle Utilities Network Management System is configurable form the integration layer. It is defined in the configuration properties file, service name = OUCCBOUNMSTroubleCallsQueryEBF and property name = NMS.NoOfDays. This value is sent to Oracle Utilities Network Management System for use as the filter when the records are being returned to Oracle Utilities Customer Care and Billing.

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 Care and Billing. As mentioned, the integration can be configured to send email notification of errors or to store them in an error table.

Integration Service

These values are cross referenced in the Service Configurations section.

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

Adapter Services

Name	Description
OUCCBOUNMSCallHistoryQueryAdapterService	Query NMS for the Trouble Calls History Adapter Service. This is the DB Adapter Service to invoke NMS stored procedure PK_CCB.Call_History.

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 Care and Billing to retrieve planned outages from Oracle Utilities Network Management System for a particular customer and display the results back in Oracle Utilities Customer Care and Billing.

Refer to the Planned Outages Query Process - Mapping Details 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 Care and Billing given a Service Point.
- Retrieve from Oracle Utilities Network Management System for display in Oracle Utilities Customer Care and Billing 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 amount of history is restricted by the number of days defined in the integration layer.

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

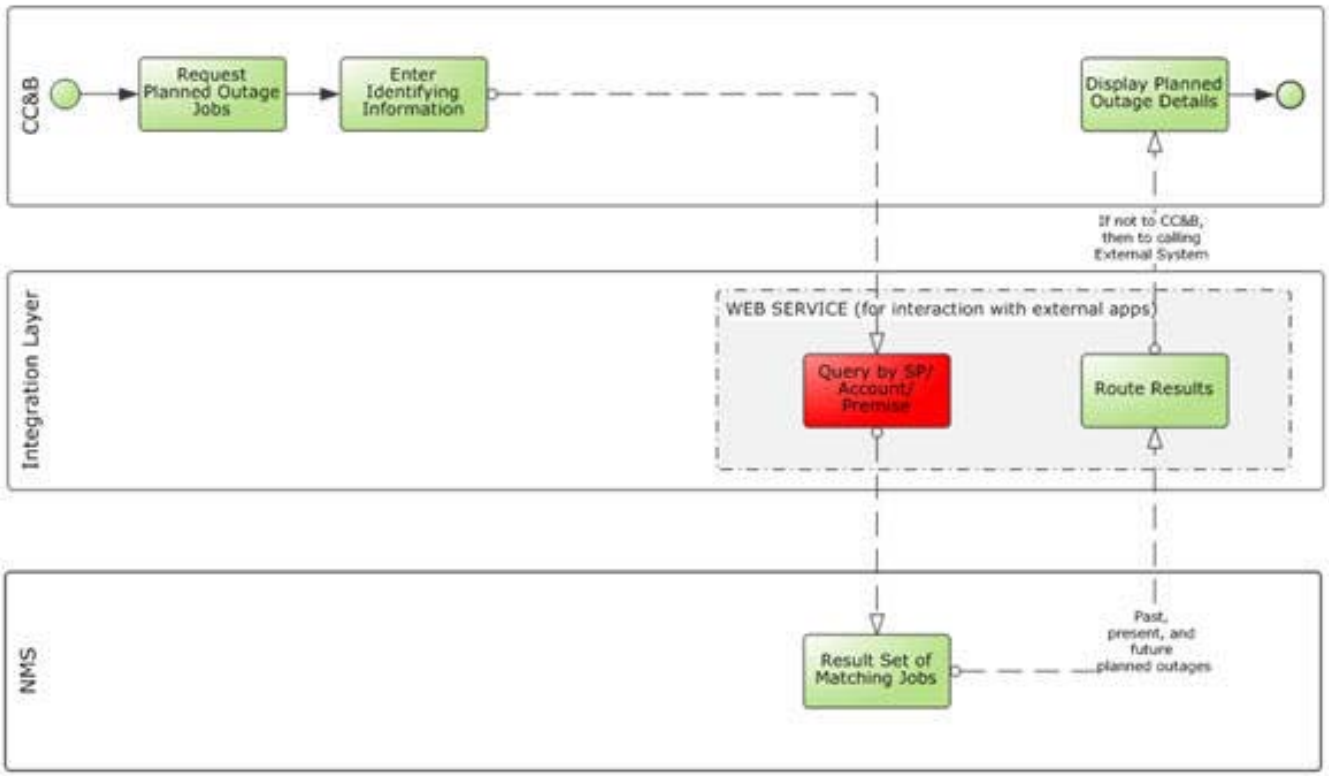


Diagram 10: Planned Outages Query Business Process

Integration Process and Technical Details

Oracle Utilities Customer Care and Billing 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 Care and Billing.

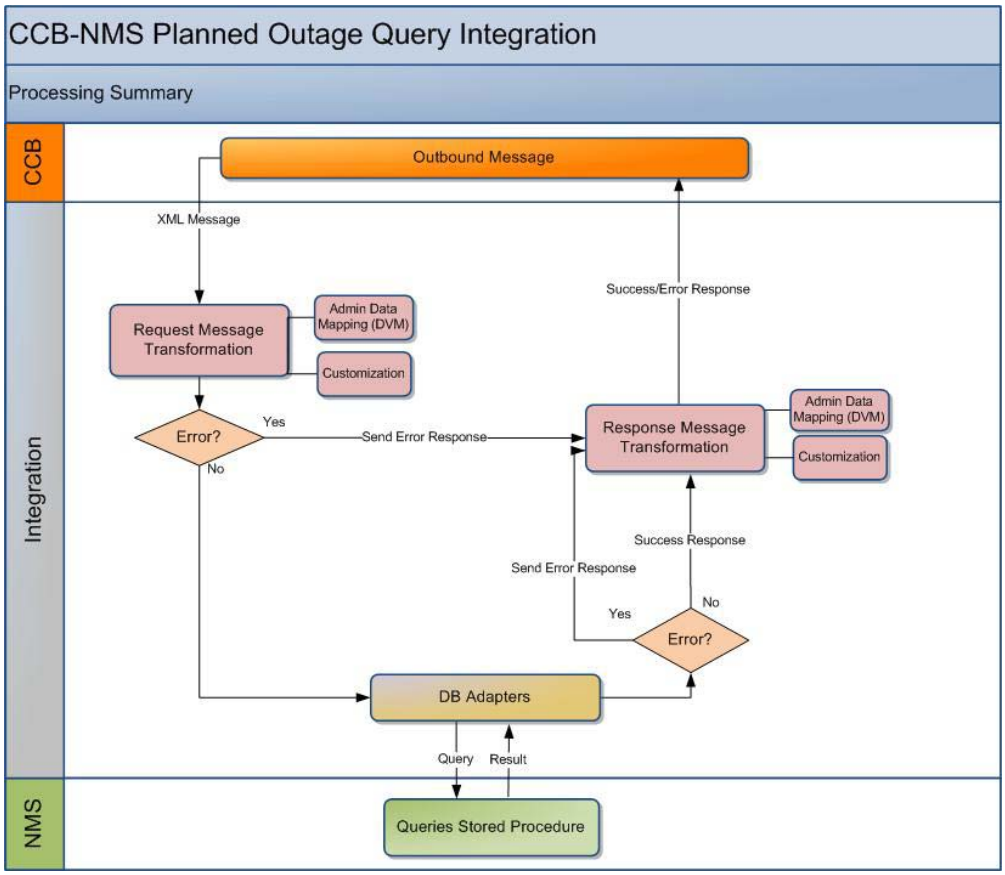


Diagram 11: Technical Process for the Planned Outage Query Business Process

Number of Days to Retrieve

The number of days of past planned outage to retrieve from Oracle Utilities Network Management System is also an input to the Oracle Utilities Network Management System stored procedure and this value is configurable from the integration layer. It is defined in the configuration properties file, service name = OUCCBOUNMSPlannedOutagesQueryEBF and property name = NMS.NoOfDays.

From Oracle Utilities Customer Care and Billing, if Include Past Planned Outages flag is true, the integration sends to Oracle Utilities Network Management System the defined number of days of past planned outage to retrieve from Oracle Utilities Network Management System obtained from the configuration file. If Include Past Planned Outages flag is false, a value of zero is passed to Oracle Utilities Network Management System and the integration only retrieves the current and future planned outages.

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 Care and Billing. As mentioned, the integration can be configured to send email notification of errors or to store them in an error table.

Integration Service

These values are cross referenced in the Service Configurations section.

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

Adapter Services

Name	Description
OUCCBOUNMSPlannedOutagesQueryAdapterService	Query NMS for Planned Outages Adapter Service. This is the DB Adapter Service to invoke NMS stored procedure PK_CCB.switching_history.

Notify Communication Preference Process

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

Refer to the Notify Communication Preference Process - Mapping Details section for message mapping information for this integration point.

Supported Functionality

Your implementation configures Oracle Utilities Network Management System notification types for outages, estimated restoration time or power restoration in Oracle Utilities Customer Care and Billing. Oracle Utilities Customer Care and Billing generates the C1-NotifyEdgeApplicationOutMsg outbound message when a communication

preference is activated or deactivated for these notification types. This outbound message then calls the OUCCBOUNMSNotifyPreferenceEBF BPEL Process. This integration point then communicates this communication preference to Oracle Utilities Network Management System for that particular Oracle Utilities Network Management System notification type.

Please refer to Notification Functionality Version Requirements for edge application requirements to use this functionality.

The following process diagram shows a graphical representation of the notify preference process:

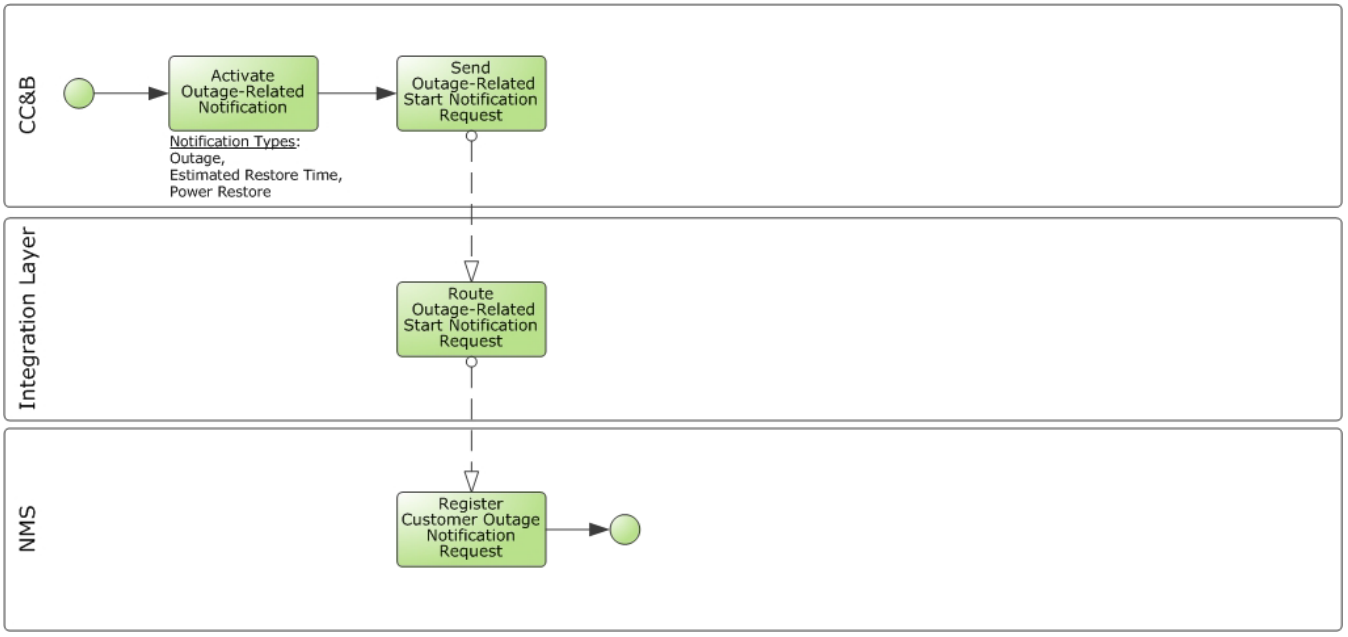


Diagram 12: Notify Communication Preference on Activation of a Communication Preference

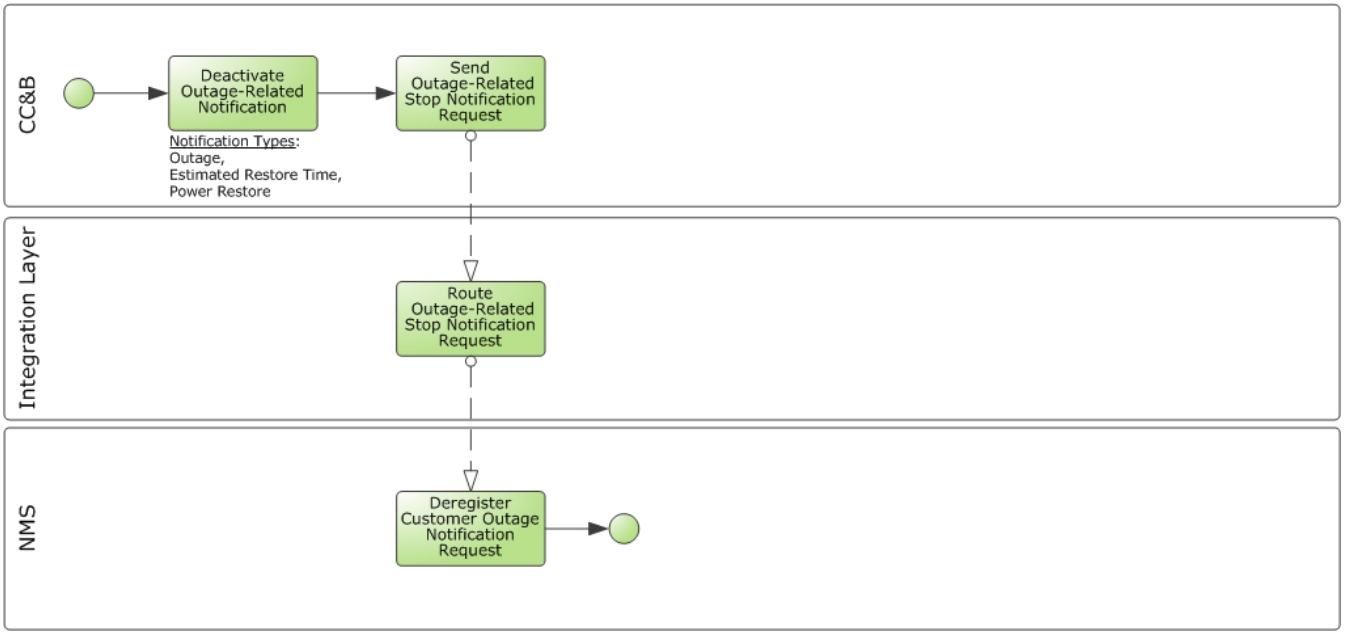


Diagram 13: Notify Communication Preference on Deactivation of a Communication Preference

Integration Process and Technical Details

- Oracle Utilities Customer Care and Billing generates the C1-NotifyEdgeApplicationsOutMsg outbound message on activation and

deactivation of communication preferences for the Oracle Utilities Network Management System notification types.

- The Oracle Utilities Customer Care and Billing outbound message C1-NotifyEdgeApplicationsOutMsg calls the BPEL process through External Systems configured in Oracle Utilities Customer Care and Billing.
- The message is transformed to the Oracle Utilities Network Management System PK _MYC_CSS.DEL_CSS_CUST_NOTIFICATION pl/sql stored procedure input format.
- The existing notification preference in Oracle Utilities Network Management System for that notification type is deleted through PK _MYC_CSS.DEL_CSS_CUST_NOTIFICATION db adapter call.
- If the activeInactive flag is 'C1AC':
  - The message is then transformed to the Oracle Utilities Network Management System PK_MYC_CSS.ADD_CSS_CUST_NOTIFICATION pl/sql stored procedure input format.
  - A new notification preference for the Oracle Utilities Network Management System notification type is added through PK_MYC_CSS.ADD_CSS_CUST_NOTIFICATION db adapter call.

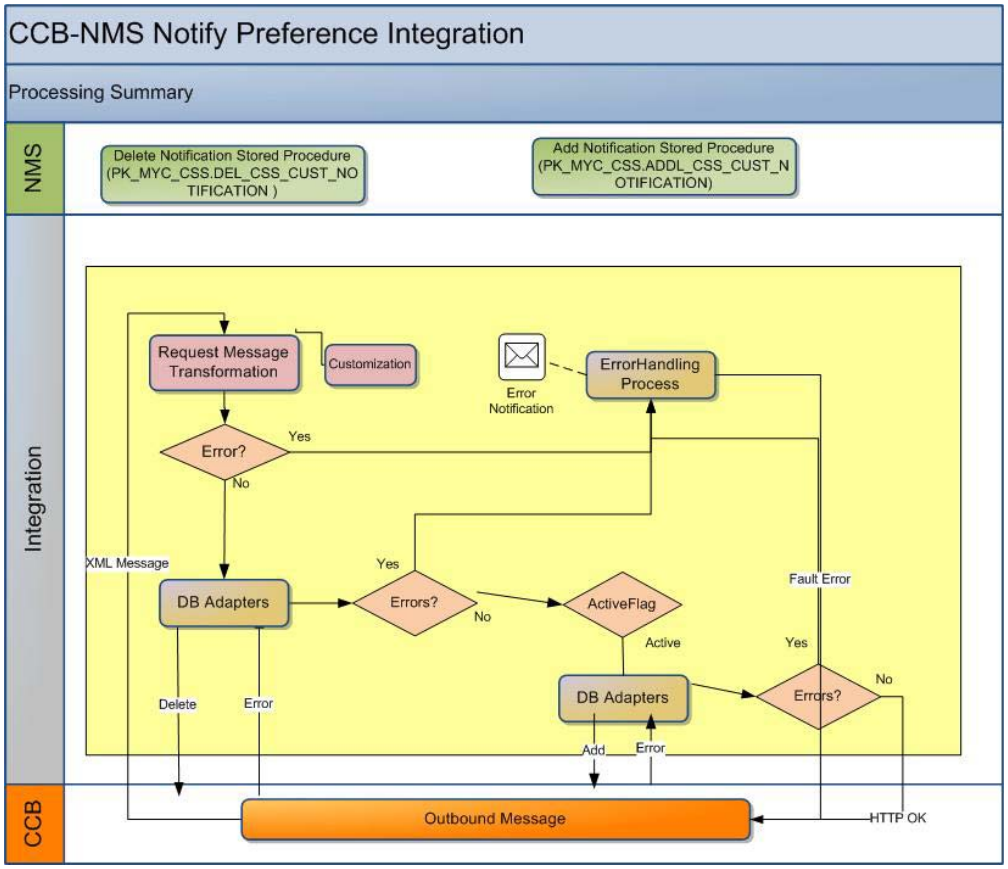


Diagram 14: Technical Process for the Notify Preference Business Process

Successful Update

When the Oracle Utilities Network Management System tables are successfully updated, the integration layer sends an HTTP confirmation to Oracle Utilities Customer Care and Billing.

Errors

When a business or technical error is encountered, the integration layer invokes the integration's common error handling process to log the error in the integration error table and send email notification if configured. The fault is then thrown back Oracle Utilities Customer Care and Billing.

Integration Service

These values are cross referenced in the Service Configurations section.

Name	Description
OUCCBOUNMSNotifyPreferenceEBF	CCB-NMS Notify Preference BPEL Process to notify NMS of the communication preference for the NMS notification types.

Adapter Services

Name	Description
OUNMSCreateNotifPrefStoredProcCall_db	This DB Adapter calls NMS pl/sql stored procedure PK_MYC_CSS.DEL_CSS_CUST_NOTIFICATION to insert communication preference into NMS tables.
OUNMSDeleteNotifPrefStoredProcCall_db	This DB Adapter calls NMS pl/sql stored procedure PK_MYC_CSS.ADD_CSS_CUST_NOTIFICATION to insert communication preferences into the NMS tables.

External DB Call

Application Description	**DB Stored Procedure**	
NMS	MYC_CSS.ADD_CSS_CUST_NOTIFICATION	PL/SQL stored procedure used to register customer to receive outage, restoration and estimated restore time update notifications from NMS.
NMS	MYC_CSS.DEL_CSS_CUST_NOTIFICATION	PL/SQL stored procedure used to unregister customer from outage, restoration and ERT notifications from NMS.

Notification Inbound Process

This BPEL process polls the Oracle Utilities Network Management System table and view MYC_CSS_PARAM_VIO_TEXT and MYC_CSS_PARAM_VIO_TEXT_VIEW for available Oracle Utilities Network Management System notifications and publishes the message into a JMS Notification queue (OUNMSNotificationRequest).

Refer to the Notification Inbound Process - Mapping Detail section for message mapping information for this integration point.

Supported Functionality

The integration point supports the following functionalities:

- Oracle Utilities Network Management System populates MYC_CSS_PARAM_VIO_TEXT and MYC_CSS_PARAM_VIO_TEXT_VIEW with notifications from Oracle Utilities Network Management System on outage, restoration and estimated restore time.
- This integration point polls these tableand view and pushes the message to the JMS queue (OUNMSNotificationRequest).

Please refer to Notification Functionality Version Requirements for edge application requirements to use this functionality.

The following process diagram shows a graphical representation of the notification inbound process:

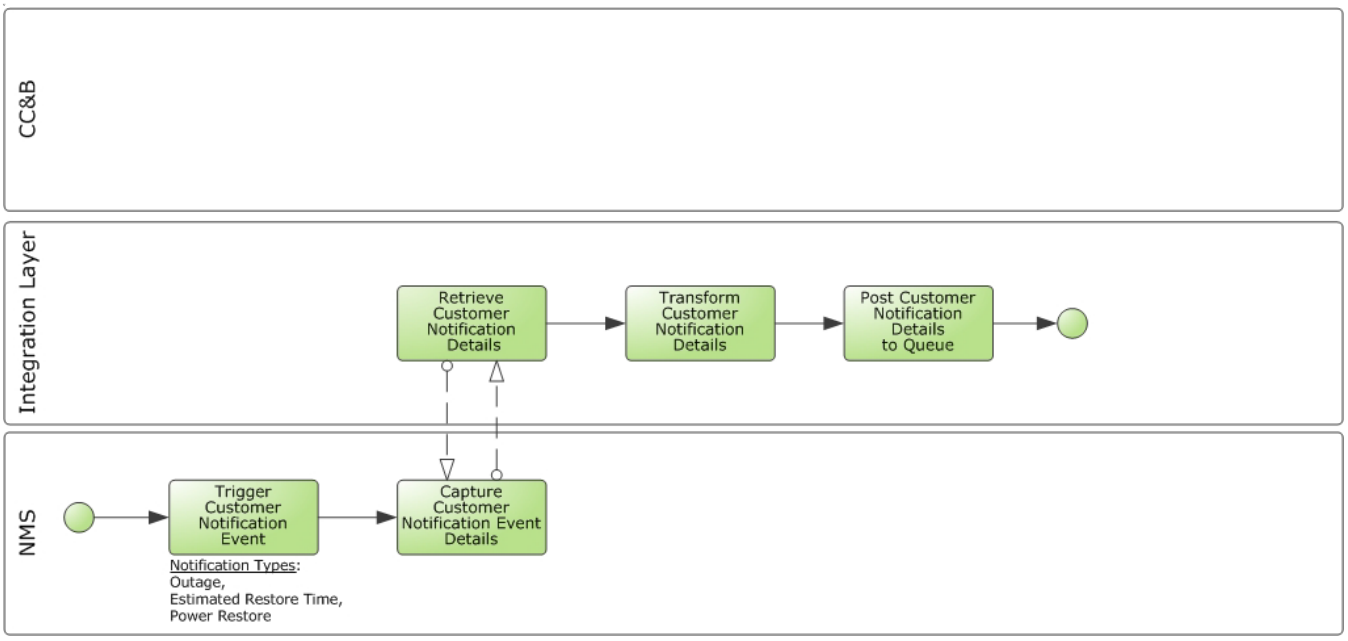


Diagram 15: Notification Inbound Business Process

Integration Process and Technical Details

- Oracle Utilities Network Management System populates MYC_CSS_PARAM_VIO_TEXT, MYC_CSS_PARAM_VIO_TEXT_VIEW database objects with notifications for outage, restoration and estimated restoration time notification updates.
- Any new notification is picked up from Oracle Utilities Network Management System view and table (MYC_CSS_PARAM_VIO_TEXT, MYC_CSS_PARAM_VIO_TEXT_VIEW) through DBPollAdapter. Once the record is read Oracle Utilities Network Management System records are updated with CSS_NOTIFIED = 'Y'.
- The message is transformed to OUNMSNotificationRequest queue message format.
- The message is then pushed into the OUNMSNotificationRequest queue message format.
- The message is pushed to OUNMSNotificationRequest queue.

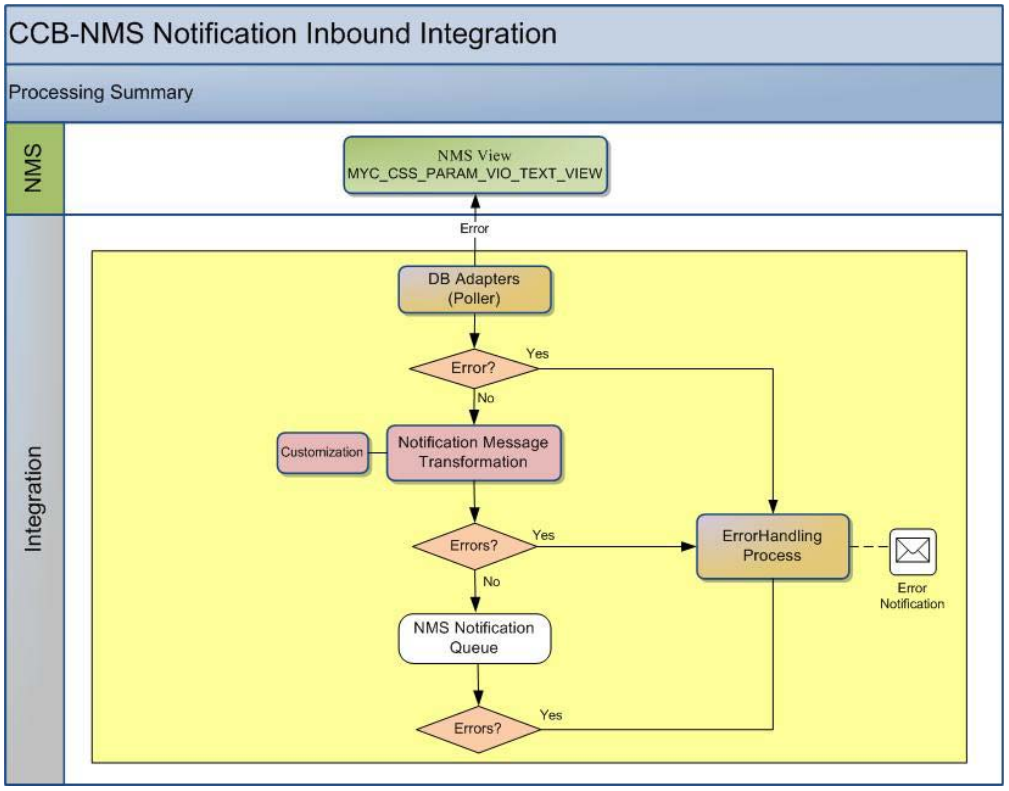


Diagram 16: Technical Process for the Notification Inbound Business Process

Errors

When a business or technical error is encountered, the integration layer invokes the integration's common error handling process to log the error in the integration error table and send email notification if configured the transaction is then rolled back.

Integration Service

These values are cross referenced in the Service Configurations section.

Name	Description
OUNMSNotificationInboundEBF	NMS Notification Inbound BPEL Process. This BPEL process polls the NMS DB table and View for any new notifications and pushes it into a JMS queue. The BPEL process includes transformations, extensions and error notifications.

Adapter Services

Name	Description
NMSNotificationsPoller_db (DB Adapter)	NMS DB Adapter – Polls NMS DB view to get new notifications. This is part of the BPEL process.
NMSNotificationPublisher_jms (JMS adapter)	JMS Adapter – Writes to the target OUNMSNotificationRequest queue. This is part of the BPEL process.

JMS Queue

Queue Name	Description
OUNMSNotificationRequest queue	NMS Notification Inbound Queue used by the integration layer for new NMS notifications.

External DB Call

Application	DB Views/Tables	Description
NMS	MYC_CSS_PARAM_VIO_TEXT_VIEW	This is a database view on top of the MYC_CSS_PARAM_VIO_TEXT table. This view adds additional information for eg: customer account, subject line.
NMS	MYC_CSS_PARAM_VIO_TEXT	This is a database table which contains notifications generated by NMS.

Create Notification Process

This synchronous BPEL process reads the message from OUNMSNotificationRequest JMS queue and calls the Oracle Utilities Customer Care and Billing C1-CreateEdgeAppNotifications webservice to send the Oracle Utilities Network Management System notifications to Oracle Utilities Customer Care and Billing.

Refer to the Create Notification Message Process - Mapping Detail section for message mapping information for this integration point.

Supported Functionality

The integration point supports the following functionalities:

- OUNMSNotificationInboundEBF BPEL process reads the Oracle Utilities Network Management System notifications through a DB poller and pushes the notifications into OUNMSNotificationRequest JMS queue.
    - This integration process reads the notification messages from OUNMSNotificationRequest JMS queue, and sends the notification to

Oracle Utilities Customer Care and Billing by calling C1-CreateEdgeAppNotifications IWS service

Please refer to Notification Functionality Version Requirements for edge application requirements to use this functionality.

The following process diagram shows a graphical representation of the create notification process:

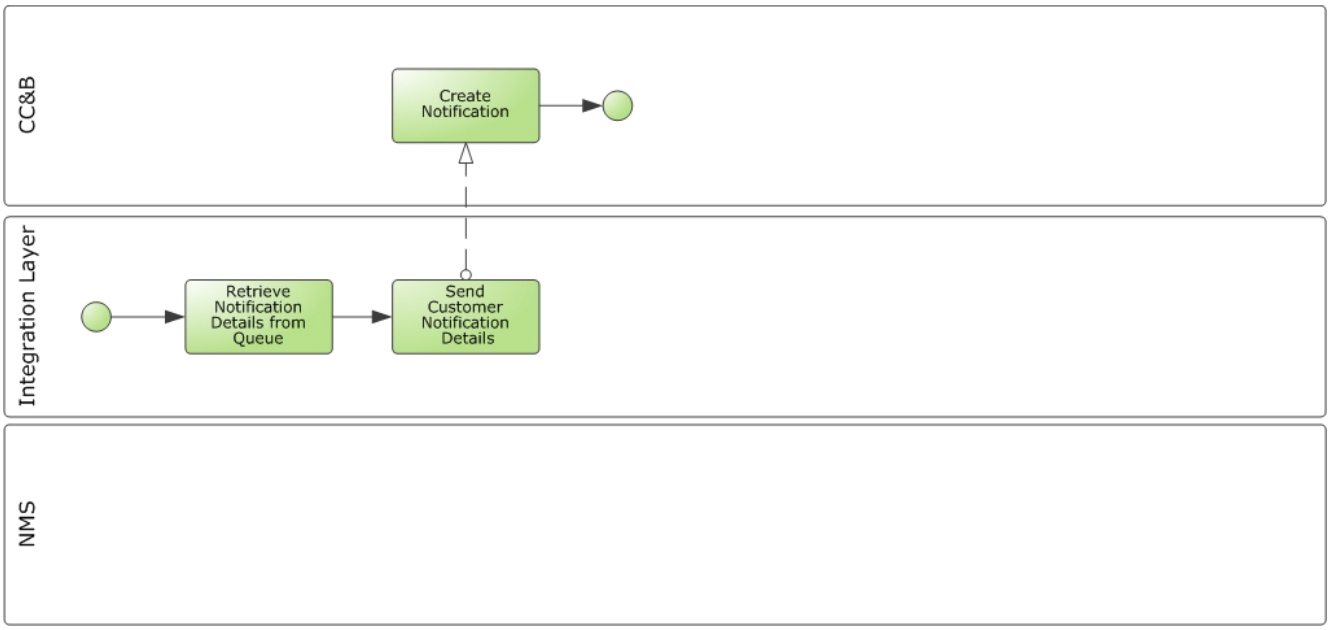


Diagram 17: Create Notification Business Process

Integration Process and Technical Details

- Message is read from the OUNMSNotificationRequest JMS queue.
- OUNMS_OUCCB_DeliveryType DVM maps the Oracle Utilities Network Management System delivery types to Oracle Utilities Customer Care and Billing delivery types.
- The message is transformed to the Oracle Utilities Customer Care and Billing IWS webservice C1-CreateEdgeAppNotification format.
- C1-CreateEdgeAppNotification webservice is invoked to send the notification to Oracle Utilities Customer Care and Billing.

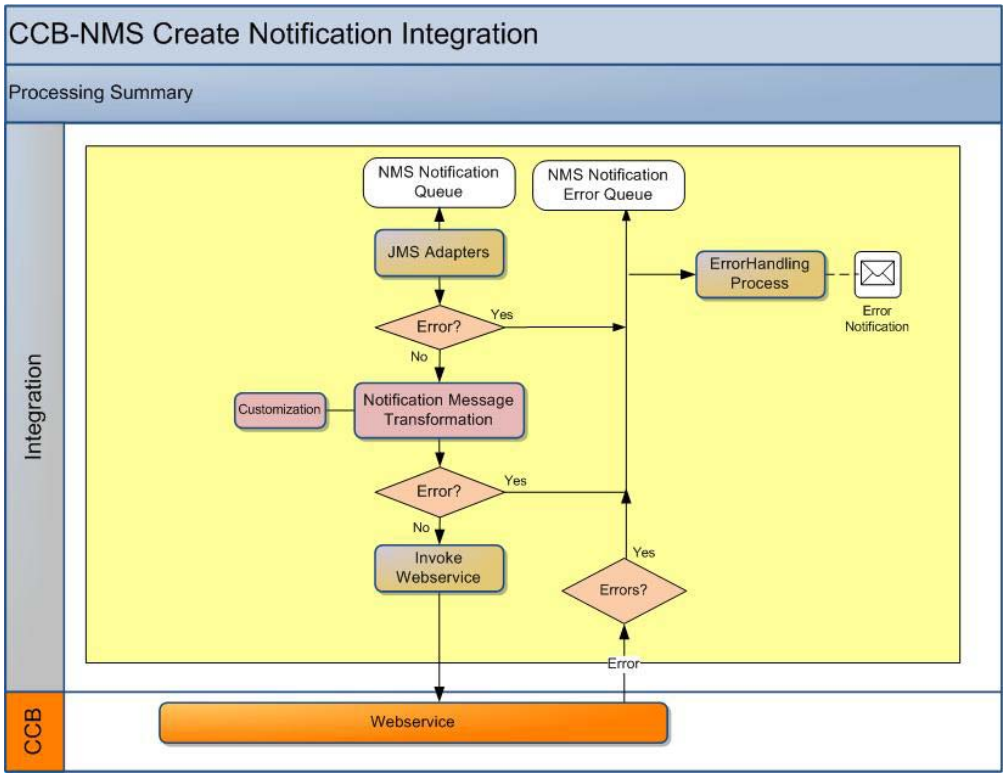


Diagram 18: Technical Process for the Create Notification Business Process

Errors

When a business or technical error is encountered, the integration layer invokes the integration's common error handling process to log the error in the integration error table and send email notification if configured and the transaction is rolled back. The message gets moved to OUNMSNotificationRequestErr queue.

Integration Service

These values are cross referenced in the Service Configurations section.

Name	Description
OUCCBCreateNotificationEBF	CCB Create Notification BPEL Process. This BPEL process transforms the incoming NMS notification message to CCB format and invokes the CCB webservice to pass the NMS notification to CCB. The BPEL process includes transformations, extensions and error notifications.

Adapter Services

JMS Adapter Name	Description
OUNMSNotificationConsumer_jms	JMS Adapter – Reads NMS Notifications from the Notification Inbound queue. This is created as part of the BPEL process.

JMS Queue

Queue Name	Description
OUNMSNotificationRequest	Notification Inbound Queue Used by the integration layer to read new NMS notifications from NMS.

External Webservice Call

Application	Webservice	Description
CCB	C1-CreateEdgeAppNotification	CCB IWS webservice to Create Edge application notifications in CCB.

Part 2

Implementation Guidelines

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

This section contains the following chapters:

- Configuration Guidelines
- Monitoring and Troubleshooting
- Customization Options

Chapter 3

Configuration Guidelines

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

- Setting Up Oracle Utilities Customer Care and Billing
- Setting Up Oracle Utilities Network Management System
- Setting Up the Integration Pack

Setting Up Oracle Utilities Customer Care and Billing

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

> For more information on configuring and working with Oracle Utilities Customer Care and Billing, see the Oracle Utilities Customer Care and Billing standard documentation.

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

- Configure Administrative Tables
- Configure the Sync Request Process
  - Batch Code
  - BO Algorithms
  - MO Algorithms
  - Maintenance Objects
  - Business Objects
- JMS Configuration
  - Weblogic Server JMS Configuration
  - Configuration File Changes
- XAI Configuration
  - XAI JNDI Server

- XAI JMS Queue
- XAI JMS Connection
- Message Sender
- Outbound Message Type
- External System

Configure Administrative Tables

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

- Characteristic Types
- Feature Configuration
- Service Type
- Meter Type

For more information about configuring Oracle Utilities Customer Care and Billing, see the section titled "Setting up the System to Enable FA Integration" in the *Oracle Utilities Customer Care and Billing User Guide*.

Characteristic Types

The following characteristic types must be defined to facilitate the integration.

Characteristic Type	Guideline	Characteristic Entity Collection	Corresponding DVM
Critical Priority Characteristic Type	• Premise characteristic used to define the critical priority for the premise. • Pre-defined characteristic type. • The pre-defined values listed here must exactly match values in the DVM for CCB Critical Priority Code.	Include *Premise*	OUCCB_OUNMS_Serv_C_Priority
Medical Priority Characteristic Type	• Premise characteristic used to define the medical priority for the premise. • Pre-defined characteristic type. • The pre-defined values listed here must exactly match values in the DVM for CCB Medical Priority Code.	Include *Premise*	OUCCB_OUNMS_Serv_D_Priority

Characteristic Type	Guideline	Characteristic Entity Collection	Corresponding DVM
Key Priority Characteristic Type	• Premise characteristic used to define the key priority for the premise. • Pre-defined characteristic type. • The pre-defined values listed here must exactly match values in the DVM for CCB Key Priority Code.	Include *Premise*	OUCCB_OUNMS_Serv_K_Priority
Location City	• Characteristic used to identify the location city for an outage without a premise. • Adhoc characteristic type. • CCB Demo Data: CI_CITY (Sample).	Include *Service Task*.	N/A
Location State	• Characteristic used to identify the location state for an outage without a premise . • Adhoc characteristic type. • CCB Demo Data: CI_STATE (Sample).	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. • CCB Demo Data: CI_LOCN1 (Sample).	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. • CCB Demo Data: CI_LOCN2 (Sample)	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. • CCB Demo Data: CI_BLKNBR (Sample)	Include *Service Task*.	N/A
Contact Name	• Characteristic used to identify a contact name used for an outage without a premise. • Adhoc characteristic type. • CCB Demo Data: CI_CNTNM (Sample).	Include *Service Task*.	N/A
Contact Number	• Characteristic used to identify a contact number used for an outage without a premise. • Adhoc characteristic type. • CCB Demo Data: CI_CNTPN (Sample).	Include *Service Task*.	N/A

Characteristic Type	Guideline	Characteristic Entity Collection	Corresponding DVM
Call Identifier	• Characteristic used to identify a call identifier used for an outage without a premise. • Adhoc characteristic type. • CCB Demo Data: CI_CALL (Sample).	Include *Service Task*.	N/A

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
	• CCB Demo Data: CI_OUT01, CI_OUT02, CI_OUT03, CI_OUT04, CI_OUT05, CI_OUT06, CI_OUT07, CI_OUT08, CI_OUT09 (Samples)
		Include *Service Task*.	N/A

Feature Configuration

To create a new feature configuration complete the following:

Schema Constants

To create new feature configuration with Schema Constants, perform the following steps:

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.
Critical Priority Characteristic Type	The user defined critical priority characteristic type code. The Option Value must be set as a valid Characteristic Type defined in the Characteristic Type table.
Medical Priority Characteristic Type	The user defined medical priority characteristic type code. The Option Value must be set as a valid Characteristic Type defined in the Characteristic Type table.
Key Priority Characteristic Type	The user defined key priority characteristic type code. The Option Value must be set as a valid Characteristic Type defined in the Characteristic 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.
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.

Oracle Utilities Network Management System Integration

To create new feature configuration with the Oracle Utilities Network Management System Integration, perform the following steps:

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

Option	Notes
External System	Defines the external system used for query outbound messages created from the outage management information portal page. The Option Value must be set as a valid External System defined in the External System table.
Outbound Message Type - Call History	Defines the outbound message type used for the call history query outbound messages created from the outage management information portal page. The Option Value must be set as a valid Outbound Message Type defined in the Outbound Message Type table.
Outbound Message Type - Job History	Defines the outbound message type used for the job history query outbound messages created from the outage management information portal page. The Option Value must be set as a valid Outbound Message Type defined in the Outbound Message Type table.
Outbound Message Type - Call History	Defines the outbound message type used for the planned outage query outbound messages created from the outage management information portal page. The Option Value must be set as a valid Outbound Message Type defined in the Outbound Message Type table.
Outage Group Code Characteristic Type Prefix	Defines the prefix used for trouble call outage group code characteristic types. The system uses this to build a drop-down of outage group codes during trouble call processing. The Option Value must be set as a valid Characteristic Type defined in the Characteristic Type table.

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.	OUCCB_OUNMS_AccountType

Meter Type

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

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

Navigation	Guideline	Corresponding DVM
Admin > Device > Meter Type	Define your meter types.	OUCCB_OUNMS_MeterType

Master Configuration

The Notification Preferences master configuration contains a section for Edge Application Notification. This must be configured to support the notification logic between Oracle Utilities Customer Care and Billing and Oracle Utilities Network Management System. Refer to the online help for more information.

Configure the Sync Request Process

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

Batch Code

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

Batch	Description
F1-SYNRQ	Sync Request Monitor Process

Batch Parameters	Parameter Description	Value
maintenanceObject	Sync Request maintenance object.	F1-SYNC REQ (This is the defaulted value.)
isRestrictedByBatchCode	The value of true restricts processing to sync requests whose current state is linked to this batch code.	
restrictToBusinessObject	Enter a business object code here to limit the process to sync requests linked to this business object.	C1-NMSSPSyncRequest (To run only the NMS customer sync request, populate this 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)_.

BO Algorithms

Algorithm Type	Description
C1-CAPNMSSPI	This pre-processing algorithm creates the initial snapshot for the sync request. Refer to the algorithm description in the system for details on how to specify the parameters below: • Define the read BOs the algorithms use to build the initial/final snapshot. The base product provides C1-NMSPerson, C1-NMSAccount, C1-NMSSA, C1-NMSSP, MDMPremise, C1-NMSMeter, and C1-NMSItem for this purpose. If additional elements are needed in the sync request, your implementation may create a child of any of these BOs and add the element under a group called <customElements>. This ensures that the elements are included in the sync request message at the proper group nodes. With this set up any custom translation can be implemented at the integration layer. • Define the data area that holds the elements needed in the snapshot. The base product provides C1-NMSSPBasedSnapshot for this purpose. Your implementation should not have to create a custom data area as this already provides <customElements> nodes throughout its schema to allow for the addition of any elements not included in the base solution.
C1-MDM-TMOT	This monitor algorithm sets a timeout limit on the receipt of a response from the external system. Define the number of hours your implementation wishes to wait for a response from NMS before transitioning the sync request into the Error state.
F1-TD-CREATE	This algorithm creates a To Do Entry. At a minimum, your implementation will have to define the To Do Type to use in creating the To Do Entry and the Characteristic Type For Log Entry to be used in linking the To Do Entry to the sync request via its logs. The base product provides F1-SYNRQ and F1-TODO, respectively, for this purpose. For details on the other parameters used by this algorithm, see the algorithm type description.

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
C1-PERCDCSP	This algorithm instantiates SP-based sync request whenever a change to the Person MO is detected. Define the sync request BO to be instantiated in the algorithm's parameters.
C1-ACCTCDCSP	This algorithm instantiates an SP-based sync request whenever a change to the Account MO is detected. Define the sync request BO to be instantiated in the algorithm's parameters.
C1-SACDCSP	This algorithm instantiates SP-based sync request whenever a change to the SA MO is detected. Define the sync request BO to be instantiated in the algorithm's parameters.
C1-PREMCDCSP	This algorithm instantiates SP-based sync request whenever a change to the Premise MO is detected. Define the sync request BO to be instantiated in the algorithm's parameters.
C1-SPICDCSP	This algorithm instantiates SP-based sync request whenever a change to the SP/Item MO is detected. Define the sync request BO to be instantiated in the algorithm's parameters.
C1-SPMCDCSP	This algorithm instantiates SP-based sync request whenever a change to the SP/Meter MO is detected. Define the sync request BO to be instantiated in the algorithm's parameters.
C1-ITEMCDCSP	This algorithm instantiates SP-based sync request whenever a change to the Item MO is detected. Define the sync request BO to be instantiated in the algorithm's parameters.
C1-MTRCDCSP	This algorithm instantiates SP-based sync request whenever a change to the Meter MO is detected. Define the sync request BO to be instantiated in the algorithm's parameters.

Maintenance Objects

Maintenance Objects	Description
PERSON	Specify the MO Audit algorithm configured in the previous section.
ACCOUNT	Specify the MO Audit algorithm configured in the previous section.
SA	Specify the MO Audit algorithm configured in the previous section.
SP	Specify the generic MO Audit algorithm F1-GCHG-CDCP. Also, specify the C1-NMSSPSyncRequest BO in the Sync Request BO MO Option.
PREMISE	Specify the MO Audit algorithm configured in the previous section.

Maintenance Objects	Description
SP/ITEM	Specify the MO Audit algorithm configured in the previous section.
SP/METER	Specify the MO Audit algorithm configured in the previous section.
ITEM	Specify the MO Audit algorithm configured in the previous section.
METER	Specify the MO Audit algorithm configured in the previous section.

Business Objects

Business Object	Description
C1-NMSSPSyncRequest	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 BO Options must be configured 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 C1-NMSSPSyncReqOutMsg for the NMS SP Sync. Refer to "Defining Outbound Message Types" 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 XSL C1-CCBJMSQAddNamespace.xsl. Refer to External Systems 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. The base package comes with an algorithm that creates a message and drops it into a JMS Queue. If your implementation uses this algorithm (C1-CR-OUTMSG), you must define the BO Options for External System and Outbound Message Type.

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

JMS Configuration

This section describes the JMS configuration to be configured in the Oracle Utilities Customer Care and Billing WebLogic server and in the Oracle Utilities Customer Care and Billing deployment xml files. Configure the JMS to receive JMS messages from the integration layer.

This configuration is only needed in the Customer Synchronization Integration process which uses the JMS queues.

Weblogic Server JMS Configuration

To configure JMS, log in o the Oracle Utilities Customer Care and Billing WebLogic server console using the URL http://<server_name>:<port_number>/console.

For example: http://ccbserver:7001/console.

JMS Module

Perform the following steps to create a new JMS module to be used for remote queue configuration:

1. Open the WebLogic console and create a new JMS module.
2. Enter a meaningful name for the JMS module. This JMS module is used to create configurations which consume messages from remote WebLogic queues.
   For example: NMSInegrationModule

Foreign Server

Perform the following steps to create a new foreign server to be used for remote queue configuration:

1. Enter the weblogic console and select the JMS module created for the integration.
2. Create a Foreign server under the JMS Module.
3. Add the following for the Foreign Server:
   - **Name** - Name for the Foreign Server
     For example: CCBNMSForeignServer
   - **JNDI Initial Context Factory -weblogic.jndi.WLInitialContextFactory**
   - **JNDI Connection URL** - Add the URL for the Integration SOA Server
     For example: **t3://soserver.com:8002**
   - **JNDI Properties Credential** - Password for the SOA Server user
   - **JNDI Properties** - **java.naming.security.principal=<SOA Server user>**
     For example: weblogic
4. Under the Foreign server create a Foreign Destination for each remote queue.
   - **Name** - Name of foreign destination
   - **Local JNDI Name** - Add a local JNDI name for the Integration Queue. Local JNDI name is added manually later as part of configuration in the weblogic-ejb-jar.xml --><weblogic-enterprise-bean> --> <message-driven-descriptor> --> <destination-jndi-name>

- **Remote JNDI Name** - JNDI name of the queue on the Integration SOA Server
  For example: the Customer Sync the integration point that uses a queue, one destination is created.

Destination Name	Local JNDI Name	Remote JNDI Name
OUCCBCustomerDataSync Response	jms/CCB-NMS/LocalOUCCBCustomerDataSyncResponse	jms/CCB-NMS/OUCCBCustomerDataSyncResponse

5. Under the Foreign server create a Remote Connection Factory.
   - **Name** - Name of remote connection factory
   - **Local JNDI Name** - Add a local JNDI name for the Integration Connection Factory. This JNDI name is later added manually as part of configuration in the weblogic-ejb-jar.xml --> <weblogic-enterprise-bean> --> <message-driven-descriptor> --> <connection-factory-jndi-name>
   - **Remote JNDI Name** - JNDI name of the JMS Connection factory on the Integration SOA Server

Destination Name	Local JNDI Name	Remote JNDI Name
CCBNMSCF	jms/CCB-NMS/LocalCCBNMSF	jms/CCB-NMS/CCBNMSCF

Configuration File Changes

It is recommended that you use the Oracle Utilities Customer Care and Billing template and CM (Customer Modification) feature to make changes to these configuration files. This ensures that your modifications cannot be overwritten by future application patches.

Modify Files: ejb-jar.xml and ejb-weblogic-jar.xml

Location: Oracle Utilities Customer Care and Billing Enterprise Archive (EAR) file

The following needs to be observed while making configuration file changes:

- The Oracle Utilities Customer Care and Billing configuration files, ejb-jar.xml and ejb-weblogic-jar.xml, must be modified to configure Message Driven Beans(MDB). MDBs which receive messages from the integration queues. These files are part of the Oracle Utilities Customer Care and Billing Enterprise Archive (EAR) file.
- The Oracle Utilities Customer Care and Billing application needs to be redeployed after these changes are made.
- **Managing Configuration Files**: Configuration files such as config.xml, ejb-jar.xml, and ejb-weblogic-jar.xml are managed through template configuration files which reside in the environment's templates directory. When the initialSetup.sh script is executed, environment specific information is combined with the template to create the target file which is then deployed to the correct location. When the environment is started (spl.sh start), changes are automatically deployed to WebLogic.

- **Templates**:
  - **Overriding the existing template: For CCB version 2.3.x**: It is possible to override the existing template by providing another template file in the same location, with the same name, but prefixed with ".cm". For example, if etc/cm.ejb-jar.xml.template is found when initialSetup is run, the cm.ejb-jar.xml.template is used to generate the target ejb-jar.xml file.
  - **Extending existing templates: For CCB version 2.4.x:** It is possible to extend existing templates with the use of Include template file(s) in the same location as the existing template. Using #ouaf_user_exit within the target template that is extended, additional configuration from the include template is processed and appended to the target template where the #ouaf_user_exit is present.
- **Enabling changes for integration**: To enable your changes for integration with Oracle Utilities Network Management System it is recommended that you first make a "CM" copy of the existing template and then make your changes to the CM version. If there are any problems with starting the application, delete the CM versions of the files and rerun initialSetup to regenerate and redeploy the original versions.
  If you make CM versions of the template files and later install a patch which updates the base template, the CM version is not updated.

  Note: For **CCB 2.3.x**, working examples of the configuration files are available for download from My Oracle Support in Patch number **9974118 - CCB - MDM/NMS INTEGRATION CONFIGURATION EXAMPLES**. Before installing the examples please read the Product Fix Design document included in the patch.

  For **CCB Version 2.4.x**, working examples of the configuration files are available for download from My Oracle Support in patch number **15868412 - CCBV2.4 - NMS INTEGRATION CONFIGURATION EXAMPLES**. Before installing the examples, read the ReadMe.txt included in the patch for more information.

For CCB Version 2.3.x

Perform the following steps to create Message Driven Beans (MDB) to receive messages from the Oracle Utilities Customer Care and Billing Inbound queue:

1. Create an MDB for the Oracle Utilities Customer Care and Billing inbound queue to receive messages and invoke Oracle Utilities Customer Care and Billing service. For simplicity, we refer to the names of the target configuration files in the following examples, however you should make your changes in the cm.<target file>.template version of the file, and then execute initalSetup.sh (Unix) or initalSetup.cmd (Windows) to deploy the generated file.
2. Modify the ejb-jar.xml and weblogic-ejb-jar.xml to configure the MDBs.
3. Add the <message-driven> and <container-transaction> tag for each inbound queue in the ejb-jar.xml. Add a security role with role cisusers in the ejb-jar.xml.

   For example:

```
<?xml version="1.0" encoding="UTF-8"?>
<ejb-jar>
<display-name>ServiceBean</display-name>
<enterprise-beans>
   <!-Customer Sync Integration Point -->
```

```
   <message-driven>
    <description>MDB for OUCCBCustomerDataSyncResponse </description>
    <display-name>OUCCBCustomerDataSyncResponse</display-name>
    <ejb-name>OUCCBCustomerDataSyncResponse</ejb-name>
    <ejb-class>com.splwg.ejb.mdb.MessageProcessor</ejb-class>
    <messaging-type>javax.jms.MessageListener</messaging-type>
    <transaction-type>Bean</transaction-type>
    <message-destination-type>javax.jms.Queue</message-destination-type>
</message-driven>
</enterprise-beans>
<assembly-descriptor>
    <security-role>
      <role-name>cisusers</role-name>
   </security-role>
    <!-Customer Sync Integration Point -->
    <container-transaction>
      <method>
         <ejb-name>OUCCBCustomerDataSyncResponse</ejb-name>
         <method-name>onMessage</method-name>
      </method>
      <trans-attribute>NotSupported</trans-attribute>
    </container-transaction>
</assembly-descriptor>
</ejb-jar>
```

4. Modify the weblogic-ejb-jar.xml. Add the <weblogic-enterprise-bean> tag for each inbound queue.
   Add a security role with role cisusers.

5. The following are references in the <weblogic-enterprise-bean> tag.

   - <ejb-name> - MDB Name given in ejb-jar.xml
   - <destination-jndi-name> - JNDI name provided in JMS Module' Foreign Server 'Foreign Destination 'Local JNDI Name
   - <connection-factory-jndi-name> - JNDI name provided in JMS Module' Foreign Server'Remote Connection Factory'Local JNDI Name

   For example:

```
<?xml version="1.0" encoding="UTF-8"?>
<weblogic-ejb-jar xmlns="http://www.bea.com/ns/weblogic/90"
xmlns:j2ee="http://java.sun.com/xml/ns/j2ee" xmlns:xsi="http://
www.w3.org/2001/XMLSchema-instance" xsi:schemaLocation="http://
www.bea.com/ns/weblogic/90 http://www.bea.com/ns/weblogic/90/
weblogic-ejb-jar.xsd">
<weblogic-enterprise-bean>
    <ejb-name>SPLServiceBean</ejb-name>
    <jndi-name>spl/servicebean</jndi-name>
</weblogic-enterprise-bean>
<!-Customer Sync Integration Point -->
<weblogic-enterprise-bean>
    <ejb-name>OUCCBCustomerDataSyncResponse</ejb-name>
    <message-driven-descriptor>
       <pool>
    <max-beans-in-free-pool>5</max-beans-in-free-pool>
    <initial-beans-in-free-pool>1</initial-beans-in-free-pool>
       </pool>
    <destination-jndi-name>jms/CCB-NMS/
OUCCBCustomerDataSyncResponse</destination-jndi-name>
    <connection-factory-jndi-name>jms/CCB-NMS/CCBNMSCF
           </connection-factory-jndi-name>
    </message-driven-descriptor>
</weblogic-enterprise-bean>
<security-role-assignment>
    <role-name>cisusers</role-name>
    <principal-name>cisusers</principal-name>
</security-role-assignment>
```

```
</weblogic-ejb-jar>
```

For CCB Version 2.4.x

To create MDB to receive messages from the Oracle Utilities Customer Care and Billing inbound queue, perform the following steps:

1. Create an MDB for each Oracle Utilities Customer Care and Billing inbound queue to receive messages and invoke the Oracle Utilities Customer Care and Billing service. For simplicity, we refer to the names of the target configuration files in the following examples. However, you should make your changes in the templates/cm_<target file>.include version of the file and then execute initalSetup.sh (Unix) or initalSetup.cmd (Windows) to deploy the generated file.
2. Create or modify the following files to configure the MDBs:
   - cm_ejb-jar.xml.wls.jms_1.include
   - cm_ejb-jar.xml.wls.jms_2.include
   - cm_weblogic-ejb-jar.xml.jms.include
   - cm_config.xml.jms.include
3. Add the <message-driven> and <container-transaction> tag for each inbound queue in the ejb-jar.xml files. Also, add a security role with role cisusers in the ejb-jar.xml files.
   |

   - **cm_ejb-jar.xml.wls.jms_1**
     Example:

```
<!-Customer Sync Response Integration Point -->
<message-driven>
   <description>MDB for OUCCBCustomerDataSyncResponse</description>
   <display-name>OUCCBCustomerDataSyncResponse</display-name>
   <ejb-name>OUCCBCustomerDataSyncResponse</ejb-name>
   <ejb-class>com.splwg.ejb.mdb.MessageProcessor</ejb-class>
   <messaging-type>javax.jms.MessageListener</messaging-type>
   <transaction-type>Bean</transaction-type>
   <message-destination-type>javax.jms.Queue</message-destination-type>
</message-driven>
```

   - **cm_ejb-jar.xml.wls.jms_2**
     Example:

```
<!-Customer Sync Response Integration Point -->
 <assembly-descriptor>

            <security-role>
                <role-name>cisusers</role-name>
            </security-role>

            <container-transaction>
              <method>
                 <ejb-name>OUCCBCustomerDataSyncResponse</ejb-name>
                   <method-name>onMessage</method-name>
              </method>
              <trans-attribute>NotSupported</trans-attribute>
            </container-transaction>

</assembly-descriptor>
```

- Modify the cm_weblogic-ejb-jar.xml.jms.include file. Add the <weblogic-enterprise-bean> tag for each inbound queue.
  The references in <weblogic-enterprise-bean> tag include:
  - <ejb-name> - MDB name given in ejb-jar.xml.
  - <destination-jndi-name> - JNDI name provided in JMS module ' Foreign server ' Foreign destination ' Local JNDI name.
  - <connection-factory-jndi-name> - JNDI name provided in JMS module ' Foreign server ' Remote Connection Factory ' Local JNDI name.

cm_weblogic-ejb-jar.xml.jms.include example:

```
<weblogic-enterprise-bean>
   <ejb-name>OUCCBCustomerDataSyncResponse</ejb-name>
   <message-driven-descriptor>
      <pool>
      <max-beans-in-free-pool>5</max-beans-in-free-pool>
      <initial-beans-in-free-pool>1</initial-beans-in-free-pool>
      </pool>
      <destination-jndi-name>jms/CCB-NMS/OUCCBCustomerDataSyncResponse</
        destination-jndi-name>
      <connection-factory-jndi-name>jms/CCB-NMS/CCBNMSCF</connection-
        factory-jndi-name>
   </message-driven-descriptor>
</weblogic-enterprise-bean>
```

- **cm_config.xml.jms**.include example:

```
<jms-system-resource>
   <name>CCBNMSFJS</name>
   <target>myserver</target>
   <descriptor-file-name>jms/CCBNMSIntegrationModule-jms.xml</descriptor-
    file-name>
</jms-system-resource>
```

XAI Configuration

The following sections identify settings required to send messages to the integration layer, including:

- XAI JNDI Server
- XAI JMS Queue
- XAI JMS Connection
- Message Sender

XAI JNDI Server

Perform the following steps to create a new XAI JNDI server to communicate with the integration layer:

1. Navigate to **Admin** > **Integration** > **XAI JNDI Server**.
   For example: CI_NMS_JNDI
2. Enter XAI JNDI Server name and description.
   For example: CCB-NMS Integration server
3. Populate the Provider URL in the format t3//<SOA Server>: <SOA Port>
   For example: t3://soaserver.us.oracle.com:8002

XAI JMS Queue

Perform the following steps to create a new XAI JMS queue:

1. Navigate to **Admin** > **Integration** > **XAI JMS Queue**.
2. Enter the following:
   - **XAI JMS Queue** - Queue name in Oracle Utilities Customer Care and Billing
   - **Description** - Queue description
   - **Queue Name** - JNDI name of the queue on the Integration server
     For example: jms/CCB-NMS/OUCCBNMSCustomerDataRequest
   - **Target Client Flag** - *JMS*
   - **XAI JNDI Server** - Select XAI JNDI Server created for the integration as described in the XAI JNDI Server section.
     For example: Customer Data Sync Integration Point

XAI JMS Queue	Description	Queue Name	Target Client Flag	XAI JNDI Server
CI_NMSCDSync	Customer Data Sync Request	jms/CCB-NMS/OUCCBCustomerDataSyncRequest	JMS	CI_NMS_JNDI

XAI JMS Connection

Perform the following steps to create XAI JMS connection:

1. Navigate to **Admin** > **Integration** > **XAI JMS Connection**.
2. Enter the following:
   - **XAI JMS Connection** - Connection name in Oracle Utilities Customer Care and Billing.
   - **Description** - Connection description.
   - **XAI JNDI Server** - Select the XAI JNDI Server created for the integration as described in the XAI JNDI Server section.

JNDI ConnectionFactory - JNDI name of the Connection factory on the Integration server
For example: jms/CCB-NMS/CCBNMSCF:

XAI JMS Connection	Description	XAI JNDI Server	JNDI Connection Factory
CI_NMS_CF	CCB NMS Integration Connection	CI_NMS_JNDI	jms/CCB-NMS/CCBNMSCF

Message Sender

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

1. Navigate to **Admin** > **Integration** > **Message Server**.
2. Enter a unique **Message Sender** and **Description**.
3. Populate values:
   - **Message Sender** - Sender name in Oracle Utilities Customer Care and Billing
   - **Description** - Sender description
   - **Invocation Type** - *Real-time*
   - **XAI Class** - *RTJMSQSNDR* (Realtime JMS Queue Sender)
   - **Active** - Select the checkbox
   - **MSG Encoding** - *UTF-8 message encoding*
   - **XAI JMS Connection** - XAI JMS connection created for the integration
   - **XAI JMS Queue** - XAI JMS Queue created for the Oracle Utilities Customer Care and Billing Outbound Queue.
4. Select the **Context** tab and set values for the following context types:
   - **JMS Message Type (Bytes(Y)/Text(N))** - *N*
   - **JMS User Name** - user for the SOA server to be accessed
   - **JMS User Password** - Password for the SOA server to be accessed

   For example:

Message Sender	Description	XAI JMS Connection	XAI JMS Queue
CI_NMS_CDSYN	NMS Customer Data Sync Request Sender	CI_NMS_JNDI	CI_NMSCDSync

Message Sender for 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*

   XAI Class = *RTHTTPSNDR*. (Real Time Sender to route messages via HTTP)
4. Select the **Active** checkbox.

   MSG Encoding = *UTF-8 message encoding*
5. Select the **Context** tab and set values for the following Context Types:
   - **HTTP Login User** - User ID for the URL to be accessed
   - **HTTP Login Password** - Password for the URL to be accessed
   - **HTTP Header** - *SOAPAction: "process"*
   - **HTTP Method (POST/GET)** - *POST*
   - **HTTP Proxy Host** - Set the proxy server name if applicable

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

For example:
http://demoenv/soa-infra/services/CCB-NMS/
OUCCBOUNMSTroubleCallInterfaceEBF /
ouccbounmstroublecallinterfaceebf_client_ep

Message Sender for Job History Query

Perform the following steps 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*
   - XAI Class = *RTHTTPSNDR*. (Real Time Sender to route messages via HTTP)
   - Select the **Active** checkbox.
   - MSG Encoding = *UTF-8 message encoding*
4. Select the **Context** tab and set values for the following context types:
   - **HTTP Login User** - User ID for the URL to be accessed
   - **HTTP Login Password** - Password for the URL to be accessed
   - **HTTP Header** - *SOAPAction: "process"*
   - **HTTP Method (POST/GET)** - *POST*
   - **HTTP Proxy Host** - Set the proxy server name if applicable
   - **HTTP Proxy Port** - Port for the proxy server if applicable
   - **HTTP Transport Method** - *SendReceive*
   - **HTTP Timeout**: 60 (put timeout in seconds)
   - **HTTP URL 1** - Set the URL to be accessed. If the URL value does not fit, use the additional HTTP URL types to set the complete URL. This should point to the Query Job History EBF.

   For example:
   http://demoenv/soa-infra/services/CCB-NMS/
   OUCCBOUNMSJobHistoryQueryEBF/ouccbounmsjobhistoryquery_client_ep

Message Sender for Trouble Call History Query

Perform the following steps to create Message Sender for Trouble Call History Query:

1. Navigate to **Admin > Integration > Message Sender**.
2. Enter a unique Message Sender and Description.

3. Populate values:
   - **Invocation Type** = *Real-time*
   - **XAI Class** = RTHTTPSNDR. (Real Time Sender to route messages via HTTP)
   - Select the **Active** checkbox.
   - **MSG Encoding** = UTF-8 message encoding
4. Select the **Context** tab and set values for the following Context Types:
   - **HTTP Login User** - User ID for the URL to be accessed
   - **HTTP Login Password** - Password for the URL to be accessed
   - **HTTP Header** - *SOAPAction: "process"*
   - **HTTP Method (POST/GET)** - *POST*
   - **HTTP Proxy Host** - Set the proxy server name if applicable
   - **HTTP Proxy Port** - Port for the proxy server if applicable
   - **HTTP Transport Method** - *SendReceive*
   - **HTTP Timeout**: 60 (put timeout in seconds)
   - **HTTP URL 1** - Set the URL to be accessed. If the URL value does not fit, use the additional HTTP URL types to set the complete URL. This should point to the Query Trouble Call History EBF.

   For example:
   http://demoenv/soa-infra/services/CCB-NMS/
   OUCCBOUNMSTroubleCallsQueryEBF/OU
   CCBOUNMSTroubleCallsQueryEBF_ep

Message Sender for Planned Outages Query

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

Perform the following steps 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*
   - XAI Class = *RTHTTPSNDR*. (Real Time Sender to route messages via HTTP)
   - Select the **Active** checkbox.
   - MSG Encoding = *UTF-8 message encoding*
4. Select the **Context** tab and set values for the following Context Types:
   - **HTTP Login User** - User ID for the URL to be accessed
   - **HTTP Login Password** - Password for the URL to be accessed
   - **HTTP Header** - *SOAPAction: "process"*
   - **HTTP Method (POST/GET)** - *POST*

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

For example:
http://demoenv/soa-infra/services/CCB-NMS/
OUCCBOUNMSOutageHistoryQueryEBF/
OUCCBOUNMSOutageHistoryQueryEBF_ep

Message Sender for Notify of Communication Preference

Perform the following steps to create Message Sender for Notify of Communication Preference:

1. Navigate to **Admin >Integration >Message Sender**.
1. Enter a unique **Message Sender** and **Description**.
2. Populate values:
   - Invocation Type = *Real-time*
   - XAI Class = RTHTTPSNDR. (Real Time Sender to route messages via HTTP)
   - Select the **Active** checkbox.
   - MSG Encoding = UTF-8 message encoding
3. Select the **Context** tab and set values for the following Context Types:
   - **HTTP Login User** - User ID for the URL to be accessed
   - **HTTP Login Password** - Password for the URL to be accessed
   - **HTTP Header** - *SOAPAction: "process"*
   - **HTTP Method (POST/GET)** - *POST*
   - **HTTP Proxy Host** - Set the proxy server name if applicable
   - **HTTP Proxy Port** - Port for the proxy server if applicable
   - **HTTP Transport Method** - *SendReceive*
   - **HTTP Timeout**: 60 (put timeout in seconds)
   - **HTTP URL 1** - Set the URL to be accessed. If the URL value does not fit, use the additional HTTP URL types to set the complete URL. This should point to the Query Trouble Call History EBF.
     For example: http://demoenv/soa-infra/services/CCB-NMS/
     OUCCBOUNMSNotifyPreferenceEBF /
     ouccbounmsnotifypreferenceebf_client_ep

Outbound Message Type

To create Outbound Message Type, perform the following steps:

1. Navigate to **Admin > Integration > Outbound Message Type**.

2. Enter a unique Outbound Message Type and Description.
3. Populate values:
    - **Business Object** = **C1-NMSSPSyncReqOutMsg** (Customer Sync Outbound Message BO)
    - **Priority** = (choose from the selection)

Trouble Calls Interface

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

Query Job History

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

Query Trouble Call History

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

Query Planned Outages

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

Edge Application Communication Preference

1. Navigate to **Admin** > **Integration** > **Outbound Message Type**.
2. Enter a unique Outbound Message Type and Description.
3. Populate values:

- **Business Object** = C1-NotifyEdgeApplicationOutMsg (Notify Edge Applications Outbound Message
- **Priority** = (choose from the selection)

External System

Perform the following steps to create a new External System for direct the integration:

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

- **Outbound Message Type** = (Outbound Message Type for Planned Outages Query)
- **Processing Method** = *Real-time*
- **Message Sender** = (Message Sender for Planned Outages Query)
- **Message XSL** = *CDxAddEnvelope-SOAP1-2.xsl*
- **Response XSL** = *C1-NMSRemoveEnvelopePlanOut.xsl*

Setting Up Oracle Utilities Network Management System

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

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

- **PL/SQL package PK_CCB** - provides access to the functions of the Oracle Utilities Network Management System required by the integration. It is part of Oracle Utilities Outage Management Standard Edition.
- **PL/SQL package PK_MYC_CSS** - provides access to the functions of the Oracle Utilities Network Management System required by the integration. This package contains stored procedures that are used to register and deregister customers to receive Outage,Restoration and ERT update notifications from Oracle Utilities Network Management System.
- **Generic IVR Adapter** - processes trouble calls received from Oracle Utilities Customer Care and Billing. 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 Care and Billing system.

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

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 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:

- Configuration Properties
- Domain Value Maps
- Error Handling

Configuration Properties

Various configurations that apply to the entire integration and specific processes for the integration services are stored in the OUCCBOUNMSConfigurationProperties.xml file located under the apps/CCB-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 custom implemented extension points available inside the processes. By default these properties are set to false, not to invoke any of the extension points.
- Activate error handling.

  Note: Whenever the **OUCCBOUNMSConfigurationProperties.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.

Please refer to Appendix B for more information on the Configuration Properties File setup.

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.

Please refer to Appendix C - Domain Value Maps (DVMs) for a listing of the DVMs included for the integration.

To Add DVMs:

1. Open a browser and access the SOA Composer Application.
2. On the SOA composer click on the “Open” drop-down and select “Open DVM”. This displays a list of all the DVM files in MDS.

3. Search and Select the relevant DVM you want to maintain.
4. The **Edit** button in the top navigation bar enables editing the DVM.
5. Once the DVM has been edited click on the "Save" button in the top navigation bar. This saves the DVM data for that session.
6. Click on "Commit" 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 OUCCBOUNMSConfigurationProperties.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/CCB-NMS. This includes specific schemas, WSDLS, DVMs and OUCCBOUNMSConfigurationProperties.xml.

> **For more information** about updating MDS, see the section "Deployment of MDS Artifacts" in the Installation Guide.

Error Handling

Perform the following steps to enable Email notification for CCB-NMS Error Handling module:

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

Error Handling Module Configuration

Error handling module configuration is governed by the Integration_err_lookup table. This table contains processing instructions for each composite. The Error_Processing_Parent composite picks data for one composite and calls error_Processing_Detail for processing.

INTEGRATION_ERR_LOOKUP

S. No.	Column Name	Description	Default / Suggested Values
1	LookUp_ID	Sequence ID of entry in this table. This is auto generated.	Auto generated
2	IP_Name	The name of the composite that is processed. Example OUCCBOUNMSCustomerSyncEBF	This column is pre populated with the individual enterprise business process name. Do not modify: Modifying this value will break the code.
3	Processing_Status	Current status of processing it has to be one of the following. HALTED (waiting for manual intervention), NOT REQUIRED ALIVE	NOT REQUIRED
4	Run_Flag	Processing flag status, Y or N. Unread value = N, read value =Y	N
5	Next_Runtime	Next runtime when the error record should be processed for this composite.	SYSDATE+200
6	Halt_For_Error	Allowed values Y or N. When set to Y manual intervention is required after one successful error record processing. When set to N processing continues without halting.	N
7	RunTime_Interval	Runtime in minutes after which the next error processing should be done. Example: P10Y0M0DT0H0M0S Next processing is done after 10 years 0 months 0 days 0 hours 0 minutes and 0 seconds This value must be updated based on the business requirement. Setting fewer intervals may have impact on performance.	Default: P10Y0M0DT0H0M0S

S. No.	Column Name	Description	Default / Suggested Values
8	Email_ID	Email-ID where error notifications are sent. This value can be different or same for all the composites.	Default: email@email.com
9	Email_Content_Type	• GENERIC - One email is sent for all errors. No detail information is included. • SINGLE - One email is sent for all errors with all details included in the attachment. • MULTIPLE - Multiple emails are sent & each email has information equal to the value specified in the Error_Count_Per_Notification column. Values are case sensitive and must always be given in upper case.	Default: GENERIC
10	Email_XSL	XSL to be applied for creating email. Content which includes subject/ body and attachment. Look and feel can be modified here.	Default file is provided for all the composites and present under the xsl folder of composite. Example: xsl/ Transformation _Create_Email.xsl Copy this to the mds folder and enter the mds path in this column for additional configuration.
11	Error_Count_Per_Processing	A notification is sent after the number of records set here is processed. For example: If this is set to 50 then an email notification containing 50 records is sent after 50 records are created in the error store.	Default: 100

S. No.	Column Name	Description	Default / Suggested Values
12	Email_Attachment_Location	Location where the email attachment is created on the server. This value should point to the location / folder where the attachment should be stored. This is used to create the attachment file in the following format. INTEGRATION_ERR_LOOKUP.Email_Attachment_Location + IP_Name + Date (in YYYYMMDDHH24MMSS)	
13	Email_Attachment_Flag	• Y - Send email with attachment. In this case it is not mandatory to have Email_Attachment_Location specified. • • N - Send email without attachment but send the attachment location. In this case Email_Attachment_Location has to be specified. ServerName +INTEGRATION_ERR_LOOKUP.Email_Attachment_Location + IntegrationPoint_Name + Date in YYYYMMDDHH24MMSS.	N
14	Publish_Human_Task_Flag	• Y - Publish human task. • N - Don't publish human task If Halt_For_Error value is set to Y and Publish_Human_Task_Flag is also Y then human task is published and the user can take action from worklist application.	N
15	ID_Human_Task	User/Group ID to which human task should be published in case Halt_For_Error is set to Y. This ID must be present in the weblogic realm pointed by fusion middleware.	Weblogic
16	Last_Updated_Date	Last updated date time	SYSDATE

S. No.	Column Name	Description	Default / Suggested Values
17	Purge_Error_Store_Flag	• Y - Purge data. • N - No purge require. The process PurgeIntegrationErrorStore is only deployed when following flag purge.process.deploy=true in deploy.properties file is set to true during installation. If flag.purge.process = false then value of this column Purge_Error_Store_Flag will always be N.	Default: N
18	Purge_Processing_Status_Flag	• Y - Purge Processing in process. • N - Purge processing not happening. The process PurgeIntegrationErrorStore is only deployed when following flag purge.process.deploy=true in deploy.properties file is set to true during installation. If flag.purge.process = false then value of this column Purge_Error_Store_Flag will always be N.	Default: N
19	Purge_Frequency	Number of days after which data should be purged. This will be in picture format. Example: P10Y0M0DT0H0M0S Next processing will be done after 10 years 0 months 0 days 0 hours 0 minutes and 0 seconds This value has to be updated based on the business requirement. Setting fewer intervals may have impact on performance. Need to set this value appropriately. Applicable only when flag.purge.process = true in deploy.properties file during installation and the process PurgeIntegrationErrorStore ID deployed.	Default: P10Y0M0DT0H0M0S

S. No.	Column Name	Description	Default / Suggested Values
20	Next_Purge_Date	Next purge date. Format: Next_Purge_date + Purge_Frequency Applicable only when flag.purge.process = true in deploy.properties file during installation and the process PurgeIntegrationErrorStore ID deployed.	SYSDATE+100
21	Purge_File_Name	Directory Name where purge file should be stored. Applicable only when flag.purge.process = true in deploy.properties file during installation and the process PurgeIntegrationErrorStore ID deployed.	'location on server where purge record should be persisted'

Primary Key - LookUp _ID, IP_Name

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

1. Use the composite: UpdateIntegrationErrorLookupTable.
2. Enter the following URL into a browser to get the screen that will provide options of updating the contents of the table.
   http://<hostname>:<soa server port>/soa-infra/services/CCB-NMS/UpdateIntegrationErrorLookupTable/updatethe integrationerrorlookuptablebpel_client_ep?
3. Expand **WS-Security** and provide authentication information.
   This username and password is going to be same as that used for login to weblogic enterprise manager console.
4. Expand the payload section.

   This displays several editable text fields.

   Only the **ipName** field is mandatory and should be entered as one of the values from INTEGRATION_ERR_LOOKUP.IP_NAME field.

   By default, all the checkboxes appearing next to the text fields are checked.
5. Provide values in the text field.
   If you do not want to have a particular value updated, then uncheck the box.

Chapter 4

Monitoring and Troubleshooting

This section provides detail into monitoring, error handling, and troubleshooting, and discusses how to:

- Monitoring from the Integration Layer
- Monitoring from Oracle Utilities Customer Care and Billing
- Monitoring from Oracle Utilities Network Management System

Monitoring from the Integration Layer

This section provides information on the following:

- Customer Synchronization
- Trouble Call Interface
- Online Queries (Job History / Call History / Planned Outages)
- Error Notification Setup
- Error Handling Module Configuration

Customer Synchronization

The following diagram illustrates the Customer Synchronization- Error Handling:

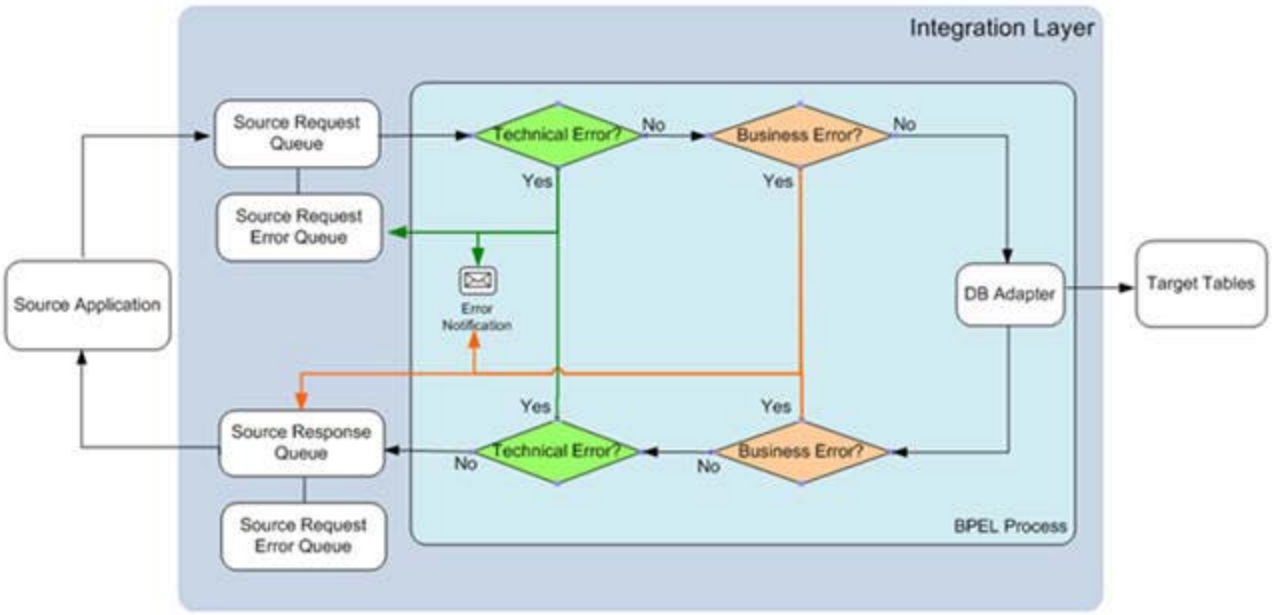


Diagram 19: Customer Data Synchronization - Error Handling

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

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

S. No.	Type of error	Action	Notification Type	Retry
1	CCB cannot reach the CCB Customer Data Sync Request Queue	Sync error response to CCB	CCB creates a To Do.	User after ensuring that the source of the issue had been fixed can resend the message from CCB.
2	Internal failure in BPEL Process (Technical Error)	Message goes to the request error queue	Email (optional)	From Weblogic Admin Console, move message to the CCB request queue
3	BPEL cannot reach NMS DB (Technical Error)	Message goes to the request error queue	Email (optional)	From Weblogic Admin Console, move message to the CCB request queue
4	Error response from NMS DB (Business Error)	Insert a negative ack message to the CCB response queue	Email (optional) and CCB To Do.	User after ensuring that the source of the issue had been fixed can resend the message from CCB.

S. No.	Type of error	Action	Notification Type	Retry
5	Empty DVM values in incoming message or the DVM lookup values are not found. (Business Error)	Insert a negative ack message to the CCB response queue	- Email (optional) and CCB To Do.	User after ensuring that the source of the issue had been fixed can resend the message from CCB.
6	Any other Technical Error	Message goes to the request error queue	Email (optional)	From Weblogic Admin Console, move message to the CCB request queue

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

To retry the technical error failure messages, perform the following steps:

1. Open a browser and access the Weblogic console for your installation.
2. Navigate to **Services**-> **Messaging** -> **JMS Modules**.
3. Select the **CCB-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.
5. This tab shows the details about the messages in the queue in a table.
6. Select the checkbox in the details table and click **Show Messages** button. This displays all the messages in the Error queue.
7. Click on the **Move** button and select the **Move All** option.
8. Select the **CCB-NMS JMS Server** to move the messages and click he **Next** button.
9. Select the correct parent queue for the error queue from the dropdown and click **Finish**.
10. 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 Care and Billing, the user can either change the status of the existing sync request in error from Error to Pending Sync Request or change data and create a new sync request but also change the status of the existing sync request in error from Error to Discarded.

Trouble Call Interface

The following diagram shows Trouble Calls Interface-Error Handling:

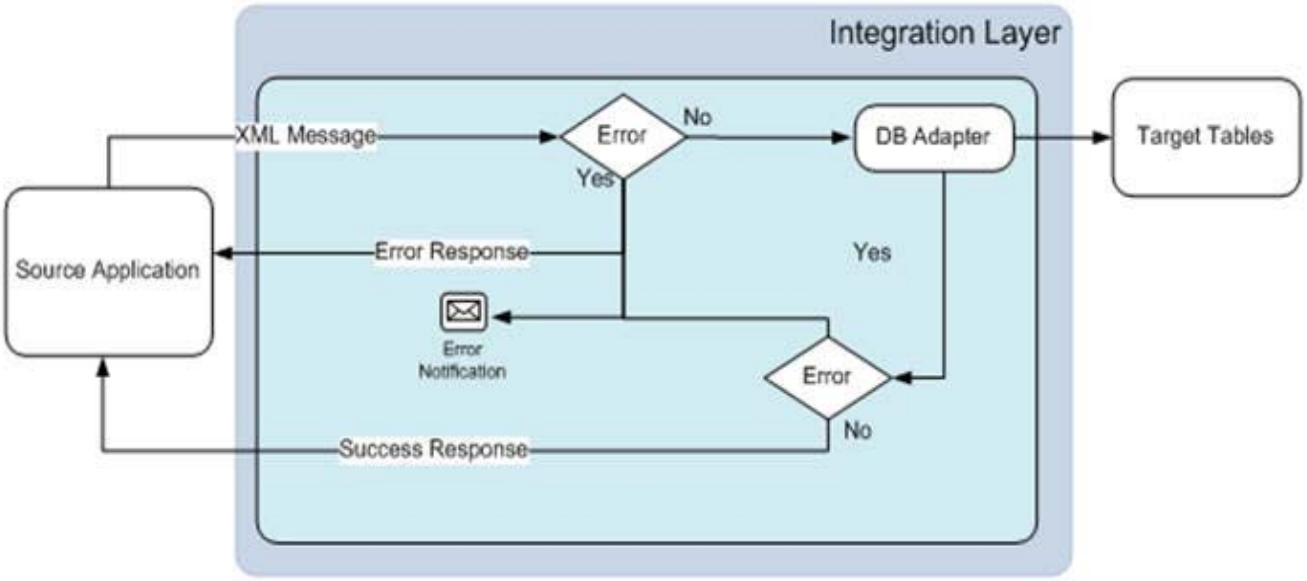


Diagram 20: Trouble Calls Interface - Error Handling

S. No	Type of error	Action	Notification Type	Retry
A1	CCB cannot reach BPEL (Technical Error)	Sync error response to CCB	• CCB Display Error in the Outage Call UI.	User can resend the message from the Outage Call UI after ensuring that the source of the issue had been fixed.
A2	Internal failure in BPEL (Technical Error)	Sync error response to CCB	• CCB Display Error in the Outage Call UI • Email (optional).	
A3	BPEL cannot reach NMS database (Technical Error)	Sync error response to CCB	• CCB Display Error in the Outage Call UI • Email (optional).	
A4	Error response from NMS (Business Error)	Sync error response to CCB	• CCB Display Error in the Outage Call UI • Email (optional).	
A5	DVM exception (Business Error)	Sync error response to CCB	• CCB Display Error in the Outage Call UI • Email (optional).	

Online Queries (Job History / Call History / Planned Outages)

The following diagram shows the online queries:

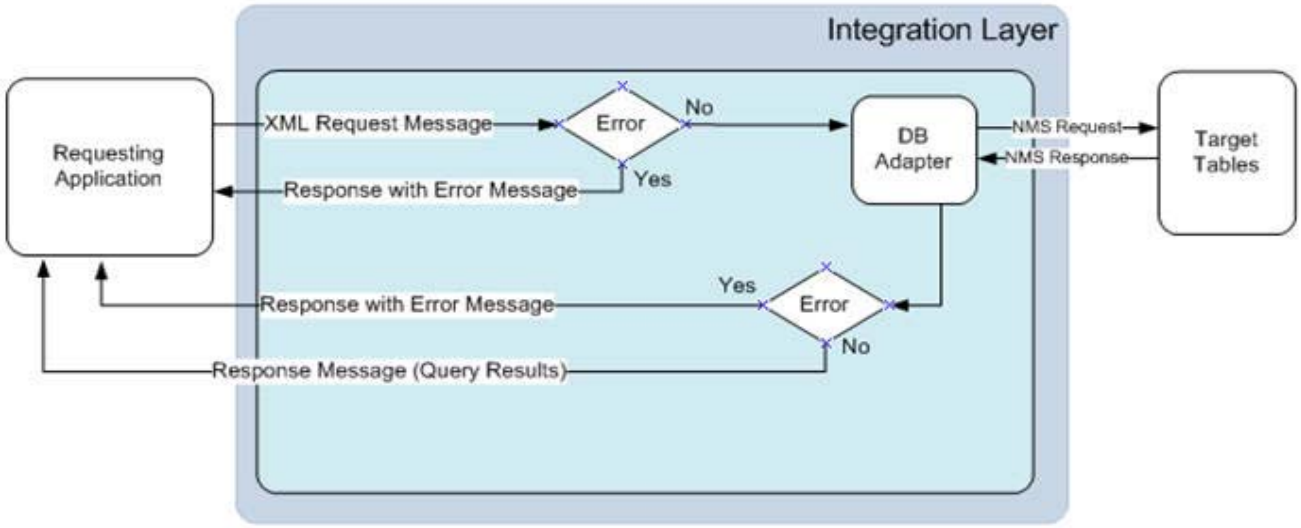


Diagram 21: Online Queries Diagram

Any errors encountered in the integration layer reported back to the Oracle Utilities Customer Care and Billing 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.

Error Notification Setup

To enable EMAIL notification for CCB-NMS Error Handling module, perform the following steps:

1. Log in to the enterprise manager console.
2. Click and expand SOA. Right-click on **soa-infra >SOA Administration > Workflow Notification Properties**.
3. On this screen, select EMAIL from the drop-down.
4. Provide the email ids for from Address / Actionable Address and Reply To Address.

Error Handling Module Configuration

Error Handling module configuration are governed by the integration_err_lookup table following is description of this table and the possible values and how it affects the Error Handling.

INTEGRATION_ERR_LOOKUP

This table contains processing instruction for each composite & Error_Processing_Parent composite picks data for one composite & call the error_Processing_Detail for processing.

S. No.	Column Name	Description	Default / Suggested values
1	LookUp_ID	Sequence ID of entry in this table. This is auto generated.	Auto generated
2	IP_Name	Composite name for which processing should be done. Example, OUCCBOUNMSCustomerSyncEBF **Note**: This is case sensitive and modifying these values results in breaking the code.	This column is pre populated with the individual enterprise business process name.
3	Processing_Status	Current status of processing it has to be one of the following: • HALTED (waiting for manual intervention), • NOT REQUIRED • ALIVE	NOT REQUIRED
4	Run_Flag	Processing flag status, Y or N. Unread value = N Read = Y	N
5	Next_Runtime	Next runtime when the error record should be processed for this composite.	SYSDATE+200
6	Halt_For_Error	Allowed values Y or N. When set to Y - Manual intervention is required after one successful error record processing. When set to N - processing continues without halting.	N

S. No.	Column Name	Description	Default / Suggested values
7	RunTime_Interval	Runtime in minutes after which the next error processing should be done. This will be picture format. Example: P10Y0M0DT0H0M0S Next processing is done after 10 years 0 months 0 days 0 hours 0 minutes and 0 seconds. This value has to be updated based on the business requirement. Setting fewer intervals may have impact on performance. Need to set this value appropriately.	Default: P10Y0M0DT0H0M0S
8	Email_ID	Email-ID to which error notification should be sent for the integration point. This value can be different or same for all the composites.	Default: email@email.com
9	Email_Content_Type	GENERIC - One email be send for all error without detail information SINGLE - One email be send for all error with all information dump into attachment MULTIPLE - Multiple emails are sent & each email has information equal to the value specified in Error_Count_Per_Notification column. The values are case sensitive and must always be given in upper case. Example: GENERIC, SINGLE,MULTIPLE	Default: GENERIC

S. No.	Column Name	Description	Default / Suggested values
10	Email_XSL	XSL to be applied for creating email subject & e-mail body. This is stored in MDS so that you can update its look & feel.	Default file is provided for all the composites and present under xsl folder of composite. Example: xsl/ Transformation_Create_Email.xsl If the client wants then can put it under the mds and provide mds path in this column.
11	Error_Count_Per_Processing	No of records for which a notification to be sent. Example: If this is 50 then email notification will be sent after every 50 records for this composite are created in error store and each email will contain 50 records.	Default: 100
12	Email_Attachment_Location	Location where the email attachment be created on server hosting SOA suite. This value will point to the location / folder where attachment needs to be stored. This is used to create the attachment file in following format. INTEGRATION_ERR_LOOKUP.Email_Attachment_Location + IP_Name + Date (in YYYYMMDDHH24MMSS).	'location on server where email attachment be persisted'

S. No.	Column Name	Description	Default / Suggested values
13	Email_Attachment_Flag	Y - Send email with attachment. In this case it is not mandatory to have Email_Attachment_Location specified. N - Send email without attachment but send the attachment location. In this case Email_Attachment_Location has to be specified. ServerName +INTEGRATION_ERR_LOOKUP.Email_Attachment_Location + IntegrationPoint_Name + Date in YYYYMMDDHH24MMSS.	N
14	Publish_Human_Task_Flag	Y - Publish human task N - Don't publish human task If Halt_For_Error value is set to Y and Publish_Human_Task_Flag is also Y then human task will be published and user can take action from worklist application.	N
15	ID_Human_Task	User/Group ID to which human task should be published in case Halt_For_Error is set to Y.	Weblogic
16	Last_Updated_Date	Last updated date time	SYSDATE
17	Purge_Error_Store_Flag	Y – Purge data N – No purge require	Default: N
18	Purge_Processing_Status_Flag	Y – Purge Processing in process N – Purge processing not happening	Default: N

S. No.	Column Name	Description	Default / Suggested values
19	Purge_Frequency	No of days after which data should be purged. This will be in picture format. Example : P10Y0M0DT0H0M0S Next processing will be done after 10 years 0 months 0 days 0 hours 0 minutes and 0 seconds. This value has to be updated based on the business requirement. Setting fewer intervals may have impact on performance. Need to set this value appropriately.	Default: P10Y0M0DT0H0M0S
20	Next_Purge_Date	Next purge date. It will be populated based on Next_Purge_date + Purge_Frequency	SYSDATE+100
21	Purge_File_Name	Directory Name where purge file should be stored.	'location on server where purge record should be persisted'

Monitoring from Oracle Utilities Customer Care and Billing

This section describes:

- Oracle Utilities Customer Care and Billing Error Logs
- Notifications
- Connection Errors

Oracle Utilities Customer Care and Billing Error Logs

The errors related to online the integration invocation from Oracle Utilities Customer Care and Billing are stored in the CCB_ENVIRONMENT_NAME/system/logs folder.

For example: V231_CCB_PERF_BLD10_LIN_ORA_WLS/logs/system

The errors related to batch the integration invocation from Oracle Utilities Customer Care and Billing are stored in the $SPLOUTPUT/ CCB_ENVIRONMENT_NAME folder.

For example: /spl/sploutput/V231_CCB_PERF_BLD10_LIN_ORA_WLS

For more information about errors and notifications, see the Oracle Utilities Customer Care and Billing documentation.

Notifications

Any errors encountered during the trouble call entry or online outage info query are displayed to the end-user in the real time on the **User** portal.

Any errors in the synchronization process are communicated back to Oracle Utilities Customer Care and Billing by the integration layer. An XAI Inbound Service invokes processing to transition the sync request to either the Synchronized state (if it is a positive acknowledgement) or the Error state (if it is a negative acknowledgement).

Connection Errors

Information can be found in the log files in the folders described above.

Monitoring from Oracle Utilities Network Management System

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

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

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

Monitoring from the Integration

The integration process can be monitored using the following:

- Monitoring the composite instances using Weblogic SOA Enterprise Manager
- Monitoring the Weblogic Logs
- Purging the Data

Weblogic SOA Enterprise Manager

To configure the Weblogic SOA enterprise manager, perform the following steps:

1. Log into the Weblogic SOA Server Enterprise Manager.
2. In the left menu, navigate to **SOA** > **soa-infra** > **CCB-NMS**.
3. All the composite processes deployed for the integration are available under the partition CCB-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 on the appropriate process instance and it displays the flow for the process.

7. The composite flow lists all the activities in the process instance.

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

Weblogic Logs

To configure the Weblogic logs, perform the following steps:

1. Log into the machine where the SOA Server is installed.
2. The SOA logs are stored in: <Weblogic installation folder>/user_projects/domains/<SOA Domain name>/servers/<SOA Server name>/logs
   For example: /slot/ems1234/oracle/Middleware/user_projects/domains/soa_domain/servers/soa_server1/logs.

Purging the Data

The Oracle Fusion Middleware maintains state of the instances and the database needs to be purged periodically.

Refer to Document ID 815896.1 on https://support.oracle.com/ for the details about purging the data from the Fusion Middleware database.

Chapter 5

Customization Options

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

- Pre-Transformation Extension Point
- Post-Transformation Extension Point
- Custom Transformations
- Notification Related Integration Services

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.

The integration layer defines an external call from the pre-transformation extension point which accepts the source xml as input and gives the source xml as output. The wsdl the integration layer points to an abstract wsdl and can be plugged in by a concrete wsdl by the implementation team.

This helps the implementation to invoke any external web service and transform the input xml.

Post-Transformation Extension Point

The post transformation extension point is invoked after the main transformation is executed. This transformation will help in transforming the target xml going as an input to the Target queue.

The Integration layer will define an external call from the Post transformation extension point which accepts the target xml as input and gives the target xml as output. The wsdl the integration layer points to an abstract wsdl and can be plugged in by a concrete wsdl by the implementation team.

This will help 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.

Extension Points

Please note the following regarding implementing extension points:

- Each process in the integration has a pre and post transformation extension point which can be used to invoke webservices and transform the payload.
- The desired extension point can be triggered from the process by enabling it using the **OUCCBOUNMSConfigurationProperties.xml** pre and post transformation extension flags as described in the Configuration Properties section.
- Each process has its own concrete wsdl which is used to read the endpoint location for the extension service.
- These concrete wsdl files are located in MDS under the directories: /apps/CCB-NMS/AIAMetaData/AIAComponents/ExtensionServiceLibrary/OUCCB and /apps/CCB-NMS/AIAMetaData/AIAComponents/ExtensionServiceLibrary/OUNMS
- The binding, port type and soap address for the extension service can be added in the concrete wsdl in the installation folder and the wsdl moved to MDS.
- To move the wsdl to MDS update the appropriate wsdl in the product install home. The directories in the product install home are: CCB_NMS_INSTALL_HOME/MDS-Artifacts/AIAMetaData/AIAComponents/ExtensionServiceLibrary/OUCCB and CCB_NMS_INSTALL_HOME/MDS-Artifacts/AIAMetaData/AIAComponents/ExtensionServiceLibrary/OUNMS.
- The OUCCBOUNMSConfigurationProperties.xml and the concrete wsdl need to be checked-in into MDS and the soa server has to be restarted.
  Refer to the command for MDS update in the installation guide to update MDS.
- To commit the update, restart the SOA server.
- On restart, the extension point will invoke the web service in the concrete wsdl.

  For example: To enable the extension points for OUCCBOUNMSCustomerSyncReqExtension add the binding and service elements to the OUCCBOUNMSCustomerSyncReqExtensionConcrete.wsdl

```
<binding
name="OUCCBOUNMSCustomerSyncReqV1ExtensionServiceSOAP11Binding"
             type="ccbext:
OUCCBOUNMSCustomerSyncReqV1ExtensionService">
```

```
        <soap:binding style="document"  transport="http://
schemas.xmlsoap.org/soap/http"/>
        <operation name="PreXformCCBtoNMSMsg">
            <soap:operation style="document"
soapAction="http://xmlns.oracle.com/OUCCBOUNMSCustomerSyncEBF/
OUCCBOUNMSCustomerSyncReqExtension/V1/ PreXformCCBtoNMSMsg "/>
            <input>
                <soap:body use="literal" parts="CCBToNMS"/>
            </input>
            <output>
                <soap:body use="literal" parts="CCBToNMS"/>
            </output>
            <fault name="fault">
                <soap:fault name="fault" use="literal"/>
            </fault>
        </operation>
        <operation name=" PostXformCCBtoNMSMsg">
            <soap:operation style="document"
                            soapAction="http://xmlns.oracle.com/
OUCCBOUNMSCustomerSyncEBF/OUCCBOUNMSCustomerSyncReqExtension/V1
PostXformCCBtoNMSMsg"/>
            <input>
                <soap:body use="literal" parts=" NMSEnqueue "/>
            </input>
            <output>
                <soap:body use="literal" parts=" NMSEnqueue "/>
            </output>
            <fault name="fault">
                <soap:fault name="fault" use="literal"/>
            </fault>
        </operation>
    </binding>
    <service name="OUCCBOUNMSCustomerSyncReqV1ExtensionService">
<!-- Port name must match the port name used for the Extension
service in the composite.xml for the process - ->
        <port name="OUCCBOUNMSCustomerSyncReqV1ExtensionService"
              binding="ccbext:
OUCCBOUNMSCustomerSyncReqV1ExtensionServiceSOAP11Binding">
            <soap:address location="<endpoint url of the Extension
server>"/>
        </port>
    </service>
```

Custom Transformations

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.
  Refer to the message mappings to see the location of customElements in each message.
- 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 i.e. xsd for the Oracle Utilities Customer Care and Billing 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 Care and Billing application are located in the product install home under the directory CCB_NMS_INSTALL_HOME/MDS-Artifacts/AIAMetaData/AIAComponents/ApplicationObjectLibrary/OUCCB/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 CCB_NMS_INSTALL_HOME/services/industry/Utilities/EnterpriseBusinessFlow/<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 Customer Data Synchronization process to pass email from Oracle Utilities Customer Care and Billing to Oracle Utilities Network Management System, perform the following steps:

```
    sendDetails'finalSnapshot'personInfo'customElements'email
element in CCB to CUST_UDF1 element in NMS.
```

Complete the following steps:

1. Modify OUCCBCustomerSyncReqCustomType.xsd

```
<xsd:complexType name="personInfoCustomType">
   <xsd:sequence>
   <xsd:element name="email" type="xsd:string"/>
   </xsd:sequence>
<xsd:complexType>
```

2. Modify Transform_CCB_to_NMS_CustomerSyncMeterInfo_Custom.xsl

```
<xsl:template name="InputParameters_customElements">
    <!-- this template is use for Xformation of //InputParameters/
customElements in Request Message-->
    <CUST_UDF1>
        <xsl:value-of select="/tns1:sendDetails/
tns1:syncRequestDetails/tns1:finalSnapshot/tns1:personInfo/
tns1:customElements/tns1:email"/>
    </CUST_UDF1>
  </xsl:template>
```

Notification Related Integration Services

The notification related services OUNMSNotificationInboundEBF, OUCCBCreateNotificationEBF, and OUCCBOUNMSNotifyPreferenceEBF use the customization model described below.

- The pre-invoke extension scope is invoked before putting the message into the queue. This helps the implementers to change the message as required.
- Override transformations are used to override the message in the incoming and outgoing messages. Override transformations named "Xform_ OverrideValues_XX.xsl" are shipped with the product, which sends the output derived from the main transformations. Using override transformations enables the implementation to pass any data from source system to the target system.

Appendix A

Data Mapping

This section provides mapping details for each integration point, including:

- Customer Data Synchronization Process - Mapping Details
- Trouble Call Process - Mapping Details
- Job History Query Process - Mapping Details
- Trouble Call History Query Process - Mapping Details
- Planned Outages Query Process - Mapping Details
- Notify Communication Preference Process - Mapping Details
- Notification Inbound Process - Mapping Detail
- Create Notification Message Process - Mapping Detail

Customer Data Synchronization Process - Mapping Details

This section provides mapping details for the following:

- Customer Data Synchronization Process - Mapping Details
- Customer Data Synchronization Request Message - Mapping Details

Refer to the Customer Data Synchronization Process description for processing details on this integration point.

Customer Data Synchronization Process - Mapping Details

Oracle Utilities Network Management System Field	Oracle Utilities Customer Care and Billing Element Name	Notes
Device ID device_ID	deviceId	• Device ID provide must exist in the NMS supply nodes table. • From CCB, obtain from geo value that matches with Geo Type set up for Device ID in CCB Feature configuration schema constants • From CCB SP Geo Table (CI_SP_GEO).
Account Type account_type	serviceType	• Account Type provide must exist in the Account Type Table in NMS. • Use DVM OUCCB_OUNMS_ AccountType.
Creation Timestamp creation_time		• Timestamp for the record's creation. NMS stored proc will put the current date time on for new records inserted. • Not mapped by the integration.
Active Flag active	Y or N (populated by the integration)	• Flag identifying currently active records. Y - For Current Customers N - For Inactive customers • If the customer ID is not populated in the message, the integration set it to N, otherwise it is always Y.
Customer ID cust_ID	accountId	• Unique external system generated primary key. • CCB Account must be linked to a metered service point via active service agreement. • From CCB Account Table (CI_ACCT).
Customer Account Number cust_account_number	accountId	From CCB Account Table (CI_ACCT).
Customer Name 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. • From CCB Person Name Table (CI_PER_NAME).
Customer Home Phone Area Code cust_home_area_code	First 3 number of homePhone	• Get Area Code from CCB homePhone element. • homePhone retrieved from CCB depends on the home phone type defined in CCB feature configuration schema constants. • From CCB Person Phone Table (CI_PER_PHONE).

Oracle Utilities Network Management System Field	Oracle Utilities Customer Care and Billing Element Name	Notes
Customer Home Phone cust_home_phone	From fourth to tenth number of homePhone	• Get Phone Number from CCB homePhone element. • homePhone retrieved from CCB depends on the home phone type defined in CCB feature configuration schema constants. • From CCB Person Phone Table (CI_PER_PHONE).
Customer Day Phone Area Code cust_day_area_code	First 3 number of businessPhone	• Get Area Code from CCB businessPhone. • businessPhone retrieved from CCB depends on the home phone type defined in CCB feature configuration schema constants. • From CCB Person Phone Table (CI_PER_PHONE)
Customer Day Phone cust_day_phone	From fourth to tenth number of businessPhone	• Get Phone Number from CCB businessPhone. • businessPhone retrieved from CCB depends on the home phone type defined in CCB feature configuration schema constants. • From CCB Person Phone Table (CI_PER_PHONE).
Customer Day Phone Extension cust_day_phone_ext	Extension	• This is the extension for the CCB businessPhone. • From CCB Person Phone Table (CI_PER_PHONE).
Customer Address 1 cust_address1	address 1	From CCB Premise Table (CI_PREM).
Customer Address 2 cust_address2	address 2	From CCB Premise Table (CI_PREM).
Customer Address 3 cust_address3	address 3	From CCB Premise Table (CI_PREM)
Customer Address 4 cust_address4	address 4	From CCB Premise Table (CI_PREM).
Customer City cust_city	City	From CCB Premise Table (CI_PREM).
Customer State cust_state	State	From CCB Premise Table (CI_PREM).
Customer Postcode 1 cust_postcode1	Postal	From CCB Premise Table (CI_PREM).

Oracle Utilities Network Management System Field	Oracle Utilities Customer Care and Billing Element Name	Notes
Premise ID serv_premise_ID	premiseId	• Unique external system generated primary key. • From CCB Premise Table (CI_PREM).
Service Account Number serv_account_number	accounted	• Account number linked to the premise ID. • From CCB Account Table (CI_ACCT).
Service Life Support serv_life_support	lifeSupport	• If the CCB premise or person life support/sensitive load flag is true, this will also be set to true. • Use DVM OUCCB_OUNMS_ LifeSupportInd
Service Address 1 serv_address1	address 1	From CCB Premise Table (CI_PREM).
Service Address 2 serv_address2	address 2	From CCB Premise Table (CI_PREM).
Service Address 3 serv_address3	address 3	From CCB Premise Table (CI_PREM).
Service Address 4 serv_address4	address 4	From CCB Premise Table (CI_PREM).
Service City serv_city	City	From CCB Premise Table (CI_PREM).
Service State serv_state	State	From CCB Premise Table (CI_PREM).
Service City State serv_city_state	Concatenate city, state	The delimiter that the integration uses for concatenation will always be (,) comma.
Service Postal serv_postcode1	Postal	From CCB Premise Table (CI_PREM).
Service D Priority serv_d_priority	medicalPriority	• D (critical) customers flag values in NMS, 0 or 1. • D Priority retrieved from premise characteristics depends on the char type defined from CCB feature configuration schema constants. • From Premise Characteristic Table (CI_PREM_CHAR). • Use DVM OUCCB_OUNMS_Serv_D_Priority.

Oracle Utilities Network Management System Field	Oracle Utilities Customer Care and Billing Element Name	Notes
Service C Priority serv_c_priority	criticalPriority	• C customers flag values in NMS, 0 or 1. • C Priority retrieved from premise characteristics depends on the char type defined from CCB feature configuration. • From Premise Characteristic Table (CI_PREM_CHAR). • Use DVM OUCCB_OUNMS_Serv_C_Priority.
Service K Priority serv_k_priority	keyPriority	• K customers flag values in NMS, 0 or 1. • K Priority retrieved from premise characteristics depends on the char type defined from CCB feature configuration. • From Premise Characteristic Table (CI_PREM_CHAR). • Use DVM OUCCB_OUNMS_Serv_K_Priority.
Meter ID meter_ID	meterId	From CCB Meter Table (CI_MTR).
Meter Number meter_number	badgeNumber	From CCB Meter Table (CI_MTR).
Meter Type meter_type	meterType	• From CCB Meter Table (CI_MTR). • Use DVM OUCCB_OUNMS_ MeterType.
Meter Manufacturer meter_manufacturer	Manufacturer	From CCB Meter Table (CI_MTR).

Customer Data Synchronization Request Message - Mapping Details

Oracle Utilities Customer Care and Billing SP Sync Request Message			Oracle Utilities Network Management System Stored Procedure Inputs	
Element Name	**Parent Element**	**Type**	**Element Name**	**DVM Mapping**
C1-NMSSPSyncRequest		Outermost Tag		
syncRequestId	C1-NMSSPSyncRequest	Field		
bo	C1-NMSSPSyncRequest	Field		
boStatus	C1-NMSSPSyncRequest	Field		

Oracle Utilities Customer Care and Billing SP Sync Request Message			Oracle Utilities Network Management System Stored Procedure Inputs	
Element Name	**Parent Element**	**Type**	**Element Name**	**DVM Mapping**
createDateTime	C1-NMSSPSyncRequest	Field		
statusDateTime	C1-NMSSPSyncRequest	Field		
version	C1-NMSSPSyncRequest	Field		
syncRequired	C1-NMSSPSyncRequest	Field		
forceSync	C1-NMSSPSyncRequest	Field		
discardReason	C1-NMSSPSyncRequest	Field		
cancelReason	C1-NMSSPSyncRequest	Field		
message	C1-NMSSPSyncRequest	List		
sequence	message	Field		
messageCategory	message	Field		
messageNumber	message	Field		
comment	message	Field		
messageParameters	message	List		
parameterSequence	messageParameters	Field		
messageParameterValue	messageParameters	Field		
mo	C1-NMSSPSyncRequest	Field		
pkValue1	C1-NMSSPSyncRequest	Field		
pkValue2	C1-NMSSPSyncRequest	Field		
pkValue3	C1-NMSSPSyncRequest	Field		
pkValue4	C1-NMSSPSyncRequest	Field		
pkValue5	C1-NMSSPSyncRequest	Field		
personBO	C1-NMSSPSyncRequest	Field		
accountBO	C1-NMSSPSyncRequest	Field		
saBO	C1-NMSSPSyncRequest	Field		
spBO	C1-NMSSPSyncRequest	Field		

Oracle Utilities Customer Care and Billing SP Sync Request Message			Oracle Utilities Network Management System Stored Procedure Inputs	
Element Name	**Parent Element**	**Type**	**Element Name**	**DVM Mapping**
premiseBO	C1-NMSSPSyncRequest	Field		
meterBO	C1-NMSSPSyncRequest	Field		
itemBO	C1-NMSSPSyncRequest	Field		
spTypeBO	C1-NMSSPSyncRequest	Field		
snapshotDA	C1-MDM1SPSyncRequest	Field		
postScript	C1-MDM1SPSyncRequest	Field		
syncRequestDetails	C1-MDM1SPSyncRequest	Group		
initialSnapshot	syncRequestDetails	Group		
personInfo	initialSnapshot	Group		
personId	personInfo	Field		
name	personInfo	Field		
homePhone	personInfo	Field		
businessPhone	personInfo	Field		
extension	personInfo	Field		
lifeSupport	personInfo	Group		
customElements	personInfo	Group		
accountInfo	initialSnapshot	Group		
accountId	accountInfo	Field		
mainPerson	accountInfo	Field		
customElements	accountInfo	Group		
saInfo	initialSnapshot	Group		
saId	saInfo	Field		
accountId	saInfo	Field		
customElements	saInfo	Group		
spInfo	initialSnapshot	Group		

Oracle Utilities Customer Care and Billing SP Sync Request Message			Oracle Utilities Network Management System Stored Procedure Inputs	
Element Name	**Parent Element**	**Type**	**Element Name**	**DVM Mapping**
spId	spInfo	Field		
premiseId	spInfo	Field		
spType	spInfo	Field		
deviceId	spInfo	Field		
serviceType	spInfo	Field		
customElements	spInfo	Group		
premiseInfo	initialSnapshot	Group		
premiseId	premiseInfo	Field		
country	premiseInfo	Field		
address1	premiseInfo	Field		
address2	premiseInfo	Field		
address3	premiseInfo	Field		
address4	premiseInfo	Field		
houseType	premiseInfo	Field		
number1	premiseInfo	Field		
number2	premiseInfo	Field		
inCityLimit	premiseInfo	Field		
city	premiseInfo	Field		
geographic	premiseInfo	Field		
county	premiseInfo	Field		
state	premiseInfo	Field		
postal	premiseInfo	Field		
criticalPriority	premiseInfo	Field		
medicalPriority	premiseInfo	Field		
keyPriority	premiseInfo	Field		

Oracle Utilities Customer Care and Billing SP Sync Request Message			Oracle Utilities Network Management System Stored Procedure Inputs	
Element Name	**Parent Element**	**Type**	**Element Name**	**DVM Mapping**
lifeSuport	premiseInfo	Field		
customElements	premiseInfo	Group		
meterInfo	initialSnapshot	Group		
meterId	meterInfo	Field		
badgeNumber	meterInfo	Field		
meterType	meterInfo	Field		
manufacturer	meterInfo	Field		
customElements	meterInfo	Group		
itemInfo	initialSnapshot	Group		
itemId	itemInfo	Field		
badgeNumber	itemInfo	Field		
itemType	itemInfo	Field		
manufacturer	itemInfo	Field		
customElements	itemInfo	Group		
customElements	initialSnapshot	Group		
finalSnapshot	syncRequestDetails	Group		
personInfo	finalSnapshot	Group		
personId	personInfo	Field		
name	personInfo	Field	cust_name	
homePhone	personInfo	Field	cust_home_area_code, cust_home_phone	
businessPhone	personInfo	Field	cust_day_area_code, cust_day_phone	
extension	personInfo	Field	cust_day_phone_ext	
lifeSupport	personInfo	Group	serv_life_support	OUCCB_OUNMS_ LifeSupportIndicator
customElements	personInfo	Group		

Oracle Utilities Customer Care and Billing SP Sync Request Message			Oracle Utilities Network Management System Stored Procedure Inputs	
Element Name	**Parent Element**	**Type**	**Element Name**	**DVM Mapping**
accountInfo	finalSnapshot	Group		
accountId	accountInfo	Field		
mainPerson	accountInfo	Field		
customElements	accountInfo	Group		
saInfo	finalSnapshot	Group		
saId	saInfo	Field		
accountId	saInfo	Field	cust_ID , cust_account_number, serv_account_number	
customElements	saInfo	Group		
spInfo	finalSnapshot	Group		
spId	spInfo	Field	service_point_ID	
premiseId	spInfo	Field		
spType	spInfo	Field		
deviceId	spInfo	Field	device_ID	
serviceType	spInfo	Field	account_type	OUCCB_OUNMS_ AccountType
customElements	spInfo	Group		
premiseInfo	finalSnapshot	Group		
premiseId	premiseInfo	Field	serv_premise_ID	
country	premiseInfo	Field		
address1	premiseInfo	Field	cust_address1, serv_address1	
address2	premiseInfo	Field	cust_address2, serv_address2	
address3	premiseInfo	Field	cust_address3, serv_address3	
address4	premiseInfo	Field	cust_address4, serv_address4	
houseType	premiseInfo	Field		
number1	premiseInfo	Field		

Oracle Utilities Customer Care and Billing SP Sync Request Message			Oracle Utilities Network Management System Stored Procedure Inputs	
Element Name	**Parent Element**	**Type**	**Element Name**	**DVM Mapping**
number2	premiseInfo	Field		
inCityLimit	premiseInfo	Field		
city	premiseInfo	Field	cust_city, serv_city, serv_city_state	
geographic	premiseInfo	Field		
county	premiseInfo	Field		
state	premiseInfo	Field	cust_state, serv_state, serv_city_state	
postal	premiseInfo	Field	cust_postcode1	
criticalPriority	premiseInfo	Field	serv_c_priority	OUCCB_OUNMS_Serv_C_Priority
medicalPriority	premiseInfo	Field	serv_d_priority	OUCCB_OUNMS_Serv_D_Priority
keyPriority	premiseInfo	Field	serv_k_priority	OUCCB_OUNMS_Serv_K_Priority
lifeSuport	premiseInfo	Field	serv_life_support	
customElements	premiseInfo	Group		
meterInfo	finalSnapshot	Group		
meterId	meterInfo	Field	meter_ID	
badgeNumber	meterInfo	Field	meter_number	
meterType	meterInfo	Field	meter_type	OUCCB_OUNMS_ MeterType
manufacturer	meterInfo	Field	meter_manufacturer	
customElements	meterInfo	Group		
itemInfo	finalSnapshot	Group		
itemId	itemInfo	Field		
badgeNumber	itemInfo	Field		
itemType	itemInfo	Field		
manufacturer	itemInfo	Field		

Oracle Utilities Customer Care and Billing SP Sync Request Message			Oracle Utilities Network Management System Stored Procedure Inputs	
Element Name	**Parent Element**	**Type**	**Element Name**	**DVM Mapping**
customElements	itemInfo	Group		
customElements	finalSnapshot	Group		

Trouble Call Process - Mapping Details

This section provides mapping details for the following:

- Trouble Call Entry Process - Mapping Details
- Trouble Call Request Message - Mapping Details

Refer to the Trouble Call Entry Process description for processing details on this integration point.

Trouble Call Entry Process - Mapping Details

Oracle Utilities Network Management System Field	Oracle Utilities Customer Care and Billing Message Element	Notes
Call Source ID 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 CCB, 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 service_point_ID	spId	
External ID external_ID	outageCallId	CCB passes the Outage Call ID.
Account Number account_number	accounted	This is the customer's account ID

Oracle Utilities Network Management System Field	Oracle Utilities Customer Care and Billing Message Element	Notes
Trouble Code trouble_code	outageCodes	• Trouble code mapping setup between CCB 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 CCB, it is the Number of Outage Code Characteristic.
Call Time call_time	callDateTime	
CallbackFlag callback_flag	callbackRequested	In NMS, the possible values include: '0' - callback not requested '1' - callback requested Defaults to '1' if no value are supplied. If Y or N are passed to NMS, it will be translated to: 'Y' is translated to '1'. 'N' is translated to '0' Use DVM OUCCB_OUNMS_CallBackIndicator to translate CCB value to NMS value.
Callback Before Time callback_before_time	callbackDateTime	
Alternate Phone Number alt_phone	callbackNumber	When the integration populates this field, it should strip off all delimiters and only pass the numeric values.
Customer Phone phone	contactNumber	• If trouble call is related to an SP, CCB pass customer phone. • If fuzzy call, CCB pass the caller's phone. • When the integration populates this field, it should strip off all delimiters and only pass the numeric values.
Customer Name 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.
Address Street 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).
Address Street 2 addr_cross_street	location2	• If fuzzy call, check locationType value. • If Street Intersection, populate with location2 (It must contain a cross street).
Address Building 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 Care and Billing Message Element	Notes
Address City State addr_city_state	city state or locationCity locationState	• If trouble call is related to an SP, CCB pass the premise city and state. Concatenation of City, State. • If fuzzy call, CCB 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 call_ID	callIdentifier	• This is the call identifier's external reference ID (i.e. 911 Reference Number).
Call Taker 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 call_comment	Comments	

Meet Type
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
		• CCB gets the value from FA Char.
		• use DVM OUCCB_OUNMS_MeetType to translate CCB value to NMS value.

Meet Time meet_time	meetDateTime	CCB will populate meetDateTime only if meet type = 1.
Call Cancel Flag 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 OUCCB_OUNMS_CallCancelIndicator to translate CCB value to NMS value.
Update Existing Record Flag update_flag	outageCallAction	• The possible values in NMS are: 0 - insert new call 1 - update existing call • Use DVM OUCC_OUNMS_NewCallIndicator to translate CCB value to NMS value.
Device ID device_ID	transformerId	May be null if trouble call is not related to a specific SP. In CCB from SP Geo Code for Device.

Note: For Fuzzy Calls: If Location is a street intersection, the mapping of the location from CCB to NMS will be p_customer_address = location1 (street name) and addr_cross_street (cross street).

If Location is a street segment, the mapping of the location from CCB to NMS will be p_customer_address = location1 (street name) and addr_building (block number, this must only be a numeric value).

Note: If Location is other (free format description), the mapping of the location from CCB to NMS will be customer address = location1 (location description).

Note: All DateTime coming from CCB will be converted to the ISO8601 format which is YYYY-MM-DDHH:MM:SS.

Trouble Call Request Message - Mapping Details

Oracle Utilities Customer Care and Billing Trouble Call Request Message			Oracle Utilities Network Management System Trouble Call Stored Procedure Input	
Element Name	**Parent Element**	**Type**	**Element Name**	**DVM Mapping**
requestMessage		Outermost Tag		
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
Status	requestMessage	Field	cancel_flag	OUCCB_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	

Oracle Utilities Customer Care and Billing Trouble Call Request Message			Oracle Utilities Network Management System Trouble Call Stored Procedure Input	
Element Name	**Parent Element**	**Type**	**Element Name**	**DVM Mapping**
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	
meetType	requestMessage	Field	meet_type	OUCCB_OUNMS_MeetType
outageCodes	requestMessage	Field	trouble_code	
transformerId	requestMessage	Field	device_ID	
callbackRequested	requestMessage	Field	callback_flag	OUCCB_OUNMS_CallBackIndicator
callbackDateTime	requestMessage	Field	callback_before_time	

Oracle Utilities Customer Care and Billing Trouble Call Request Message			Oracle Utilities Network Management System Trouble Call Stored Procedure Input	
Element Name	**Parent Element**	**Type**	**Element Name**	**DVM Mapping**
callbackNumber	requestMessage	Field	alt_phone	
customElements	requestMessage			

Job History Query Process - Mapping Details

This section provides mapping details for the following:

- Job History Query Request Message - Mapping Details
- Job History Query Response Message - Mapping Details

Refer to the Job History Query Process description for processing details on this integration point.

Job History Query Request Message - Mapping Details

Oracle Utilities Customer Care and Billing Request Message Elements	Oracle Utilities Network Management System Field	DVM
<jobHistoryRequest>		
spId	CID	
premiseId	PREMISEID	
accountId	ACCOUNTNUMBER	
location		
cityStreet	CITY	
state	STATE	
intersection		
street1	STREET1	
street2	STREET2	
intersection		

Oracle Utilities Customer Care and Billing Request Message Elements		Oracle Utilities Network Management System Field	DVM
	segment		
	Street	STREET1	
	Number	BLOCKNUMBER	
	Segment		
	Location		
	externalId	EXTERNALID	
	callIdentifierId	CALLID	
	callerName	CALLERNAME	
	callerPhoneNumber	CALLERPHONE	
		P_CMP_DAYS	
</jobHistoryRequest>			

Job History Query Response Message - Mapping Details

Request Message		Oracle Utilities Network Management System Field	DVM
<jobHistoryResponse>			
<jobHistory>			
	spId	CID	
	jobStartDateTime	BEGIN_TIME	
	troubleLocation	TROUBLE_LOCATION	
	estimatedRestorationDateTime	EST_REST_TIME	
	actualRestorationDateTime	RESTORE_TIME	
	ertType	EST_SOURCE	OUCCB_OUNMS_ETR_Source

Request Message		Oracle Utilities Network Management System Field	DVM
	eventStatus	STATUS	OUCCB_OUNMS_Status
	alarmState	ALARM_STATE	OUCCB_OUNMS_Alarm_State
	customersAffected	NUM_CUST_OUT	
	jobId	EVENT_IDX	
	opearatorComment	OPERATOR_COMMENT	
	deviceClass	DEVCLS_NAME	
	troubleDescription	TROUBLE_CODE	
	feeder	FEEDER_NAME	
	primaryCause	CAUSE	OUCCB_OUNMS_Cause
	actionTakenDescription	DESCRIPTION	
	referralGroup	REFERRAL_GROUP	
		P_ERR_NO	OUCCB_OUNMS_Error_Code
		P_ERR_MSG	
		UDF1	
		UDF2	
		UDF3	
		UDF4	
		UDF5	
</jobHistory>			
<exceptionInfo>	<messageCategory/>		
	<messageNumber/>		
	<comments/>		
	<messageParms>		
	<parmSequence/>		
	<messageParmValue/>		
	</messageParms>		

Request Message	Oracle Utilities Network Management System Field	DVM
</exceptionInfo>		
</jobHistoryResponse>		

Trouble Call History Query Process - Mapping Details

This section provides mapping details for the following:

- Trouble Call History Query Request Message - Mapping Detail
- Trouble Call History Query Response Message - Mapping Details

Refer to the Trouble Call History Query Process description for processing details on this integration point.

Trouble Call History Query Request Message - Mapping Detail

Oracle Utilities Customer Care and Billing Request Message		Oracle Utilities Network Management System Field	DVM
<callHistoryRequest>			
	spId	CID	
	premiseId	PREMISEID	
	accountId	ACCOUNTNUMBER	
	location		
	cityStreet	CITY	
	state	STATE	
	intersection		
	street1	STREET1	
	street2	STREET2	
	intersection		
	segment		
	street	STREET1	

Oracle Utilities Customer Care and Billing Request Message		Oracle Utilities Network Management System Field	DVM
	number	BLOCKNUMBER	
	segment		
	location		
	externalId	EXTERNALID	
	callIdentifierId	CALLID	
	callerName	CALLERNAME	
	callerPhoneNumber	CALLERPHONE	
		P_NUM_DAYS	
</callHistoryRequest>			

Trouble Call History Query Response Message - Mapping Details

Response Message		Oracle Utilities Network Management System Field	DVM
<callHistoryResponse>			
<callHistory>			
	seq	NUMB	
	spId	CID	
	callDate	INPUT_TIME	
	location	ADDRESS	
	complaintDescription	SHORT_DESC	
	callComments	OP_COMMENT	
	issuer	USER_NAME	
	referenceNumber	EXTERNALID	
	contactName	CUSTOMER_NAME,	
	callStatus	ACTIVE	OUCCB_OUNMS_Call_Status

Response Message		Oracle Utilities Network Management System Field	DVM
	callId	GENERAL_AREA	
		P_ERR_NO	
		P_ERR_MSG	
		UDF1	
		UDF2	
		UDF3	
		UDF4	
		UDF5	
</callHistory>			
<exceptionInfo>	<messageCategory/>		
	<messageNumber/>		
	<comments/>		
	<messageParms>		
	<parmSequence/>		
	<messageParmValue/>		
	</messageParms>		
</exceptionInfo>			
</callHistoryResponse>			

Planned Outages Query Process - Mapping Details

This section provides mapping details for the following:

- Planned Outages Query Request Message - Mapping Details
- Planned Outages Query Response Message - Mapping Details

Refer to the Planned Outages Query Process description for processing details on this integration point.

Planned Outages Query Request Message - Mapping Details

Oracle Utilities Customer Care and Billing Request Message Elements		Oracle Utilities Network Management System Field	DVM
< plannedOutages Request>			
	spId	CID	
	showAllPlannedOutages		
		P_NUM_DAYS	
</ plannedOutages Request>			

Planned Outages Query Response Message - Mapping Details

Response Message			Oracle Utilities Network Management System Field	DVM
< 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	
		userDefinedField3	UDF3	

Response Message		Oracle Utilities Network Management System Field	DVM
	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>			
</ plannedOutages Response>			

Notify Communication Preference Process - Mapping Details

Refer to the Notify Communication Preference Process description for processing details on this integration point.

OUCCBOUNMSNotifyPreferenceEBF			**Oracle Utilities Customer Care and Billing Outbound message to send notification preference to Edge application (C1-NotifyEdgeApplicationOutMsg)**		
Element Name	**Parent Element**	**Type**	**Element Name**	**Parent Name**	**Type**
sendDetails		OutermostTag	sendDetails		OutermostTag
accountId	sendDetails	Field	accountId	sendDetails	Field
notificationType	sendDetails	Field	notificationType	sendDetails	Field
notificationEdgeApp	sendDetails	Field	notificationEdgeApp	sendDetails	Field
activeInactive	sendDetails	Field	activeInactive	sendDetails	Field
customElements	sendDetails		customElements	sendDetails	Field

Notification Inbound Process - Mapping Detail

Refer to the Notification Inbound Process description for processing details on this integration point.

Oracle Utilities Network Management System DB Poll Adapter			**Oracle Utilities Network Management System Notification Inbound Message**		
Element Name	**Parent Element**	**Type**	**Element Name**	**Parent Name**	**Type**
MycCssParamVioTextCollection		OutermostTag	NMSNotificationInbound		OutermostTag
MycCssParamVioText		Group			
paramVioId	MycCssParamVioText	Field			
vioText	MycCssParamVioText	Field			
cssNotified	MycCssParamVioText	Field			
MycCssParamVioTextView	MycCssParamVioText	Group	notification		List
customerAccount	MycCssParamVioTextView	Field	accountId		Field
		Field	appId	notification	Field

Oracle Utilities Network Management System DB Poll Adapter			Oracle Utilities Network Management System Notification Inbound Message		
Element Name	**Parent Element**	**Type**	**Element Name**	**Parent Name**	**Type**
triggerCode	MycCssParamVioTextView	Field	notificationType	notification	Field
			notificationTypeDescription	notification	Field
notificationChannel	MycCssParamVioText	Field	deliveryType	notification	Field
vioSubject	MycCssParamVioTextView	Field	subjectText	notification	Field
vioText	MycCssParamVioTextView	Field	messageBodyText	notification	Field
			customElements	notification	Field

Create Notification Message Process - Mapping Detail

Refer to the Create Notification Process description for processing details on this integration point.

Oracle Utilities Network Management System Inbound Message			Oracle Utilities Customer Care and Billing Webservice to receive notification (C1-CreateEdgeAppNotifications)		
Element Name	**Parent Element**	**Type**	**Element Name**	**Parent Name**	**Type**
NMSNotificationInbound		**OutermostTag**	**C1-CreateEdgeAppNotifications**		**OutermostTag**
notificationType		Field	notificationType	C1-CreateEdgeAppNotifications	Field
accountId		Field	accountId	C1-CreateEdgeAppNotifications	Field
			notifications	C1-CreateEdgeAppNotifications	Group
		Field	notification	notifications	List
deliveryType		Field	deliveryType	notification	Field
			language	notification	Field
subjectText		Field	subjectText	notification	Field
mesageBodyText		Field	messageBodyText	notification	Field
			messageCategory	notification	Field
			subjectMessageNumber	notification	Field
			messageParmCollCount	notification	Field
			messageParams	notification	Group
			messageParm1	notification	Field
			messageParm2	notification	Field
			messageParm3	notification	Field
			messageParm4	notification	Field
			messageParm5	notification	Field
			messageParm6	notification	Field
			messageParm7	notification	Field
			messageParm8	notification	Field

Oracle Utilities Network Management System Inbound Message			Oracle Utilities Customer Care and Billing Webservice to receive notification (C1-CreateEdgeAppNotifications)		
Element Name	**Parent Element**	**Type**	**Element Name**	**Parent Name**	**Type**
NMSNotificationInbound		**OutermostTag**	**C1-CreateEdgeAppNotifications**		**OutermostTag**
			messageParm9	notification	Field
			messageParmTypes	notification	Group
			messageParmType1	notification	Field
			messageParmType2	notification	Field
			messageParmType3	notification	Field
			messageParmType4	notification	Field
			messageParmType5	notification	Field
			messageParmType6	notification	Field
			messageParmType7	notification	Field
			messageParmType8	notification	Field
			messageParmType9	paramTypes	Field
			notificationTexts	notification	Group
			notificationText	notificationTexts	List
			sequence	notificationText	Field
			messageNumber	notificationText	Field
			messageParmCollCount	notificationText	Field
			messageParms	notificationText	Field
			messageParm1	notificationText	Field
			messageParm2	notificationText	Field
			messageParm3	notificationText	Field
			messageParm4	notificationText	Field
			messageParm5	notificationText	Field

Oracle Utilities Network Management System Inbound Message			Oracle Utilities Customer Care and Billing Webservice to receive notification (C1-CreateEdgeAppNotifications)		
Element Name	**Parent Element**	**Type**	**Element Name**	**Parent Name**	**Type**
NMSNotificationInbound		**OutermostTag**	**C1-CreateEdgeAppNotifications**		**OutermostTag**
			messageParm6	notificationText	Field
			messageParm7	notificationText	Field
			messageParm8	notificationText	Field
			messageParm9	notificationText	Field
			messageParmTypes	notificationText	Field
			messageParmType1	notificationText	Field
			messageParmType2	notificationText	Field
			messageParmType3	notificationText	Field
			messageParmType4	notificationText	Field
			messageParmType5	notificationText	Field
			messageParmType6	notificationText	Field
			messageParmType7	notificationText	Field
			messageParmType8	notificationText	Field
			messageParmType9	notificationText	Field
customElements		Field	customElements	C1-CreateEdgeAppNotifications	List
			errorInformation	C1-CreateEdgeAppNotifications	Group
			isInError	errorInformation	Field
			errorReference	errorInformation	Field
			number	errorInformation	Field
			errorMessage	errorInformation	Field

Appendix B

Configuration Properties File

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

For information on modifying configuration properties refer to the "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 which are used by all the SOA composites.

Module Name	Property Name	Default / Shipped Value	Description
CCB-NMS	CCB.Generic.MessageCategory	11114	This is the Message category that the integration uses for CCB Error messages.
CCB-NMS	CCB.GenericBusinessException .MessageNumber	11001	This is the Message number the integration uses for Generic CCB error.
CCB-NMS	CCB.GenericDVMException .MessageNumber	11401	This is the Message number the integration uses for DVM error.
CCB-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.
CCB-NMS	ErrorHandling.GenericEmailID		This property is used to set the administrator email ID for the errorhandling process to send out an email in case of a critical failure where even the Errorhandling process fails.

Module Name	Property Name	Default / Shipped Value	Description
CCB-NMS	DVM.OUCCB_OUNMS_ETR_SOURCE .ThrowException	false	This flag indicates if an error is triggered when the DVM lookup value is not found for DVM OUCCB_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.
CCB-NMS	DVM.OUCCB_OUNMS_Job_History_Status .ThrowException	false	This flag indicates if an error is triggered when the DVM lookup value is not found for DVM OUCCB_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.
CCB-NMS	DVM.OUCCB_OUNMS_Alarm_State .ThrowException	false	This flag indicates if an error is triggered when the DVM lookup value is not found for DVM OUCCB_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.
CCB-NMS	DVM.OUCCB_OUNMS_CALL_STATUS .ThrowException	false	This flag indicates if an error is triggered when the DVM lookup value is not found for DVM OUCCB_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.
CCB-NMS	DVM.OUCCB_OUNMS_CallBackIndicator .ThrowException	false	This flag indicates if an error is triggered when the DVM lookup value is not found for DVM OUCCB_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.

Module Name	Property Name	Default / Shipped Value	Description
CCB-NMS	DVM.OUCCB_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.
CCB-NMS	DVM.OUCCB_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.
CCB-NMS	DVM.OUCCB_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.
CCB-NMS	DVM.OUCCB_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.
CCB-NMS	DVM.OUCCB_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.
CCB-NMS	DVM.OUCCB_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.

Module Name	Property Name	Default / Shipped Value	Description
CCB-NMS	DVM.OUCCB_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.
CCB-NMS	DVM.OUCCB_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.
CCB-NMS	DVM.OUCCB_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.
CCB-NMS	DVM.OUCCB_OUNMS_ErrorCode .ThrowException	false	This flag is not used by the integration.
CCB-NMS	DVM.OUCCB_OUNMS_LifeSupportIndicator _FALSE_VALUE	0	This is the NMS value for life support if it is false.
CCB-NMS	DVM.OUCCB_OUNMS_LifeSupportIndicator _TRUE_VALUE	1	This is the NMS value for life support if it is true. This value is used to verify that the CCB life support value in the premise info or person info is true then the NMS value has to be set to true.

Service Configurations

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

Service Name	Property Name	Default / Shipped Value or System ID of Initiating System	Description
Customer Data Synchronization Process			
OUCCBOUNMSCustomerDataSyncReqEBF	Default.SystemID	OU_CCB_01	Initiating system ID.
	Extension.PreXformCCBtoNMS	false	If set to true, the pre transformation extension service is invoked.
	Extension.PostXformCCBtoNMS	false	If set to true, the post transformation extension service is invoked.
	Extension.CustomXformItemCCBtoNMS	false	If set to true, the custom transformation for Item is invoked.
	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.
	Comments.NoItemInfoMapping	Synchronization of item information is not supported.	These comments are used to store a clearer error message in the integration error table when an error is encountered when a message with item information is sent from CCB, but no customization is enabled in the integration layer.
	Comments.NoMeterandItemMapping	Meter or item information is missing.	These comments are used to store a clearer error message in the integration error table when an error is encountered when a message with no meter or item information is sent from CCB but no customization is enabled in the integration layer.
Trouble Call Entry Process			
OUCCBOUNMSTroubleCallInterfaceEBF	Default.SystemID	OU_CCB_01	Initiating system ID.
	Extension.PreXformCCBtoNMS	False	If set to true, the pre transformation extension service is invoked.

Service Name	Property Name	Default / Shipped Value or System ID of Initiating System	Description
	Extension.PostXformCCBtoNMS	False	If set to true, the post transformation extension service is invoked.
	NMS.CCBCallSourceID	2	Define unique call source ID for CCB. • This CCB call source ID indicates that the trouble call was created in CCB. • 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 CCB.
	CCB.LocationType.StreetIntersection	C1IS	CCB 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 CCB Location Type value for Street Segment. Location Type coming from CCB is not mapped to NMS. It is only used by the integration for the mapping of the cross street or block number.
	CCB.LocationType.StreetSegment	C1SS	CCB 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 CCB Location Type value for Street Intersection. Location Type coming from CCB is not mapped to NMS. It is only used by the integration for the mapping of the cross street or block number.

Service Name	Property Name	Default / Shipped Value or System ID of Initiating System	Description
	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			
OUCCBOUNMSJobHistoryQuery	Default.SystemID	OU_CCB_01	Initiating system ID.
	Extension.PreXformCCBtoNMS	false	If set to true, the pre transformation extension service is invoked.
	Extension.PostXformCCBtoNMS	false	If set to true, the post transformation extension service is invoked.
	Extension.PreXformNMStoCCB	false	If set to true, the pre transformation extension service is invoked.
	Extension.PostXformNMStoCCB	false	If set to true, the post transformation extension service is invoked.
	NMS.NumberOfDaysOfHistory	60	Define the Number of Days Of Job History to return.
	BusinessError.NotificationFlag	true	If set to true, the business error notification is sent via email.
	TechnicalError.Notificati onFlag	true	If set to true, the technical error notification is sent via email.
Trouble Call History Query Process			
OUCCBOUNMSTroubleCallsQueryEBF	Default.SystemID	OU_CCB_01	Initiating system ID.
	Extension.PreXformCCBtoNMS	false	If set to true, the pre transformation extension service is invoked.
	Extension.PostXformCCBtoNMS	false	If set to true, the post transformation extension service is invoked.
	Extension.PreXformNMStoCCB	false	If set to true, the pre transformation extension service is invoked.

Service Name	Property Name	Default / Shipped Value or System ID of Initiating System	Description
	Extension.PostXformNMStoCCB	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.Notificati onFlag	true	If set to true, the business error notification is sent via email.
	TechnicalError.Notificati onFlag	true	If set to true, the technical error notification is sent via email.
Planned Outages Query Process			
OUCCBOUNMSPlannedOutagesQueryEBF	Default.SystemID	OU_CCB_01	Initiating system ID.
	Extension.PreXformCCBtoNMS	false	If set to true, the pre transformation extension service is invoked.
	Extension.PostXformCCBtoNMS	false	If set to true, the post transformation extension service is invoked.
	Extension.PreXformNMStoCCB	false	If set to true, the pre transformation extension service is invoked.
	Extension.PostXformNMStoCCB	false	If set to true, the post transformation extension service is invoked.
	NMS.NumberOfDaysOfHistory	10	Define the Number of Days Of Planned Outages to return.
	BusinessError.Notificati onFlag	true	If set to true, the business error notification is sent via email.
	TechnicalError.Notificati onFlag	true	If set to true, the technical error notification is sent via email.
Notify Communication Preference Process			
OUCCBOUNMSNotifyPreferenceEBF	Default.SystemID	OU_CCB_01	Default system ID
	BusinessError.NotificationFlag	false	If set to true, the business error notification is sent via email.

Service Name	Property Name	Default / Shipped Value or System ID of Initiating System	Description
	TechnicalError.NotificationFlag	false	If set to true, the technical error notification is sent via email.
Notification Inbound Process			
OUNMSNotificationInboundEBF	Default.SystemID	OU_CCB_01	Default system ID
	BusinessError.NotificationFlag	false	If set to true, the business error notification is logged in error handling system and email sent if configured.
	TechnicalError.NotificationFlag	false	If set to true, the technical error notification is logged in error handling system and email sent if configured.
	CCB.OUCCBCreateNotificationEBF.Endpoint.URL	CCB URL	URL pointing to CCB C1-CreateEdgeAppNotifications IWS service
Create Notification Process			
OUCCBCreateNotificationEBF	Default.SystemID	OU_CCB_01	Default system ID
	BusinessError.NotificationFlag	false	If set to true, the business error notification is sent via email.

Service Name	Property Name	Default / Shipped Value or System ID of Initiating System	Description
	TechnicalError.NotificationFlag	false	If set to true, the technical error notification is sent via email.
	CCB.OUCCBCreateNotificationEBF.Endpoint.URL	CCB URL	URL pointing to CCB C1-CreateEdgeAppNotifications IWS service

Appendix C

Domain Value Maps (DVMs)

The following table lists the DVMs included for the integration.

For information on creating DVMs refer to the "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	CCB/NMS Values
OUCCB_OUNMS_AccountType	Customer Data Synchronization	DVM mapping for CCB Service Type Code to the to NMS Account Type.	OUCCB_ServiceType - This contains the valid CCB values for 'Service Type'. OUNMS_AccountType - This contains the valid NMS values for 'Account Type'.
OUCCB_OUNMS_Alarm_State	Job History Query	DVM mapping for Alarm State Code	OUCCB_ Alarm_State - This contains the valid CCB values for 'Alarm State'. These values are obtained from CCB lookup C1_ALARM_STATE_FLG. OUNMS_ Alarm_State - This contains the valid NMS values for 'Alarm State'.
OUCCB_OUNMS_Call_Status	Trouble Call History Query	DVM mapping for Call Status Code	OUCCB_Call_Status - This contains the valid CCB values for 'Call Status'. These values are obtained from CCB lookup C1_CALL_STATUS_FLG. OUNMS_Call_Status - This contains the valid NMS values for 'Call Status'.
OUCCB_OUNMS_CallBackIndicator	Trouble Call Interface	DVM mapping for Call Back Indicator	OUCCB_ CallbackRequested - This contains the valid CCB values for 'Callback Requested'. OUNMS_CallbackFlag - This contains the valid NMS values for 'Callback Flag'.

DVM	Integration Points	Description	CCB/NMS Values
OUCCB_OUNMS_CallCancelIndicator	Trouble Call Interface	DVM mapping for Call Cancel Indicator	OUCCB_Status - This contains the valid CCB values for 'Call Cancel'. OUNMS_ CallCancelFlag - This contains the valid NMS values for 'Call Cancel Flag'.
OUCCB_OUNMS_Cause	Job History Query	DVM mapping for Cause Code	OUCCB_Cause - This contains the valid CCB values for 'Cause'. OUNMS_CauseFlag- This contains the valid NMS values for 'Cause Flag'.
OUCCB_OUNMS_ETR_Source	Job History Query	DVM mapping for ETR Source Code	OUCCB_ ETR_Source - This contains the valid CCB values for 'ETR Source'. These values are obtained from CCB lookup C1_ETR_SOURCE_FLG. OUNMS_ ETR_Source - This contains the valid NMS values for 'ETR Source'.
OUCCB_OUNMS_Job_History_Status	Job History Query	DVM mapping for Job History Status Code	OUCCB_ Job_History_Status - This contains the valid CCB values for 'ETR Source'. These values are obtained from CCB lookup C1_ETR_SOURCE_FLG OUNMS_ Job_History_Status - This contains the valid NMS values for 'Job History Status'.
OUCCB_OUNMS_LifeSupportIndicator	Customer Data Synchronization	DVM mapping for Life Support Indicator	OUCCB_ LifeSupportIndicator - This contains the valid CCB values for 'Life Support Indicator'. OUNMS_ LifeSupportIndicator - This contains the valid NMS values for 'Life Support Indicator'.
OUCCB_OUNMS_MeetType	Trouble Call Interface	DVM mapping for Meet Type Code	OUCCB_MeetType - This contains the valid CCB values for 'Meet Type'. OUNMS_MeetType - This contains the valid NMS values for 'Meet Type'.
OUCCB_OUNMS_MeterType	Customer Data Synchronization	DVM mapping for Meter Type Code	OUCCB_MeterType - This contains the valid CCB values for 'Meter Type'. OUNMS_MeterType - This contains the valid NMS values for 'Meet Type'.
OUCCB_OUNMS_NewCallIndicator	Trouble Call Interface	DVM mapping for New Call Indicator	OUCCB_ OutageCallAction - This contains the valid CCB values for 'Outage Call Action Flag'. These values are obtained from CCB lookup C1_OUTCALL_ACT_FLG. OUNMS_ UpdateExistingFlag - This contains the valid NMS values for 'Update Existing Flag'.

DVM	Integration Points	Description	CCB/NMS Values
OUCCB_OUNMS_Serv_C_Priority	Customer Data Synchronization	DVM mapping for Critical Priority Code	OUCCB_ Serv_C_Priority - This contains the valid CCB values for 'Serv C Priority'. OUNMS_ Serv_C_Priority - This contains the valid NMS values for 'Serv C Priority'
OUCCB_OUNMS_Serv_D_Priority	Customer Data Synchronization	DVM mapping for Medical Priority Code	OUCCB_ Serv_D_Priority - This contains the valid CCB values for 'Serv D Priority'. OUNMS_ Serv_D_Priority - This contains the valid NMS values for 'Serv D Priority'
OUCCB_OUNMS_Serv_K_Priority	Customer Data Synchronization	DVM mapping for Key Priority Code	OUCCB_ Serv_K_Priority - This contains the valid CCB values for 'Serv K Priority'. OUNMS_ Serv_K_Priority - This contains the valid NMS values for 'Serv K Priority'
OUNMS_OUCCB_DeliveryType	Create Notification	DVM mapping for delivery types	OUNMS_DeliveryType - This contains delivery types used in NMS OUCCB_DeliveryType - This contains delivery types used in CCB Example: EMAIL