Oracle Process Integration Pack for Oracle Utilities Field Work 3.1 -

Implementation Guide

Release 3.1

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Contents

Preface

Welcome to the Process Integration Pack for Oracle Utilities Field Work 3.1.

Oracle Application Integration Architecture (AIA) provides the guides and resources indicated in this section.

Oracle Application Integration Architecture Guides

- Oracle Fusion Middleware Infrastructure Components and Utilities User's Guide for Oracle Application Integration Architecture Foundation Pack 11g Release 1 (11.1.1.4.0)
- Oracle Fusion Middleware Installation and Upgrade Guide for Oracle Application Integration Architecture Foundation Pack 11g Release 1 (11.1.1.4.0)
- Oracle Fusion Middleware Concepts and Technologies Guide for Oracle Application Integration Architecture Foundation Pack 11g Release 1 (11.1.1.4.0)
- Oracle Fusion Middleware Reference Process Models User's Guide for Oracle Application Integration Architecture Foundation Pack 11g Release 1 (11.1.1.4.0)
- Oracle Fusion Middleware Migration Guide for Oracle Application Integration Architecture 11g Release 1 (11.1.1.4.0)
- Oracle Fusion Middleware Developer's Guide for Oracle Application Integration Architecture Foundation Pack 11g Release 1 (11.1.1.4.0)

Additional Resources

Additional documentation provided that is specific to this release.

- Oracle Application Integration Architecture: Product-to-Guide Index
- Known Issues and Workarounds
- Release Notes
- Documentation Updates Guide
- Functional Diagrams

Part 1: Understanding the Delivered Integrations

Chapter 1: Process Integration Pack for Oracle Utilities Field Work Overview

This chapter provides information regarding:

- An Overview of the Business Processes included in this Integration
- Participating Applications in the Field Work Process Integration Pack
- Common Terms Used in this Guide

Overview

The Process Integration Pack for Oracle Utilities Field Work supports the creation and synchronization of field work records between Oracle Utilities Customer Care and Billing, Oracle Utilities Work and Asset Management, and Oracle Utilities Mobile Workforce Management.

As an order is initiated within one of the applications it is propagated to one or both of the other two applications depending on the established rules for the type of order. As the order life cycle progresses, the integration manages:

- Order Creation
- Order Update, Cancel or Completion
- Appointment Management
- Meter and Item Validation
- Timesheet Creation (applicable only to Oracle Utilities Mobile Workforce Management v1.x)
- Billing
- Customer Update

Participating Applications

The Process Integration Pack for Oracle Utilities Field Work is an integration involving the following products:

- Oracle Utilities Customer Care and Billing (CC&B)
- Oracle Utilities Mobile Workforce Management (MWM)
- Oracle Utilities Work and Asset Management (WAM)

This chapter provides a general description of each of these applications.

Oracle Utilities Customer Care and Billing

Oracle Utilities Customer Care and Billing (CC&B) manages customer information associated with field activities and processes the associated billing. Typically processing begins when a customer logs a request, or Field Activity, for work. Oracle Utilities Customer Care and Billing communicates this Field Activity to Oracle Utilities Mobile Workforce Management as a Field Order or Activity or to Oracle Utilities Work and Asset Management as a Service Request.

Oracle Utilities Mobile Workforce Management

This integration supports two versions of Oracle Utilities Mobile Workforce Management. This section provides information on each version.

Mobile Workforce Management v1.x

The Oracle Utilities Mobile Workforce Management (MWM) product comprises the following user applications:

- **Dispatch Workstation** - Dispatchers manage and monitor Field Orders and crews using the Dispatch Workstation. This application also includes the Admin Tool, which is used to maintain personnel, vehicles, and crews.
- **Mobile Workstation** - Mobile crew members receive work orders, record progress, and enter completion details using the Mobile Workstation. As orders are processed by the user, the status and completion information are returned by wireless communication or LAN connection.

Behind the scenes, the Oracle Utilities Mobile Workforce Management server processes orders, crews, personnel, dispatch functions, and status transactions, and then communicates the status of orders and users to connected applications. The Oracle Utilities Mobile Workforce Management Router converts and routes transactions between external applications, including Oracle Utilities Customer Care and Billing.

Mobile Workforce Management v2.x

The Oracle Utilities Mobile Workforce Management (MWM) product is based on the Oracle Utilities Application Framework (OUAF) and is realized as three distinct functional components:

- **Resource Planning and Scheduling** - Supports resource planners and service managers in managing resources, planning shifts, and scheduling work. The system manages activity requests sent in from host systems as well as automatically generates shifts and optimizes the schedule based on business rules.
- **Common dispatching functionality** - Supports dispatchers as they handle exceptions throughout the day, and enables context-based decision making at the dispatcher level. The system can be configured to automatically dispatch all activities or limit auto-dispatching to certain activity types or shifts. The system maintains real-time communication with mobile resources, tracks the location of crews and vehicles, and enables dispatchers to monitor and manage activities, crews, alerts, and key performance indicators. Common dispatching functionality is provided through the Common Dispatching Interface (CDI) portal.

- **Mobile communications platform** - Supports mobile crews as they perform service work, facilitating communication with the dispatcher, providing GPS-based mapping services, and processing activity status updates and work completion details. The application runs on a Mobile Data Terminal (MDT) device.

Oracle Utilities Work and Asset Management

Oracle Utilities Work and Asset Management (WAM) manages work processes from the creation of a Service Request to the completion of work and processing work related charges. Once an order is translated from one of the other systems to become a Service Request in Oracle Utilities Work and Asset Management, the systems continue to communicate to update statuses, create charges, bill charges when needed, and to close out the work.

Common Terms Used in this Guide

The following terms and acronyms are used throughout this guide.

AIA Terms

ABCS	Application Business Connector Services
DVM	Domain Value Map
EBM	Enterprise Business Messages - Packets of data which the Mediator accepts from requesters and routes to providers. They carry the pieces of data needed for the requests to be understood and serviced.
EBO	Enterprise Business Object
JMS	Java Message Service - The JMS producers are responsible for posting the message to the Consumer JMS Queue for the corresponding target application.
PIP	Process Integration Pack
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.
XSL	Extensible Style Language

Application Names

CC&B	Oracle Utilities Customer Care and Billing
MWM v1.x	Oracle Utilities Mobile Workforce Management version 1.x
MWM v2.x	Oracle Utilities Mobile Workforce Management version 2.x
WAM	Oracle Utilities Work and Asset Management

General Terms

Orders are referred to in different terms in each of the applications involved in this integrated product. In each of these systems, an order translates to:

Abbreviation	Order Name	Application
FA	Field Activity	CC&B
SR	Service Request	WAM
FO	Field Order	MWM v1.x
A	Activity	MWM v2.x

Other General Terms

CM	Customer Modification
CSR	Customer Service Representative
Edge applications	The applications that are involved in the integration - CC&B, MWM, and WAM
MPL	Multi Purpose Listener. The Multi Purpose Listener is a multi-threaded Java server that reads XML requests from various external and internal data sources, such as a Java Message Service (JMS) message queue, a JMS topic or system staging tables. The MPL can be used to process inbound messages (those sent by an external application to invoke a system service), or outgoing messages (those sent by your product to external applications). The MPL uses different receivers to process messages from different data sources.
Participating Application	One of the three applications involved in the three-way integration - CC&B, MWM, or WAM
SOAP	Simple Object Access Protocol. It 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
Three Way Order	This is an order that is integrated in all three systems.
XAI	XML Application Integration. An Oracle Utilities Framework utility used to configure the system transfer information between CC&B/MWM v2.x and external applications using XML. XAI exposes system business objects as a set of XML based web services. The service can be invoked using different methods, for example, 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

For more information on AIA terms and concepts please refer to the *Oracle Fusion Middleware Concepts and Technologies Guide for Oracle Application Integration Architecture Foundation Pack 11g Release 1 guide*.

References

For more information on the terms and entities related to the integration, see Appendix B: Cross-References.

Chapter 2: Work Order Process Integration

This chapter provides an overview of Work Order Process Integration and discusses:

- Functionality Supported by Work Order Processing
- Assumptions and Constraints for Work Order Processing
- Integration Process Flows for Work Order Processing

Work Order Process Integration Overview

If you are using the complete integration between Oracle Utilities Customer Care and Billing, Oracle Utilities Mobile Workforce Management, and Oracle Utilities Work and Asset Management, the most likely business process to follow is:

- Order initiated by an action in Oracle Utilities Customer Care and Billing.
- Order created as a Field Order (FO) in Oracle Utilities Mobile Workforce Management v1.x or Activity (A) in Oracle Utilities Mobile Workforce Management v2.x and/or as a Service Request (SR) in Oracle Utilities Work and Asset Management. This is based on order type business rules.
- Order is worked and finished in Oracle Utilities Mobile Workforce Management or if the order is not sent to Oracle Utilities Mobile Workforce Management, it is worked and completed in Oracle Utilities Work and Asset Management.
- If an Oracle Utilities Work and Asset Management SR is part of the order, Oracle Utilities Work and Asset Management may send billing information back to Oracle Utilities Customer Care and Billing when the SR is closed in Oracle Utilities Work and Asset Management.
- Oracle Utilities Work and Asset Management is used to capture billing information.
- Oracle Utilities Mobile Workforce Management is used to manage work scheduling and appointments.
- Oracle Utilities Customer Care and Billing is used to manage the customer inquiry and initiate service.

Oracle Utilities Customer Care and Billing can be used by customer service representatives (CSRs) to create fieldwork orders. A CSR can initiate orders of certain types manually and/or take actions to cause Oracle Utilities Customer Care and Billing to automatically generate orders of various types based on the business rules established in the administrative tables within Oracle Utilities Customer Care and Billing.

A Field Activity (FA) may or may not have a related appointment date and time slot. This typically depends on the type of order and possibly the access available to installed products at a service point.

If a Field Activity does not require an appointment, Oracle Utilities Customer Care and Billing sends the order information to the integration product once it is created. If a Field Activity does require an appointment, Oracle Utilities Customer Care and Billing sends the order to the integration product once it is appointed. This is controlled by existing set up rules within Oracle Utilities Customer Care and Billing.

While this is the most likely process to follow in using this integration, please keep in mind that other scenarios and possibilities do exist when utilizing this integration. The following sections provide an overview of all supported functionality:

Supported Functionality

The following functions can be completed within the work order processing:

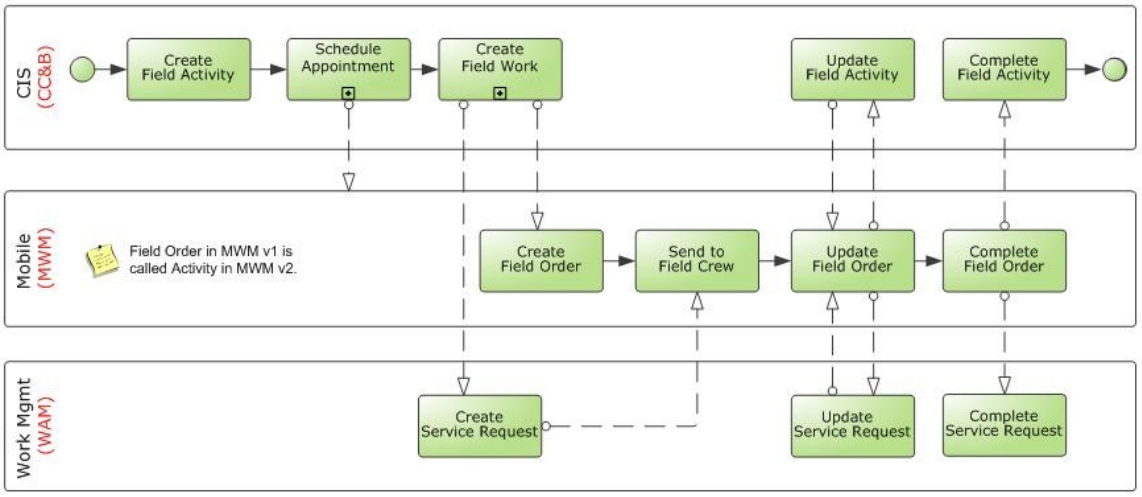
- Create order
- Update or cancel order
- Complete order

Create Order

The following scenarios apply to how an order might be created:

Order Initiated from Oracle Utilities Customer Care and Billing

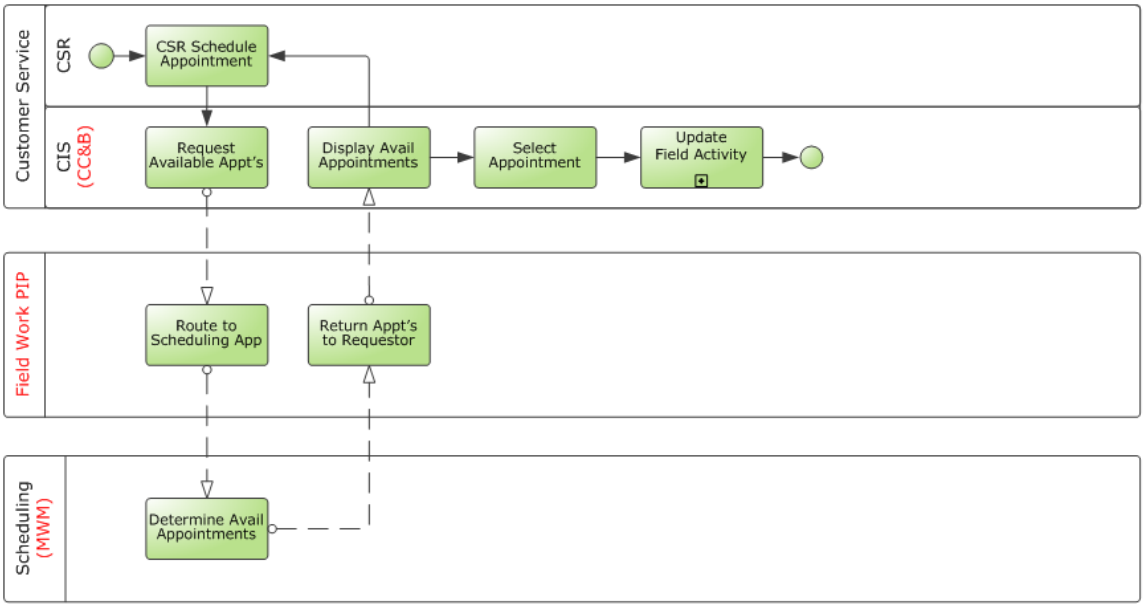
This diagram shows the high level flow when an order is created in Oracle Utilities Customer Care and Billing:



Process flow when an order is created within Oracle Utilities Customer Care and Billing

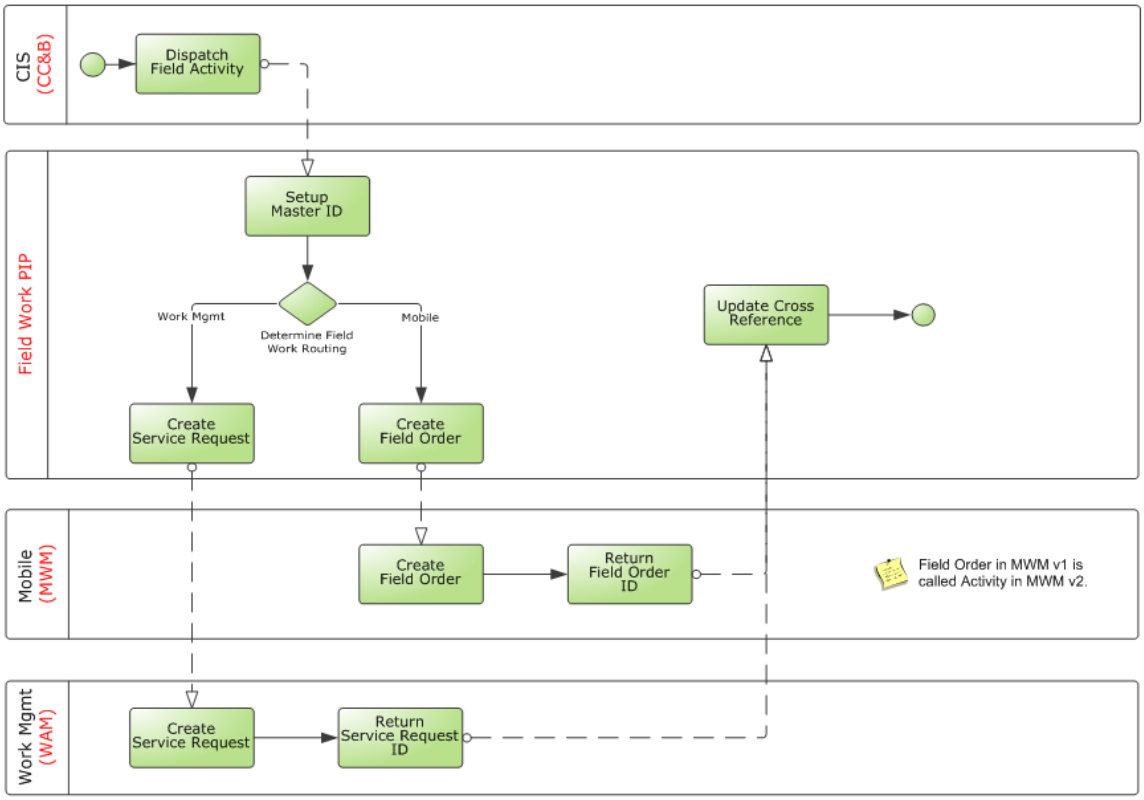
This process is broken down into 2 separate process flows at the next level – Appointment Creation and Field Work Creation.

This diagram shows the process flow when an appointment is created:



Process flow for appointment creation

This diagram shows the process flow when a field-order is created:

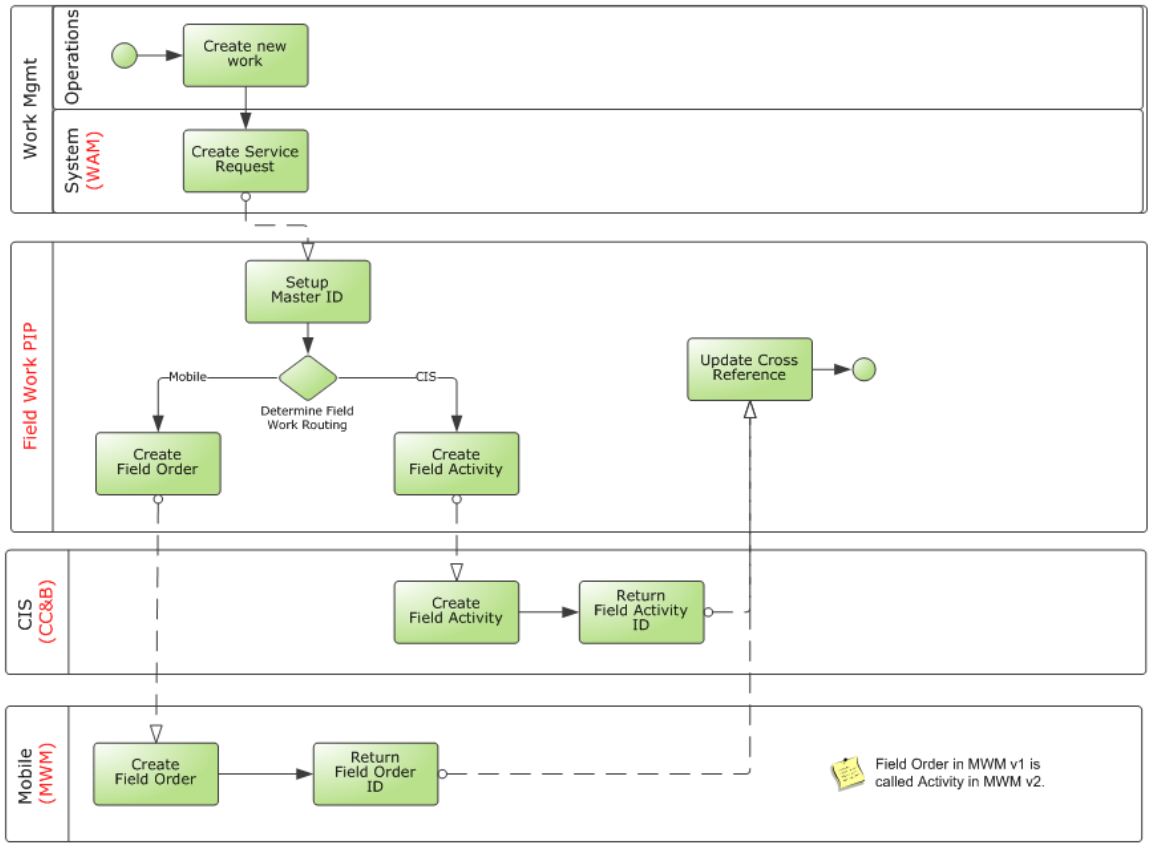


Process flow for field order creation

Field Work Order Creation in Oracle Utilities Customer Care and Billing for Order Initiated in Oracle Utilities Work and Asset Management

An order is initiated when a user creates an Oracle Utilities Work and Asset Management Service Request and is propagated to the other systems to become an Oracle Utilities Customer Care and Billing Field Activity and/or an Oracle Utilities Mobile Workforce Management Field Order (v1.x) or activity (v2.x).

The following diagram shows the flow for when an order is initiated from an Oracle Utilities Work and Asset Management Service Request.



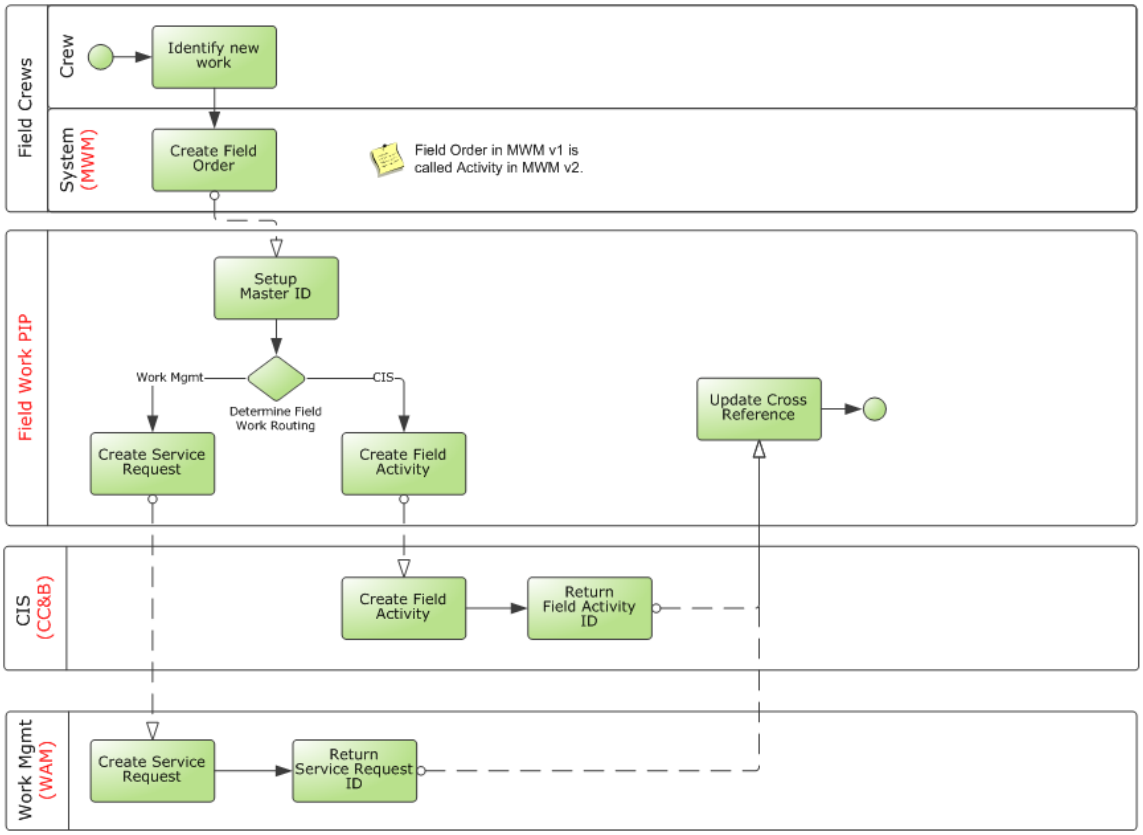
Process flow when a user creates an Oracle Utilities Work and Asset Management Service Request

Order Initiated in Oracle Utilities Mobile Workforce Management v1.x or v2.x

An order is initiated by a user creating an Oracle Utilities Mobile Workforce Management Pickup Order or Activity that is related to an existing order they are working on at the same service point.

Business Process Diagram

The following diagram shows the flow for when an order is created from an Oracle Utilities Mobile Workforce Management Pickup Order or Activity:



Process flow when an order is created from an Oracle Utilities Mobile Workforce Management related Pickup Order or Activity

Note: In Oracle Utilities Mobile Workforce Management v1.x messages for related Pickup Orders are sent only after the order is completed.
In Oracle Utilities Mobile Workforce Management v2.x, related Pickup Activity messages are sent out as soon as the Pickup Order is created and the integration returns the common ID to Oracle Utilities Mobile Workforce Management synchronously.

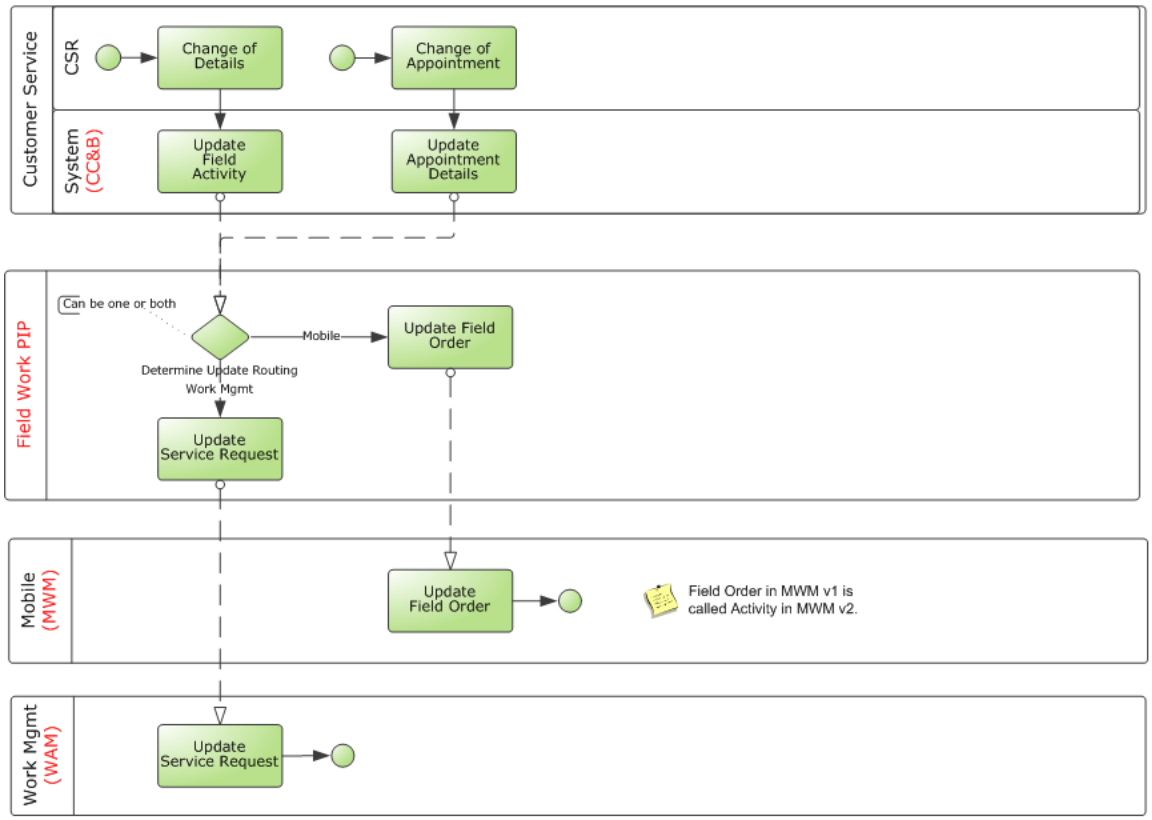
Update or Cancel Order

The following scenarios apply to how an order might be updated or canceled:

Update Order in Oracle Utilities Customer Care and Billing

An existing order, regardless of where it was initiated, is updated by a customer service representative using Oracle Utilities Customer Care and Billing. The changes are sent to linked orders in other systems.

This diagram shows the process of updating an order in Oracle Utilities Customer Care and Billing:

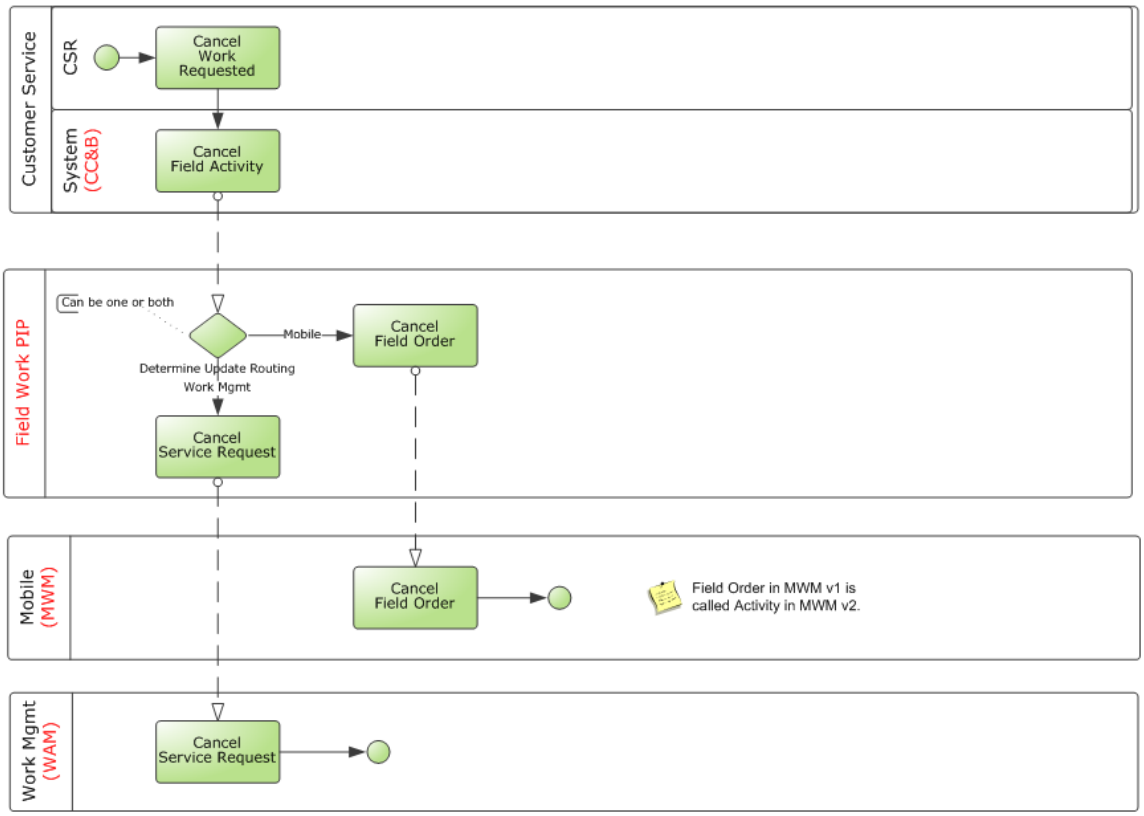


Process flow when an existing order is updated in Oracle Utilities Customer Care and Billing

Cancel Order in Oracle Utilities Customer Care and Billing

When an existing order, regardless of where it was initiated, is canceled by a customer service representative using Oracle Utilities Customer Care and Billing the changes are sent to linked orders in other systems.

This diagram shows the process of canceling an order in Oracle Utilities Customer Care and Billing:



Process flow when an existing order is canceled in Oracle Utilities Customer Care and Billing

An Oracle Utilities Customer Care and Billing user updates or cancels a Field Activity. Updates are sent to linked orders in other systems.

Generally, an update to the Schedule Date or Problem Description on the Field Activity triggers this update. This update from Oracle Utilities Customer Care and Billing is for orders that are linked to either Oracle Utilities Work and Asset Management or Oracle Utilities Mobile Workforce Management.

- If the CCB Field Activity is linked to Oracle Utilities Mobile Workforce Management and not linked to Oracle Utilities Work and Asset Management, Oracle Utilities Mobile Workforce Management receives the updated Problem Description and Schedule Date.
- If the CCB Field Activity is linked to Oracle Utilities Work and Asset Management and not linked to Oracle Utilities Mobile Workforce Management, Oracle Utilities Work and Asset Management receives the updated Problem Description and Schedule Date.
- If the CCB Field Activity is linked to both Oracle Utilities Mobile Workforce Management and Oracle Utilities Work and Asset Management, the update is sent to both applications.

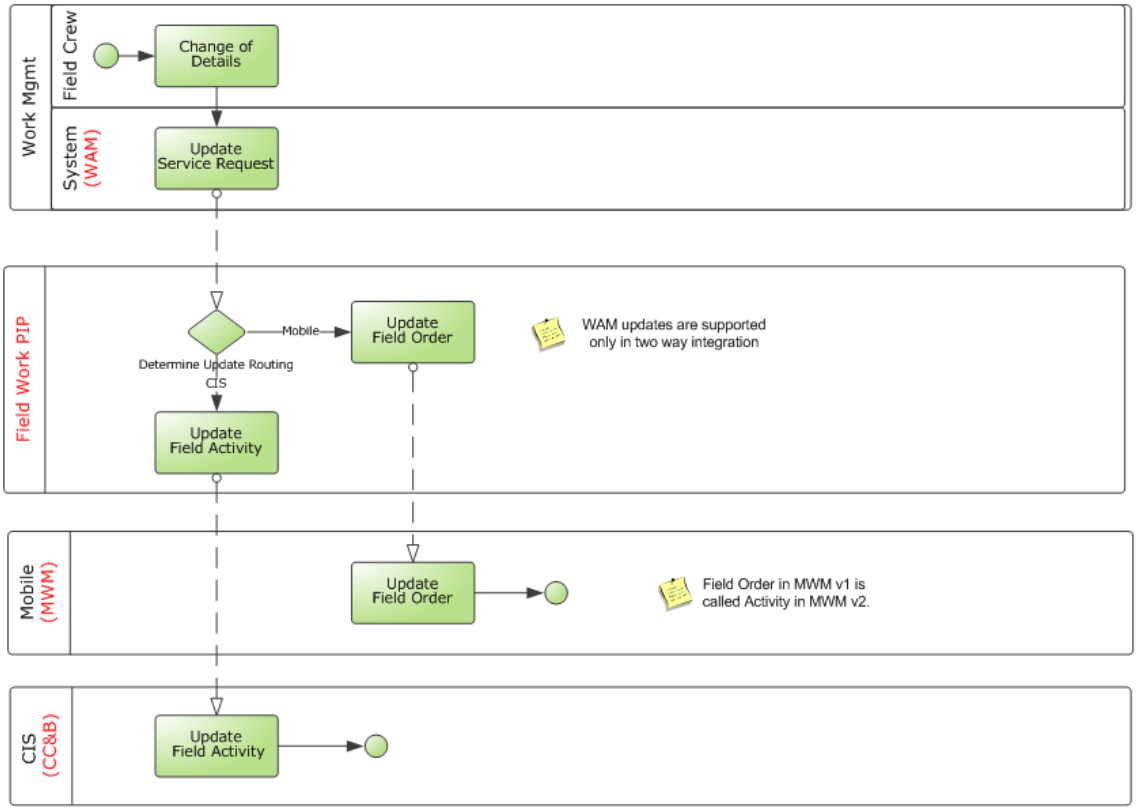
Note: If an Oracle Utilities Customer Care and Billing user completes an order, this too causes Oracle Utilities Customer Care and Billing to send a cancel message out to the linked applications.

Update Order in Oracle Utilities Work and Asset Management

An existing order, regardless of where it was initiated, is updated by an Oracle Utilities Work and Asset Management representative. The changes are sent to linked orders in other systems.

Oracle Utilities Work and Asset Management updates are supported only for two-way integration. If an order exists in Oracle Utilities Customer Care and Billing and in Oracle Utilities Mobile Workforce Management, then Oracle Utilities Work and Asset Management updates are not sent to either system.

This diagram shows the processing when an order is updated in Oracle Utilities Work and Asset Management:

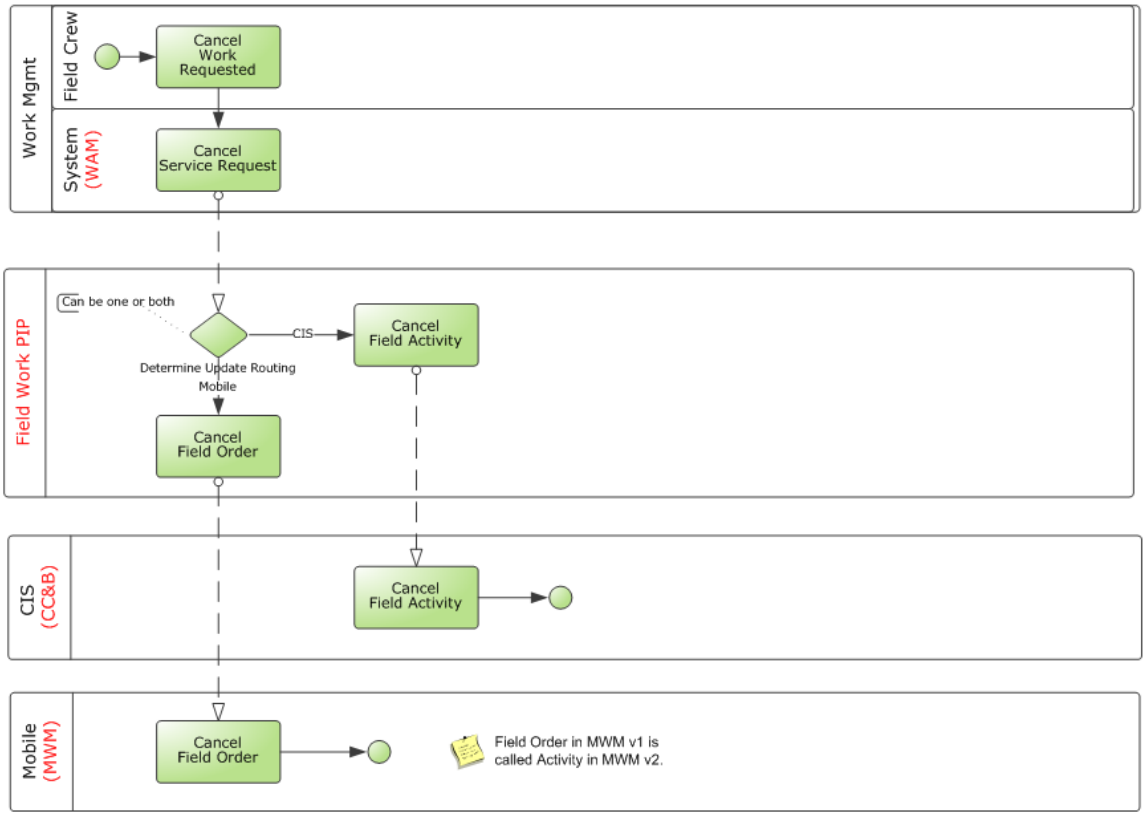


Process flow when an order is updated from Oracle Utilities Work and Asset Management

Cancel Order in Oracle Utilities Work and Asset Management

An existing order, regardless of where it was initiated, is canceled by an Oracle Utilities Work and Asset Management representative. The changes are sent to linked orders in other systems.

This diagram shows the processing when an order is canceled in Oracle Utilities Work and Asset Management:



Process flow when an order is canceled from Oracle Utilities Work and Asset Management

Status Update in Oracle Utilities Work and Asset Management

As the status of a Service Orders in Oracle Utilities Work and Asset Management is changed from Active to one of the other eligible statuses, the new status information is sent to Oracle Utilities Customer Care and Billing, if the order is linked only to Oracle Utilities Customer Care and Billing. This new Oracle Utilities Work and Asset Management status is reflected in Oracle Utilities Customer Care and Billing as Intermediate Status on the corresponding Oracle Utilities Customer Care and Billing Field Activity.

The information about the status update in Oracle Utilities Work and Asset Management is not sent to either of the other two applications when the order is linked to both Oracle Utilities Customer Care and Billing and Oracle Utilities Mobile Workforce Management.

For orders that are linked to Oracle Utilities Mobile Workforce Management as well, Oracle Utilities Customer Care and Billing tracks the status of the order in Oracle Utilities Mobile Workforce Management using the intermediate status and ignores the status of the order in Oracle Utilities Work and Asset Management.

Also, if the order is linked only to Oracle Utilities Mobile Workforce Management and not linked to Oracle Utilities Customer Care and Billing, status updates from Oracle Utilities Work and Asset Management are not sent.

Update Order in Oracle Utilities Mobile Workforce Management

A field service representative using Oracle Utilities Mobile Workforce Management updates an order. The status updates are sent only to Oracle Utilities Customer Care and Billing.

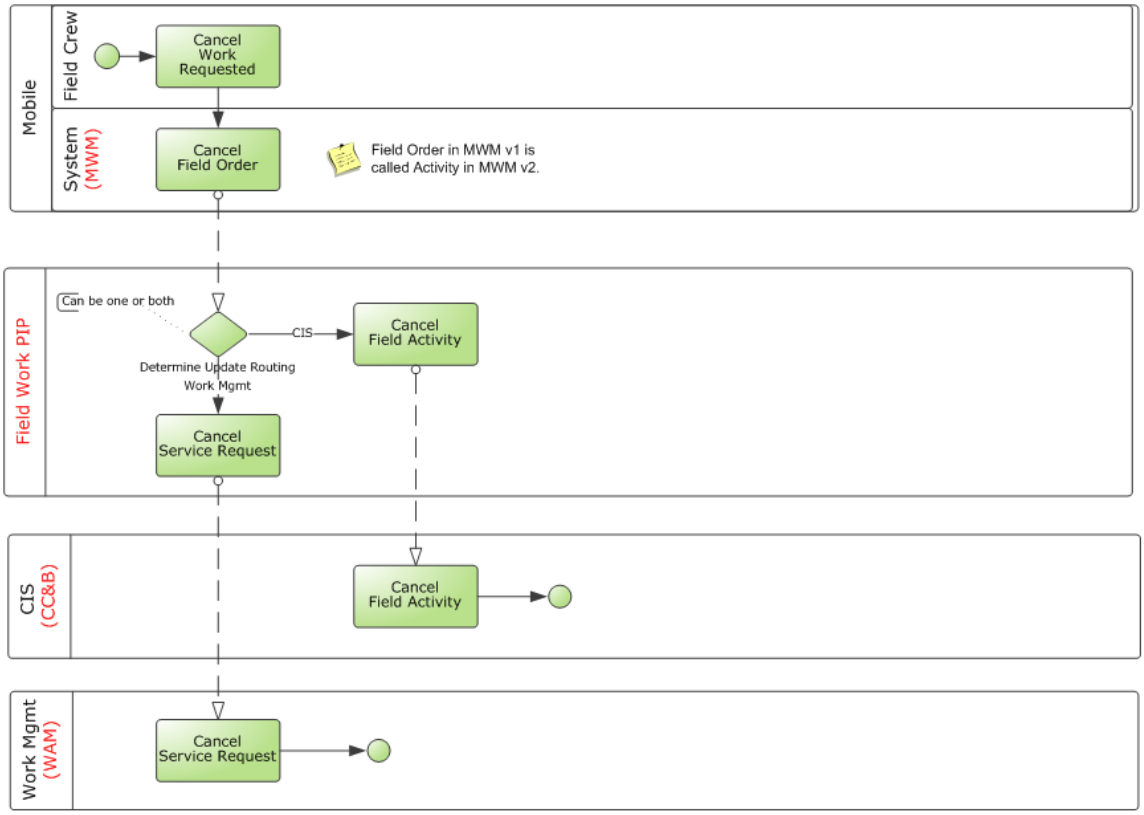
This diagram shows the processing when an order is updated in Oracle Utilities Mobile Workforce Management:

Process flow when an order is updated in Oracle Utilities Mobile Workforce Management

Cancel Order in Oracle Utilities Mobile Workforce Management

Using Oracle Utilities Mobile Workforce Management, a field service representative cancels an order.

This diagram shows the processing when an order is canceled in Oracle Utilities Mobile Workforce Management:



Process flow when an order is canceled from Oracle Utilities Mobile Workforce Management

Status Update in Oracle Utilities Mobile Workforce Management

As the status of a Field Order or Activity in Oracle Utilities Mobile Workforce Management is updated as the order is assigned to a Field Service Representative or re-assigned in Oracle Utilities Mobile Workforce Management, the new status information is sent to Oracle Utilities Customer Care and Billing, if the order is linked to Oracle Utilities Customer Care and Billing. This new status is reflected in Oracle Utilities Customer Care and Billing as Intermediate status on the corresponding Oracle Utilities Customer Care and Billing Field Activity.

The information about the status update in Oracle Utilities Mobile Workforce Management is not sent to Oracle Utilities Work and Asset Management. This information is only tracked in Oracle Utilities Customer Care and Billing.

Other Notes Regarding Updates and Cancellations

- Only orders that are linked in the other systems are updated. Separate routing of updates is not supported.
- Because routing rules may change between the time an order is created as a two or three-

way order and the time of the update, the system cannot send an update to a system that never initially received the create command for an order.

- If an order starts as a two-way order when it is created, it remains a two-way order throughout its life span until it is resolved and completed.

  For instance, if the order is initiated in Oracle Utilities Customer Care and Billing and is only sent to Oracle Utilities Work and Asset Management, no new order is created in Oracle Utilities Mobile Workforce Management. This type of processing is not supported by the integration.

Complete Order

Regardless of where they were initiated, orders can be completed from Oracle Utilities Mobile Workforce Management or Oracle Utilities Work and Asset Management. Orders completed from Oracle Utilities Customer Care and Billing are canceled in the other systems. Canceling orders directly in Oracle Utilities Customer Care and Billing is not recommended.

The following describes various scenarios for order completion:

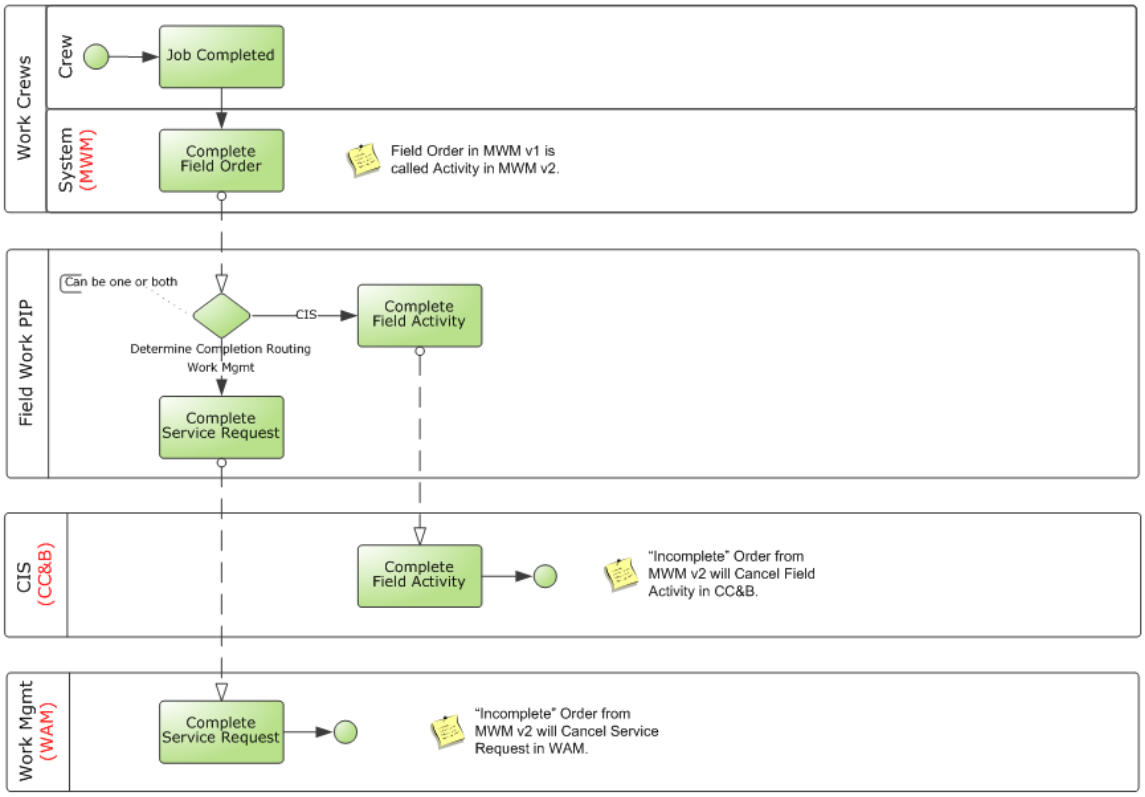
Order Completed in Oracle Utilities Mobile Workforce Management

When a Field Service Representative completes an order in Oracle Utilities Mobile Workforce Management a completion message is sent to Oracle Utilities Customer Care and Billing, Oracle Utilities Work and Asset Management or both, depending on which applications the particular order was linked to during order creation. This results in the target application(s) completing the corresponding order and recording the information that was sent by Oracle Utilities Mobile Workforce Management for the completed order. This may include information like meter readings recorded by the Field Service Representative during order completion, direct charges and materials used from inventory for completing the order, or other items.

The time entry, material, and direct charges used to complete an order are sent by Oracle Utilities Mobile Workforce Management to the Oracle Utilities Work and Asset Management Service Request. The material and direct charges are sent as part of the order completion message. The time entry is often sent at end of shift and/or after the order is completed.

Note: Time Entry, Direct Charges, and Materials are not supported between Oracle Utilities Mobile Workforce Management v2.x and Oracle Utilities Work and Asset Management. This functionality will be included in a future release.

This diagram shows the processing when an order is completed in Oracle Utilities Mobile Workforce Management:



Process flow when an order is completed in Oracle Utilities Mobile Workforce Management

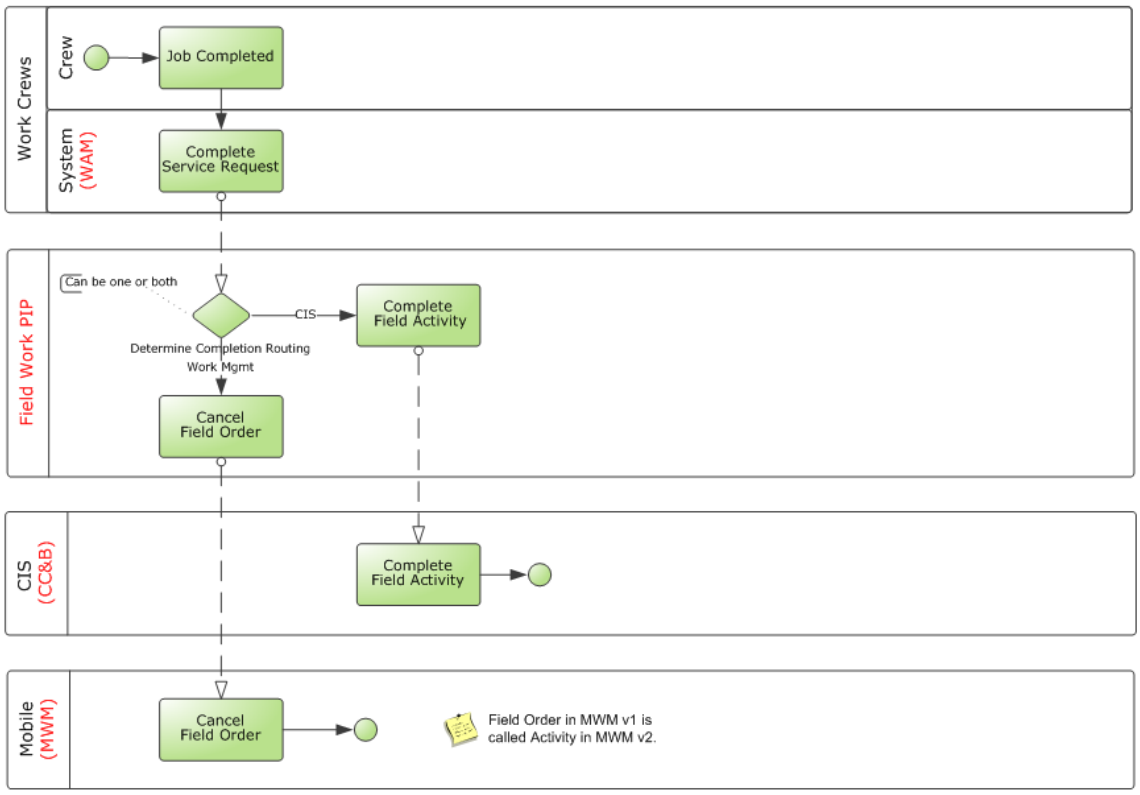
In Oracle Utilities Mobile Workforce Management v1.x, the Field Service Representative may mark the Field Order as incomplete and record a reason on the order to indicate why the order was not completed. When this is done, a message is sent to Oracle Utilities Customer Care and Billing which logs the information sent by Oracle Utilities Mobile Workforce Management on the corresponding Field Activity.

In Oracle Utilities Mobile Workforce Management v2.x, the Field Service Representative can mark the Activity as incomplete; however, it is sent as a cancellation to Oracle Utilities Customer Care and Billing and Oracle Utilities Work and Asset Management.

Order Completed in Oracle Utilities Work and Asset Management

A business flow where the order is completed in Oracle Utilities Work and Asset Management is only common when Oracle Utilities Mobile Workforce Management is not part of the suite of products used; however, it is possible in a three-way integration model under some rare circumstances.

This diagram shows the processing when an order is completed in Oracle Utilities Work and Asset Management:



Process flow when an order is completed in Oracle Utilities Work and Asset Management

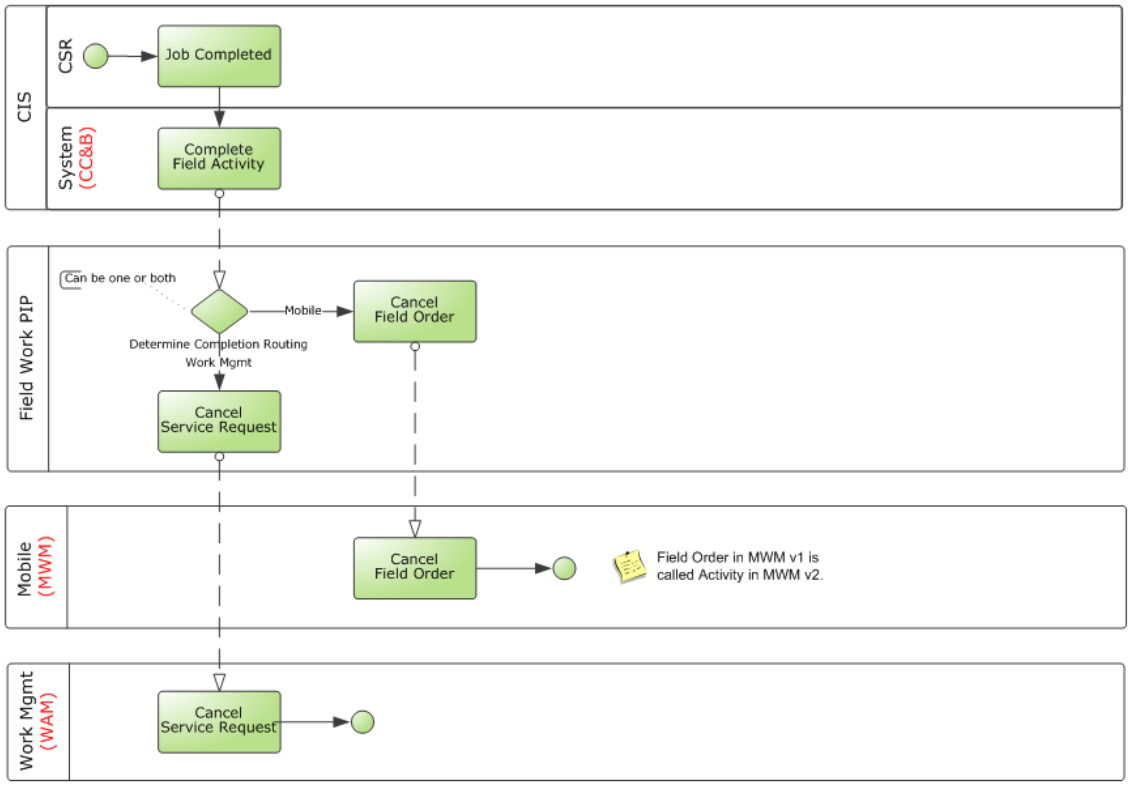
- If Oracle Utilities Customer Care and Billing is linked to the order, Oracle Utilities Customer Care and Billing completes the corresponding Field Activity and records any meter reading information sent by Oracle Utilities Work and Asset Management.
- If Oracle Utilities Mobile Workforce Management is linked to the order, the integration sends a cancellation request to Oracle Utilities Mobile Workforce Management resulting in canceling the corresponding Field Order or Activity.

  This is done to prevent the Field Service Representative from working on a Field Order or Activity that has been completed in Oracle Utilities Work and Asset Management.

Order Completed in Oracle Utilities Customer Care and Billing

When an integrated order is completed in Oracle Utilities Customer Care and Billing, it is canceled in the linked systems. This is done to prevent further work on the order by users in either of the other systems.

This diagram shows the processing when an order is completed in Oracle Utilities Customer Care and Billing:



Process flow when an order is completed from Oracle Utilities Customer Care and Billing

Assumptions and Constraints for Work Order Processing

This integration does not support the following:

- New orders cannot be added in Oracle Utilities Mobile Workforce Management. Only Oracle Utilities Mobile Workforce Management Pickup Orders are supported.
- Only Oracle Utilities Work and Asset Management Service Requests are supported in this integration. Work orders and tasks are not supported with this release.
- Service requests cannot be transitioned to work orders in Oracle Utilities Work and Asset Management while still sending information to Oracle Utilities Customer Care and Billing and Oracle Utilities Mobile Workforce Management.
- When Oracle Utilities Work and Asset Management is used, master data between Oracle Utilities Customer Care and Billing and Oracle Utilities Work and Asset Management must be synchronized. Refer to Chapter 9: Data Synchronization for additional details.

- An update to the schedule date on a Service Request in Oracle Utilities Work and Asset Management is not also updated in Oracle Utilities Customer Care and Billing or Oracle Utilities Mobile Workforce Management if the order being updated is a three-way order. For three-way order types in Oracle Utilities Work and Asset Management, it is best to prevent Oracle Utilities Work and Asset Management users from updating these fields.
- Oracle Utilities Mobile Workforce Management and Oracle Utilities Work and Asset Management do not provide an asynchronous inbound web service to inform the application users if the outbound order messages from these applications fails in the integration layer or fails because of a data error (for example invalid order type).

  When these errors occur, the integration sends an e-mail notification to the designated administrator.

- Oracle Utilities Customer Care and Billing receives asynchronous responses from the Field Activity Response service in Oracle Utilities Mobile Workforce Management v1.x when orders are created and updated. In Oracle Utilities Mobile Workforce Management v2.x, the response is sent out synchronously.

  These responses are posted to the Oracle Utilities Customer Care and Billing notification download table. Because this is a three-way integration, these messages may be routed to both Oracle Utilities Work and Asset Management and Oracle Utilities Mobile Workforce Management. In this case, acknowledgements are received from both the target applications, and even though two acknowledgements are sent to Oracle Utilities Customer Care and Billing, the XAI download staging table shows only the first received response. Once these acknowledgements are successfully processed by Oracle Utilities Customer Care and Billing, both are visible on the Oracle Utilities Customer Care and Billing Field Activity screen under the **Log** tab.

- The integration does not support equipment or badged items (for example, lamp, pole, transformers) in Oracle Utilities Work and Asset Management.
- For Oracle Utilities Mobile Workforce Management generated orders, the integration only supports Pickup Orders. New Orders, Unrelated Pickup Orders, or Assist Orders created in Oracle Utilities Mobile Workforce Management are not supported.
- Field Activities coming to Oracle Utilities Customer Care and Billing must have a Service Point defined.

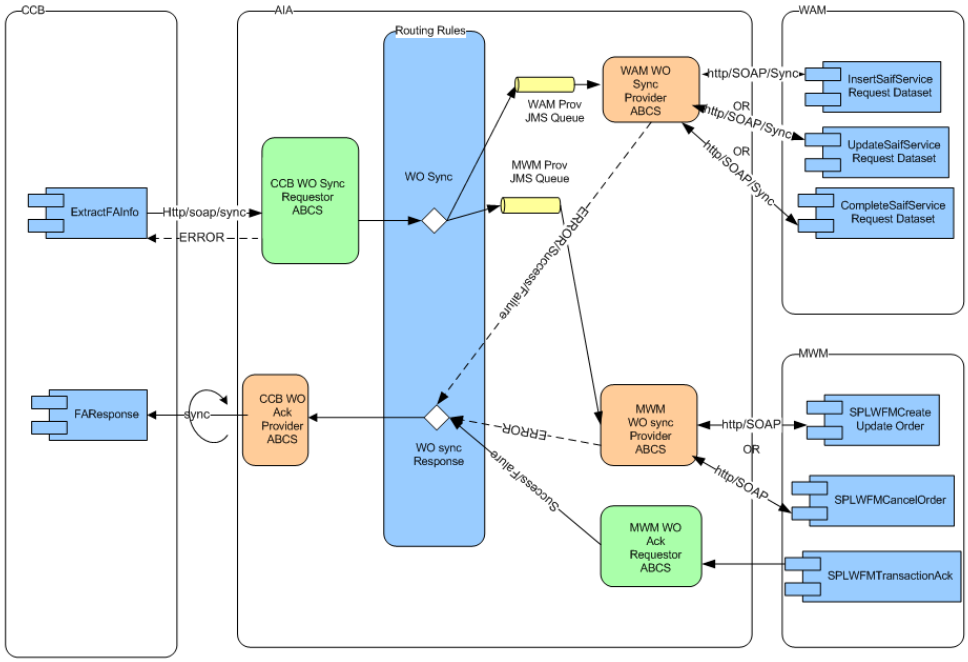
  Orders created in Oracle Utilities Work and Asset Management without service points are only applicable to order types that are routed to and from Oracle Utilities Mobile Workforce Management. For these order types, the routing in the Order Type DVM must also be set to not send these orders to Oracle Utilities Customer Care and Billing. Pickup Orders for these order types in Oracle Utilities Mobile Workforce Management should be configured to route to Oracle Utilities Work and Asset Management only. They cannot route to Oracle Utilities Customer Care and Billing as the pickups also do not have a service point.

Integration Process Flows for Work Order Processing

The following diagrams outline the key components used in the process flows where orders are created, or updated, or completed in one of the three applications.

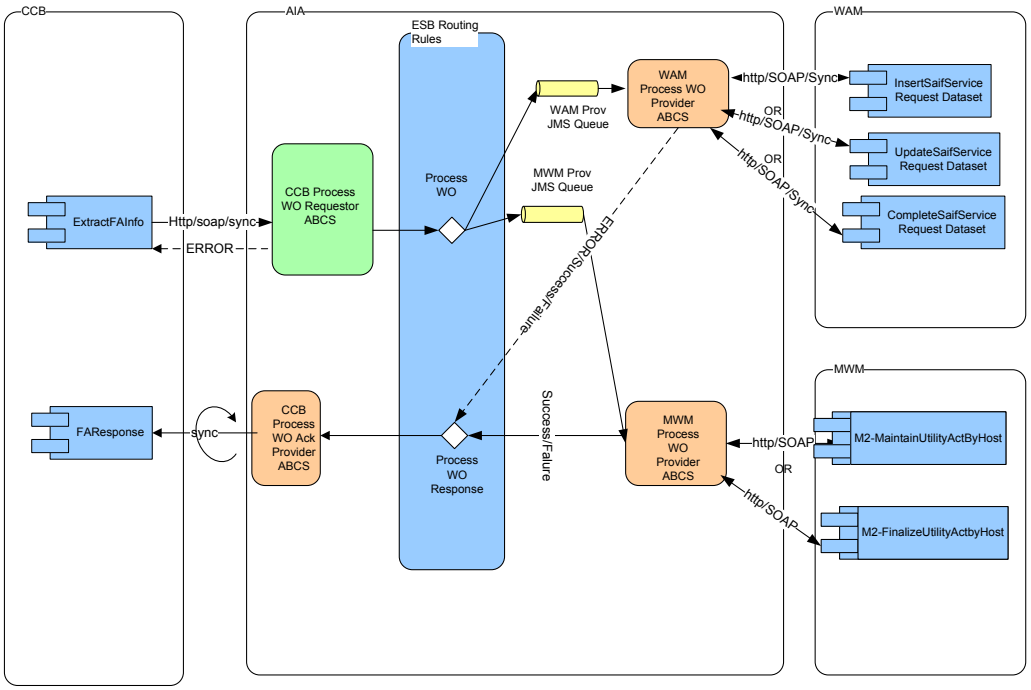
Orders Originating in Oracle Utilities Customer Care and Billing

This diagram shows the technical process of creating, updating, or canceling an order originated in Oracle Utilities Customer Care and Billing and routed to Oracle Utilities Work and Asset Management or Oracle Utilities Mobile Workforce Management v1.x.



Order created, updated or canceled

This diagram shows the routing of an Oracle Utilities Customer Care and Billing originated order to Oracle Utilities Work and Asset Management and Oracle Utilities Mobile Workforce Management v2.x



Order created, updated or canceled

Processing Details

Oracle Utilities Customer Care and Billing WO Requester: As a Field Activity is created, updated, or canceled in Oracle Utilities Customer Care and Billing, Oracle Utilities Customer Care and Billing sends a message to the Oracle Utilities Customer Care and Billing WO Requester ABCS with the details of the Field Activity.

Action Code: The action code in these messages identifies whether the message is for create, update, or cancel.

Mapping: The message is mapped to **ProcessWorkOrderEBM**.

Work Order Request EBS: The request is invoked by the Oracle Utilities Customer Care and Billing Work Order Requester ABCS after the message is mapped. The message is routed based on the routing rules to:

> Oracle Utilities Work and Asset Management JMS Producer and/or Oracle Utilities Mobile Workforce Management JMS Producer

New Orders: The JMS Producer routing rules are based on how the order type is associated to the specific order. This configuration is determined on the DVM map **FS_Order_TypeCode**.

Updates: The messages are routed based on the applications that the order was linked to when the create message was sent for the order.

JMS Producers: The JMS producers are responsible for posting the message to the Consumer JMS Queue for the corresponding target application.

JMS Consumer: Listens to the Oracle Utilities Work and Asset Management or Oracle Utilities Mobile Workforce Management producer JMS Queue and invokes the Work Order Provider ABCS for each message received in either the Oracle Utilities Work and Asset Management or Oracle Utilities Mobile Workforce Management queue.

Work Order Provider ABCS: For both Oracle Utilities Mobile Workforce Management and Oracle Utilities Work and Asset Management, the provider ABCS queries the Process/Operation attribute in **ProcessWorkOrderEBM** to determine the type of message (create, update, cancel, or complete). Depending on the operation, the ABCS invokes the appropriate web service in Oracle Utilities Mobile Workforce Management or Oracle Utilities Work and Asset Management after mapping ProcessWorkOrderEBM to the corresponding inbound message schema.

Oracle Utilities Work and Asset Management **Work Order Provider ABCS:** This ABCS receives the synchronous response from Oracle Utilities Work and Asset Management, maps it to the Sync Work ProcessWorkOrderResponseEBM (including any error information received from Oracle Utilities Mobile Workforce Management) and invokes the Work Order Response EBS. This response/acknowledgement is routed back to Oracle Utilities Customer Care and Billing using the Oracle Utilities Customer Care and Billing Work Order Acknowledgement Provider ABCS.

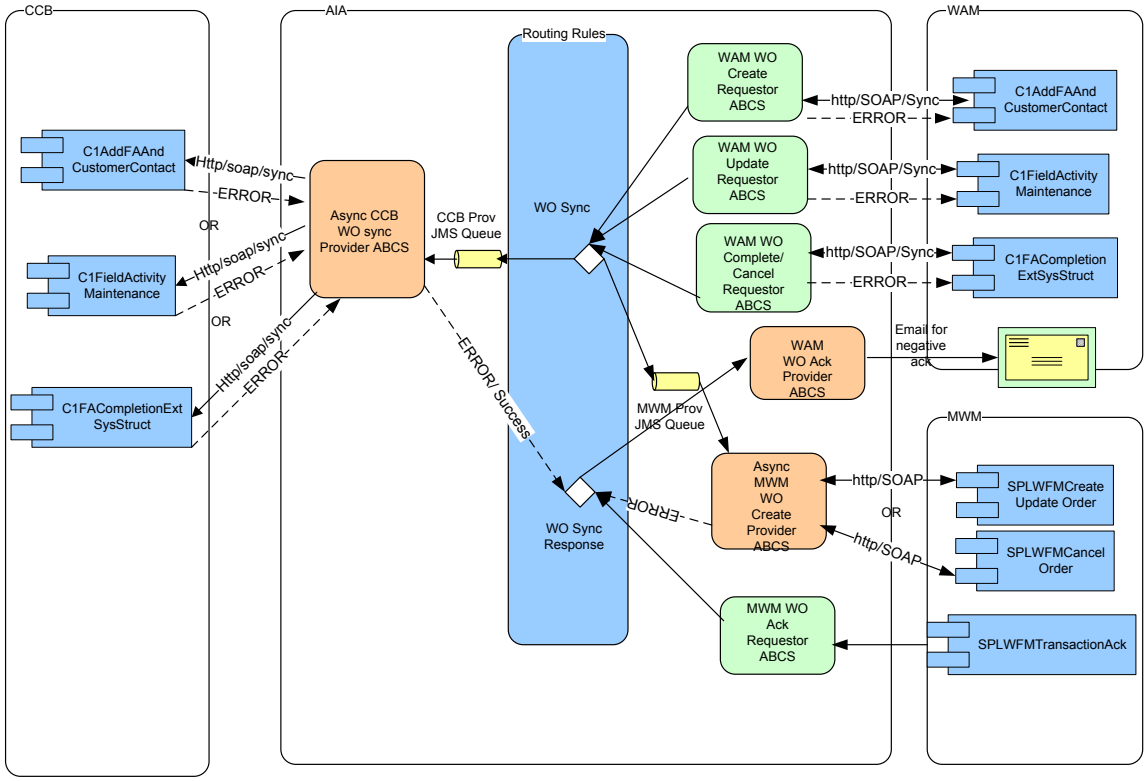
Oracle Utilities Mobile Workforce Management **Work Order Provider ABCS:** If the Operation in the EBM is for completion, this is treated as an order cancellation for Oracle Utilities Mobile Workforce Management and the Field Order or Activity cancellation web service in Oracle Utilities Mobile Workforce Management is invoked.

Acknowledgements: After Oracle Utilities Mobile Workforce Management has processed the inbound message, Oracle Utilities Mobile Workforce Management v1.x responds with an asynchronous acknowledgement/response message sent to Oracle Utilities Mobile Workforce Management Work Order Acknowledgement Requester ABCS, indicating whether Oracle Utilities Mobile Workforce Management successfully processed the message or found errors with the data.

In Oracle Utilities Mobile Workforce Management v2.x, the acknowledgement/response is sent synchronously. The Oracle Utilities Mobile Workforce Management Work Order Acknowledgement Requester ABCS maps the message received to the **ProcessWorkOrderResponseEBM** (including any error information received from Oracle Utilities Mobile Workforce Management) and invokes the Work Order Response EBS. This response/acknowledgement is routed back to Oracle Utilities Customer Care and Billing using the Oracle Utilities Customer Care and Billing Work Order Acknowledgement Provider ABCS.

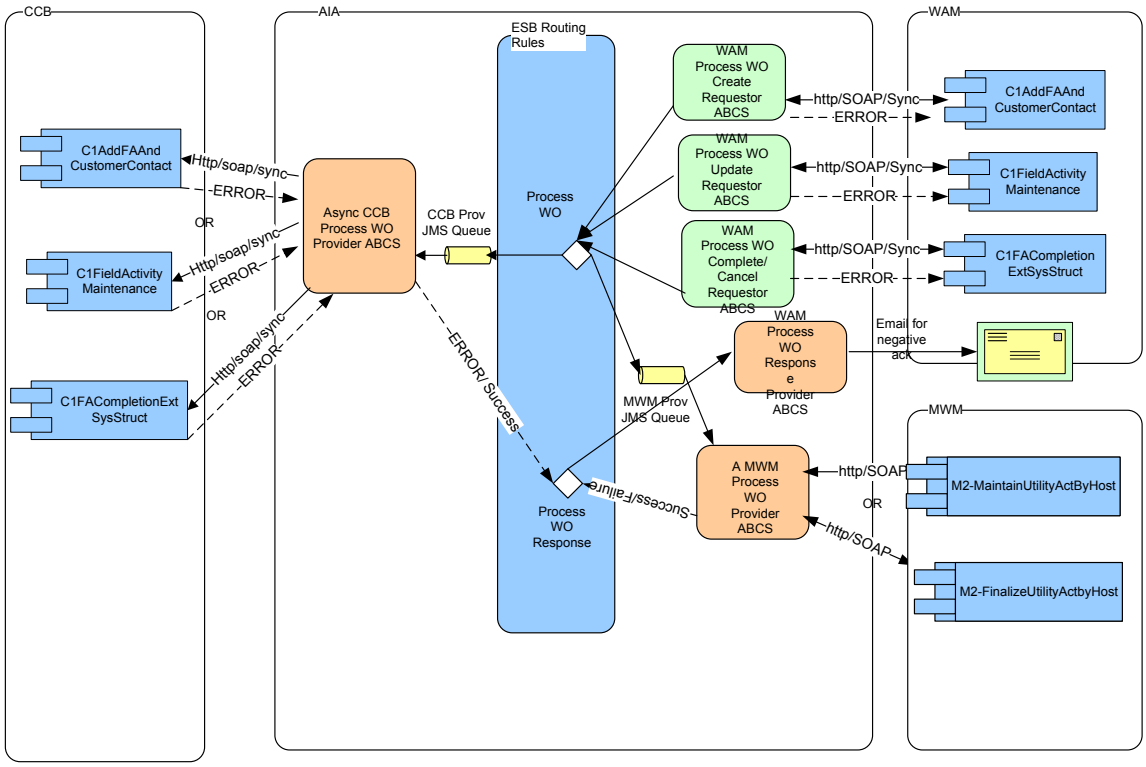
Orders Originating in Oracle Utilities Work and Asset Management

The following diagram shows how an order message for Create, Update, Cancellation or Completion originating in Oracle Utilities Work and Asset Management is integrated to Oracle Utilities Customer Care and Billing and Oracle Utilities Mobile Workforce Management v1.x.



Order created, updated, canceled, or completed

This diagram shows a Service Request originated in Oracle Utilities Work and Asset Management and routed to Oracle Utilities Customer Care and Billing and Oracle Utilities Mobile Workforce Management v2.x



Order created, updated, canceled, or completed

Processing Details

Oracle Utilities Work and Asset Management WO Requester: As an order is created in Oracle Utilities Work and Asset Management and activated or an active order is updated in Oracle Utilities Work and Asset Management, Oracle Utilities Work and Asset Management sends a message to the Oracle Utilities Work and Asset Management Work Order Requester ABCS:

- Create messages invokes Oracle Utilities Work and Asset Management Work Order Create Requester ABCS
- Update messages invokes Oracle Utilities Work and Asset Management Work Order Update Requester ABCS
- Cancel and Completion messages invoke Oracle Utilities Work and Asset Management Work Order Complete(/cancel) Requester ABCS

Mapping: The requester ABCS maps the message sent by Oracle Utilities Work and Asset Management to **ProcessWorkOrderEBM** and invokes Work Order Request EBS. Create messages must undergo message enrichment first.

Work Order Request EBS: The message is routed based on the routing rules to

- Oracle Utilities Customer Care and Billing JMS Producer and/or Oracle Utilities Mobile Workforce Management JMS Producer

New Orders: The routing rules are based on how the order type and Problem Code are associated to on the specific order. This configuration is determined by the DVM map **FS_Order_TypeCode**.

Updates: The messages are routed based on the applications that the order was linked to when the create message was sent for the order.

JMS Producers: The JMS producers are responsible for posting the message to the Consumer JMS Queue for the corresponding target application.

JMS Consumer: Listens to the Oracle Utilities Customer Care and Billing or Oracle Utilities Mobile Workforce Management Producer JMS Queue and invokes the Work Order Provider ABCS for each message received in either the Oracle Utilities Customer Care and Billing or Oracle Utilities Mobile Workforce Management queue.

Work Order Provider ABCS: For both Oracle Utilities Mobile Workforce Management and Oracle Utilities Customer Care and Billing, the provider ABCS queries the Process/Operation attribute in **ProcessWorkOrderEBM** to determine the type of message (create, update, cancel, or complete). Depending on the operation, the ABCS invokes the appropriate web service in Oracle Utilities Mobile Workforce Management or Oracle Utilities Customer Care and Billing after mapping ProcessWorkOrderEBM to the corresponding inbound message schema.

CC&B Work Order Provider ABCS: If Oracle Utilities Customer Care and Billing fails to create/update the corresponding Field Activity and returns an error back to the ABCS, this ABCS maps the error response to **Sync Work ProcessWorkOrderResponseEBM** (including any error information received from Oracle Utilities Customer Care and Billing) and invokes the Work Order Response EBS. This response/acknowledgement is routed to Oracle Utilities Work and Asset Management Work Order Acknowledgement Provider ABCS.

Order Completion: If the Operation in EBM is for completion, the Oracle Utilities Mobile Workforce Management Field Order or Activity cancellation web service is invoked and the transaction is treated like an order cancellation.

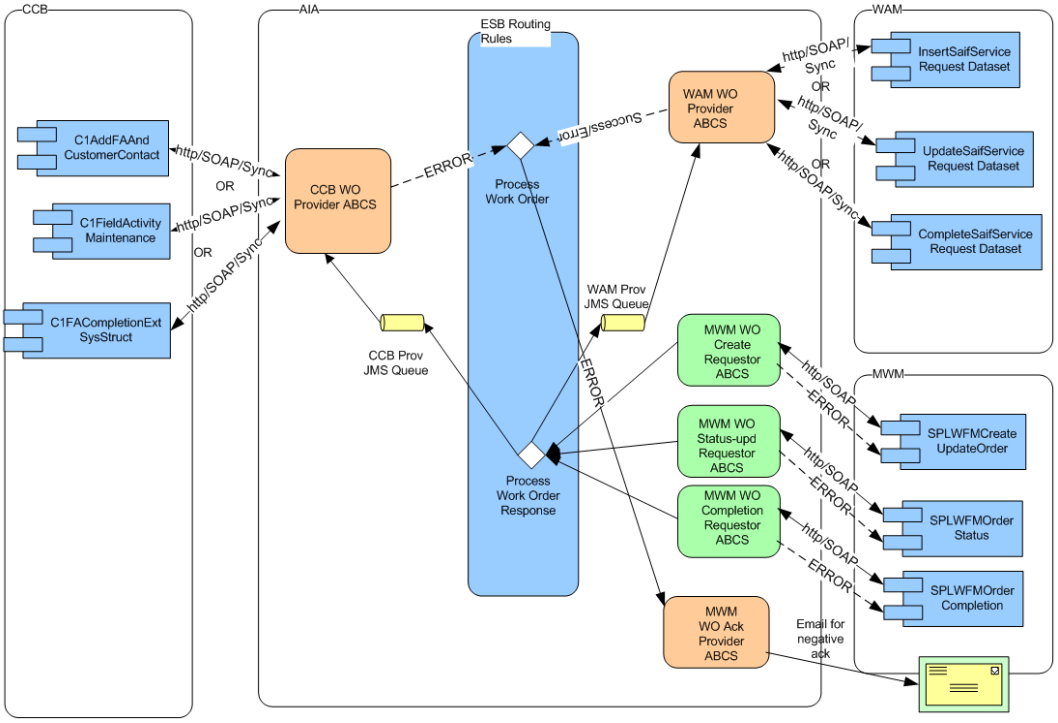
Acknowledgements: After Oracle Utilities Mobile Workforce Management has processed the inbound message, Oracle Utilities Mobile Workforce Management v1.x responds with an asynchronous acknowledgement/response message sent to Oracle Utilities Mobile Workforce Management Work Order Acknowledgement Requester ABCS, indicating whether Oracle Utilities Mobile Workforce Management successfully processed the message or found errors with the data.

In Oracle Utilities Mobile Workforce Management v2.x, the acknowledgement/response is sent synchronously. The Oracle Utilities Mobile Workforce Management Work Order Acknowledgement Requester ABCS maps the message received to the **ProcessWorkOrderResponseEBM** (including any error information received from Oracle Utilities Mobile Workforce Management) and invokes the Work Order Response EBS. This response/acknowledgement is routed back to the Oracle Utilities Work and Asset Management Work Order Acknowledgement Provider ABCS if the information received from Oracle Utilities Mobile Workforce Management indicates that Oracle Utilities Mobile Workforce Management had failed to process the message.

If the Oracle Utilities Work and Asset Management Work Order Acknowledgement Provider ABCS receives the message from Oracle Utilities Customer Care and Billing or Oracle Utilities Mobile Workforce Management, it sends an e-mail notification to the designated administrator and creates a work list entry.

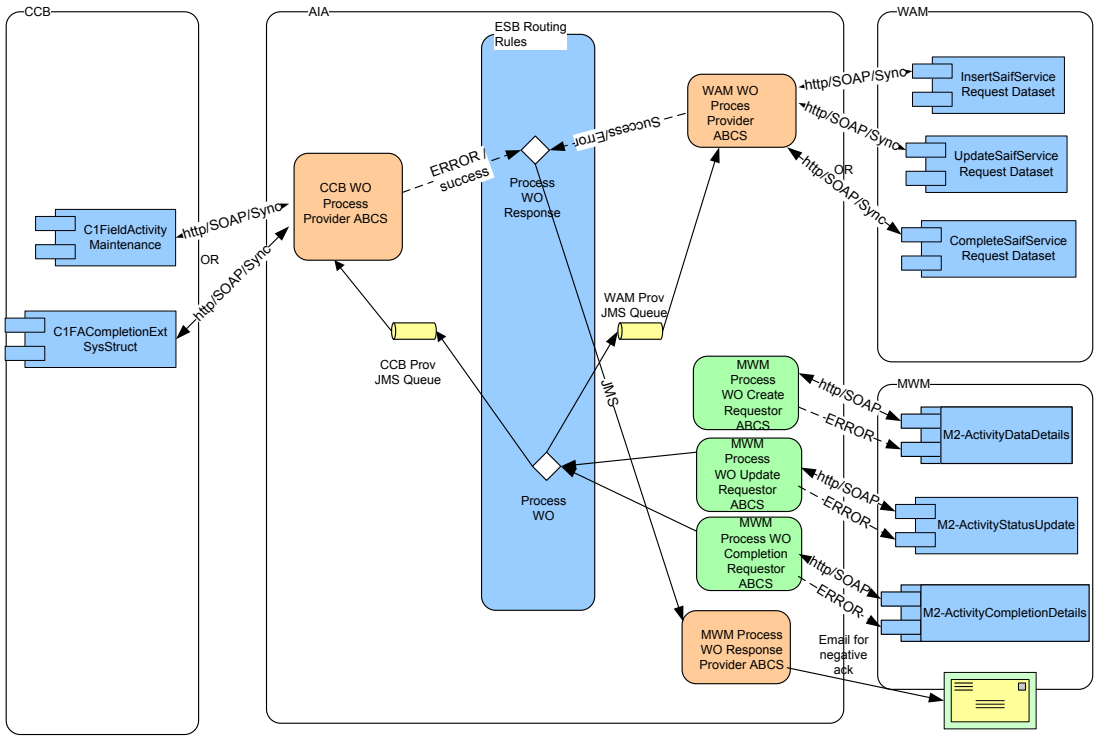
Orders Originating in Oracle Utilities Mobile Workforce Management

The following diagram shows how a new Pickup Order originated and completed in Oracle Utilities Mobile Workforce Management v1.x , or a status update, cancellation or completion message for an existing order in Oracle Utilities Mobile Workforce Management v1.x is integrated to Oracle Utilities Work and Asset Management and Oracle Utilities Customer Care and Billing.



Order created, updated, canceled, or completed

The following diagram shows how a new Pickup Order originated and completed in Oracle Utilities Mobile Workforce Management v2.x , or a status update, cancellation or completion message for an existing order in Oracle Utilities Mobile Workforce Management v2.x is integrated to Oracle Utilities Work and Asset Management and Oracle Utilities Customer Care and Billing.



Order created, updated, canceled, or completed

Processing Details

Oracle Utilities Mobile Workforce Management WO Requester: This flow supports Field Order or Activity cancellations, status update, and completions from Oracle Utilities Mobile Workforce Management as well as related Pick-up Order Creation and Completion. Depending on whether the transaction is an update to a Field Order or Activity in Oracle Utilities Mobile Workforce Management, or is a related Pickup Order created for a Field Order or Activity, Oracle Utilities Mobile Workforce Management sends a message to one of the Oracle Utilities Mobile Workforce Management Work Order Requester ABCS:

- Create messages invoke Oracle Utilities Mobile Workforce Management Work Order Create Requester ABCS
- Order Status change messages invoke Oracle Utilities Mobile Workforce Management Work Order Status Update Requester ABCS
- Cancel and Completion messages invoke Oracle Utilities Mobile Workforce Management Work Order Complete/Cancel Requester ABCS

Mapping: The requester ABCS maps the message sent by Oracle Utilities Mobile Workforce Management to **ProcessWorkOrderEBM** and invokes **Work Order Request EBS**.

Work Order Request EBS: The request is invoked by the Oracle Utilities Mobile Workforce Management Work Order Requester ABCS after the message is mapped. The message is routed based on the routing rules to: Oracle Utilities Customer Care and Billing JMS Producer and/or Oracle Utilities Work and Asset Management JMS Producer

New Orders: The routing rules are based on how the order type and Problem Code are associated to the specific order. This configuration is determined on the DVM map **FS_Order_TypeCode**.

Updates: The messages are routed based on the applications that the order was linked to when the create message was sent for the order.

JMS Producers: The JMS producers are responsible for posting the message to the Consumer JMS Queue for the corresponding target application.

JMS Consumer: Listens to the Oracle Utilities Work and Asset Management or Oracle Utilities Customer Care and Billing Producer JMS Queue and invokes the Work Order Provider ABCS for each message received in either the Oracle Utilities Work and Asset Management or Oracle Utilities Customer Care and Billing queue.

Work Order Provider ABCS: For both Oracle Utilities Customer Care and Billing and Oracle Utilities Work and Asset Management, the provider ABCS queries the Process/Operation attribute in **ProcessWorkOrderEBM** to determine the type of message (create, update, cancel, or complete). Depending on the operation, the ABCS invoke the appropriate web service in Oracle Utilities Customer Care and Billing or Oracle Utilities Work and Asset Management after mapping ProcessWorkOrderEBM to the corresponding inbound message schema.

Oracle Utilities Work and Asset Management Work Order Provider ABCS: This ABCS receives a synchronous response from Oracle Utilities Work and Asset Management, maps it to the Sync Work ProcessWorkOrderResponseEBM (including any error information received from Oracle Utilities Mobile Workforce Management) and invokes the Work Order Response EBS. This response/acknowledgement is routed back to Oracle Utilities Mobile Workforce Management using the Oracle Utilities Mobile Workforce Management Work Order Acknowledgement Provider ABCS.

CC&B Work Order Provider ABCS: If Oracle Utilities Customer Care and Billing fails to create/update the corresponding Field Activity and returns an error back to the ABCS, the ABCS maps the error response to the Sync Work ProcessWorkOrderResponseEBM (including any error information received from Oracle Utilities Customer Care and Billing) and invokes the Work Order Response EBS. This response/acknowledgement is routed to Oracle Utilities Mobile Workforce Management Work Order Acknowledgement Provider ABCS.

Acknowledgements: If the Oracle Utilities Mobile Workforce Management Work Order Acknowledgement Provider ABCS receives error messages from the other applications it sends and e-mail to the designated administrator and creates a work list entry. With Oracle Utilities Mobile Workforce Management v2.x, if there is pickup activity, the integration sends back the new common ID.

Order Acknowledgements for Work Order Processing

The acknowledgements described in this section provide information regarding the success or failure of transactions within the integration.

- If the request originated in Oracle Utilities Customer Care and Billing, an asynchronous acknowledgement confirming success or failure is sent back to Oracle Utilities Customer Care and Billing.
- If the transaction failed and the request originated in either Oracle Utilities Mobile Workforce

Management or Oracle Utilities Work and Asset Management, the system sends an e-mail to a designated administrator and creates a work list entry.

Neither Oracle Utilities Work and Asset Management nor Oracle Utilities Mobile Workforce Management has the ability to receive an asynchronous response for sent messages. Oracle Utilities Customer Care and Billing Orders

The Oracle Utilities Customer Care and Billing inbound web service responds with a success or fail for create, update, cancel and complete orders coming into Oracle Utilities Customer Care and Billing.

Oracle Utilities Work and Asset Management Orders

The Oracle Utilities Work and Asset Management inbound web service responds with a success or fail for create, update, cancel and complete orders coming into Oracle Utilities Work and Asset Management.

Oracle Utilities Mobile Workforce Management Orders

Oracle Utilities Mobile Workforce Management generates an outbound acknowledgement message indicating whether the transaction was successfully processed for incoming created, updated and canceled orders. This message differs between v1.x and v2.x of the application:

- Oracle Utilities Mobile Workforce Management v1.x - This message is generated separately and is not a sync response to the inbound message.
- Oracle Utilities Mobile Workforce Management v2.x - The response message is synchronous.

Chapter 3: Appointments Process Integration

This chapter provides an overview of Appointments Process Integration and discusses:

- Functionality Supported by Appointments Processing
- Assumptions and Constraints for Appointments Processing
- Integration Process Flows for Appointments Processing

If a customer changes an appointment time, the integration provides processing to support the process of finding a new appointment slot.

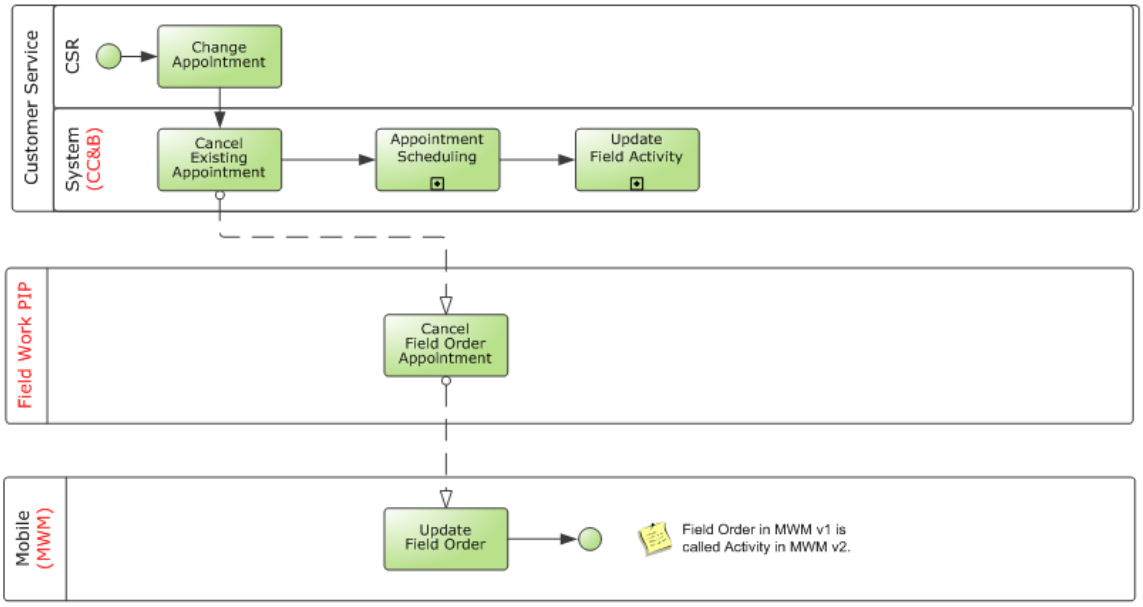
Supported Functionality

This section describes the functionality supported by this integration point.

Change the Appointment Time for an Order

If a customer changes the appointment time for an existing order, the CSR can use Oracle Utilities Customer Care and Billing to cancel the old appointment, request a new available appointment slot, and select an appropriate appointment time slot in consultation with the customer.

The following diagram shows the processing when an appointment is changed:



Process flow for changing the appointment time for an order

Assumptions and Constraints for Appointments Processing

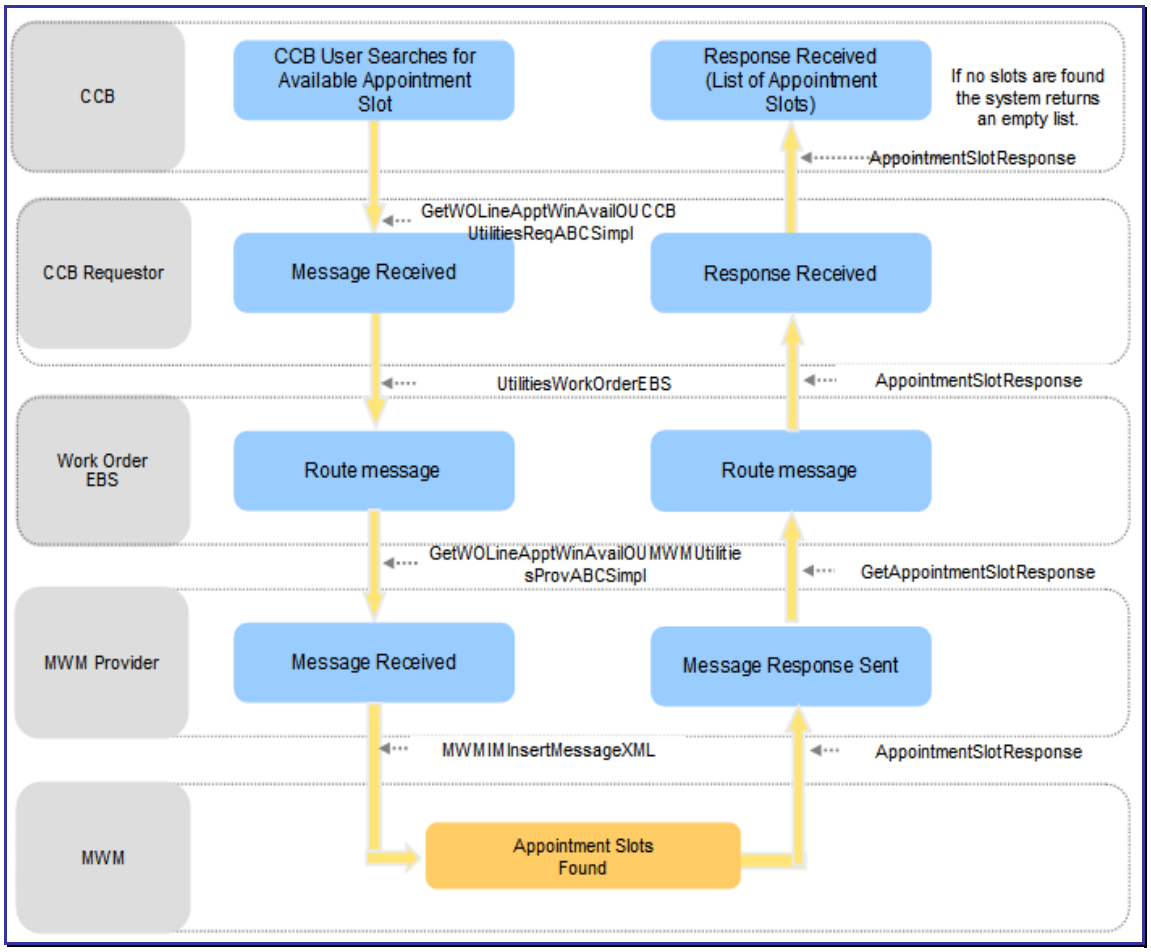
- You can search for available appointment slots for only one Field Activity at a time.
- Errors are displayed in the UI.

Integration Process Flows for Appointments Processing

This section includes graphical descriptions of the functionality included for this integration point.

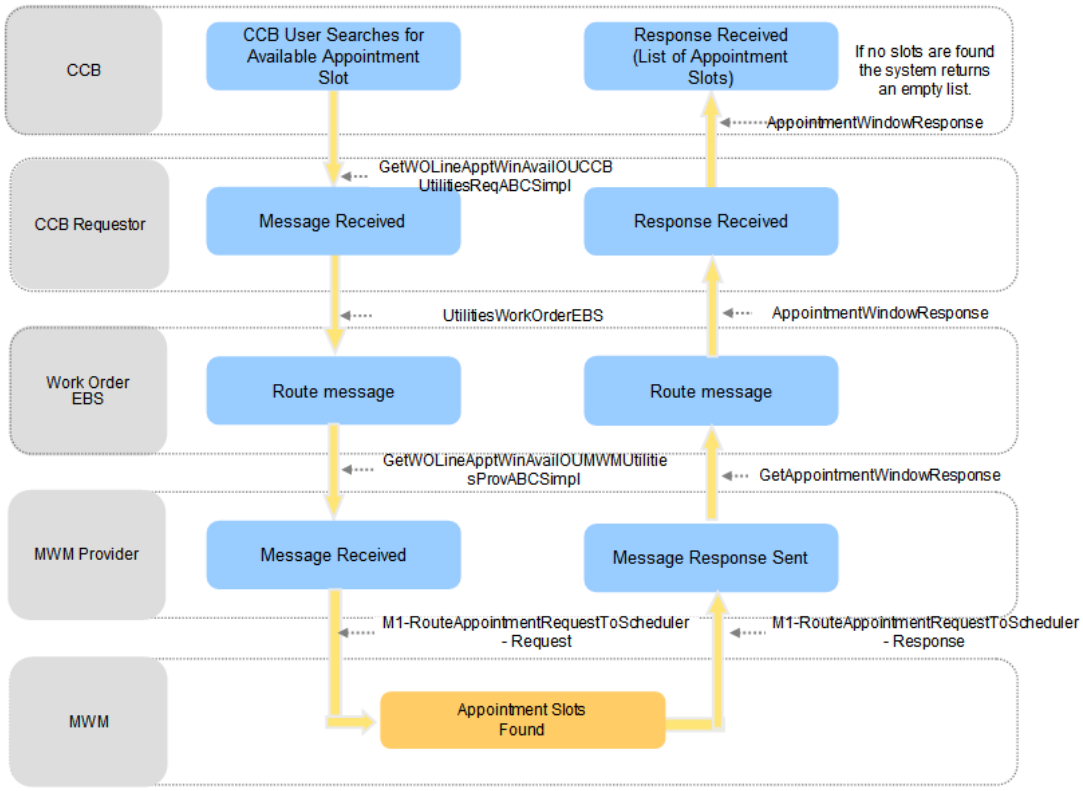
Appointment Processing

This diagram shows the technical flow for appointment processing with Oracle Utilities Mobile Workforce Management v1.x:



Process flow for Get Appointment Slot Request

This diagram shows the technical flow for appointment processing with Oracle Utilities Mobile Workforce Management
v2.x:



Process flow for Get Appointment Slot request

This integration flow describes the path of an Oracle Utilities Customer Care and Billing Get Appointment Slot request. When an Oracle Utilities Customer Care and Billing user searches for available appointment slots from Oracle Utilities Mobile Workforce Management, they include the location where the work needs to be done, the order/task type, dispatch group/service area, slot group/appointment group code, and on/around date time to Oracle Utilities Mobile Workforce Management.

If the Oracle Utilities Customer Care and Billing user does not provide the dispatch group on or around the date and time, Oracle Utilities Customer Care and Billing provides the dispatch group of the selected Field Activity as the default for this information. The system uses the schedule date and time of the selected Field Activity for the On/Around Date.

If available appointment slots are found, Oracle Utilities Mobile Workforce Management sends a response containing the list of appointment slots.

If no available appointment slots are found, the response returns an empty list and a message is displayed on the Oracle Utilities Customer Care and Billing Appointment screen informing the user that no available appointments are found.

If an error is encountered while transforming the message, or the Mediator or Oracle Utilities Mobile Workforce Management is unreachable, the system synchronously responds to the requesting application with an error. An error message is displayed on the Oracle Utilities Customer Care and Billing Appointment screen informing the user that an error was encountered by the external system.

Chapter 4: Meter or Item Validation Process Integration

This chapter provides an overview of Meter or Item Validation Process Integration and discusses:

- Functionality Supported by Meter or Item Validation Processing
- Assumptions and Constraints for Meter or Item Validation Processing
- Integration Process Flows for Meter or Item Validation Processing

Meter or Item Validation Process Integration Overview

If an Oracle Utilities Mobile Workforce Management or Oracle Utilities Work and Asset Management user requests validation for a meter or an item, the validation is always sent to Oracle Utilities Customer Care and Billing. Once Oracle Utilities Customer Care and Billing validates the Installed Product (Meter/Item) the response is routed to the correct edge application.

Meter configuration information is stored in Oracle Utilities Customer Care and Billing. If this information is needed in one of the other applications, a meter validation must occur. The validation is sent to Oracle Utilities Customer Care and Billing and Oracle Utilities Customer Care and Billing responds with meter information (including configuration and Register Information) as well as a valid or not valid indicator. For validation of an item, only the validity information is sent as response from Oracle Utilities Customer Care and Billing and no further information about the Item is sent in the response.

Meter Processing in Oracle Utilities Work and Asset Management

When a field service representative is installing a meter or an item, Oracle Utilities Work and Asset Management provides the ability for this user to request real-time validation of the badge number for the meter or item being installed. This request sends a synchronous call to Oracle Utilities Customer Care and Billing. This means that Oracle Utilities Work and Asset Management waits for the response back for any request made to validate Meter/Item.

Meter Processing in Oracle Utilities Mobile Workforce Management

When a field service representative is installing a meter or an item, Oracle Utilities Mobile Workforce Management provides the ability for this user to request real-time validation of the badge number for the meter or item being installed. Oracle Utilities Customer Care and Billing performs validation and sends back a Validation Response to Oracle Utilities Mobile Workforce Management.

In Oracle Utilities Mobile Workforce Management v1.x, this is done asynchronously. This means Oracle Utilities Mobile Workforce Management does not wait for the response back for any request made to validate Meter/Item. Oracle Utilities Mobile Workforce Management displays a progress dialog to the user. If the response is not received within a configurable time, the user can continue with the completion without having the badge number validated.

In Oracle Utilities Mobile Workforce Management v2.x, the validation is done synchronously and the user must wait until a response is received or until the call times out. If a response is not returned, the user can continue with the completion without having the badge number validated.

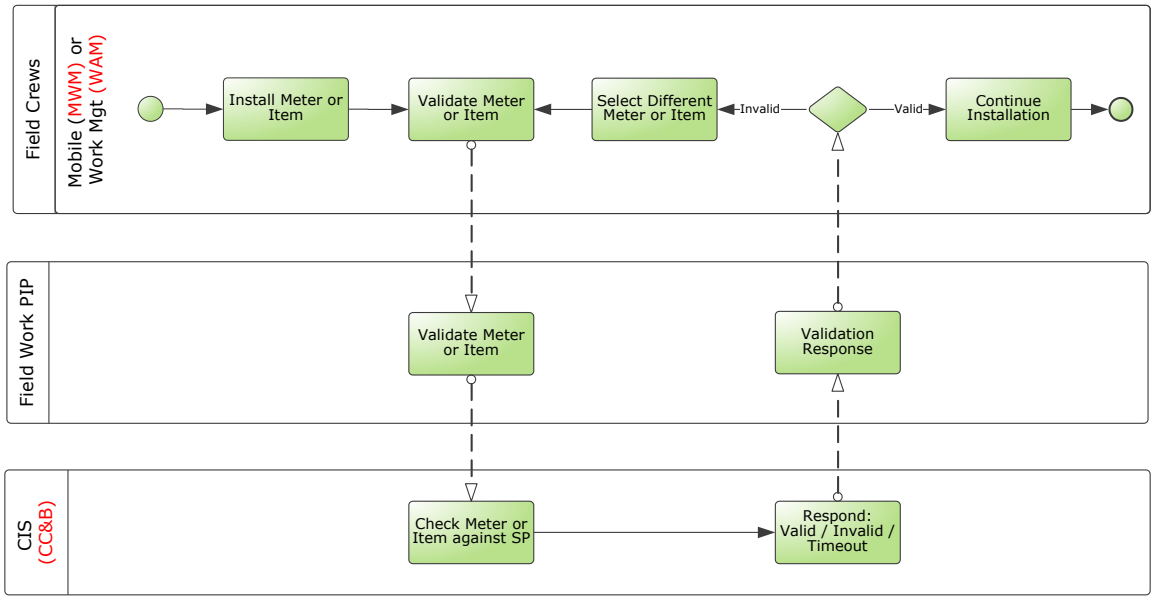
Supported Functionality

When a validation is requested two functions are performed:

- Oracle Utilities Customer Care and Billing responds with information indicating that the meter or item to be inserted at the service point linked to the order is valid for installation at that service point.
- Oracle Utilities Customer Care and Billing sends information about the meter and its configuration to the requester. No information about the item is returned to the requestor.

Whether the validation request is initiated within Oracle Utilities Work and Asset Management or Oracle Utilities Mobile Workforce Management, a request is sent to Oracle Utilities Customer Care and Billing and the system responds with the meter or item information as applicable.

This diagram shows the process flow when meter validation is requested from Oracle Utilities Mobile Workforce Management or Oracle Utilities Work and Asset Management:



Process flow when meter validation is requested from Oracle Utilities Mobile Workforce Management or Oracle Utilities Work and Asset Management

Assumptions and Constraints for Meter or Item Validation Processing

- Oracle Utilities Customer Care and Billing is always the provider and either Oracle Utilities Work and Asset Management or Oracle Utilities Mobile Workforce Management can be the requester.

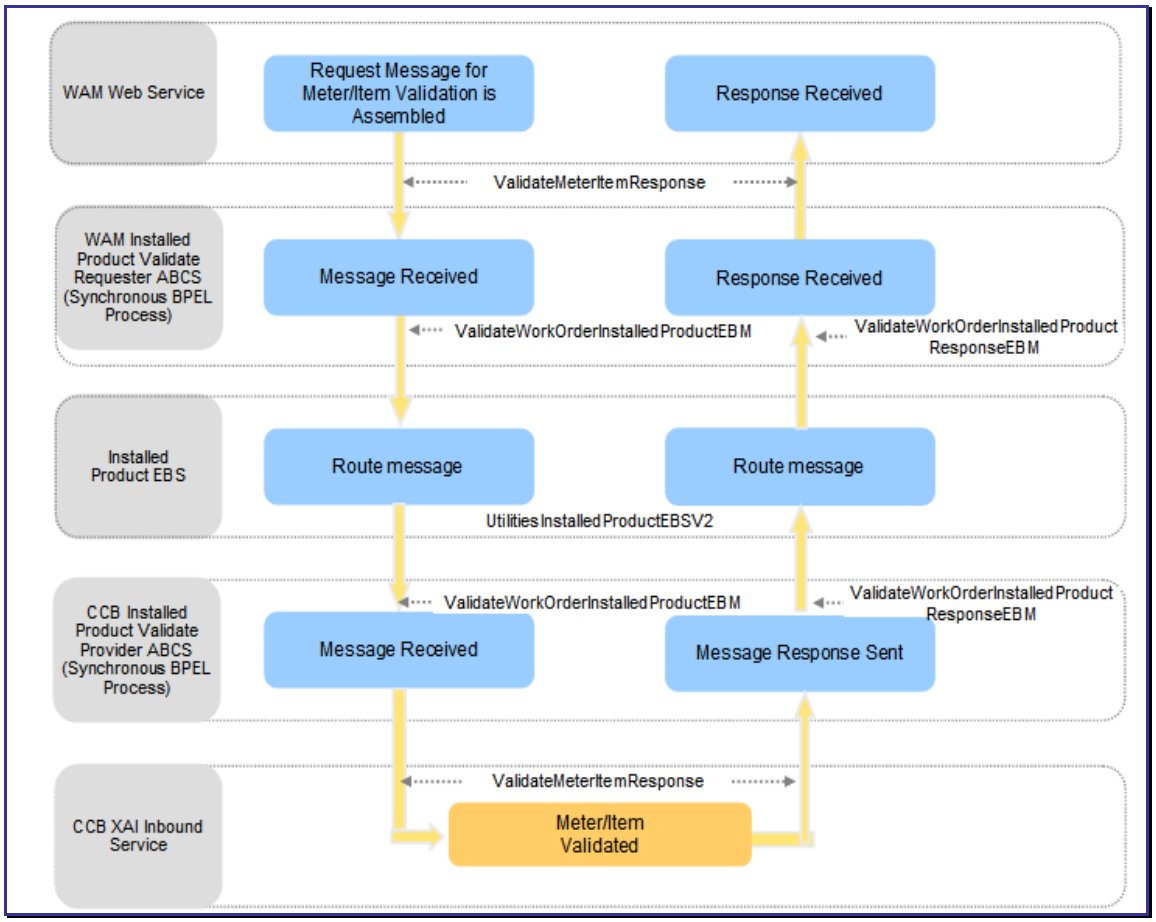
- Oracle Utilities Customer Care and Billing requires a Field Activity ID or Service Point ID for the Meter/Item to be validated.
- Oracle Utilities Work and Asset Management stores the Common Cross-Reference ID as the External System ID and passes that information to Oracle Utilities Work and Asset Management Requester ABCS.
- Oracle Utilities Mobile Workforce Management stores the Common Cross Reference ID as the External System ID and passes that information to Oracle Utilities Mobile Workforce Management Requester ABCS.
- Any Business Error messages returned by Oracle Utilities Customer Care and Billing are part of the response message and are sent back to Oracle Utilities Work and Asset Management/Oracle Utilities Mobile Workforce Management as part of the response message.

Integration Process Flows for Meter or Item Validation Processing

This section includes graphical representations of the functionality included for this integration point.

Validation Processing between Oracle Utilities Work and Asset Management and Oracle Utilities Customer Care and Billing

This technical diagram shows how validations are processed between Oracle Utilities Work and Asset Management and Oracle Utilities Customer Care and Billing:



Installed Product Validate Oracle Utilities Work and Asset Management – Oracle Utilities Customer Care and Billing Integration Flow

Processing Details

- Oracle Utilities Work and Asset Management assembles the request message for Meter/Item validation. This request message is sent to the Oracle Utilities Work and Asset Management Requester ABCS, which is a synchronous BPEL process where the message is transformed and enriched into Installed Product for Utilities EBO format.
- The message is routed through a Mediator process, UtilitiesInstalledProductEBSV2 to the provider ABCS (Oracle Utilities Customer Care and Billing).

- Once the message is correctly routed to the Oracle Utilities Customer Care and Billing provider ABCS (synchronous BPEL process), the message is transformed from Installed Product EBO format to a format that XAI Inbound Service (ValidateMeterItemResponse) requires in Oracle Utilities Customer Care and Billing.
- Oracle Utilities Customer Care and Billing validates the Installed Product (Meter/Item) and sends a response to the Oracle Utilities Customer Care and Billing Provider ABCS. The Provider ABCS transforms it back to the EBO format and the message is routed through the Mediator process to the Oracle Utilities Work and Asset Management Requester ABCS.
- The Requester ABCS transforms the message from EBO format into a format that Oracle Utilities Work and Asset Management understands.
- Any errors are handled in the integration layer.
- If an Item/Meter is invalid, the Error Code and Error Message information is sent back as part of the response. The Registers node in the response message are not present for an Item Validation or if the Meter/Item is invalid.

Validating Meter Numbers in Oracle Utilities Work and Asset Management

1. **Open a Service Request that references an external order.**

   On the search options screen place a **%** in the External Order field to find all records that reference an external order.

2. **Select** *Meter Information* **from the Views list.**

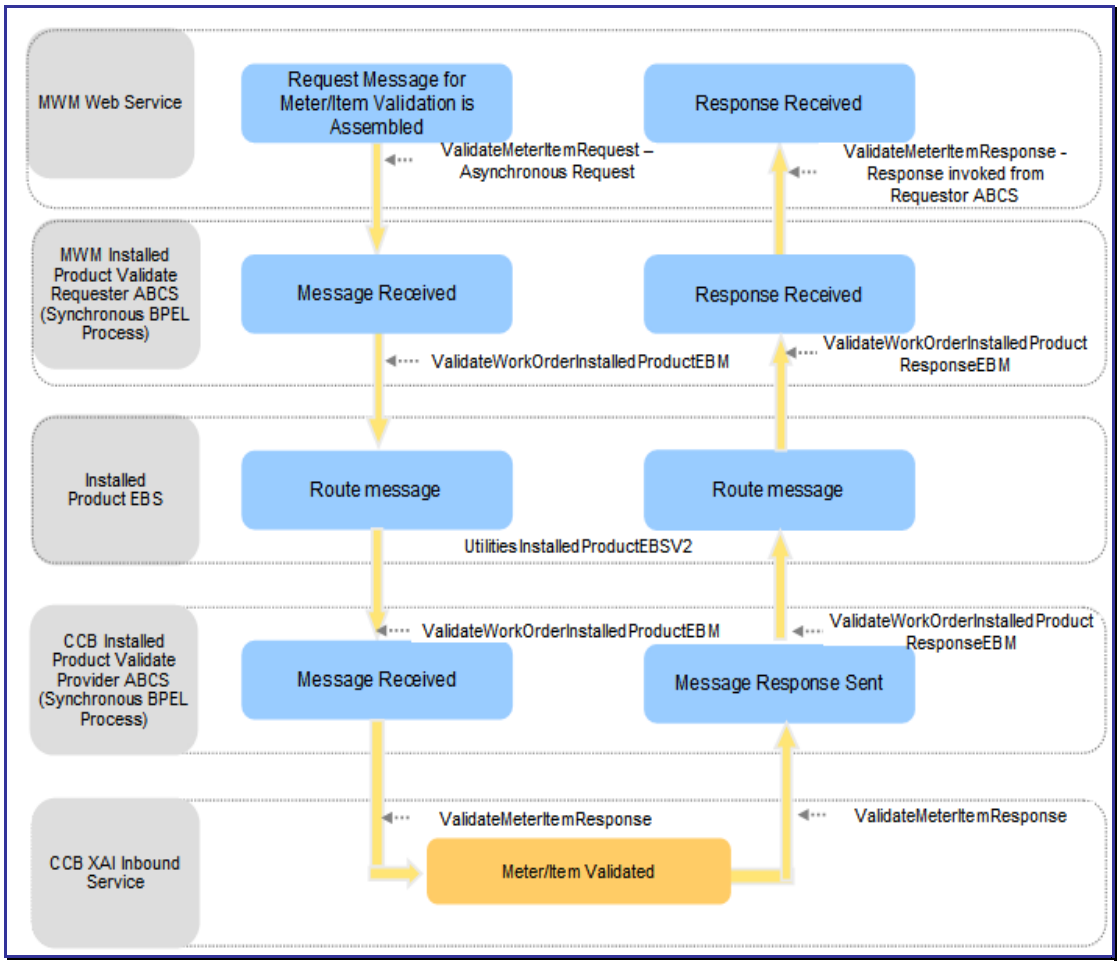
3. **Enter a** *Meter Badge Number* **and click** *Validate***.**

   The system initiates a request to Oracle Utilities Customer Care and Billing that verifies whether or not the badge number exists on the service point of the Service Request. If the badge number is valid and this meter can be installed on this service point, Oracle Utilities Customer Care and Billing returns register information to populate the Meter Information view.

   After meter information is returned, the user can update the Read Date/Time, Status, Disconnect Location, and the actual reading.

Validation Processing between Oracle Utilities Mobile Workforce Management v1.x and Oracle Utilities Customer Care and Billing

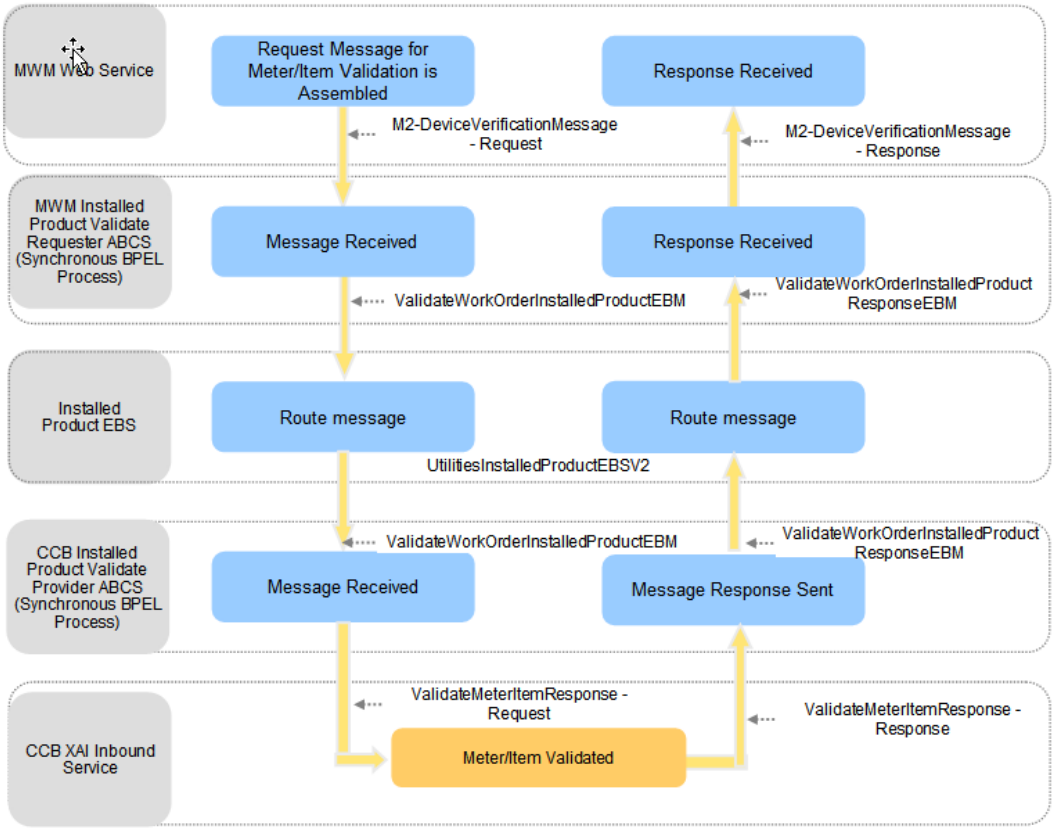
This technical diagram shows how validations are processed between Oracle Utilities Mobile Workforce Management v1.x and Oracle Utilities Customer Care and Billing:



Installed Product Validate Oracle Utilities Mobile Workforce Management – Oracle Utilities Customer Care and Billing Integration Flow

Validation Processing between Oracle Utilities Mobile Workforce Management v2.x and Oracle Utilities Customer Care and Billing

This technical diagram shows how validations are processed between Oracle Utilities Mobile Workforce Management v2.x and Oracle Utilities Customer Care and Billing:



Installed Product Validate Oracle Utilities Mobile Workforce Management – Oracle Utilities Customer Care and Billing Integration Flow

- Oracle Utilities Mobile Workforce Management assembles the request message for Meter/Item validation and sends out the request as an Asynchronous call in Oracle Utilities Mobile Workforce Management v1.x to the Oracle Utilities Mobile Workforce Management Requester ABCS. Oracle Utilities Mobile Workforce Management v2.x sends the validation request synchronously.
- The Oracle Utilities Mobile Workforce Management Requester ABCS is a synchronous BPEL process where the message is transformed and enriched into Installed Product for Utilities EBO format.
- The message is routed through a Mediator process, UtilitiesInstalledProductEBSV2 to the provider ABCS (Oracle Utilities Customer Care and Billing).
- Once the message is correctly routed to the Oracle Utilities Customer Care and Billing provider ABCS (synchronous BPEL process), the message is transformed from Installed Product EBO format to a format that XAI Inbound Service (ValidateMeterItemResponse) requires in Oracle Utilities Customer Care and Billing.

- Oracle Utilities Customer Care and Billing validates the Installed Product (Meter/Item) and sends back a response to the Oracle Utilities Customer Care and Billing Provider ABCS. The Provider ABCS transforms it back to the EBO format and the message is routed back through the Mediator process to the Oracle Utilities Mobile Workforce Management Requester ABCS.
- The Requester ABCS transforms the message from EBO format into a format that Oracle Utilities Mobile Workforce Management understands and invokes Oracle Utilities Mobile Workforce Management with the response message.
- Any errors are handled in the integration layer.

To validate a meter in Oracle Utilities Mobile Workforce Management v1.x

1. **In Oracle Utilities Mobile Workforce Management Mobile Workstation, open a Field Order that references an External Order ID and access the External System Order Types Primary Detail Completion screen.**
2. **Enter the meter/item badge number and click Verify.**

   The system displays the Validation Progress screen showing a progress bar.
3. **Wait while the validation is processed by Oracle Utilities Customer Care and Billing.**
4. **When the response is received, the message on the screen indicates whether the validation was successful.**
5. **Click OK to return to the Detail Completion screen.**

   If the transaction is successful, the screen is updated with the data from the response. If unsuccessful, enter a different badge number and try again.

   If the response is not received within a configurable time, the message on the screen indicates that the validation has timed out. Click **OK** to return to the Detail Completion screen where you can enter the appropriate data and complete the order anyway.

To validate a meter in Oracle Utilities Mobile Workforce Management v2.x

1. **In Mobile Application, open an activity requiring a new device to be set that references a Host External ID and access the New Meter/Item map or fragment.**
2. **Enter the meter/item badge number and click Verify.**

   The map is locked (user input is not accepted).
3. **Wait while the validation is processed by Oracle Utilities Customer Care and Billing.**

Valid response: If a valid response is received, an override checkbox is displayed. If the device being set is a meter, the information returned in the response is reflected on the map. The Meter Configuration Type is automatically selected and the reading details are displayed.
Invalid response: If an invalid response or error response is received, a message is displayed indicating the reason for the verification failure. An **Override** checkbox is displayed. The user can retry the verification by modifying the badge number and clicking **Verify** again. If the badge number is correct, the user can override the verification by selecting the **Override** checkbox, which allows the user to complete the activity without a valid verification. If the device being set is a meter, the user must select a Meter Configuration Type, which causes the application to build the reading details.

For more information about incoming and outgoing meter validation messages, see Oracle Utilities Customer Care and Billing documentation topic “Defining Field Order Options - Incoming Validate Meter / Item Message and Outgoing Validate Meter / Item Message”. Also see the *Oracle Utilities Customer Care and Billing User Guide* section on Meter Management.

Chapter 5: Timesheet Creation Process Integration

This chapter provides an overview of Timesheet Creation Process Integration and discusses:

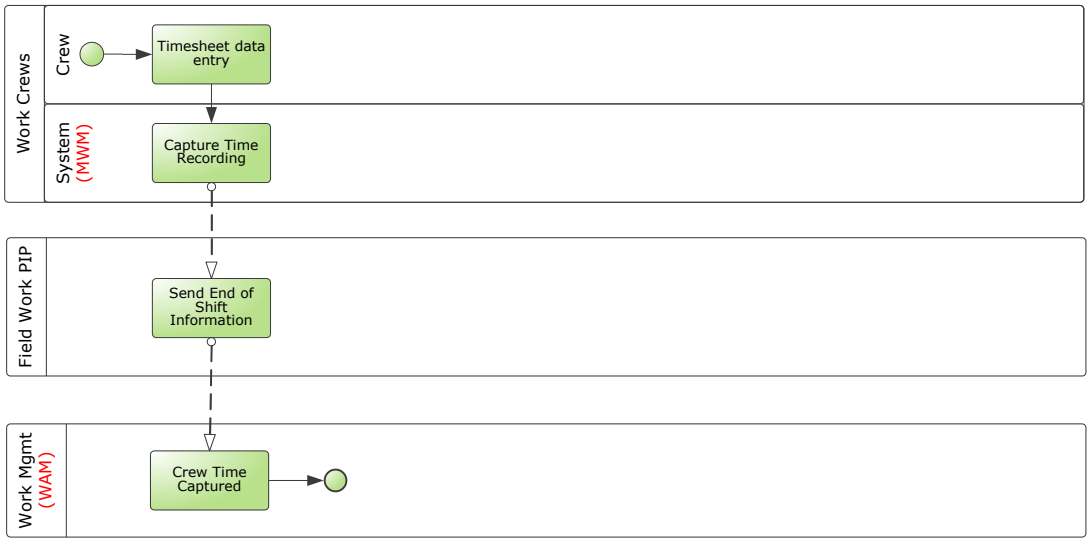
- Functionality Supported by Timesheet Creation Processing
- Assumptions and Constraints for Timesheet Creation Processing
- Integration Process Flows for Timesheet Creation Processing

Crew time hours are sent to Oracle Utilities Work and Asset Management after being recorded against orders. Only Oracle Utilities Mobile Workforce Management v1.x Field Orders that reference an Oracle Utilities Customer Care and Billing Field Activity or an Oracle Utilities Work and Asset Management Service Request are supported. This is a one-way integration from Oracle Utilities Mobile Workforce Management v1.x to Oracle Utilities Work and Asset Management.

Supported Functionality

When workers or crews work on orders, they often complete timesheets associated to the order. Timesheets can be entered directly in Oracle Utilities Work and Asset Management or they can be sent from Oracle Utilities Mobile Workforce Management to Oracle Utilities Work and Asset Management.

The following diagram shows the process flow when crew time is entered for an order in Oracle Utilities Mobile Workforce Management:



Process flow when crew time is entered for an order in Oracle Utilities Mobile Workforce Management

Assumptions and Constraints for Timesheet Creation Processing

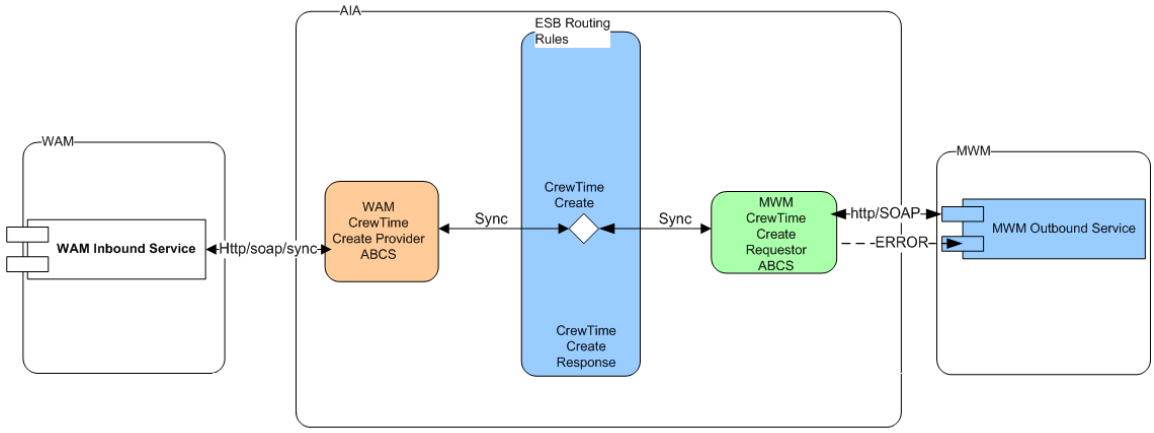
- Timesheet is not supported between Oracle Utilities Mobile Workforce Management v2 and Oracle Utilities Work and Asset Management.
- Any business errors that occur during import within Oracle Utilities Work and Asset Management need to be handled manually. Oracle Utilities Work and Asset Management sends an alert with the error message to the home page of the designated employee.
- Oracle Utilities Mobile Workforce Management stores the Common Cross Reference ID as the External System ID and passes that information to Oracle Utilities Mobile Workforce Management Requester ABCS.

Integration Process Flows for Timesheet Creation Processing

The integration flow specifies the path of an Oracle Utilities Mobile Workforce Management Timesheet request. When a user enters time against a Field Order, the user sends this timesheet to Oracle Utilities Work and Asset Management system where it is used to calculate the total cost of that Field Order. The request is asynchronous from Oracle Utilities Mobile Workforce Management to Oracle Utilities Work and Asset Management. Only technical errors are reported back to Oracle Utilities Mobile Workforce Management where it has the ability to resend the request. All business errors are handled within Oracle Utilities Work and Asset Management.

Creation of Timesheets

This technical diagram shows the process flow when a timesheet is entered in Oracle Utilities Mobile Workforce Management:



Process flow of timesheet request

Processing Details

Oracle Utilities Mobile Workforce Management assembles the request message for Timesheet(s). This request message is sent to the Oracle Utilities Mobile Workforce Management Requester ABCS, which is an asynchronous BPEL process where the message is transformed and enriched into TimeSheet EBO format.

The message is routed through a Mediator process, TimeSheetEBSV1 to the provider ABCS.

Once the message is correctly routed to the Oracle Utilities Work and Asset Management provider ABCS, the message is transformed from Timesheet EBO format to a format suited for the Oracle Utilities Work and Asset Management Inbound Service.

Oracle Utilities Work and Asset Management validates the request and if there is a business error then the system sends an alert to the designated user in Oracle Utilities Work and Asset Management. In addition, the integration uses standard error handling.

Chapter 6: Billing Process Integration

This chapter provides an overview of Billing Process Integration and discusses:

- Functionality Supported by Billing Processing
- Assumptions and Constraints for Billing Processing
- Integration Process Flows for Billing Processing

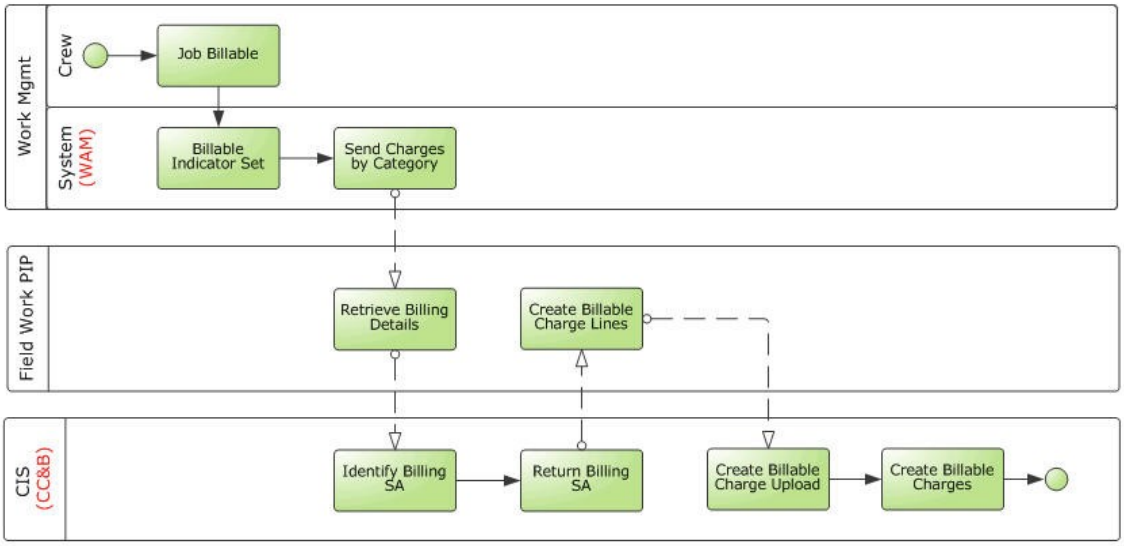
In some cases, a finished Service Request may require billing. This is indicated when the bill customer box is checked on the Oracle Utilities Work and Asset Management Service Request. In this way, Oracle Utilities Work and Asset Management controls which orders are to be billed as well as how much to bill for the order. If a Service Request contains billable charges and the indicator is checked when the Service Request is closed in Oracle Utilities Work and Asset Management, the billing information is sent to Oracle Utilities Customer Care and Billing. Billable charges include time, materials, and direct charges associated with the order to Oracle Utilities Customer Care and Billing.

Supported Functionality

The Bill Customer Indicator can also be set from Oracle Utilities Mobile Workforce Management v1.x. When Oracle Utilities Mobile Workforce Management sends cost and materials as part of order completion to Oracle Utilities Work and Asset Management, it can also indicate if the order is billable by setting the Bill Customer Indicator to true. This can be overridden in Oracle Utilities Work and Asset Management.

In Oracle Utilities Work and Asset Management, this Bill Customer Indicator is part of the Service Request Screen. In Oracle Utilities Mobile Workforce Management, this indicator is part of the Field Order Screen. An Oracle Utilities Mobile Workforce Management or Oracle Utilities Work and Asset Management user should set the value of this field.

This diagram shows the process flow when an order is billed to a customer:



Process flow when an order is billed to a customer

Assumptions and Constraints for Billing Processing

- For this integration, an Oracle Utilities Mobile Workforce Management or Oracle Utilities Work and Asset Management user sets the Billable Indicator.

  No configuration exists that automatically sets the Billable Indicator to a certain value.

- When Oracle Utilities Work and Asset Management sends the billable charges to Oracle Utilities Customer Care and Billing, it always sends the Oracle Utilities Work and Asset Management Expense Category and amount.

  Oracle Utilities Work and Asset Management Expense Category is mapped to Oracle Utilities Customer Care and Billing Bill Charge Line Type. For every Oracle Utilities Work and Asset Management Expense Category, an equivalent Oracle Utilities Customer Care and Billing Bill Charge Line Type is set up in Oracle Utilities Customer Care and Billing. The Oracle Utilities Customer Care and Billing Bill Charge Line Type contains the default values for accounts receivable distribution code, currency code, Show On Bill indicator, Appear In Summary indicator and the Memo Only indicator that is defaulted onto the line details associated with the uploaded billable charges. Oracle Utilities Work and Asset Management does not send individual billable charge information to Oracle Utilities Customer Care and Billing (for example, accounts receivable distribution code, currency code, the indicators).

- If the SA Type created for the Billable Charge SA has a start option, the start option should not turn on the Create Billable Charge switch. The user should create the Billable Charge manually by invoking the Oracle Utilities Customer Care and Billing XAI service - Create Billable Charge Upload Entry.

- Charges are created as part of closing the Oracle Utilities Work and Asset Management Service Request only if the External Order field is populated on the Service Request. The External Order field holds the equivalent Oracle Utilities Customer Care and Billing Field

Activity and/or Oracle Utilities Mobile Workforce Management Field Order.

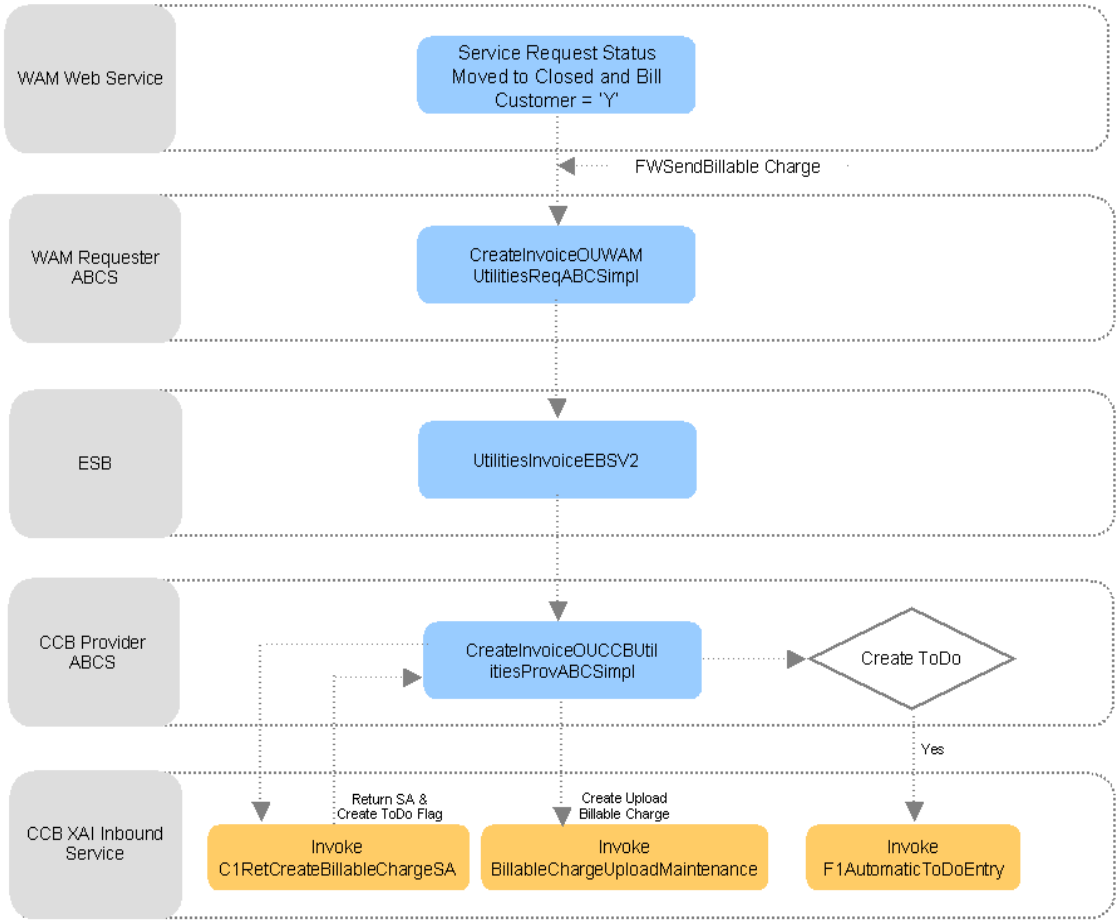
- The Service Point and Customer link to the Service Request that needs to be billed must exist in Oracle Utilities Customer Care and Billing.
- If an error is encountered and the message was not successfully sent to the integration layer, no resend action is available in Oracle Utilities Work and Asset Management to send the message again. The billable charge has to be manually created in Oracle Utilities Customer Care and Billing.

Integration Process Flows for Billing Processing

This section includes graphical representations of the functionality included for this integration point.

Technical Flow Diagram for Billing an Order

This diagram shows how charges for an order coming from Oracle Utilities Work and Asset Management are integrated to Oracle Utilities Customer Care and Billing:



Process Flow for Billing an Order to a Customer

Processing Details

This integration flow shows how an order is billed to a customer. An Oracle Utilities Work and Asset Management User initiates this flow when a Service Request is **Closed** and the Bill Customer Flag is set to true. This invokes the Send Billable Charge Web Service to send billable charge information for Time, Materials, and/or Direct Charges associated with the order to the integration layer.

The Oracle Utilities Work and Asset Management Requester ABCS accepts the ABM coming from Oracle Utilities Work and Asset Management in the integration layer. The ABCS transforms the message into an EBM using the Invoice EBO format and initiates the EBS. The transformation also gets the common ID of the Service Request from the Cross-reference table and pass it to the EBM. The EBS, which is implemented as a Mediator process routes the message to the appropriated Oracle Utilities Customer Care and Billing Queue. An Oracle Utilities Customer Care and Billing provider JMS consumer listens to the provider queue in Oracle Utilities Customer Care and Billing and invokes the Oracle Utilities Customer Care and Billing Provider ABCS for each message received in the queue.

The Oracle Utilities Customer Care and Billing Provider ABCS calls the following services to create the billable charges:

C1RetCreateBillableChargeSA - This new XAI Inbound Service retrieves a Billable Charge Service Agreement (SA) for a given Account or Service Point (SP). The status of the SA must be non-closed or non-canceled. If the Account or SP is not associated with a Billable Charge SA, it creates the SA using the CIS Division, SA Type, SA Start Option (if provided) defined in the AIA Configuration File. If only the SP is provided and the SP is linked to more than one account, it picks one of the accounts for the SP and use that to find or create the billable charge SA. Then, it sets the Create To Do Flag to true.

BillableChargeUploadMaintenance - This existing XAI Inbound Service creates a Billable Charge Upload record in Oracle Utilities Customer Care and Billing. The Order Common ID is stored as a Line Characteristic in the Billable Charge Line.

F1AutomaticToDoEntry - This existing XAI Inbound Service is only invoked if the Create To Do Flag coming from C1RetCreateBillableChargeSA service is true. If Create To Do Flag is true, the integration layer creates a To Do Entry using the To Do Type data defined in the AIA Configuration File after the Billable Charge Upload record has been added to Oracle Utilities Customer Care and Billing. This To Do reminds the user to verify if the billable charge has been created for the correct account because the SP provided is linked to more than one account. New To Do Type is also needed for this TO DO.

If an error is encountered when the message is sent from Oracle Utilities Work and Asset Management, the system synchronously responds to the requesting application with an error. The Oracle Utilities Work and Asset Management application does not include resend functionality for Create Billable Charge so there is no way to resend the message again. The Billable Charge has to be manually created in Oracle Utilities Customer Care and Billing.

In case of data or technical error in the ABCS like transformation failure or bind fault or some other internal error in the BPEL process, the standard AIA error processing generates an error e-mail notification and work list entry.

In case of remote exception (the target web service cannot be reached even after all the retry attempts configured in the fault policy file are exhausted), the standard AIA error processing generates an error e-mail notification and work list entry. The system rolls back the transaction so that the message stays in the Oracle Utilities Customer Care and Billing Queue and the JMS consumer stops processing the queue. When the target web service is available again, it processes the record from the queue again.

In case of business exceptions from the target application, the standard AIA error processing generates an error e-mail notification and work list entry. After fixing the error, this can be retrieved from BPEL.

Chapter 7: Customer Update Process Integration

This chapter provides an overview of Customer Update Process Integration and discusses:

- Functionality Supported by Customer Update Processing
- Assumptions and Constraints for Customer Update Processing
- Integration Process Flows for Customer Update Processing

Customer Update Process Integration Overview

An Oracle Utilities Work and Asset Management user can pass updated Customer data collected in the field (such as a phone number or mailing address) to Oracle Utilities Customer Care and Billing. The information may be changed either online in the Service Request or from the Oracle Utilities Work and Asset Management mobile application. Information is stored in the SA_CREW_WORK_LOG table as changes to the Service Request prior to sending to Oracle Utilities Customer Care and Billing. This synchronous request creates Customer Contact and To Do records in Oracle Utilities Customer Care and Billing.

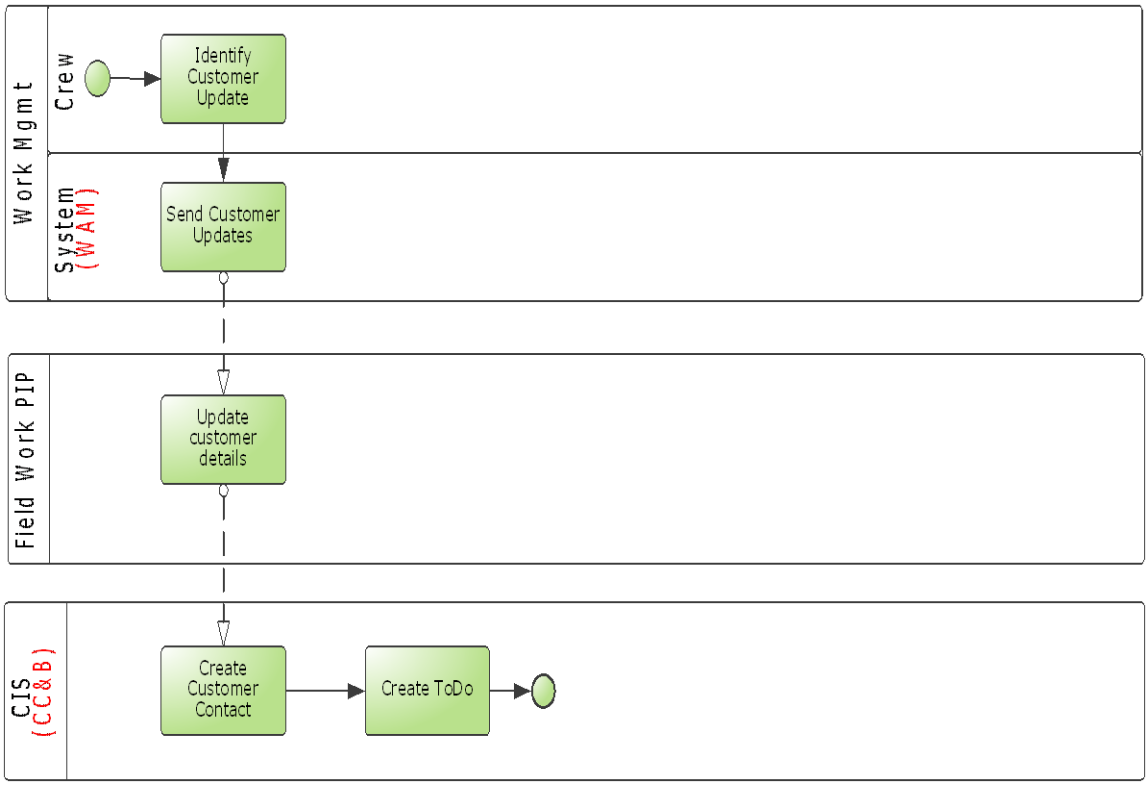
Crew log entry in SA_CREW_WORK_LOG table is created in Oracle Utilities Work and Asset Management when one or more of these fields change:

- Customer_id
- Customer_last_name
- Customer_first_name
- Company
- Number_prefix
- Street_number_char
- Number_suffix
- Street_name
- Street_direction
- Suite
- City
- State_province
- Postal_code

- Post_office_box
- Customer_phone
- Customer_phone_ext
- Customer_home_phone

Supported Functionality

The following diagram shows the process of updating a customer from Oracle Utilities Work and Asset Management to Oracle Utilities Customer Care and Billing:



Customer updated in Oracle Utilities Customer Care and Billing from Oracle Utilities Work and Asset Management

When customer information is updated in Oracle Utilities Work and Asset Management, Oracle Utilities Work and Asset Management initiates an outbound message to Oracle Utilities Customer Care and Billing. This request creates a Customer Contact and To Do records in Oracle Utilities Customer Care and Billing.

Assumptions and Constraints for Customer Update Processing

- Oracle Utilities Customer Care and Billing is always the provider and Oracle Utilities Work and Asset Management is the requester.
- Oracle Utilities Work and Asset Management must know when the customer data has

changed and that this data is linked to an external system.

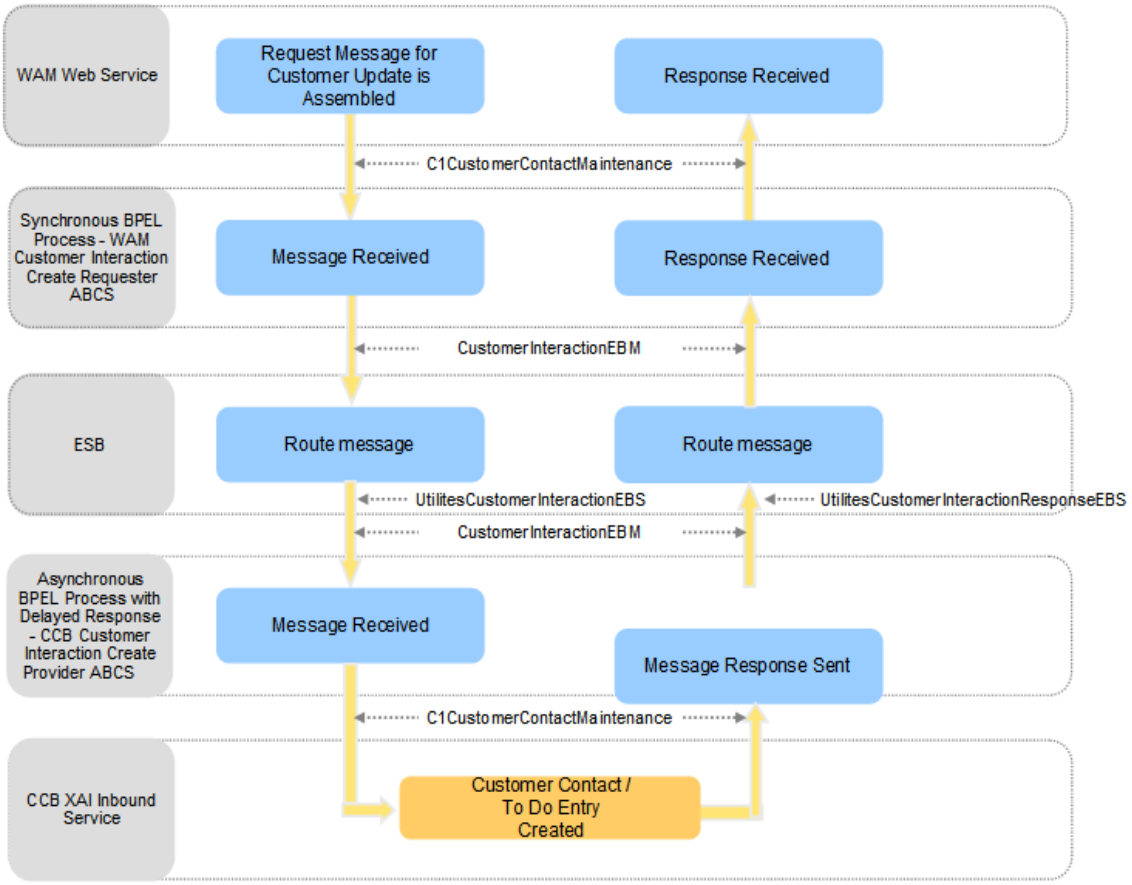
- Because of a design constraint where Oracle Utilities Work and Asset Management sends the request out asynchronously and waits for a response (Asynchronous with Delayed Response pattern), the Customer Update Process will not work properly in a clustered Environment in the current integration.

Integration Process Flows for Customer Update Processing

This section includes graphical representations of the functionality included for this integration point and describes some of the processing details.

Update of Customer Information

The following technical diagram shows the customer interaction flow between Oracle Utilities Work and Asset Management to Oracle Utilities Customer Care and Billing:



Customer Interaction Integration Flow between Oracle Utilities Work and Asset Management – Oracle Utilities Customer Care and Billing

Processing Details

- Oracle Utilities Work and Asset Management assembles the request message for Customer

Update. This request message is sent to the Oracle Utilities Work and Asset Management Requester ABCS (synchronous BPEL process) where the message is transformed and enriched into Customer Interaction for Utilities EBO format.

- The message is routed through a Mediator process, UtilitiesCustomerInteractionEBS to the provider ABCS (Oracle Utilities Customer Care and Billing).
- Once the message is correctly routed to the Oracle Utilities Customer Care and Billing provider ABCS (Asynchronous BPEL process with Delayed Response), the message is transformed from Customer Interaction EBO format to a format that XAI Inbound Service (C1CustomerContactMaintenance) requires in Oracle Utilities Customer Care and Billing.
- Oracle Utilities Customer Care and Billing creates the Customer Contact and a To Do entry and sends back a response to the Oracle Utilities Customer Care and Billing Provider ABCS. The Provider ABCS transforms it back to the EBO format and invokes the Mediator process UtilitiesCustomerInteractionResponseEBS that routes the response to the Oracle Utilities Work and Asset Management Requester ABCS that receives the response.
- The Requestor ABCS transforms the message from EBO format into a format that Oracle Utilities Work and Asset Management understands. Errors are handled in the integration layer.

Note: Correlation sets are used to correlate the instance ID of the outbound Invoke Request from Requester ABCS and the inbound receive on the Requester ABCS.

To update Customer Contact Information

1. **Open a Service Request that References an External Order ID either online or from the Oracle Utilities Work and Asset Management mobile application.**
2. **Change any updated Customer contact data collected (such as a phone number or mailing address), as needed.**
   Information is stored in the SA_CREW_WORK_LOG table as changes to the Service Request prior to sending to Oracle Utilities Customer Care and Billing.

   The system initiates an outbound service to Oracle Utilities Customer Care and Billing that creates a Customer Contact and To Do records in Oracle Utilities Customer Care and Billing.

Chapter 8: Understanding Integration Interfaces and Components

This section provides further information regarding interfaces, messages, webservices (inbound and outbound), AIA Components and integration services that are used in the integration. These entities do not require configuration; however, they can be helpful in understanding the integration as a whole.

Note: The core EBO and EBM XSD files can be located by EBO within the $AIA_HOME/AIAMetaData/AIAComponents/EnterpriseObjectLibrary/Core/EBO/ parent folder. The core EBS WSDL files can be located by EBO within the $AIA_HOME/AIAMetaData/AIAComponents/EnterpriseBusinessServiceLibrary/Core/EBO/ parent folder.

For more information about EBOs, see Appendix B: Cross-References.

Work Order Processing

This section describes the application interfaces and components relevant to the work order processing integration point.

Edge Application Interfaces for Work Order Processing

Inbound Oracle Utilities Customer Care and Billing Web Services

Web Service Name	Invoked By	Web service Description
C1AddFAandCustomerContact	CC&B Work Order Provider ABCS	Invoked to Create new Field Activities in CC&B.
C1FieldActivityMaintenance	CC&B Work Order Provider ABCS	Invoked to update Field Activities in CC&B for Instructions, Schedule date or for Intermediate status.
C1FACompletionExtSysStruct	CC&B Work Order Provider ABCS	Invoked for completing Field Activities, Canceling them or updating them with incomplete information.
FAResponse	CC&B Work Order Acknowledgement Provider ABCS	Invoked to update CC&B with acknowledgements for the Order messages sent out by CC&B. These show either error information or success.
C1ExtractSPInfo	CC&B Get Meter Data Provider Service	Invoked to get the Meter and register information for a Specific Service point as a part of Message enrichment triggered by WAM Work Order Create Provider ABCS.

Web Service Name	Invoked By	Web service Description
C1FACompletionFieldWork	CC&B Work Order Provider Service	This service was created by CC&B to support a more customizable integration with MWM on Completion. Refer to Chapter 10 Configuration Guidelines, Setting up Field Work Process Integration Pack, Configuration to Invoke CCB XAI Inbound Service C1FACompletionFieldWork to support Generic FA steps for FA Completion. By default, the C1FACompletionExtSysStruct XAI Inbound service is invoked from CC&B Work Order Provider ABCS.

Outbound CC&B Messages

Message Name	Invokes	Web service Description
ExtractFAInfo	CC&B Work Order Requester ABCS	Filed Activity Outbound (all actions from CC&B Create, update, cancel)

Inbound Oracle Utilities Work and Asset Management Web Services

Web Service Name	Invoked By	Web service Description
ServiceRequestDatasetService: InsertSaifServiceRequestDataset, UpdateSaifServiceRequestData,	WAM Work Order Provider ABCS	Invoked for Creating, canceling and Updating Service Requests in WAM.
ServiceRequestCompletionDatasetService: CompleteServiceRequest	WAM Work Order Provider ABCS	Invoked for Completing Service Requests in WAM.

Outbound Oracle Utilities Work and Asset Management Messages

Message Name	Invokes	Web service Description
C1AddFAandCustomerContact	WAM Work Order Create Requester ABCS	This message is used by WAM to send new Service Requests created in WAM.
C1FieldActivityMaintenance	WAM Work Order Update Requester ABCS	This message is used by WAM to send Service Requests Updates and status updates.
C1FACompletionExtSysStruct	WAM Work Order Complete Requester ABCS	This message is used by WAM to send Service Request Completions.

Inbound Oracle Utilities Mobile Workforce Management v1.x Web Services

Web Service Name	Invoked By	Web service Description
SPLMWMService.wsdl:MWMServiceSoap:Submit	MWM Work Order Provider ABCS	Invoked for Creating, canceling and Updating Field Orders in MWM.

Outbound Oracle Utilities Mobile Workforce Management v1.x Web Messages

Message Name	Invokes	Web service Description
SPLWFMCreateUpdateOrder	MWM Work Order Create Requester ABCS	This message is used by MWM to send new orders created in MWM.
SPLWFMOrderStatus	MWM Work Order Status Update Requester ABCS	This message is used by MWM to send order Updates and status updates.
SPLWFMOrderCompletion SPLWFMCancelOrder	MWM Work Order Cancel/Complete Requester ABCS	This message is used by MWM to send order Completions/Cancellations.
SPLWFMTransactionAck	MWM Work Order Response Requestor ABCS	This message is used by MWM to send response to work order Create, Updates, Completions/Cancellations.

Inbound Oracle Utilities Mobile Workforce Management v2.x Web Services

Web Service Name	Invoked By	Web service Description
M2-MaintainUtilityActByHost	MWM Work Order Provider ABCS	Invoked for Creating and Updating activities in MWM.
M2-FinalizeUtilityActByHost	MWM Work Order Provider ABCS	Invoked for Completing and canceling activities in MWM.

Outbound Oracle Utilities Mobile Workforce Management v2.x Web Messages

Message Name	Invokes	Web service Description
M2-ActivityDataDetails	MWM Work Order Create Requester ABCS	This message is used by MWM to send new activities created in MWM.
M2-ActivityStatusUpdate	MWM Work Order Status Update Requester ABCS	This message is used by MWM to send activity status updates.
M2-ActivityCompletionDetails	MWM Work Order Complete Requester ABCS	This message is used by MWM to send activity Completions.

Core AIA Components and Integration Services for Work Order Processing

The integration flow uses the following components:

EBO	EBM	File Locations
WorkOrderEBO	ProcessWorkOrderEBM - Used for Order messages ProcessWorkOrderResponseEBM - Used for Order Response/Acknowledgement message	The core EBO and EBM XSD files are in: $AIA_HOME/AIAMetaData/AIAComponents/EnterpriseObjectLibrary/Core/EBO/ parent folder.

Enterprise Business Services

EBS Name	Description
UtilitiesWorkOrderEBS	Receives the ProcessWorkOrderEBM and routes it to the appropriate JMS Producer.
UtilitiesWorkOrderResponseEBS	Receives the ProcessWorkOrderResponseEBM and routes it to the appropriate ABCS.
The core EBS WSDL files are located in: $AIA_HOME/AIAMetaData/AIAComponents/EnterpriseBusinessServiceLibrary/Core/EBO/ parent folder	

ABCS

These values are cross-referenced in the configuration guidelines section for the integration.

ABCS Name	Description
ProcessWorkOrderOUCCBUtilitiesReqABCSImpl	CC&B Work Order Requester ABCS
ProcessWorkOrderCreateOUWAMUtilitiesReqABCSImpl	WAM Work Order Create Requester ABCS
ProcessWorkOrderUpdateOUWAMUtilitiesReqABCSImpl	WAM Work Order Update Requester ABCS
ProcessWorkOrderCompleteOUWAMUtilitiesReqABCSImpl	WAM Work Order Completion/Cancel Requester ABCS
ProcessWorkOrderCreateOUMWMUtilitiesReqABCSImpl	MWM v1.x Work Order Create Requester ABCS
ProcessWorkOrderCreateOUMWMUtilitiesReqABCSImplV2	MWM v2.x Work Order Create Requester ABCS
ProcessWorkOrderStatusOUMWMUtilitiesReqABCSImpl	MWM v1.x Work Order Status Update Requester ABCS
ProcessWorkOrderStatusOUMWMUtilitiesReqABCSImplV2	MWM v2.x Work Order Status Update Requester ABCS
ProcessWorkOrderCompleteOUMWMUtilitiesReqABCSImpl	MWM v1.x Work Order Completion/Cancel Requester ABCS
ProcessWorkOrderCompleteOUMWMUtilitiesReqABCSImplV2	MWM v2.x Work Order Completion/Cancel Requester ABCS
ProcessWorkOrderOUCCBUtilitiesProvABCSImpl	CC&B Work Order Provider ABCS
ProcessWorkOrderOUWAMUtilitiesProvABCSImpl	WAM Work Order Provider ABCS
ProcessWorkOrderOUMWMUtilitiesProvABCSImpl	MWM v1.x Work Order Provider ABCS
ProcessWorkOrderOUMWMUtilitiesProvABCSImplV2	MWM v2.x Work Order Provider ABCS
ProcessWorkOrderResponseOUMWMUtilitiesReqABCSImpl	MWM v1.x Work Order Acknowledgement Requester ABCS
ProcessWorkOrderResponseOUCCBUtilitiesProvABCSImpl	CC&B Work Order Acknowledgement Provider ABCS
ProcessWorkOrderResponseOUWAMUtilitiesProvABCSImpl	WAM Work Order Acknowledgement Provider ABCS
ProcessWorkOrderResponseOUMWMUtilitiesProvABCSImpl	MWM v1.x Work Order Acknowledgement

ABCS Name	Description
	Provider ABCS
ProcessWorkOrderResponseOUMWMUtilitiesProvABCSImplV2	MWM v2.x Work Order Acknowledgement Provider ABCS

Adapter Services

Adapter Service Name	Description
ProcessWorkOrderOUMWMUtilitiesJMSProducer	This is the JMS producer service that is invoked when the EBM is routed to MWM. This service is responsible for posting the message to the Consumer JMS Queue for MWM.
ProcessWorkOrderOUMWMUtilitiesJMSConsumer	This is the JMS consumer service responsible for listening to the Producer JMS Queue for MWM and sending the messages to MWM v1.x Work Order Provider ABCS.
ProcessWorkOrderOUMWMUtilitiesJMSConsumer V2	This is the JMS consumer service responsible for listening to the Producer JMS Queue for MWM and sending the messages to MWM v2.x Work Order Provider ABCS.
ProcessWorkOrderOUCCBUtilitiesJMSProducer	This is the JMS producer service that is invoked by the EBS when the message is to be routed to CC&B. This service is responsible for posting the message to the Consumer JMS Queue in CC&B.
ProcessWorkOrderOUCCBUtilitiesJMSConsumer	This is the JMS consumer service responsible for listening to the Producer JMS Queue in CC&B and sending the messages to CC&B Work Order Sync Provider ABCS.
ProcessWorkOrderOUWAMUtilitiesJMSProducer	This is the JMS producer service that is invoked by the EBS when the message is to be routed to WAM. This service is responsible for posting the message to the Consumer JMS Queue in WAM.
ProcessWorkOrderOUWAMUtilitiesJMSConsumer	This is the JMS consumer service responsible for listening to the Producer JMS Queue in WAM and sending the messages to WAM Work Order Provider ABCS.

Message Enrichment Services

These services are used to enrich the Order Create message received from Oracle Utilities Work and Asset Management with information about the Meter installed at the Service Point sent by Oracle Utilities Work and Asset Management on the Create Request.

Message Enrichment Service Name	Description
WAMGetMeterDataReqService	This is an EBS service invoked by WAM Work Order Create Requester ABCS to retrieve the meter and register information from CC&B for the Service Point sent by WAM in the create request. This service in turn invokes the BPEL service CCBGetMeterDataProvService to retrieve the Meter information.
CCBGetMeterDataProvService	This is a BPEL process that retrieves the meter information for the specified Service Point from CC&B. It invokes the CC&B service C1ExtractSPInfo to get the meter information.

Appointments Processing

Edge Application Interfaces for Appointments Processing

This section describes the application interfaces relevant to the appointment processing integration point.

Inbound Oracle Utilities Mobile Workforce Management v1.x Web Services

Web Service Name	Invoked By	Web service Description
MWMIMInsertMessageXML	MWM Get Work Order Line Appointment Window Provider ABCS	Inbound Service to retrieve the available appointment window for a given date time and dispatch group.

Inbound Oracle Utilities Mobile Workforce Management v2.x Web Services

Web Service Name	Invoked By	Web service Description
M1-RouteAppointmentRequestToScheduler	MWM Get Work Order Line Appointment Window Provider ABCS	Inbound Service to retrieve the available appointment window for a given date time and dispatch group.

Core AIA Components and Integration Services for Appointments Processing

The integration flow uses the following components:

EBO	EBM	File Locations
WorkOrderEBO	GetWorkOrderLineAppointmentWindowAvailabilityEBM	The core EBO and EBM XSD files are in: $AIA_HOME/AIAMetaData/AIAComponents/EnterpriseObjectLibrary/Core/EBO/ parent folder.

Enterprise Business Services

EBS Name	Description
UtilitiesWorkOrderEBS	Receives the GetWorkOrderLineAppointmentWindowAvailability EBM and routes it to the appropriate MWM Provider. The core EBS WSDL files are located in: $AIA_HOME/AIAMetaData/AIAComponents/EnterpriseBusinessServiceLibrary/Core/EBO/ parent folder

ABCS

These values are cross-referenced in the configuration guidelines section for the integration.

ABCS Name	Description
GetWOLineApptWinAvailOUCCB UtilitiesReqABCSImpl	CC&B Get Work Order Line Appointment Window Requester ABCS
GetWOLineApptWinAvailOUMWM	MWM v1.x Get Work Order Line Appointment Window

ABCS Name	Description
UtilitiesProvABCSImpl	Provider ABCS
GetWOLineApptWinAvailOUMWM UtilitiesProvABCSImplV2	MWM v2.x Get Work Order Line Appointment Window Provider ABCS

Meter or Item Validation Processing

Edge Application Interfaces for Meter or Item Validation Processing

This section describes the application interfaces relevant to the meter or item validation integration point.

Inbound CC&B Web Services

Web Service Name	Invoked By	Web service Description
ValidateMeterItemResponse	CC&B Work Order Installed Product Validate Provider ABCS	This message is used to send a meter/item Validation Request to CC&B and get the response back from CC&B.

Outbound Oracle Utilities Work and Asset Management Messages

Message Name	Invokes	Web service Description
ValidateMeterItemResponse	WAM Work Order Installed Product Validate Requester ABCS	This message is used by WAM to send a meter/item Validation Request and get the response back.

Outbound Oracle Utilities Mobile Workforce Management v1.x Web Messages

Message Name	Invokes	Web service Description
ValidateMeterItemRequest	MWM Work Order Installed Product Validate Requester ABCS	This message is used to send Meter/Item Validation request.

Outbound Oracle Utilities Mobile Workforce Management v2.x Web Messages

Message Name	Invokes	Web service Description
M2-DeviceVerificationMessage	MWM Installed Product Validation Requester ABCS	This message is used by MWM to validate Meter/Item in CCB.

Inbound Oracle Utilities Mobile Workforce Management v1.x Web Services

Web Service Name	Invoked By	Web service Description
SPLMWMService.wsdl:MWMService Soap:Submit	MWM Work Order Installed Product Validate Requester ABCS	Invoked to send back the response for the Meter Validation to MWM

Core AIA Components and Integration Services for Meter or Item Validation Processing

The integration flow uses the components indicated below.

EBO	EBM	File Locations
InstalledProductEBO	ValidateWorkOrderInstalledProductEBM ValidateWorkOrderInstalledProductResponseEBM	The core EBO and EBM XSD files are in: $AIA_HOME/AIAMetaData/AIAComponents/EnterpriseObjectLibrary/Core/EBO/ parent folder.

Enterprise Business Services

EBS Name	Description
UtilitiesInstalledProductEBSV2	The UtilitiesInstalledProductEBSV2 service is implemented as a Mediator process routing service. It provides the basic request operations that can be performed against the InstalledProductEBO. This service is invoked as part of the WAM-CC&B or MWM-CC&B Validate Installed Product flow. It has routing rules set up for one operation: ValidateWorkOrderInstalledProduct. The core EBS WSDL files are located in: $AIA_HOME/AIAMetaData/AIAComponents/EnterpriseBusinessServiceLibrary/Core/EBO/ parent folder

For more information about this EBS, see *Oracle Fusion Middleware Concepts and Technologies Guide for Oracle Application Integration Architecture Foundation Pack 11g Release 1, "*Understanding Enterprise Business Services*"*

ABCS

These values are cross-referenced in the configuration guidelines section for the integration.

ABCS Name	Description
ValidateInstalledProductOUWAMUtilitiesReqABCSImpl	WAM synchronously invokes the ValidateInstalledProductOUWAMUtilitiesReqABCSImpl service when a field service representative tries to validate a Meter/Item for a particular Service Request. The call returns the validity of the Meter/Item along with Meter Configuration, Registers Information for a Meter.
ValidateInstalledProductOUMWMUtilitiesReqABCSImpl	MWM v1.x asynchronously invokes the ValidateInstalledProductOUMWMUtilitiesReqABCSImpl service when a field service representative tries to validate a Meter/Item for a particular Order. The call returns the validity of the Meter/Item along with Meter Configuration, Registers Information for a Meter.
ValidateInstalledProductOUMWMUtilitiesReqABCSImplV2	MWM v2.x synchronously invokes the ValidateInstalledProductOUMWMUtilitiesReqABCSImplV2 service when a field service representative tries to validate a Meter/Item for a particular Order. The call returns the validity of the Meter/Item along with Meter Configuration, Registers Information for a Meter.

ABCS Name	Description
ValidateInstalledProductOUCCBUtilitiesProvABCSImpl	UtilitiesInstalledProductEBSV2 synchronously invokes the ValidateInstalledProductOUCCBUtilitiesProvABCSImpl service when a request is sent by the Requester ABCS to validate a Meter/Item. The ValidateInstalledProductOUCCBUtilitiesProvABCSImpl invokes the CC&B XAI Inbound Service ValidateMeterItemResponse and gets the response back and transforms it back to EBO form and sends it to EBS to route it to WAM/MWM Requester ABCS.

Timesheet Creation Process

Edge Application Interfaces for Timesheet Creation Processing

This section describes the application interfaces relevant to the timesheet creation processing integration point.

This table shows the Oracle Utilities Work and Asset Management web services.

Web Service Name	Direction	Invoked By	Web service Description
MWMTimesheetDatasetService	Inbound	WAM TimeSheet Provider ABCS	Invoked to Create new Timesheet(s) in WAM.
CreateTimeSheet	Outbound	MWM TimeSheet Create Requester ABCS	This message is used by MWM to send new Timesheet record(s)

Core AIA Components and Integration Services for Timesheet Creation Processing

The integration flow uses the following components:

EBO	EBM	File Locations
TimeSheetEBO	TimeSheetEBM ValidateWorkOrderInstalledProductResponseEBM	The core EBO and EBM XSD files are in: $AIA_HOME/AIAMetaData/AIAComponents/EnterpriseObjectLibrary/Core/EBO/ parent folder.

Enterprise Business Services

EBS Name	Description
TimeSheetEBSV1	The TimesheetEBSV1service is implemented as a Mediator process routing service. It provides the basic request operations that can be performed against the TimeSheetEBO. This service is invoked as part of the MWM-WAM Create TimeSheet flow. It has routing rules set up for one operation: Create TimeSheet. The core EBS WSDL files are located in: $AIA_HOME/AIAMetaData/AIAComponents/EnterpriseBusinessServiceLibrary/Core/EBO/ parent folder

ABCS

These values are cross-referenced in the configuration guidelines section for the integration.

ABCS Name	Description
CreateTimeSheetOUMWMUtilityReqABCSImpl	MWM synchronously invokes the CreateTimeSheetOUMWMUtilityReqABCSImpl service when a field service representative enters a Timesheet for a particular Service Request.
CreateTimeSheetOUWAMUtilitiesProvABCSImpl	TimeSheetEBSV1 synchronously invokes the CreateTimeSheetOUWAMUtilitiesProvABCSImpl service when a request is sent by the Requester ABCS

Billing Process

Edge Application Interfaces for Billing Processing

This section describes the application interfaces relevant to the billing processing integration point.

Inbound Oracle Utilities Customer Care and Billing Web Services

Web Service Name	Invoked By	Web service Description
C1RetCreateBillableChargeSA	CC&B Create Invoice Provider ABCS	Inbound Service to retrieve or create a Billable Charge SA
BillableChargeUploadMaintenance	CC&B Create Invoice Provider ABCS	Creates billable charge upload records.
F1AutomaticToDoEntry	CC&B Create Invoice Provider ABCS	Automatic To Do Entry use to create To Do Entry in CC&B

Outbound Oracle Utilities Work and Asset Management Messages

Message Name	Invokes	Web service Description
FWSendBillableCharge	WAM Create Invoice Requester ABCS	This message is used by WAM to send Billable Charges created in WAM.

Core AIA Components and Integration Services for Billing Processing

The integration flow uses the following components:

EBO	EBM	File Locations
InvoiceEBO	CreateInvoiceEBM	The core EBO and EBM XSD files are in: $AIA_HOME/AIAMetaData/AIAComponents/EnterpriseObjectLibrary/Core/EBO/ parent folder.

Enterprise Business Services

EBS Name	Description
UtilitiesInvoiceEBSV2	Receives the CreateInvoiceEBM and routes it to the appropriate JMS Producer. The core EBS WSDL files are located in: $AIA_HOME/AIAMetaData/AIAComponents/EnterpriseBusinessServiceLibrary/Core/EBO/ parent folder

ABCS

These values are cross-referenced in the configuration guidelines section for the integration.

ABCS Name	Description
CreateInvoiceOUWAMUtilitiesReqABCSImpl	WAM Create Invoice Requester ABCS
CreateInvoiceOUCCBUtilitiesProvABCSImpl	CC&B Create Invoice Provider ABCS

Adapter Services

Adapter Service Name	Description
CreateInvoiceOUCCBUtilitiesJMSProducer	This is the JMS producer service that is invoked when the EBM is routed to CC&B. This service is responsible for posting the message to the Create Invoice Consumer JMS Queue for CC&B.
CreateInvoiceOUCCBUtilitiesJMSConsumer	This is the JMS consumer service responsible for listening to the Producer JMS Queue in CC&B and sending the messages to the CC&B Create Invoice Provider ABCS

Customer Update Process

Edge Application Interfaces for Customer Update Processing

This section describes the application interfaces relevant to the customer update processing integration point.

Inbound CC&B Web Services

Message Name	Invoked By	Web service Description
C1CustomerContactMaintenance	CC&B Customer Interaction Create Provider ABCS	This message is used to create a customer contact and To Do in CC&B based on the customer update request received and a response is sent back from CC&B.

Outbound Oracle Utilities Work and Asset Management Messages

Message Name	Invokes	Web service Description
C1CustomerContactMaintenance	WAM Customer Interaction Create	This message is used by WAM to

Message Name	Invokes	Web service Description
	Requester ABCS	send a customer update information to CC&B.

Core AIA Components and Integration Services for Customer Update Processing

The integration flow uses the following components:

EBO	EBM	File Locations
CustomerInteractionEBO	CustomerInteractionEBM	The core EBO and EBM XSD files are in: $AIA_HOME/AIAMetaData/AIAComponents/EnterpriseObjectLibrary/Core/EBO/ parent folder.

Enterprise Business Services

EBS Name	Description
UtilitiesCustomerInteractionEBS	The UtilitiesCustomerInteractionEBS service is implemented as a Mediator process routing service. It provides the basic request operations that can be performed against the CustomerInteractionEBO. This service is invoked as part of the WAM-CC&B Create Customer Interaction flow. It has routing rules set up for one operation: CreateCustomerInteraction.
UtilitiesCustomerInteractionResponseEBS	The UtilitiesCustomerInteractionResponseEBS service is implemented as a Mediator process routing service to route the response sent from ProviderABCS back to RequesterABCS. It has routing rules set up for one operation: CreateCustomerInteractionResponse. This service is invoked as part of the WAM-CC&B Create Customer Interaction flow.
The core EBS WSDL files are located in: $AIA_HOME/AIAMetaData/AIAComponents/EnterpriseBusinessServiceLibrary/Core/EBO/ parent folder	

For more information about this EBS, see *Oracle Application Integration Architecture - Foundation Pack: Integration Developer's Guide,* "Designing and Developing EBSs" and *Oracle Application Integration Architecture - Foundation Pack: Concepts and Technologies Guide,* "Understanding EBSs".

ABCS

These values are cross-referenced in the configuration guidelines section for the integration.

ABCS Name	Description
CreateCustomerInteractionOUWAMUtilitiesReqABCSImpl	WAM synchronously invokes the CreateCustomerInteractionOUWAMUtilitiesReqABCSImpl service when a field service representative tries to update Customer Information. The Provider ABCS retrieves the response from CC&B and invokes the MEDIATOR process UtilitiesCustomerInteractionResponseEBS that routes the response to the WAM Requester ABCS where a Pick activity receives the response and sends it to WAM.

ABCS Name	Description
	Note. Correlation sets are used to correlate the instance ID of the outbound Invoke Request from Requester ABCS and the inbound receive on the Requester ABCS.
CreateCustomerInteractionOUCCBUtilitiesProvABCSImpl	UtilitiesCustomerInteractionEBS invokes the CreateCustomerInteractionOUCCBUtilitiesProvABCSImpl service when a request is sent by the Requester ABCS to Create a Customer Contact. The CreateCustomerInteractionOUCCBUtilitiesProvABCSImpl invokes the CC&B XAI Inbound Service C1CustomerContactMaintenance and gets the response back and transforms it back to EBO form and invokes the MEDIATOR process UtilitiesCustomerInteractionResponseEBS that routes the response to the WAM Requester ABCS.

Part 2: Implementing the Delivered Integrations

Chapter 9: Data Synchronization

This chapter provides an overview of the synchronization requirements for the integration, and discusses how to:

- Synchronize Oracle Utilities Customer Care and Billing and Oracle Utilities Work and Asset Management
- Synchronize Oracle Utilities Work and Asset Management and Oracle Utilities Mobile Workforce Management

Data Synchronization processes are required to support integrated functionality between the three participating applications. Oracle Utilities Customer Care and Billing Premises and Service Points translate to Oracle Utilities Work and Asset Management Assets. Oracle Utilities Customer Care and Billing Accounts with valid Service Agreements translate to Oracle Utilities Work and Asset Management Customers. The synchronization of this data is done by batch processing in an initial load. The system then keeps the data in sync using periodic incremental updates. No user action is required to complete these updates.

Prerequisites

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

Synchronization between Oracle Utilities Customer Care and Billing and Oracle Utilities Work and Asset Management

This section provides details on the required synchronization between Oracle Utilities Customer Care and Billing and Oracle Utilities Work and Asset Management, and discusses how to complete these synchronizations.

Synchronizing Premises and Service Points

The integration supports synchronizing Oracle Utilities Customer Care and Billing premise and service point information so that a corresponding asset is created in Oracle Utilities Work and Asset Management. As premises and service points are added or changed, database triggers capture these actions and write information to a change log table.

Important: Database configuration is required. Be sure that your system administrator has performed all set up requirements to configure the database for the integration.

Note: If the functionality provided by the base integration does not meet your business requirements, you can create your own batch processes for synchronizing data and/or create Customer Modification (CM) triggers to capture different premise and service point changes.

Processing Details

- When users update Oracle Utilities Work and Asset Management Asset records that originated from Oracle Utilities Customer Care and Billing, Oracle Utilities Work and Asset Management does not send updates back to Oracle Utilities Customer Care and Billing and Asset fields are not restricted from update in Oracle Utilities Work and Asset Management.
- Records can be downloaded from Oracle Utilities Customer Care and Billing in two modes - initial load and incremental update.
- The integration extracts records from Oracle Utilities Customer Care and Billing and uploads them into the Oracle Utilities Work and Asset Management Asset Interface table. At the scheduled run time, the Oracle Utilities Work and Asset Management batch job creates new Asset records or updates existing Asset records with data from the Asset Interface Table and the defaults from the business rules.
- The system assigns a Premise Asset Record Type when an Asset is created from an Oracle Utilities Customer Care and Billing Premise or assigns a SP Asset record Type when an Asset is created from an Oracle Utilities Customer Care and Billing Service Point. The Asset record types are defined in code table 230. The Oracle Utilities Customer Care and Billing Premise Types and Asset Types are defined in the Oracle Utilities Work and Asset Management Asset Type Table (Code Table 29).
- An Asset record is not created for a Premise until a Service Point has also been created in Oracle Utilities Customer Care and Billing for the Premise. The system does not transfer information for a Premise or Account without a Service Point in Oracle Utilities Customer Care and Billing.
- When users create or update customer records in Oracle Utilities Customer Care and Billing, the integration populates related information in Oracle Utilities Work and Asset Management. This information can be found in the Oracle Utilities Customer Care and Billing Account Information section on the Oracle Utilities Work and Asset Management Customer module header. The Oracle Utilities Work and Asset Management Customer ID is equivalent to the Oracle Utilities Customer Care and Billing Account Number.
- Related Service Agreement information is displayed in the Oracle Utilities Work and Asset Management Customer module Address (Detail) view in the Oracle Utilities Customer Care and Billing Service Agreements section. The Premise ID is populated in the Oracle Utilities Customer Care and Billing Premise ID field on the same screen. The account may have multiple addresses, so the Contact Info flag is set on the Oracle Utilities Customer Care and Billing mailing address record.

Updating Information

When an existing Premise and/or Service Point are updated in Oracle Utilities Customer Care and Billing, the integration records are changed in the Oracle Utilities Work and Asset Management Interface Table and uploaded into Oracle Utilities Work and Asset Management.

Premise Alternate Addresses and Non-Badged items associated to Service Points are not created or updated on the Oracle Utilities Work and Asset Management Asset record.

Before Running Oracle Utilities Customer Care and Billing Background Download Process

Before you run the Oracle Utilities Customer Care and Billing background download process, complete the following configurations, data backup, and create a database link.

Oracle Utilities Work and Asset Management Configurations to Complete

- Manually configure Oracle Utilities Work and Asset Management Asset Type Codes Code Table.

  Synchronize asset types between Oracle Utilities Work and Asset Management and Oracle Utilities Customer Care and Billing to use this data as part of the integration business processes.

Description	Asset Type Codes
Used by Integration Point	Work Order and Asset Data Synchronization
CCB Entity	SP_TYPE or PREMISE_TYPE
WAM Entity	Asset Type Codes Code Table
Required Mapping	Asset Type Code == SP_TYPE Code (if Asset is an SP)
	Asset Type Code == PREMISE_TYPE Code (if Asset is a Premise)

- Configure Oracle Utilities Work and Asset Management Batch Processes.
- Configure the following Oracle Utilities Work and Asset Management Business Rules.
  - Default Accts for Interfaces Business Rule
  - Interface Parameters Rule
  - Interfaces Rules
  - Product Integration CCB Rule

Data Backup

Ensure that you have created a backup of the database prior to running the Oracle Utilities Customer Care and Billing background download process.

Create Database Link

Create a database link called **WAM** from the Oracle Utilities Customer Care and Billing database to the Oracle Utilities Work and Asset Management database before running the Oracle Utilities Customer Care and Billing Background Download Process. This database link should have access to synergen objects in Oracle Utilities Work and Asset Management database.

Copy and unzip the file WAM.zip to a local drive on the desktop. This zip file is shipped with Oracle Utilities Customer Care and Billing and can be located on the Oracle Utilities Customer Care and Billing shipment. After the file is unzipped, follow the steps to complete the synchronization:

To create a database link:

1. **Navigate to the Scripts sub-folder.**

   This sub-folder contains the SQL files that update your database for this installation. Some of the SQL files in this folder may contain DDL (data definition language) statements that may change the object definition or create new objects in your database. You may customize these DDL statements to match your storage requirements.

2. **Logon to the Oracle Utilities Customer Care and Billing database as application owner (CISADM) using SQLPlus.**

   The integration requires that you have triggers defined in the Oracle Utilities Customer Care and Billing database.

3. **Run the following sql scripts to generate the triggers:**

   - C1_CCB_WAM_ACCT.SQL
   - C1_CCB_WAM_ACCTPER.SQL
   - C1_CCB_WAM_PER.SQL
   - C1_CCB_WAM_PERN.SQL
   - C1_CCB_WAM_PERP.SQL
   - C1_CCB_WAM_SA.SQL
   - C1_CCB_WAM_SP.SQL
   - C1_CCB_WAM_PREM_AST.SQL
   - C1_CCB_WAM_PREM_CUST.SQL

   Log in to the Oracle Utilities Customer Care and Billing database as SYSTEM and run the sql script :

   C1_CCB_WAM_SYNON.SQL

Oracle Utilities Customer Care and Billing Background Download Process

Run the download batch process as an initial sync or as an incremental update. Run this process for your initial synchronization.

Process	C1-WAMAS
WAM Interface Table	WAIF_ASSET
Description	C1-WAMAS is responsible for extracting the information for the integration and updating WAIF_ASSET.

Oracle Utilities Work and Asset Management Upload Process

Run WIFP_ASSET_INTERFACE to update the Oracle Utilities Work and Asset Management application tables with the Asset information extracted from Oracle Utilities Customer Care and Billing into WAIF_ASSET. WIFP_ASSET_INTERFACE was set up as part of configurations.

WAM Interface Table	WAIF_ASSET
WAM Batch Process	WIFP_ASSET_INTERFACE

Synchronizing Account/Service Agreements and Customers

A customer in Oracle Utilities Customer Care and Billing is defined as the main person on an account with an active service agreement (Pending Start, Active or Pending Stop statuses) with a Service Agreement / Service Point relationship.

When Oracle Utilities Customer Care and Billing users create new Accounts and Service Agreements, batch processing automatically creates a Customer record in Oracle Utilities Work and Asset Management. Additions and changes to Oracle Utilities Customer Care and Billing Accounts are also synchronized with Customer records in Oracle Utilities Work and Asset Management as needed.

Processing Details

- Records are extracted and uploaded into the Oracle Utilities Work and Asset Management Customer Interface table. At the scheduled run time, the Oracle Utilities Work and Asset Management batch job manager creates new Customer records containing the Customer's name and ID and associated Premise Address data and Service Agreements for the Account.
- Customer records become Active or Inactive in Oracle Utilities Work and Asset Management based on whether a currently active Service Agreement/Service Point relationship exists (SA start/stop). Oracle Utilities Work and Asset Management uses the Account ID assigned in Oracle Utilities Customer Care and Billing as the Customer ID.
- A Customer record is not created until a service agreement has been created for the Account in Oracle Utilities Customer Care and Billing.

Updating Information

As customer information is added or changed in the integration, database triggers capture these actions and write information to a change log table. The same processing as is used for new records updates fields in the Customer records.

Oracle Utilities Customer Care and Billing Background Download Process

CCB Background Process	C1-WAMEX
WAM Interface Table	WAIF_CUSTOMER
WAM Batch Process	WIFP_ASSET_INTERFACE
Guideline	C1-WAMEX extracts information from CC&B and updates WAIF_CUSTOMER through a database link. Run the download batch process as an initial sync or as an incremental update.

Oracle Utilities Work and Asset Management Upload Process

WAM Interface Table	WAIF_CUSTOMER
WAM Batch Process	WIFP_CUSTOMER_INTERFACE
Guideline	In order to upload the Customer information extracted from CC&B into WAM application tables, run WIFP_CUSTOMER_INTERFACE.

Tracking Data Changes

A change in some of the Premise, Service Point and Customer data in Oracle Utilities Customer Care and Billing populates the Change Log Table using database triggers. The Change Log Table tracks changes to the source data that must be reflected in the asset management system. The database triggers enabled on the affected tables populate the Oracle Utilities Customer Care and Billing Change Log Table with the following fields:

- ***Batch Control*** - Responsible for extracting the changes made to records on the Table and moving the data from Oracle Utilities Customer Care and Billing to the Oracle Utilities Work and Asset Management Integration tables using db link.
- ***Table*** – The table where the data has been manipulated.
- ***Primary Key Value*** – The value of the extract driver.
- ***Change Type*** – The type of change. Possible values include Insert, Update and Delete.
- ***Date/Time*** – The date and time that the change occurred.

Triggers

The following tables show a summary of the triggers used for the batch control indicated. The trigger is required in the Oracle Utilities Customer Care and Billing database to track the indicated changes.

Batch Control: C1-Oracle Utilities Work and Asset ManagementAS

Changes Tracked: Asset

Trigger Name	Table	Action Monitored	PK Values Stored	Fields Monitored
C1_CCB_WAM_SP	CI_SP	Insert/Update	SP_ID	PREM_ID SP_TYPE_CD SP_STATUS_FLG INSTALL_DT
C1_CCB_WAM_PREM_AST	CI_PREM	Update	PREM_ID	PREM_TYPE_CD PARENT_PREM_ID ADDRESS1 ADDRESS2 CITY STATE POSTAL

Batch Control: C1-Oracle Utilities Work and Asset ManagementEX

Changes Tracked: Customer

Trigger Name	Table	Action Monitored	Filter Condition	PK Values Stored	Fields Monitored
C1_CCB_WAM_ACCT	Account	Update		ACCT_ID	MAILING_PREM_ID BILL_CYC_CD SETUP_DT
C1_CCB_WAM_ACCTPER	Account Person	Insert/Update		ACCT_ID, PER_ID	MAIN_CUST_SW ACCT_REL_TYPE_CD BILL_ADDR_SRCE_FLG PER_ID
C1_CCB_WAM_PER	Person	Update		PER_ID	EMAILID
C1_CCB_WAM_PERN	Person Name	Insert/Update	new.PRIM_NAME_SW = 'Y'	PER_ID	ENTITY_NAME PRIM_NAME_SW
C1_CCB_WAM_PERP	Person Phone	Insert/Update		PER_ID, SEQ_NUM	PHONE EXTENSION

Trigger Name	Table	Action Monitored	Filter Condition	PK Values Stored	Fields Monitored
C1_CCB_WAM_PREM_CUST	Premise	Update		PREM_ID	PREM_TYPE_CD PARENT_PREM_ID ADDRESS1 ADDRESS2 CITY STATE POSTAL
C1_CCB_WAM_SA	SA	Update		SA_ID	SA_STATUS_FLG SA_TYPE_CD START_DT
C1_CCB_WAM_SASP	SASP	Insert		ACCT_ID, SA_ID, SA_SP_ID	

Normally, the PK Values contain the Prime Key of the table being monitored; however, to reduce duplicate records from being inserted in the Oracle Utilities Work and Asset Management interface tables, some of the tables have the ACCT ID in the prime key.

Note: The PLANT can be defined in 3 different places in the system. The triggers do not track changes to PLANT because this field is rarely changed. Plant is synchronized only to Oracle Utilities Work and Asset Management when the batch process is run on initial load.

For more information on data mapping between Oracle Utilities Customer Care and Billing and Oracle Utilities Work and Asset Management tables, see Appendix A.

Synchronization Between Oracle Utilities Work and Asset Management and Oracle Utilities Mobile Workforce Management

In order for this integration to work correctly, some entities must be manually synchronized between Oracle Utilities Work and Asset Management and Oracle Utilities Mobile Workforce Management.

Synchronizing Employees

Oracle Utilities Work and Asset Management Employee records correspond to Oracle Utilities Mobile Workforce Management User records, so users in Oracle Utilities Mobile Workforce Management must be defined as Employees in Oracle Utilities Work and Asset Management. Employee synchronization is needed for Oracle Utilities Mobile Workforce Management User records as well as for Timesheet functionality. Synchronizing employees is only required for Oracle Utilities Mobile Workforce Management v1.x. The base Oracle Utilities Mobile Workforce Management v2.0.1.x application does not support the timesheet integration flow; therefore, it is not required.

Manually synchronize the employee data between the Oracle Utilities Work and Asset Management and Oracle Utilities Mobile Workforce Management applications in order to use these employees as part of the integration business processes.

Description	Employee Codes. You may also need to configure user profiles for these employees in WAM so that for these employees can log in to WAM.
Used by Integration Point	Time Sheet
MWM Database table	DHTWAMEMPL
WAM Entity	SA_EMPLOYEE (Employee module)
Required Mapping	DHTWAMEMPL .EMPL_CD == SA_EMPLOYEE .EMPLOYEE_NO
	DHTWAMEMPL .EMPL_DESC == SA_EMPLOYEE. NAME_LAST + ‘, ‘ + SA_EMPLOYEE. NAME_FIRST
ABCS Name	ProcessWorkOrderOUWAMUtilitiesProvABCSImpl

Synchronizing Storeroom and Stock Codes

Manually synchronize the storeroom and Stock Codes between the Oracle Utilities Work and Asset Management and Oracle Utilities Mobile Workforce Management applications in order to use this data as part of the integration business processes. It is important to note that Oracle Utilities Mobile Workforce Management does not support special characters such as “-“ in stock codes or Storeroom values. When creating these codes in Oracle Utilities Work and Asset Management do not use special characters. Synchronizing stock codes is only required for Oracle Utilities Mobile Workforce Management v1.x. The base Oracle Utilities Mobile Workforce Management v2.0.1.x application does not support capturing the material used as part of the completion integration flow; therefore, it is not required.

Description	Stock Code and Storeroom.
Used by Integration Point	Work Order
MWM Database table	DHTWAMSTOCK
WAM Entity	SA_CATALOG (Master Catalog records) and SA_STOREROOM
Required Mapping	DHTWAMSTOCK.stock_cd == SA_STOREROOM.stock_code
	DHTWAMSTOCK.stock_desc == SA_CATALOG.stock_desc
	DHTWAMSTOCK.storeroom == SA_STOREROOM.storeroom
	DHTWAMSTOCK.catalog == SA_CATALOG.unit_of_issue

Synchronizing Vendors

Manually synchronize the Vendor between the Oracle Utilities Work and Asset Management and Oracle Utilities Mobile Workforce Management applications in order to use this data as part of the integration business processes. Synchronizing vendor codes is only required for Oracle Utilities Mobile Workforce Management v1.x. The base Oracle Utilities Mobile Workforce Management v2.0.1.x application does not support capturing direct charges as part of the completion integration flow; therefore, it is not required.

Description	Vendor Codes
Used by Integration Point	Work Order
MWM Database table	DHTWAMVENDOR
WAM Entity	SA_VENDOR (Vendor module)
Required Mapping	DHTWAMVENDOR.vendor_cd == SA_VENDOR.vendor_code
	DHTWAMVENDOR.vendor_desc == SA_VENDOR.vendor_name

Chapter 10: Configuration Guidelines

This chapter provides detail into the required configuration settings for the integration, and discusses how to:

- Choose a configuration scenario for your business
- Set up Oracle Utilities Customer Care and Billing
- Set up Oracle Utilities Work and Asset Management
- Set up Oracle Utilities Mobile Workforce Management v1.x
- Set up Oracle Utilities Mobile Workforce Management v2.x
- Set up the Field Work Process Integration Pack
- View EBO Implementation Maps

This chapter provides post-install configuration instructions. **For more information** about installation and deployment of your PIP, see *Oracle Fusion Middleware Installation and Upgrade Guide* for Oracle Application Integration Architecture Foundation Pack.

Choosing a Configuration Scenario for your Business

This integration supports several business models. The configuration of the product and its integration points is slightly different for each business model. This section is intended to help you decide which business model is likely to work best for your organization and which technical configuration is best suited to your chosen business model.

Every configuration scenario uses Process Integration Pack for Oracle Utilities Field Work to manage business processes and the flow of data between the applications.

Step by step configuration for each scenario is described in following sections.

Note: Some items are required for the general configuration of the participating application, but are not specifically required for the integration. You may already have these items configured if you use the application separately from the integration. Set these items according to the needs of your business and then populate the corresponding DVM accordingly.

For more information about populating the DVMs, see Domain Value Maps.

Scenario 1: Integration + CC&B, MWM & WAM

Scenario 1: Integration + 3 edge applications are used to automate order to completion and billing.
WAM Service Requests
CC&B Field Activities
MWM Field Orders (v1.x) / MWM Activities (v2.x)

Application Product	Managed Functions	Notes
Oracle Utilities Customer Care and Billing	Field Activities are created or updated by customer request, customer service representative action, automated process within the application, or from receiving integrated orders originated by other applications. These orders are sent to, or received from, the integration product as required by the business process.	Also configure customer and asset data synchronization - send.
Oracle Utilities Work and Asset Management	Service Requests are created, updated, and in some cases completed. These orders are sent to, or received from, the integration product as required by the business process.	Also configure customer and asset data synchronization - receive.
Oracle Utilities Mobile Workforce Management	Field Orders/Activities originating from other applications are updated and completed. Pickup orders, related to other orders, are created. These orders are sent to, or received from, the integration product as required by the business process.	
Process Integration Pack for Oracle Utilities Field Work	Order information and actions are received from the requester application. The orders are routed to the provider application(s) involved in the business process, based on the type of order and the action required. Information is enriched and transformed as needed by the participating applications. Error information is logged and communicated.	

Scenario 2: Integration + CC&B & MWM

Scenario 2: Integration + 2 edge applications are used to automate order to completion
CC&B Field Activities
MWM Field Orders (v1.x) / MWM Activities (v2.x)

Application Product	Managed Functions
Oracle Utilities Customer Care and Billing	Field Activities are created or updated by customer request, customer service representative action, automated process within the application, or from receiving integrated orders originated by other applications. These orders are sent to, or received from, the integration product as required by the business process.

Scenario 2: Integration + 2 edge applications are used to automate order to completion CC&B Field Activities MWM Field Orders (v1.x) / MWM Activities (v2.x)	
Application Product	**Managed Functions**
Oracle Utilities Mobile Workforce Management	Field Orders/Activities originating from other applications are updated and completed. 'Pickup' orders, related to other orders, are created. These orders are sent to, or received from, the integration product as required by the business process.
Oracle Utilities Work and Asset Management	Not Used.
Process Integration Pack for Oracle Utilities Field Work	Order information and actions are received from the requester application. The orders are routed to the provider application(s) involved in the business process, based on the type of order and the action required. Information is enriched and transformed as needed by the participating applications. Error information is logged and communicated.

Scenario 3: Integration + WAM & MWM

Scenario 3: Integration + 2 edge applications are used to automate order to completion MWM Field Orders (v1.x) / MWM Activities WAM Service Requests	
Application Product	**Managed Functions**
Oracle Utilities Customer Care and Billing	Not Used.
Oracle Utilities Mobile Workforce Management	Field Orders originating from other applications are updated and completed. Pickup Orders, related to other orders, are created. These orders are sent to, or received from, the integration product as required by the business process.
Oracle Utilities Work and Asset Management	Service Requests are created, updated, and in some cases completed. These orders are sent to, or received from, the integration product as required by the business process.
Process Integration Pack for Oracle Utilities Field Work	Order information and actions are received from the requester application. The orders are routed to the provider application(s) involved in the business process, based on the type of order and the action required. Information is enriched and transformed as needed by the participating applications. Error information is logged and communicated.

Scenario 4: Integration + WAM & CC&B

Scenario 4: Integration + 2 edge applications are used to automate order to completion and billing
CC&B Field Activities
WAM Service Requests

Application Product	Managed Functions	Notes
Oracle Utilities Customer Care and Billing	Field Activities are created or updated by customer request, customer service representative action, automated process within the application, or from receiving integrated orders originated by other applications. These orders are sent to, or received from, the integration product as required by the business process.	Also configure customer and asset data synchronization - send.
Oracle Utilities Mobile Workforce Management	Not Used.	
Oracle Utilities Work and Asset Management	Service Requests are created, updated, and in some cases completed. These orders are sent to, or received from, the integration product as required by the business process.	Also configure customer and asset data synchronization - receive.
Process Integration Pack for Oracle Utilities Field Work	Order information and actions are received from the requester application. The orders are routed to the provider application(s) involved in the business process, based on the type of order and the action required. Information is enriched and transformed as needed by the participating applications. Error information is logged and communicated.	

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.

Scenario 1: CC&B – MWM - WAM

In this scenario, the integration product coordinates the flow of information between three Oracle Utilities application products based on configuration settings described. All three application products and the integration product must be configured to enable this business scenario. This section of the document describes the configuration required for one of the application products.

Reminder: In addition to the business process information flows orchestrated by the integration product, you must also configure customer and asset data synchronization between Oracle Utilities Customer Care and Billing and Oracle Utilities Work and Asset Management.

Complete the following steps in Oracle Utilities Customer Care and Billing to configure the integration:

1. Set up a synchronization database link between Oracle Utilities Customer Care and Billing and Oracle Utilities Work and Asset Management to support synchronization of customer and asset data.
2. Configure the admin tables to support integration.
3. Configure XAI to pass messages with integration layer.
4. Start the Multi-Purpose Listener (MPL) and insure message exchange between systems.

To configure Oracle Utilities Customer Care and Billing for Scenario 1:

1. **Configure customer and asset data synchronization.**
    - Establish a database link
    - Create integration triggers
    - Set up and schedule background processes
2. **Map to Plant.**
3. **Configure administrative menu tables.**
    - Characteristic Type
    - Algorithm
    - Field Activity Type
    - To Do Roles
    - Slot Group
    - Customer Contact Type
    - Service Provider
    - Notification Download Type
    - XML Application Integration (XAI)
    - Notification Download Profile
    - Field Activity Integration Algorithm
    - Feature Configuration

- Dispatch Group
- Field Service Control

4. **Configure main menu tables.**
    - Stock Location

Configuring Customer and Asset Data Synchronization

You must synchronize all customer and service point data from Oracle Utilities Customer Care and Billing to Oracle Utilities Work and Asset Management in order for rest of the integration between these products to function correctly.

Set up Feature Configuration as described in this guide before you run data synchronization processes.

For more information on how to set up the processes involved in the data synchronization, see Data Synchronization.

Synchronization Schedule

Schedule the processes so that the synchronization of data is done at regular intervals based on your business requirements. If the customer and service point data is not kept up to date you may experience errors within the integrated business processes included within the Process Integration Pack for Oracle Utilities Field Work Integration product.

Mapping to Plant

One important decision to make about the integration and mapping is how to map Oracle Utilities Customer Care and Billing to Plant in Oracle Utilities Work and Asset Management.

Note: You cannot define multiple plants in Oracle Utilities Customer Care and Billing if Oracle Utilities Mobile Workforce Management is part of your integration.

Multiple Plants

The integration between Oracle Utilities Customer Care and Billing and Oracle Utilities Work and Asset Management is structured to support multiple plants in Oracle Utilities Work and Asset Management (within one database schema). The integration between Oracle Utilities Work and Asset Management and Oracle Utilities Mobile Workforce Management does not support multiple plants.

The intent of setting up multiple plants is to segregate the data so that within a single database instance users signed into Plant 01 cannot see records in Plant02 and so on. The plant column is a primary key on all Oracle Utilities Work and Asset Management database tables.

In most cases where multiple plants are used, the data is being segregated by organization or geographic location. For example, a client may use a single database instance for two maintenance organizations in different parts of a state - each location may be its own plant. In another example, a client in a single geographic region may segregate the gas and electric data into different plants. For the latter, a single Premise in Oracle Utilities Customer Care and Billing (with both gas and electric Service Points) must have two corresponding Asset records in Oracle Utilities Work and Asset Management - one for each Plant. The associated Service Point for gas only resides in the Oracle Utilities Work and Asset Management Plant for gas, and the Service Point for electric only resided in the Oracle Utilities Work and Asset Management Plant for electric.

Because a multiple plant configuration impacts whether one or more Asset records need to be created for a single Premise record, the value for Plant must be defined only at the Service Point in Oracle Utilities Customer Care and Billing. The Premise and Account records associated to the Service Point use the value for Plant designated on that Service Point.

Mapping in Oracle Utilities Customer Care and Billing

Oracle Utilities Customer Care and Billing supports several ways to define plant. Based on your business requirements, define the Plant Source and Plant Value option types in Feature Configuration according to the following:

Plant Configuration (Single or Multiple)	Plant Source Option Type	Plant Value Option Type	Comments
Single	Feature Configuration (FECO)	Enter a value for the plant such as **PL1** in the Value column for the Plant Value Option Type. Note: In WAM, Plant field is only 3 characters long.	Plant is defined in the Plant Value option type in Feature Configuration.
Multiple	Service Point Operations Area (OPAR)	Enter a Field Service Class in the Value column for the Plant Value Option Type. The defined Field Service Class is used to retrieve the Plant Value defined in the Operations Area on the Service Point. Note: Field Service Class and Operations Area must be defined in the CC&B Control Tables. - Step 1: Navigate to Admin Menu > Operations Area and define operations areas with values for each plant. - Step 2: Navigate to Admin> Field Service Class and reference the plant Operations Areas defined in Step 1.	Plant is defined in the Operations Area for the Service Point with Field Service Class = Plant Value defined in Feature Configuration. Use this configuration if you choose to use a separate plant for each Geographic Area or for each Service Type. This is an alternative to using SP Characteristic. Use one configuration or the other. Not both.

Plant Configuration (Single or Multiple)	Plant Source Option Type	Plant Value Option Type	Comments
Multiple	Service Point Characteristic (SPCH)	Enter a Characteristic Type in the Value column for the Plant Value Option Type. The Characteristic Type is used to retrieve the Plant Value defined in the Characteristic on the Service Point. The Characteristic Type must also be defined in the CC&B Control Table and link to the SP Types to be used. - Step 1: Navigate to Admin Menu > Characteristic Type and define a characteristic type with predefined value for plant. For each plant, enter a predefined characteristic value. Set the Characteristic Entity as **Service Point** - Step 2: Navigate to Admin Menu > SP Type > SP Characteristic and define a SP Characteristic referencing the characteristic defined in Step 1. - Step 3: Your implementation should design and run a process that populates Plant Characteristic value on every Service Point.	Plant is defined in the Characteristic value for the Service Point with Characteristic Type = Plant Value defined in Feature Configuration. Use this configuration if you choose to use a separate plant for each. Service Point Type or another criteria on SP level This is an alternative to using Operations Area. Use one configuration or the other. Not both. Defining plant on the SP Characteristic allows for more flexibility. Here there is also space to specify latitude/longitude, SP Type, or any attribute on SP.

For more information about creating these settings in Oracle Utilities Customer Care and Billing, refer to the Oracle Utilities Customer Care and Billing user documentation titled “Feature Configuration.”

Note: The Plant information sent to Oracle Utilities Work and Asset Management from Oracle Utilities Customer Care and Billing does not use the plant information stored in the AIA Configuration Properties file. Only the Timesheet integration uses the plant information in this file.

Configure Admin Tables

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

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

CIS Division

A CIS division is associated with a jurisdiction. The definition of a jurisdiction is a geographic-oriented entity with unique business rules. For example, if you conduct business in California and Nevada, and each state has different collection rules, you will need a separate jurisdiction for each state. Set up a CIS division for each jurisdiction in which you conduct business.

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

Navigation	Guideline	Corresponding DVM
Admin Menu > CIS Division	Create the divisions required by your business and populate the necessary information if these records are not created yet.	FS_Order_Division

Characteristic Types

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

Characteristic Type	Guideline	Characteristic Entity Collection	Comment
Field Activity ID	To capture the Field Activity ID for the NDS created for outbound messages, Create a foreign key characteristic type (if you do not already have one defined for Field Activity ID).	Include ***Notification Download Staging*** in the characteristic entity collection.	Define this as a parameter in the algorithm used to create NDS records for outage calls.
Force Appointment	This characteristic can be used if you want to indicate if appointment was set manually on this Field Activity.	Include ***Field Activity*** in the characteristic entity collection.	Predefined characteristic type with all the values defined.
Phone Number	This characteristic is used to override when the PHON parameter is defined in Feature Config and a phone value is provided on the Field Activity.	Include ***Field Activity*** in the characteristic entity collection.	Adhoc characteristic type.
Service Request ID	Create the characteristic type CM-SOID used to store the common ID of an order associate with a Billable Charge Line. Also define the CCB OrderIDCharacteristicTypeCode in the AIAConfigurationProperties.xml file to be the created Service Request ID Characteristic Type.	Include ***Billable Charge Line*** in the characteristic entity collection.	Adhoc characteristic type.

Note: CM-SOID is the code used when invoice information is sent from Oracle Utilities Work and Asset Management to Oracle Utilities Customer Care and Billing to create a billable charge. If you use a different characteristic type, change the reference for CC&B .OrderIDCharacteristicTypeCode">CM-SOID</Property> in the AIAConfigurationProperties.xml file as well.

Feature Configuration

To manage feature configuration:

1. **Navigate to Admin Menu > Feature Configuration.**
2. **Create new feature configuration with *FA Integration* as the Feature Type and enter required option types and values for the service provider you have configured for this integration.**
3. **Populate entries for the applicable options.**

Option	Notes
Allow Forced Appointments	Set to **Y** if you use MWM appointment functionality.
Allow Manual Appointment	Set to **Y** if you use MWM appointment functionality.
Allow Manual Appointment Cancellation	Set to **Y** if you use MWM appointment functionality.
Allow Multiple Reservations	Set this to **N**.
Allow Narrowing Of Appointment Window	Set to **Y** if you use MWM appointment functionality.
Reservation Characteristic Type	This option is not applicable for this integration.
Service Provider	Service Provider defined for Process Integration Pack for Oracle Utilities Field Work
Appointment Java Class Interface	The system provides the java class com.splwg.wfmi.workforce.SPLWFMSystem for real-time appointment logic. Applicable if appointments functionality needed
Intermediate Status To Skip Message	Populate FA Intermediate Status to indicate that Field Activity is created or updated by an external system. For the base product settings set this value to Created/Changed by external system.
Plant Source	Mapped to the Plant in WAM.
Plant Value	Mapped to the Plant in WAM.
Phone Number Type - Home	This option type indicates the user defined home phone number type code. This is an optional field. For this Option Type, the Option Value must be a valid Phone Number Type defined in the Phone Type Table. Applicable only if integration with WAM is available. No need to set it up for integration between CC&B and-MWM only.
Phone Number Type - Business	This option type indicates the user defined business phone number type code. This is an optional field. For this Option Type, the Option Value must be a valid Phone Number Type defined in the Phone Type Table. Applicable only if integration with WAM is available. No need to set it up for integration between CC&B and-MWM only.
Phone Number Type - Fax	This option type indicates the user defined fax phone number type code. This is an optional field. For this Option Type, the Option Value must be a valid Phone Number Type defined in the Phone Type Table. Applicable only if integration with WAM is available. No need to set it up for

Option	Notes
	integration between CC&B and-MWM only.
Account Relationship Type – Company Contact	This option type indicates the user defined account relationship type code for the contact person. This is an optional field. For this Option Type, the Option Value must be a valid Account Relationship Type defined in the Account Relationship Type Table. Applicable only if integration with WAM is available. No need to set it up for integration between CC&B and-MWM only.
Review Hi-Low	If you do want to use invoke Hi/low review for meter reads passed from an external system, set this option to **Y**.
Intermediate Status to Prevent FA Cancel	Create an entry in the option collection for any FA Intermediate Status value that is set to prevent the system from automatically canceling a Field Activity.
To Do Type for Negative Acknowledgment	To Do Type used to create a To Do Entry when a negative acknowledgment is received. The example provided with the system - TD-FARSP To Do Type
Message ID Database Sequence Name	Sequence field used in the database to generate message ID. The base application uses CI_WFM_MSGID_SEQ sequence.
Default Days Of Available Appointment	A number defined by the implementation.
Phone Characteristic	If the Override Phone option is defined, the system overrides the Account Phone Number with value defined as characteristic on the FA.
Allow Slot group	Set to **Y** if you want to pass slot group to MWM for Appointments. If this value is not passed to MWM, Integration reads a default slot group from AIAConfigurationProperties.xml file. The lookup that controls the values of the slot group that is being passed from CCB is C1_TIME_OF_DAY

Feature Configuration - Messages

If the feature exists to interface with an external system, define the mapping between error and warning codes in the external system and our system.

Navigate to **Admin Menu, Feature Configuration** and open the **Messages** tab.

For each message that may be received from an external system, define the **External Message Category** and **External Message Code** to identify the message.

Map the exact contents of the ExernalMessageCode received from Oracle Utilities Mobile Workforce Management or Oracle Utilities Work and Asset Management to the External Message Code defined on the **Messages** tab in Feature Configuration.

A corresponding message must be defined in the system message tables. For each message, identify the Message Category and Message Number. The Message Category for new messages is 90000 ***by default.*** Numbers 90000 or higher are designated for custom use so as to avoid being overwritten in an upgrade.

FA Type

When you set up your Field Activity Types, keep in mind that a Field Activity cannot have more than 7 steps if it will be completed by an external system.

Following is the list of supported FA Types:

Order Type Description	Oracle Utilities Customer Care and Billing Field Activity Type Configuration
Connect SP	Step 1: Connect SP
Install Meter	Step 1: Connect SP Step 2: Install Meter
Turn On Meter	Step 1: Turn On Meter
Turn Off Meter	Step 1: Turn Off Meter
Remove Meter	Step 1: Remove Meter Step 2: Disconnect SP
Disconnect SP	Step 1: Disconnect SP
Read Meter	Step 1: Read Meter
Install Item	Step 1: Connect SP Step 2: Install Item
Turn On Item	Step 1: Turn On Item
Turn Off Item	Step 1: Turn Off Item
Remove Item	Step 1: Remove Item Step 2: Disconnect SP
Replace Meter	Step 1: Remove Meter Step 2: Install Meter
Replace Item	Step 1: Remove Item Step 2: Install Item

Additional configuration maybe needed to support other order types.

Note that appointments are not supported in Oracle Utilities Work and Asset Management, so unless Oracle Utilities Mobile Workforce Management is part of the integration, Appointment Booking should not be set to **Required for Dispatch**.

Navigation	Guideline	Corresponding DVM
Admin Menu > Field Activity Type	Create the types required by your business and populate the necessary information to define your set of Field Activity Types required for your business.	FS_Order_TypeCode.

To Do Type/ To Do Role

Create the To Do Type, To Do Role, and Error Message (as needed) to be used to create the following:

- Warn the user when multiple accounts are linked to a Service Point (To Do Entry)

Appropriate To Do roles must be created to handle To Do entries created for this To Do Type coming from the external systems. Navigate to the To Do Type portal under the Admin menu to create this role.

Customer Contact Class and Type

Define the customer contact class and type to be used when Oracle Utilities Work and Asset Management sends a customer information creating customer contacts for the following events:

- Extracting customer data updates
- When Service Requests become field activities

Navigate to the Customer Contact Class and Customer Contact Type modules under the Admin menu to make these updates.

To Do Role for Customer Contact

Create an appropriate To Do role to receive To Do entries for incoming messages from the external system. Oracle Utilities Work and Asset Management sends Customer Contact and To Do information to Oracle Utilities Customer Care and Billing when customer or service point information is updated for the following events:

- Extracting customer data updates
- When Service Requests become field activities

The value of meter read source is controlled within the configuration file under the ABCS Name and Property Name ToDoRole.

Navigation	Value	ABCS Name
Admin Menu > To Do Role	Define To Do Role to use when assigning To Do Entries created as result of customer information updates sent from an external system.	CreateCustomerInteractionOUWAMUtilitiesReqABCSImpl Property Name: ToDoRole

Bill Charge Line Type

Bill charge line types simplify the creation of billable charges in Oracle Utilities Customer Care and Billing. Each line type contains values that are defaulted onto the line details associated with the uploaded billable charges.

The codes defined here must exactly match values in the DVM for the invoice charge line type code indicated.

Navigation	Field	Description	Corresponding DVM
Admin Menu > Bill Charge Line Type	**Bill Charge Line External Type**	The code value for the type of bill charge line.	FS_Invoice_ChargeLineTypeCode
	Description	An easily recognizable description of this bill charge line.	
	Currency Code	Define the currency to be defaulted onto billable charge upload lines that reference this line type.	

Navigation	Field	Description	Corresponding DVM
	Show on Bill	Define the value to be defaulted into the Show on Bill indicator on billable charge upload lines that reference this line type.	
	App in Summary	Define the value to be defaulted into the App in Summary indicator on billable charge upload lines that reference this line type. This determines the indenting, indicating summary information or not, of the line item on a bill.	
	Memo Only, No GL	Define the value to be defaulted into the Memo Only, No GL indicator on billable charge upload lines that reference this line type.	
	Distribution Code	Define the values to be defaulted into the Distribution Code field on billable charge upload lines that reference this line type.	

Item Type

Items are any type of equipment, other than meters. Every item has an item type that defines characteristics common to all items with this type.

The codes defined here must exactly match values in the DVM for item type code indicated.

Navigation	Guideline	Corresponding DVM
Admin Menu > Item Type	Define the item types that are used in the integration.	FS_Order_ItemTypeCode

Meter Configuration Type

Every meter configuration must reference a meter configuration type. The meter configuration type indicates the valid (required or optional) unit of measure and time of use registers for the configuration.

The codes defined here must exactly match values in the DVM for meter configuration type indicated.

Navigation	Guideline	Corresponding DVM
Admin Menu > Meter Configuration Type	Define your meter configuration types.	FS_Order_MeterConfigurationType

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 exactly match values in the DVM for meter type code indicated.

Navigation	Guideline	Corresponding DVM
Admin Menu > Meter Type	Define your meter types.	FS_Order_MeterTypeCode

Operations Area

When you set up a service point, define the operation areas that manage its fieldwork.

The codes defined here must exactly match values in the DVM for disconnect location code indicated.

Navigation	Guideline	Corresponding DVM
Admin Menu > Operations Area	Define your operations area codes.	FS_Order_OperationsArea

Disconnect Location

When a service point is disconnected from the supply source, a disconnect location must be specified. This location defines where service was severed. It also controls the type of Field Activity generated to reconnect service.

The codes defined here must exactly match values in the DVM for disconnect location code indicated.

Navigation	Guideline	Corresponding DVM
Admin Menu > Disconnect Location	Define your disconnect location codes.	FS_Order_DisconnectLocationCode

Meter Read Source

The FA Completion process populates the Meter Read Source on meter reads passed from the workforce management system. In order to use the base product FA completion, create this meter read source.

The value of meter read source is controlled within the configuration file where:

ABCS Name = ProcessWorkOrderCompleteOUMWMUtilitiesReqABCSImpl

Property name = Default.MeterReadSource

Navigation	Guideline	AIA Config File
Admin Menu > Meter Read Source	Define the Meter Read Source you want to use on meter reads added to CC&B from an external system.	Default.MeterReadSource

FA Integration Algorithm

To integrate with external systems, create an algorithm for FA Integration.

Set the first two parameters as per your business practice. Use FA ID Characteristic Type defined for this integration (see Characteristic Types section).

Navigation	Create Algorithm For	Parameters	Suggested Value
Admin Menu >Algorithm	FA-INT	Postpone FA Interface After Appointment is Booked	N (if MWM is not integrated) Y (if MWM is integrated)

Navigation	Create Algorithm For	Parameters	Suggested Value
		Appointment Processing Using Orders	Y (Appointments might be added and canceled by the workforce management system as part of order processing.)
		FA ID Characteristic Type	Use the same value as defined under Characteristic Type.

Information About this Algorithm Type

This FA integration algorithm creates XAI outbound messages (NDS records) to notify an external system if an FA is created, changed or canceled.

For each NDS record created

- The service provider (SPr) on the external system for the dispatch group is used.
- The NDS type used is the one associated with the download condition flag value indicated in the details below.
- A context entry is created for the FA ID. This is needed to extract the FA details
- If you populate FA ID Char Type, (parm 1) the FA ID is also linked as a char, enabling you to easily navigate to the FA from the NDS
- A context entry is created for a unique outgoing Message ID for the external system. Message ID is calculated using a DB sequence whose name is referenced in the option Message ID Database Sequence Name on the external system feature config.
    - The algorithm creates an NDS as follows:
    - FA creation where the Intermediate Status is not in the option Intermediate Status to Skip Message on the external system feature config:
    - If the Appt Booking flag on the FA type is ***Req'd For Dispatch*** and the Postpone FA Interface After Appt Is Booked (parm 3) is ***Y*** and the FA is not associated with an appointment, no message is created. It is interfaced when the appointment is booked. This is the recommended setup for FA Types that require appointment to be booked.
    - If the FA type doesn't require an appt for dispatch, a record is created. The download condition is FA Creation.
    - For FA cancellation, online or batch, the download condition is FA Cancellation. If the FA is has an appointment and the Appointment Processing using orders (parm 4) is ***N***, a second NDS is created to cancel the appointment.

Certain FA Changes

- Changing the FA type from one that was not eligible to be interfaced to one that is eligible. The download condition is FA Creation.
- Changing the dispatch group on the FA to one that references a different external system sends an FA Cancel message to the previous external system and an FA Creation message

to the new external system.

- Populating the appointment period when Postpone FA Interface After Appt Is Booked is Y. The download condition is FA Creation.
- Changing the schedule date. The download condition is FA Rescheduled.
- Completing an FA in Oracle Utilities Customer Care and Billing sends an FA Cancel message. Either the FA Cancellation or the Appointment Cancel using the FA Cancel download condition is used based on the cancel FA rules previously described.
- Other changes besides a change to External ID or Intermediate Status where the Intermediate Status is not in the option Intermediate Status to Skip Message on the external system feature configuration. The download condition is FA Changed.

Note: The external ID and intermediate status fields only change after info is received from the external system so our system does not need to send a message in this case.

- For the situation where many records are generated for the same FA in a short period of time, the algorithm attempts to manage the records. Before creating an FA Cancel or FA Change, the algorithm checks for an existing NDS record for the same SPr and FA ID in Pending or Retry status

For FA Cancel

- If an FA Create message is found, it is canceled and no new message is created.
- If an FA Change message is found, it is canceled and a new FA Cancel record is created.
- If no other message is found, a new FA Cancel record is created.

For FA Change

- If an FA Create or an FA Change message is found, no new record is created.
- If no other message is found, a new FA Change record is created.
- If Create Log Entry (parm 2) is Y, an FA log record is created for the following events:
    - Status change; log type is FA Status Change
    - Intermediate status change; log type is FA Intermediate Status Change
    - External ID change; log type is FA External ID Change
    - Appt period change (and populated); log type is Appointment Booked
    - Appt period reset; log type is Appointment Canceled

Dispatch Group

A dispatch group is a logical group of representatives located at an operations area. When a Field Activity is created, the system assigns it to a dispatch group based on the type of activity, the type of service point, and the operations area that manages the service point.

Create a dispatch group to be used for field activities that are to be integrated with the other participating applications.

The codes defined here must exactly match values in the DVM for Dispatch Group indicated.

Navigation	Guideline	Corresponding DVM
Admin Menu > Dispatch Group	Reference the FA integration algorithm and Feature Configuration previously defined. Select the ***Allow Dispatch*** check box to mark the dispatch group as eligible for dispatch.	FS_Order_DispatchGroup

Representative

A representative is the individual (or equipment) that performs Field Order activities. This is the Representative to be used when Oracle Utilities Mobile Workforce Management or Oracle Utilities Work and Asset Management sends an order completion message to Oracle Utilities Customer Care and Billing.

Add Representative to the Dispatch Group you are using for the Process Integration Pack for Oracle Utilities Field Work.

Add this value to AIAConfigurationProperties.xml file according to the following example:

Navigation	Value	ABCS Name
Admin Menu > Representative	<Property name=" CCB.Representative.FACompletion ">CREW1</Property>	ProcessWorkOrderOUCCBUtilitiesProvABCSImpl
Only used if the **WAM.Pass.Representative.Information** property in **ProcessWorkOrderCompleteOUWAMUtilitiesReqABCSImpl** is set to false and the Completion Request is coming from Oracle Utilities Work and Asset Management Or **MWM.Pass.Representative.Information** property in **ProcessWorkOrderCompleteOUMWMUtilitiesReqABCSImpl** is set to false and the Completion Request is coming from Oracle Utilities Mobile Workforce Management.		

Service Point Type

Every service point must reference a service point (SP) type. The SP type controls almost all aspects of the service point behavior (for example, the type of Field Activity that may be dispatched to it, the type of service agreement that may be linked to it, the type of meter that may be installed at it).

Create the service point types required by your business and populate the necessary information.

Navigation	Guideline	Corresponding DVM
Admin Menu > SP Type	Define valid service point types.	FS_Order_ServicePointTypeCode

Billable Charge SA Types

Create a SA Type to be used for the creation of a Billable Charge SA if the account does not have an existing billable Charge SA.

The codes defined here must exactly match values in the AIAConfigurationProperties.xml file indicated.

Navigation	Value	AIAConfigurationProperties.xml
Admin Menu >SA Type	<Property name=" CCB.BillableChargeSATypeCode "> ZZONEOFF </Property> <Property name=" CCB.SAStartOption "></Property>	CreateInvoiceOUCCBUtilitiesProvABCSImpl

Billable Charge SA Start Option

If a SA Start Option is needed to create a Billable Charge SA, make sure this is also created in Oracle Utilities Customer Care and Billing.

The code defined here must exactly match values in the AIAConfigurationProperties.xml file indicated. This is an optional value. If your implementation does not use SA Start option, leave it blank.

Navigation	Value	AIAConfigurationProperties.xml
Admin Menu >SA Type	<Property name=" CCB.SAStartOption "></Property>	CCB.SAStartOption

Field Service Control

In order to ensure that the appropriate dispatch group is referenced on the appropriate field activities, set up field service control records to indicate the default dispatch group. A record must be created for every combination of operations area, SP type and the previously defined Field Activity type(s).

Stock Locations

A stock location is a physical or logical location at which meters and/or items are stored while they are not installed at a service point.

The codes defined here must exactly match values in the AIA configuration file for the Item and/or Meter Stock Location Codes indicated.

Navigation	Value	Corresponding DVM
Main Menu > Meter > Stock Location	Define stock location codes.	FS_ItemStockLocationCode FS_MeterStockLocationCode

Note: Mixed case, hyphens and spaces cannot be used in Oracle Utilities Mobile Workforce Management code tables. This limitation affects the Oracle Utilities Customer Care and Billing values passed to Oracle Utilities Mobile Workforce Management such as meter badge numbers. Make sure your implementation is using all capital letters for badge numbers in Oracle Utilities Customer Care and Billing.

Slot Group

The slot group in Oracle Utilities Customer Care and Billing application is used to indicate the time of day for which the appointment is needed. It maps to Slot group in Oracle Utilities Mobile Workforce Management v1.x and Appointment Booking Group in Oracle Utilities Mobile Workforce Management v2.x. It is controlled by lookup C1_TIME_OF_DAY.

Geographic Type

If your company uses geographic coordinates, you may setup a geographic type for each type of geographic coordinate you capture on service points. This information is extracted from Oracle Utilities Customer Care and Billing when a FA is created or updated and passed to Oracle Utilities Mobile Workforce Management.

The codes defined here and used on service points must exactly match values in the AIA configuration file for the geographic coordinates.

Navigation	Value	AIAConfigurationProperties.xml
Admin Menu > Meter > Geographic Type	Define geo types used for geographic coordinates	OUCCB.GeoCodeLatitude OUCCB.GeoCodeLongitude

Configure Notification Download and XAI

The following sections identify settings required to communicate using XAI.

XAI Sender for Service Order

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

Create a new XAI Sender which points to the Oracle Utilities Customer Care and Billing Requester ABCS for the Field Order integration point.

1. **Navigate to Admin Menu, XAI Sender.**
2. **Enter a unique XAI Sender and Description.**
3. **Populate values as follows:**

   Invocation Type = ***MPL***

   XAI Class = ***HTTPSNDR***. This is the class for Real-time sender to route messages using HTTP.

   MSG Encoding = ***UTF-8 message encoding***

Select the ***Active*** check box.

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: "ProcessOrder"***
    - **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 (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 Appointment Requester ABCS.

      For example:

      http://soa-server:soa-port/soa-infra/services/default/ProcessWorkOrderOUCCBUtilitiesReqABCSImpl/ProcessWorkOrderOUCCBUtilitiesReqABCSImpl
    - **Character Encoding** – ***UTF-8***
    - **HTTP Header – *Content-Type:text/xml;charset=UTF-8***

XAI Sender for Appointments

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

Create a new XAI Sender which points to the CC&B Requester ABCS for Appointments integration point.

1. **Navigate to Admin Menu, XAI Sender.**
2. **Enter a unique XAI Sender and Description.**
3. **Populate values as follows:**

   Invocation Type = ***MPL***

   XAI Class = ***HTTPSNDR***. This is the class for Real-time sender to route messages using HTTP.

   MSG Encoding = ***UTF-8 message encoding***
4. **Select the** *Active* **check box.**
5. **Navigate to the context tab and set the 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: "GetWOLineApptWinAvail"***
- **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** (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 Appointment Requester ABCS

For example: http://soa-server:soa-port/soa-infra/services/default/GetWOLineApptWinAvailOUCCBUtilitiesReqABCSImpl/GetWOLineApptWinAvailOUCCBUtilitiesReqABCSImpl

- **Character Encoding** – ***UTF-8***

XAI Route Type

Create the following route types for communicating with integration layer referencing XAI senders previously created for Field Activity and Appointment.

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

Create a new XAI Route Type which points to the CC&B Requester ABCS for Appointments integration point.

1. **Navigate to Admin Menu, XAI Route Type.**
2. **Enter a unique XAI Route Type and Description.**
3. **Populate values as follows:**

   Select the ***Receive Acknowledge*** check box if the system expects to receive a synchronous response to outgoing messages of this type.

   Select the ***Post Response*** check box if a synchronous response to an outgoing message requires something to occur in the system. If the box is checked, a response to a message of this type causes an XAI upload staging record to be created. That record is processed along with other uploaded messages, to invoke an appropriate service.

Configuration values for XAI Route Type include:

XAI Route Type	XAI Sender	XSL Request	XSL Response	Post Response
Created Order	Reference XAI Sender – Service Order defined in	C1FieldServiceIntOrderCreate.xsl		Checked

XAI Route Type	XAI Sender	XSL Request	XSL Response	Post Response
	the previous step			
Canceled Order	Reference XAI Sender – Service Order defined in the previous step	C1FieldServiceIntOrderUpdate.xsl		Checked
Order Update	Reference XAI Sender – Service Order defined in the previous step	C1FieldServiceIntOrderCancel.xsl		Checked
Find Available Appointments		C1FieldWorkIntQueryAppointmentSlotsRequest.xsl	C1FieldWorkIntQueryAppointmentSlotsResponse.xsl	Unchecked

Note: Default XSL transformation scripts that perform the data filter and initial mapping between Oracle Utilities Customer Care and Billing outbound message and the integration layer have been provided by the product. If your implementation has different requirements, create your own XSL transformation scripts and reference your new XSLs on the appropriate XAI Route Types.

Note: To provide Oracle Utilities Mobile Workforce Management with additional Information related to activities, Oracle Utilities Customer Care and Billing can be configured with additional XAI Route types. Refer to Chapter 13: Custom Extensions for Oracle Utilities Customer Care and Billing and Oracle Utilities Mobile Workforce Management, section -Characteristics and Geographic Values XSL Template in Oracle Utilities Customer Care and Billing for information on how to use these new route types.

External System

Create a new External System for the Process Integration Pack for Oracle Utilities Field Work.

1. **To define an External System, open** Admin Menu, External System**.**
2. **Enter a unique** External System **and** Description**.**
3. **Set Our Name in Their System to** *CC&B.*

   The values set in the AIA Configuration properties Default.Notification.External.ID and Default.Reply.To.Message.Source must match the External System name created in Oracle Utilities Customer Care and Billing.

Service Provider

Create a new Service Provider to be used for the Process Integration Pack for Oracle Utilities Field Work.

1. **To define a Service Provider, open Admin Menu, Service Provider.**
2. **Enter a unique Service Provider and Description.**

3. **Set External System to the External System created for the Process Integration Pack for Oracle Utilities Field Work.**
4. **Set Notification DL Profile to the Notification Download Profile created for the Process Integration Pack for Oracle Utilities Field Work.**
5. **Set Person ID to the Person representing this service provider (If not exist, create one in Person Page)**

Notification Download Type

Only the following download conditions identified in Setting up Outbound Messages are applicable to this integration.

- FA Cancellations
- FA Creation
- FA Change
- FA Reschedule
- Get Available Appointments

Get Available Appointments NDS Type - reference CDxProcessXDS XAI inbound service and no context types.

NDS Types **FA Cancellation/FA Creation/FA Change/FA Reschedule** - reference ExtractFAInfo XAI Inbound service and the following context types:

Context type	xpath
FA ID	//ExtractFAInfoService/ExtractFAInfoHeader@FieldActivityID
Message ID	//ExtractFAInfoService/ExtractFAInfoDetails@MessageID

Refer to the demonstration data for an example of NDS Types and Context Type/XPATH settings.

Notification Download Profile

Create a notification download profile for the service provider previously created.

To define a Notification Download Profile:

1. **Navigate to Admin Menu > Notification Download Profile.**
2. **Enter a unique Notification Download Profile and Description.**

   Include an entry in the profile for each NDS type created previously in the NDS collection. Also, flag this NDS type with a processing method of XAI.

3. **Enter values according to the following:**

NDS Type	Description
Get Available Appointments	Point to the Find Available Appointments Route type created previously
FA Cancellation	Point to the Canceled Order route type created previously
FA Creation	Point to the Created Order route type created previously
FA Changed	Point to the Order Update route type created previously
FA Rescheduled	Point to the Order Update route type created previously

Scenario 2: CC&B - MWM

In this scenario, the integration product coordinates the flow of information between:

- Oracle Utilities Customer Care and Billing
- Oracle Utilities Mobile Workforce Management

Configuration Considerations for Scenario 2

Follow the guidelines to configure Oracle Utilities Customer Care and Billing for Scenario 1 with the following exceptions:

- Billable Charge is not used.
- Customer Interactions are not used
- No customer and asset data synchronization processing is available in this scenario.
- Feature Configuration options related to data synchronization do not need to be configured
- To Type and To Do Roles for Billable Charge SA, Customer Contacts are created as result of customer information change or creation of are not in use.

Scenario 3: MWM – WAM

In this scenario, the integration product coordinates the flow of information between:

- Oracle Utilities Mobile Workforce Management
- Oracle Utilities Work and Asset Management

Configuration Considerations for Scenario 3

Oracle Utilities Customer Care and Billing is not configured for Scenario 3.

Scenario 4: CC&B - WAM

In this scenario, the integration product coordinates the flow of information between:

- Oracle Utilities Customer Care and Billing
- Oracle Utilities Work and Asset Management

Configuration Considerations for Scenario 4

Follow the guidelines to configure Oracle Utilities Customer Care and Billing for Scenario 1 with the following exception:

- Data configurations needed for the Appointments integration points are not used in this scenario.

Setting up Oracle Utilities Work and Asset Management

The following sections provide details into the Oracle Utilities Work and Asset Management 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 Work and Asset Management, see the *Oracle Utilities Work and Asset Management User Guide and Configuration Guide*.

In addition to the business process information flows orchestrated by the integration product, configure customer and asset data synchronization between Oracle Utilities Customer Care and Billing and Oracle Utilities Work and Asset Management.

For more information on synchronizing data, see Data Synchronization.

Scenario 1: CC&B – MWM - WAM

In this scenario, the integration product coordinates the flow of information between three Oracle Utilities application products based on the configuration settings described. All three application products and the integration product must be configured to enable this business scenario. This section of the document describes the configuration required for one of the application products.

Configure the following in Oracle Utilities Work and Asset Management:

- Code Tables
- Batch Processes

- Sequence Numbers
- Employees
- Storeroom/Stock Code
- Business Rules
- Accounts

Batch Processes

Open the Job Manager module in the Administration subsystem to add the following batch jobs for processing records sent from Process Integration Pack for Oracle Utilities Field Work Integration. Integration processes populate the tables that provide the input to these jobs.

In the Oracle Utilities Work and Asset Management application, navigate to App Map -> Administration subsystem -> ***Job Manager*** to access these batch processes.

For more information, see the *Oracle Utilities Work and Asset Management Interfaces Guide*.

Descriptioin for Common Keywords and Parameters:

Job_in - The job number assigned by the Oracle Utilities Work and Asset Management application Job Manager.

Plant_in – Character string that identifies Oracle Utilities Work and Asset Management plant code.

Direction_in - Single character that identifies Inbound (I) or Outbound (O) processing.

Pre_in - Character string that identifies the custom stored procedure to call **before** the interface procedure begins.

Post_in - Character string that identifies the custom stored procedure to call **after** the interface procedure finishes.

Batch Processes Used for Data Synchronization

Configuration of these processes is required before data synchronization can be completed.

For more information on synchronizing these properties with Oracle Utilities Customer Care and Billing, see Synchronization between Oracle Utilities Customer Care and Billing and Oracle Utilities Work and Asset Management.

Procedure Name	Batch Process	Setting	Notes
Asset Standard Interface Procedure	WIFP_ASSET_INTERFACE(job_in, plant_in, direction_in, purge_in, option_in, pre_in, post_in);	Example of Job Manager Procedure set up: WIFP_ASSET_INTERFACE(26, '01', 'I', 'Y', null, null, null);	This process is used for import of Asset data (Service Point and Premise) from CC&B to WAM. The process is run manually.
Customer Standard Interface Procedure	WIFP_CUSTOMER_INTERFACE(job_in, plant_in, direction_in, purge_in, option_in, pre_in, post_in);	Example of Job Manager Procedure set up: WIFP_CUSTOMER_INTERFACE(43, '01', 'I', 'Y', null, null, null);	This process is used for import of Customer from CC&B to WAM. The process is run manually.
CCB Service Request Interface	sdbp_ccb_service_request.ccb_service_request_interface(job_in, plant_in, purge_in, pre_in, post_in);	Example of Job Manager Procedure set up: WIFP_ASSET_INTERFACE(55, '01', 'Y', null, null, null);	This should be included in run_all_batch to run after customer and asset interfaces.

Batch Processes Called by Web Services

Procedure Name	Batch Process	Setting	Notes

Service Request Interface Procedure
The Standard Service Request interface is NOT used for this integration.
	SDBP_CCB_SERVICE_REQ_INTERFACE (job_in, plant_in, direction_in, purge_in, pre_in, post_in, addr_in, sr_no_in, message_id_in, dbms_activity, error_no, error_message);	Example of Job Manager Procedure set up:
		declare
		in_out1 varchar2(2000);
		in_out2 number :=0;
		in_out3 varchar2(2000);
		begin
		SDBP_CCB_SERVICE_REQ_INTERFACE('103','01','I','Y',NULL,NULL,'sdbp_CCB_parse_address',NULL,NULL,in_out1,in_out2,in_out3);
		end;
			This job is used to log error messages generated from inbound Service Requests sent from CC&B. If you want to see a log of errors, look for this batch job number in the Job Manager module.

Batch Processes Used to Post Costs

The following procedures are not called in any of the web service classes, but they are needed to post the costs of the respective expense they process (only posted costs can be sent as billable charges). It is likely that these processes are already configured for Oracle Utilities Work and Asset Management. The corresponding log messages can be viewed under the sdbp_run_all_batch.

Procedure Name	Batch Process	Setting	Notes
Direct Charges Interface Procedure	sdbp_direct_charges.direct_charges(job_in, plant_in);	Enter Interval – sysdate + 999	Processes approved direct charges which have not yet been posted and creates new entries in the Direct Charges Log.
Labor Cost Interface Procedure	sdbp_cost_labor.cost_labor(job_in, plant_in);	Enter Interval – sysdate + 999	Processes approved labor costs (from timesheets) which have not yet been posted.
Stock Cost Interface Procedure	sdbp_cost_stock.cost_stock(job_in, plant_in);	Enter Interval – sysdate + 999	Processes costs for stock transactions which have not yet been posted. Information is selected from the table SA_INVENTORY_LOG and posted throughout the system. Once a stock cost transaction is successfully processed, it is marked as posted.

Special Batch Process for Error Logging

In addition to logging of errors in tables and logs, there is pl/sql called from java web services code that logs errors. These pl/sql routines require a batch job to be created so that log messages can be generated to the job manager log message table.

Immediately suspend the created batch job after it is created creation so that it is never run. The easiest and safest way to create the batch job is to enter **null**; in the Procedure field.

To create the batch job for error logging

To complete this task, you must create three separate batch jobs.

1. **Open the Job Manager module in the Oracle Utilities Work and Asset Management application.**
2. **Click New.**
3. **Select the *Suspended or Broken* check box.**
4. **Populate fields according to the following:**

```
Procedure = null; /* SDBP_CCB_SERVICE_REQ_INTERFACE*/
Interval = sysdate+1 (the system defaults to this value)
```

5. **Click Save.**
6. **Repeat from step 2 to create two more jobs where:**

```
Procedure = null; /*SDBP_FIELD_WORK.FW_WEB_SERVICE_LOGGING*/

and

Procedure = null; /* SDBP_MWM_INTEGRATION.MWM_WEB_SERVICE_LOGGING */
```

Business Rules

To configure a Business Rule

1. **In Oracle Utilities Work and Asset Management, navigate to Application Map -> Administration subsystem -> *Business Rules* module.**
2. **Search for and select the appropriate Rule indicated in the following sections.**
3. **Enter the relevant information indicated in the following sections.**
4. **Click Save.**

Craft Rate Rule

This rule is used to define default craft rates used in the timesheet integration for all incoming timesheets. Populate rule keys based on your business requirements.

A default craft must also be added to the AIA configuration file: CreateTimeSheetOUWAMUtilitiesProvABCSImpl

Product Integration CCB Rule

This rule is used to define default values used for fields integrated with Oracle Utilities Customer Care and Billing.

- ***ADDRESS PARSER PROCEDURE*** - Indicates the batch procedure used to parse the address. Modify the stored procedure indicated to properly parse the address fields to that they match the address format sent from the external system. Default = SDBP_CCB_PARSE_ADDRESS
- ***CONTACT CHG EVENT TYPE*** - Indicates the Event Type for the crew work log entry when the customer's contact information has changed.
- ***DEFAULT DISPATCH GROUP*** - Indicates the default dispatch group to use when creating field activities from service requests.
- ***DISPATCHER*** - Indicates the value used to populate Dispatcher in Service Request.
- ***HOLD FA UNTIL INTERFACE SYNC*** - Indicates whether the system should hold FA information sent from the integration until Customer and Service Point data has been synchronized between systems. The Service Request will be created by the batch process 'CCB Service Request Interface' after the required data is synchronized. This will ensure a valid SR is created.
- ***PREMISE ASSET RECORD TYPE*** - Indicates the Asset Record Type used for syncing up Premise records from Oracle Utilities Customer Care and Billing to Oracle Utilities Work and

Asset Management.

- ***PROCESS USER*** - Identifies which records in Oracle Utilities Work and Asset Management were created from an external source. Value for Process User is used to populate fields such as: CREATED_BY, LAST_UPDATE_USER, etc.
- ***SERVICE REQUEST STATUS TRIGGER*** - Indicates whether the system should enable or disable Oracle Utilities Customer Care and Billing Integration in the Service Request module. When ON, Service Request changes and new Service Requests will be sent to Oracle Utilities Customer Care and Billing. Default setting is OFF.
- ***SP ASSET RECORD TYPE*** - Indicates the Asset Record Type used for syncing up Service Point records from Oracle Utilities Customer Care and Billing to Oracle Utilities Work and Asset Management.
- ***VALIDATE CUSTOMER ID*** - Indicates whether or not the system should validate Customer ID against customer table.

Note: Make sure that the premise Asset Record Type and SP Asset Record Type are different from each other and that they are not already used as regular Asset IDs.

Default Accts for Interfaces Rule

This rule is used while syncing Premise and Service Point information from Oracle Utilities Customer Care and Billing to Oracle Utilities Work and Asset Management. It establishes default account values that are used according to the zip code appearing on the Premise or Service Point which creates a new Asset record. Enter **DEFAULT** in the Zip Code column to establish default values that are used when no zip is present or there are no settings entered on the business rule for a particular zip code.

For example Department/Area/Account combinations could be entered to use zip codes 94596 and 97123 respectively. When a Service Point with any other zip code or no zip code is imported from Oracle Utilities Customer Care and Billing, the values next to DEFAULT is used.

Direct Charge Types Rule

This rule defines the default direct charge types used when creating timekeeping charges. Configure rule keys according to your business requirements.

Note the DVM that must also be set up to create a cross-reference between the Oracle Utilities Work and Asset Management values you create for this rule, and the values used by the other applications.

Corresponding DVM - FS_Order_ExpenseTypeCode

Expense Codes Rule

When costs are sent to Oracle Utilities Customer Care and Billing, they are summarized by the Oracle Utilities Customer Care and Billing Expense code defined in this rule. These expense codes and categories are defined on Expense Codes Rule in Oracle Utilities Work and Asset Management. Values for the Oracle Utilities Customer Care and Billing Expense column do not need to be populated.

Note the DVM that must also be set up to create a cross-reference between the Oracle Utilities Work and Asset Management values you create for this rule, and the values used by the other applications.

Corresponding DVM - FS_Invoice_ChargeLineTypeCode

Interface Parameters Rule

Configure the Interface Parameters rule to set the parameters that drive business logic in the interface.

Asset Address Parser and Customer Address Parser - Oracle Utilities Work and Asset Management stores parts of an address (Street Number, Street Name, Street Suffix and Apartment Number) in individual fields. Oracle Utilities Customer Care and Billing does not store addresses in such detail, rather it stores entire lines of addresses in Address 1, Address 2, and so on.

The parameter entered for these rule keys controls how address parsing occurs when the system processes customers, premises & service points. You can replace the standard batch job procedure with a custom procedure that uses the same parameters. The provided parameter parses out street number and name.

Interface Rules

Configure the Interface business rules to designate which fields should be updated with information from the integration business processes when data is passed between the applications.

You must configure the interface rules for the following modules:

- Asset Interface Rule
- Customer Interface Rule
- Customer Address Interface Rule
- Customer SA Interface Rule
- Standard Service Req Interface Rule

If you set all of the values in the Update column to NO, the system does not update any fields when updated records are passed from the integration processes.

Set the Update column to YES for fields that must be updated when data is transferred from the integration processes.

For more information, see the *Oracle Utilities Work and Asset Management Interfaces guide*.

Product Integration Rule

This rule defines the integration between Oracle Utilities Work and Asset Management and other Oracle Utility products.

- ***INTEGRATION TYPE*** – Enter **FIELD WORK** to set the type required for the three-way integration.

Product Integration MWM Rule

This rule is used to define default values used for fields integrated with Oracle Utilities Mobile Workforce Management.

- ***TIMEKEEPING ALERT USER*** – Enter the Oracle Utilities Work and Asset Management user who must be alerted about any errors or warnings that occur during processing of timesheets that are inbound to Oracle Utilities Work and Asset Management through the web service.
- ***WORK ORDER ALERT USER*** - Enter the Oracle Utilities Work and Asset Management user who must be alerted about any errors or warnings that occur during the processing of work orders that are inbound to Oracle Utilities Work and Asset Management through the web service.

Product Integration Field Work Rule

This rule is used in place of Product Integration Oracle Utilities Customer Care and Billing and Product Integration Oracle Utilities Mobile Workforce Management rules that are used for point-to-point integrations.

- ***BILLABLE CHARGES*** – This includes the rule to determine whether to send billing information as billable charges to Oracle Utilities Customer Care and Billing.
- With this value set to ON, Oracle Utilities Mobile Workforce Management sends a completion to Oracle Utilities Work and Asset Management and Oracle Utilities Work and Asset Management passes the charges to Oracle Utilities Customer Care and Billing as billable charges.
- ***COUNTRY CODE*** – Enter the applicable country code. Values are validated by code table 15 which uses ISO codes for countries.
- ***PROCESS USER*** - Enter the Oracle Utilities Work and Asset Management user who must be alerted about any errors or warnings that occur during the completion of Service Requests that are inbound to Oracle Utilities Work and Asset Management through the web service.
- ***SERVICE REQUEST ALERT USER*** - Enter the Oracle Utilities Work and Asset Management user who must be alerted about any errors or warnings that occur during the completion of Service Requests that are inbound to Oracle Utilities Work and Asset Management through the web service.
- ***TIMEKEEPING ALERT USER*** - Enter the Oracle Utilities Work and Asset Management user who must be alerted about any errors or warnings that occur during processing of timesheets that are inbound to Oracle Utilities Work and Asset Management through the web service.
- ***TIMEZONE*** – Enter the applicable time zone in a valid Java Time zone ID (for example **America/Los_Angeles**)

Shift Differential Rates Rule

This information is used for establishing the shift differential rates to be used for cost accounting. Populate the rule keys according to your business requirements.

Note the DVM that must also be set up to create a cross-reference between the Oracle Utilities Work and Asset Management values you create for this rule, and the values used by the other applications. This DVM maps shift codes between Oracle Utilities Mobile Workforce Management and Oracle Utilities Work and Asset Management.

Corresponding DVM - FS_TimeSheet_ShiftCode

Timekeeping Charge Types Rule

Set up a timekeeping charge types rule to be used for charges being sent from Oracle Utilities Mobile Workforce Management. Configure the rule keys as follows:

- ***Charge Type*** - Select a value to be used for this purpose. Example: R
- ***Status*** - Allow
- ***Lookup*** - Service Request
- ***Reference ID*** - Leave blank

Note the DVM that must also be set up to create a cross-reference between the Oracle Utilities Work and Asset Management values you create for this rule, and the values used by the other applications.

Corresponding DVM - FS_Order_ChargeType

Timekeeping Labor Earning Type Code Rule

Corresponding DVM - FS_TimeSheet_LaborEarningType

This rule is used to define default labor earning types used in the timesheet integration for all incoming timesheets. Populate rule keys based on your business requirements.

Note the DVM that must also be set up to create a cross-reference between the Oracle Utilities Work and Asset Management values you create for this rule, and the values used by the other applications.

Web Services Gateway Rule

This rule is used to define the web services that the Oracle Utilities Work and Asset Management application must interface with.

> ***Web Service Gateway Key*** (do not modify) - The values in this column reference the Requester ABCS that the Oracle Utilities Work and Asset Management application must interface with. This is for internal use by Oracle Utilities Work and Asset Management and must not be modified.

This table lists Web Service Gateway Keys that are used for this integration pack:

Web Service Gateway Key	Description
CCB CREATE CUST CONTACT	Used for sending Customer Update outbound message from WAM.
CCB ORDER STATUS	Used for sending Service Request Status Update outbound message from WAM.
FW COMPLETE SERVICE ORDER	Used for sending Service Request Completion outbound message

Web Service Gateway Key	Description
	from WAM.
FW CREATE SERVICE ORDER	Used for sending Service Request Creation outbound message from WAM.
FW SEND BILLABLE CHARGE	Used for Sending Billable Charges from WAM.
FW UPDATE SERVICE ORDER	Used for sending Service Request Update outbound message from WAM.

Username & Password - The username and password needed to access the Requester ABCS on BPEL.

Dataset ID (do not modify) - These values indicate to Oracle Utilities Work and Asset Management which table to retrieve information from, and provide the keys to use from that table. This is for internal use by Oracle Utilities Work and Asset Management and must not be modified.

Consumer Class (do not modify) - The Java class name called by Oracle Utilities Work and Asset Management. This is for internal use by Oracle Utilities Work and Asset Management and must not be modified.

Service URL - The URL that the consumer class indicated in the previous column uses to call the Requester ABCS on BPEL. Set this to the endpoint URL of the corresponding Requester ABCS BPEL Process. This URL is typically in this format http://<SOA Server name>:<port>/soa-infra/default/<Requester ABCS Name>/<Requester ABCS Name>.

Gateway URL - The Gateway URL path to Oracle Utilities Work and Asset Management. The Consumer Class is physically stored on this server. Verify that you have the correct IP address and Port set for these.

Below is a sample table of details that go into the Business Rule – Web Services Gateway:

Web Service Gateway Key	Username	Password	Dataset ID	Consumer Class	Service URL	GateWay URL	Log Level
CCB CREATE CUST CONTACT	Weblogic username	Weblogic password	Do not modify	Do not modify	http://soaserver:port/soa-infra/services/default/CreateCustomerInteractionOUWAMUtilitiesReqABCSImpl/CreateCustomerInteractionOUWAMUtilitiesReqABCSImpl	http://wamappserver:port/synergen/WebGateWay	
CCB ORDER STATUS	Weblogic username	Weblogic password	Do not modify	Do not modify	http://soaserver:port/soa-infra/services/default/ProcessWorkOrderUpdateOUWAMUtilitiesReqABCSImpl/ProcessWorkOrderUpdateOUWAMUtilitiesReqABCSImpl	http://wamappserver:port/synergen/WebGateWay	
FW COMPLETE	Weblogic username	Weblogic password	Do not modify	Do not modify	http://soaserver:port/soa-infra/services/default/ProcessWorkO	http://wamappserver:port/synerge	ALL

SERVICE ORDER					rderCompleteOUWAMUtilitiesReqABCSImpl/ProcessWorkOrderCompleteOUWAMUtilitiesReqABCSImpl	n/WebGateWay	
FW CREATE SERVICE ORDER	Weblogic username	Weblogic password	Do not modify	Do not modify	http://soaserver:port/soa-infra/services/default/ProcessWorkOrderCreateOUWAMUtilitiesReqABCSImpl/ProcessWorkOrderCreateOUWAMUtilitiesReqABCSImpl	http://wamappserver:port/synergen/WebGateWay	ALL
FW SEND BILLABLE CHARGE	Weblogic username	Weblogic password	Do not modify	Do not modify	http://soaserver:port/soa-infra/services/default/CreateInvoiceOUWAMUtilitiesReqABCSImpl/CreateInvoiceOUWAMUtilitiesReqABCSImpl	http://wamappserver:port/synergen/WebGateWay	ALL
FW UPDATE SERVICE ORDER	Weblogic username	Weblogic password	Do not modify	Do not modify	http://soaserver:port/soa-infra/services/default/ProcessWorkOrderUpdateOUWAMUtilitiesReqABCSImpl/ProcessWorkOrderUpdateOUWAMUtilitiesReqABCSImpl	http://wamappserver:port/synergen/WebGateWay	ALL

Code Tables

To configure the code tables

1. **In Oracle Utilities Work and Asset Management, navigate to Application Map -> Administration subsystem -> Code Tables module.**
2. **Search for and select the appropriate Code Table as indicated in the following sections.**
3. **Enter the relevant information as indicated in the following sections.**
4. **Click Save.**
5. **Define values in the code tables described in this section.**
   If you have already defined codes you do not need to change them for integration as long as you populate them in the correct DVM so that they properly integrate with the codes used by other integrated application products. The DVM for each code table is indicated with the code table description.

Code Table	Description	Corresponding DVM
Code Table 19: Country Codes	Standard ISO codes already populated.	FS_Country_Code
Asset Type Codes Code Table	Define Asset Type codes to be used. This code table must be set up before synchronizing Premise and Service point information from CC&B to WAM.	FS_Order_ServicePointTypeCode

Code Table	Description	Corresponding DVM
Code Table 241: Service Request Problem Codes	Define problem codes to be used.	FS_Order_TypeCode.
Code Table 240: Service Request Type	Define SR Type codes to be used.	FS_Order_TypeCode
Code Table 246: Disconnect Location	Define codes for disconnect locations. The code is used for the ***Disconnect Location*** field in the Service Request module Meter Information view.	FS_Order_DisconnectLocationCode
Code Table 251: Personal ID (Account Segement 1)	Configure this code table based on the account that is configured for the integration.	n/a

For more information on configuring accounts, see Configuration for Department, Area, and Account.

Crew Codes for Timesheet

Navigation	Guideline	Corresponding DVM
Crew module in the Maintenance subsystem	Populate crew codes based on your business requirements.	FS_TimeSheet_CrewCode

Department, Area and Account

In Oracle Utilities Work and Asset Management, the combination of Department, Area, and Account constitutes an Account. Account configuration is required for any usage of the Oracle Utilities Work and Asset Management application, and is not specific to the integration. However, you may want to establish accounts that are specific to field work activities.

Navigation	Guideline	Corresponding DVM
App Map -> Resource subsystem -> Department	Populate Departments based on your business requirements.	FS_Order_OperationsArea In addition to mapping codes, this DVM is used to specify a default WAM account code to be used on the Service Request.
App Map -> Resource subsystem -> Area module	Populate Areas linked to the created departments based on your business requirements.	
App Map -> Resource subsystem -> Account module	Populate Accounts linked to the created departments and areas based on your business requirements.	

Employee for Checkout Transactions

A default Oracle Utilities Work and Asset Management employee is referenced on all checkout transactions received from Oracle Utilities Mobile Workforce Management with Service Request completions. This employee must be set up or identified in Oracle Utilities Work and Asset Management and then referenced in the AIA configuration file. Use the following steps if you decide to create a new employee for this purpose. Note that the values used here are just samples. You can choose appropriate values for your installation.

1. **In the Oracle Utilities Work and Asset Management application, navigate to App Map -> Resource subsystem -> *Employee* module**
2. **Click New.**

   Enter Employee No – FWI001

   Enter Last Name – FWI

   Enter First Name – 001

   Crew – FWI01

   Craft – FMIINV
3. **Click Save.**

Responsibility Configuration for Control of Fields (Optional)

It is recommended that you restrict the user's ability to update the schedule date and problem description on the Service Request once the SR has been activated. In three-way integration, fields being updated in Oracle Utilities Work and Asset Management do not update the other two applications. For orders integrated two-way these updates however are carried to the other application containing the order.

To Configure the Application for Control of the Schedule Date and Problem Code fields

1. **In Oracle Utilities Work and Asset Management, navigate to App Map -> Administration subsystem -> *Responsibility***
2. **Open the appropriate Responsibility record.**
3. **Select *Service Request* as the module in the Modules list.**
4. **Click *Fields*.**
5. **Select *SCHEDULE_DATE* field from the list of values.**
6. **Select the boxes to set the level of Ability for the first selected block and/or field.**
7. **Click Save.**
8. **Repeat for the *PROBLEM_CODE* field.**

For more information about restricting fields, see *Oracle Utilities Work and Asset Management User Guide*, "Responsibility."

Sequence Numbers

1. **In the Oracle Utilities Work and Asset Management application navigate to App Map -> Administration subsystem -> Sequence Numbers module**

   Search for and select the table name – SA_SERVICE_REQUEST

2. **Enter the following values:**

   Sequence No – leave as is, do not change

   Prefix – You can choose to use a prefix if required by your organization. Or you may leave it blank.

   Length – 7 (do not change)

   System – True (this setting is required for system generated Service Request numbers in Oracle Utilities Work and Asset Management).

3. **Click Save.**

Standard Notes

Users have the option to enter remarks when completing a Field Order. Remarks are displayed on the Service Request module Closeout view and must be defined in the Standard Notes module with a note type of CIS Remark.

Items Configured for Synchronization

The following Oracle Utilities Work and Asset Management modules should have already been configured and synchronized with Oracle Utilities Mobile Workforce Management in the steps detailed in Chapter 9: Data Synchronization.

- Vendor
- Storeroom
- Stock Code
- Employee

Scenario 2: CC&B - MWM

In this scenario, the integration product coordinates the flow of information between:

- Oracle Utilities Customer Care and Billing

- Oracle Utilities Mobile Workforce Management

Configuration Considerations for Scenario 2

Oracle Utilities Work and Asset Management is not configured for Scenario 2.

Scenario 3: MWM – WAM

In this scenario, the integration product coordinates the flow of information between:

- Oracle Utilities Mobile Workforce Management
- Oracle Utilities Work and Asset Management

Configuration Considerations for Scenario 3

Follow the guidelines to configure Oracle Utilities Work and Asset Management for Scenario 1 with the following exceptions:

- Customer Interaction is not used
- Billable Charge is not used
- Install Product is not used

Scenario 4: CC&B - WAM

In this scenario, the integration product coordinates the flow of information between:

- Oracle Utilities Customer Care and Billing
- Oracle Utilities Work and Asset Management

Configuration Considerations for Scenario 4

Follow the guidelines to configure Oracle Utilities Work and Asset Management for Scenario 1 with this exception: Data configuration needed for the Timesheet integration point is not applicable for this scenario

Setting up Oracle Utilities Mobile Workforce Management v1.x

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

For more information on configuring and working with Oracle Utilities Mobile Workforce Management, see the *Oracle Utilities Mobile Workforce Management User Guide and Configuration Guide*.

Scenario 1: CC&B – MWM - WAM

In this scenario, the integration product coordinates the flow of information between three Oracle Utilities application products based on the configuration settings described. All three application products and the integration product must be configured to enable this business scenario. This section of the document describes the configuration required for one of the application products.

To configure Oracle Utilities Mobile Workforce Management for Scenario 1:

- Router settings
- Transaction processing table
- Web service definition table
- Other database tables

The Oracle Utilities Mobile Workforce Management Router converts and routes transactions between external applications. Router configuration settings are defined in the Router.INI file.

Note: Modification of the router settings should not be required during initial system configuration.

Router.INI

The Router.INI file is located in the Router subdirectory within the Oracle Utilities Mobile Workforce Management installation directory. Router.INI is divided into sections with each section starting with the section name in square brackets.

[Connections] - This section identifies the connection number and connection type to use for each configured connection. The installation wizard automatically sets the connection type to WEB; otherwise, the connection type is FILE and selects the integration component.

For each connection listed in the [Connections] section, there exists a section containing the configuration parameters for that connection. The name of the section is a combination of the connection type and connection number, such as [WEB1] or [FILE1].

Note: The connection section must be named appropriately for the Router application to apply the INI parameters. If the connection type is changed, the name of the connection section must be changed to match the new type.

The following router settings affect the operation of the interfaces to external systems:

Parameter	Description
HeartBeatSecs	The frequency (in seconds) at which Oracle Utilities Mobile Workforce Management sends heartbeat transactions to external applications. Default: 0

Parameter	Description
SendHeartBeatTransNo	Not used for this integration. Default: 1999
RcvdHeartBeatTransNo	Not used for this integration. Default: 1099
CheckSecs	The frequency (in seconds) at which Oracle Utilities Mobile Workforce Management checks the InputDirectory for new transactions. Default: 30
MaxThreadPoolSize	The maximum number of permanent web service threads in the thread pool for this connection. These threads are used to send transactions to external web service. The threads in the thread pool are permanent threads and are not deleted until the Router application is shut down. The Router can create more threads than specified in this parameter, but those threads are temporary and are deleted when they are IDLE. Typically, a large pool of threads is not necessary. If the volume of transactions from Oracle Utilities Mobile Workforce Management is high, then you might want to increase the size of this parameter. Default: 10
MaxNumberOfThreads	The maximum number of web service threads that can be created for this connection. This includes the number of permanent threads in the thread pool and all temporary threads. Set this value as greater than or equal to the value of MaxThreadPoolSize. Default: 100

Note: If you modify any of the entries in this INI file, restart the Oracle Utilities Mobile Workforce Management Router in order for the new values to be used.

Admin Database Tables

This section identifies and describes the Oracle Utilities Mobile Workforce Management tables that contain data codes used by the Process Integration Pack for Oracle Utilities Field Work Integration product. The Admin tables must be populated with the same entries as exist in the DVMs for Oracle Utilities Mobile Workforce Management. If you have already established values based on your business practices for the tables below,populate the DVM with the values you used within Oracle Utilities Mobile Workforce Management.

For more information about populating the DVMs, see Domain Value Maps.

To add or modify these tables

1. **Navigate to the Admin Tool within Oracle Utilities Mobile Workforce Management.**

   This is found within the Dispatch Station application.

2. **Modify settings as needed.**

Timesheet Menu Options

Access to Time Sheet menu options in Oracle Utilities Mobile Workforce Management Mobile Workstation is controlled by the following configuration parameters:

Database Table	Config Code	Section	Parameter	Default Value *	Description
DHTMWINI	DBM_DEF	37146	EnableWnd	[App]Dispatcher=F	Enables the Time Sheet option on the Control Menu for Mobile Workstation users only. The option is disabled for Dispatch Workstation users.
DHTMWINI	FO_DEF	37145	EnableWnd	STATION.INI::App::Dispatcher=F	Enables the Add to Time Sheet option on the Field Order Actions Menu for Mobile Workstation users only. The option is disabled for Dispatch Workstation users.

* If the Oracle Utilities Work and Asset Management component is not selected during installation of Oracle Utilities Mobile Workforce Management, the default value for both of these parameters is set to False, which disables the option for all users.

Additional Admin Tables

Table	Description	Corresponding DVM
DisconnectLocationCode From the Admin Tool select the Service Point Disconnect Location table and enter or modify the necessary data.	When a service point is disconnected from the supply source, a disconnect location must be specified. This location defines where service was severed.	FS_Order_DisconnectLocationCode
Service Area / Dispatch Group	A dispatch group is a logical group of representatives located at an operations area. In Oracle Utilities Mobile Workforce the Service Areas are used to indicate areas where crews work on Field Orders. Database Table in MWM: DHTSERV Column Name: Service_Area	FS_Order_DispatchGroup
Division	Database Table in MWM: DHTDIV Column Name: Division	FS_Order_Division
Direct Expense Type Code	When direct charge expenses are sent from MWM an expense type code must be associated with the information.	FS_Order_ExpenseTypeCode
Database Table in MWM	DHTWAMDIRCHRG Column Name: Charge_Type	

Table	Description	Corresponding DVM
Meter/Item Status Code	Database Table in MWM: DHTMTRST Column Name: Meter_Status_Cd	FS_Order_MeterStatusCode
Labor Earning Type	Database Table for Regular Earning Type Code: DHTWAMREGEARN Column Name: Earn_CD Database Table for Premium Earning Type Code: DHTWAMPREMEARN Column Name: Earn_CD	FS_TimeSheet_LaborEarningType
Meter Configuration Type	Database Table in MWM : DHTPRGID Column Name: Program_ID	FS_Order_MeterConfigurationType
Meter/Item Stock Location Codes	Database Table in MWM : DHTSTKLO Column Name: Stock_Loc_CD	FS_Order_MeterStockLocationCode
Operations Area	Database Table in MWM: DHTDIST Column Name: District	FS_Order_OperationsArea
Read Type Code		FS_Order_ReadTypeCode
Register Time of Use Code	Database Table in MWM: DHTRDUCD Column Name: Read_Use_CD	FS_Order_RegisterTimeOfUseCode
Service Point Type Code	Database Table in MWM: DHTSPTYP Column Name: SPT_TYPE_CD	FS_Order_ServicePointTypeCode
Order Type	Database Table in MWM: DHTFOTYP Column Name: FO_TYPE	FS_Order_TypeCode
Shift Code	Database Table in MWM: DHTWAMSHIFTDIFF Column Name: SHIFTDIFF_CD	FS_TimeSheet_ShiftCode
Crew Code	Database Table in MWM: DHTCREW Column Name: CREW	FS_TimeSheet_CrewCode
Slot Profile	Database Table in MWM: ORSPIP.SLOT_PROFILE Column Name: SLOT_GROUP	FS_Order_SlotGroup

Transaction Processing Tables

Transaction processing information for the Oracle Utilities Mobile Workforce Management interface component is stored in two database tables:

Note: The transaction processing tables are pre-loaded with entries for all transactions supported by the integration and should not need modification. The tables and their contents are described here for informational purposes only.

Database Table	Description
DHTTXNCD	This table maps external transaction codes (EXTTXND) to internal transaction IDs (INTTXNID) for processing purposes. If there is no entry in this table for a particular transaction or ICD, the external transaction ID is used for the internal transaction ID. See the following table for ICDs and transaction codes used in this integration. **Note:** Transactions in Oracle Utilities Mobile Workforce Management are also referred to as ICDs. An ICD is an Interface Control Document that uses an Oracle Utilities Mobile Workforce Management proprietary transaction format.
DHTTXNPR	This table describes which transactions are processed for each connection. The columns in the table are: INPUT_CONNECTION: The name of the connection that generated the transaction/ICD. INTERNAL_TXN_ID: This ID is derived from the DHTTXNCD table. If no internal transaction ID entry exists in the table for a transaction, the Router uses the external transaction ID (transaction code of the ICD ID) as the internal transaction ID. SEQUENCE_NBR: This sequence number is used to ensure that multiple entries for the same INPUT_CONNECTION/INTERNAL_TXN_ID are unique. This sequence number is part of the key for this table. OUTPUT_CONNECTION: The name of the connection that receives this transaction. FUNCTION_ID: The ID for the internal function within the Router application that processes the transaction.

ICDs used for outbound services

ICD	Description
11/53	Order completions (converts to transaction code 1003)
93	Validation Requests (converts to transaction code 1016)
98	Transaction Acknowledgement (converts to transaction code 1013)
132	Order status (converts to transaction codes 1004, 1006, 1007, 1008)
158	TimeSheet

ICDs used for inbound services

ICD	Description
0001	Order creation
0002	Order update
0003	Order cancellation/completion
0016	Validation Response

Transactions sent from Oracle Utilities Work and Asset Management:

Description	External Transaction Code (EXTTXNID)	Internal Transaction ID (INTTXNID)
Order creation	0001	1000
Order update	0002	1002
Order cancellation/completion	0003	1003

Message Priority Table

Database Table: DHTICDPR

This table defines the priority associated with each ICD. You should define the same priority for all ICDs sent from the mobile station that affect the event status or crew status. This ensures that they are sent in the order in which they are created. This is especially important when a crew is out of range and ICDs are queued up for delivery once communication is re-established.

Although default values are provided for the Message Priority table, it is important that you verify the values to ensure they are accurate for your system.

ICDs affecting event status

ICD	Description
8	Enroute
9	Onsite
11	Completion
20	Cancel status

ICDs affecting crew status:

ICD	Description
18	Out of Service
19	Return to Service

Web Service Definition Table

Table Name: DHTWBCNG

This table contains an entry for each transaction sent to the integration layer web service.

Data to be populated in this table is indicated in Appendix C: DHTWBCNG_DATA.

Replace the <SOA_HOST> and <SOA_PORT> in the data with the correct SOA Suite Host machine name and port.

The table includes many additional columns which are not used in this integration. The columns related to the integration are described here:

Field	Description
TRANSACTION_ID	The ID of the input transaction/ICD being processed (DHTTXNPR.INTERNAL_TXN_ID not DHTTXNPR_FUNCTION_ID). This is a required field. Do not modify. The value is defaulted to FWI if **Process Integration Pack for Oracle Utilities Field Work** option was selected when Oracle Utilities Mobile Workforce Management was installed.
TRANSACTION_NAME	The name of the transaction. This is a required field used for informational purposes only. It should not be modified.
HOST_SYSTEM	The name of the external connection to receive the transaction. This is a required entry for Process Integration Pack for Oracle Utilities Field Work. The value should match name of the external system defined on the router and user for the integration. This is a required field.
XSL_PATH	n/a
ENDPOINT_URL	The end-point URL where the transaction is sent. The URL is composed of the IP address/machine name where the external web service is installed, the port used to communicate with the web service, and the name of the web service. The name of the web service should not need to be changed, but the IP address/port might need to be configured. This parameter is set during the Oracle Utilities Mobile Workforce Management installation if the IP address and port are specified. This is a required entry for this integration. This is a required field.
NAMESPACE_URL	The target namespace from the WSDL file for the web service. This is a required field that should not need to be modified.
RESPONSE_XSL_PATH	n/a
SEQUENCE_TAG	n/a
VALIDATE_RESPONSE_XSL_PATH	n/a
RETRY_MESSAGE	Indicates whether or not the message should be retried following a failure to send. This is a required field that should not need to be modified.

Example of set up for Web Service definition:

```
DHTWBCNG_table_e
   Xport_Example
```

Scenario 2: CC&B - MWM

In this scenario, the integration product coordinates the flow of information between:

- Oracle Utilities Customer Care and Billing
- Oracle Utilities Mobile Workforce Management

Configuration Considerations for Scenario 2

Follow the guidelines to configure Oracle Utilities Mobile Workforce Management for Scenario 1 with the following exception:

- Data configuration needed for the timesheet integration point is not applicable here.

Scenario 3: MWM – WAM

In this scenario, the integration product coordinates the flow of information between:

- Oracle Utilities Mobile Workforce Management
- Oracle Utilities Work and Asset Management

Oracle Utilities Work and Asset Management Configuration Considerations for Scenario 3

Follow the guidelines to configure Oracle Utilities Mobile Workforce Management for Scenario 1 with the following exceptions:

- Appointments
- Install Product

Scenario 4: CC&B - WAM

In this scenario, the integration product coordinates the flow of information between:

- Oracle Utilities Customer Care and Billing
- Oracle Utilities Work and Asset Management

Configuration Considerations for Scenario 4

Oracle Utilities Mobile Workforce Management is not configured for Scenario 4.

Setting up Oracle Utilities Mobile Workforce Management v2.x

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

For more information on configuring and working with Oracle Utilities Mobile Workforce Management, see the *Oracle Utilities Mobile Workforce Management User Guide and Configuration Guide.*

Scenario 1: CC&B – MWM - WAM

In this scenario, the integration product coordinates the flow of information between three Oracle Utilities application products based on the configuration settings described. All three application products and the integration product must be configured to enable this business scenario. This section of the document describes the configuration required for one of the application products.

To configure Oracle Utilities Mobile Workforce Management for Scenario 1:

At a high-level, you must complete the following steps in Oracle Utilities Mobile Workforce Management to configure the integration:

1. **Configure the admin tables to support integration.**
    a. Activity Types
    b. Service Areas
    c. Appointment Booking Group
2. **Configure the extendable lookup tables to support integration**
    a. Device Manufacturer
    b. Disconnect Location
    c. Meter Configuration Type
    d. Meter Location
    e. Payment Cancellation Reason
    f. Service Instructions
    g. Service Warnings
    h. Stock Locations
    i. Time Of Use
    j. Unit Of Measure
3. **Configure XAI to pass messages with integration layer.**

Configure Administration Tables

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

Activity Type

The codes defined here must exactly match values in the DVM for Order Type indicated. Refer to FA Type section in Oracle Utilities Customer Care and Billing configuration for supported Activity Types.

Navigation	Guideline	Corresponding DVM
Admin Menu > Task Types	Create the activity types required by your business and populate the necessary information to define your set of Activity Types required for your business.	FS_Order_TypeCode.

Service Areas

The codes defined here must exactly match values in the DVM for Dispatch Group indicated.

Navigation	Guideline	Corresponding DVM
Admin Menu > Service Area	In Oracle Utilities Mobile Workforce Management the Service Areas are used to indicate areas where crews work on activities.	FS_Order_DispatchGroup

Appointment Booking Group

The codes defined here must exactly match values in the DVM for Slot Group indicated. Refer to Slot Group section in Oracle Utilities Customer Care and Billing configuration for supported Appointment Booking Groups.

Navigation	Guideline	Corresponding DVM
Admin Menu > Appointment Booking Group	Create the Appointment Booking Groups required by your business and populate the necessary information to define your set of Appointment Booking Groups required for your business.	FS_Order_SlotGroup.

Configure Extendable Lookups

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

Disconnect Location

When a service point is disconnected from the supply source, a disconnect location must be specified. This location defines where service was severed. It also controls the type of Field Activity generated to reconnect service.

The codes defined here must exactly match values in the DVM for disconnect location code indicated

Navigation	Guideline	Corresponding DVM

Admin Menu > Extendable Lookup > Disconnect Location	Define your disconnect location codes.	FS_Order_DisconnectLocationCode

Meter Configuration Type

Every meter configuration must reference a meter configuration type. The meter configuration type indicates the valid (required or optional) unit of measure and time of use registers for the configuration.

The codes defined here must exactly match values in the DVM for meter configuration type indicated.

Navigation	Guideline	Corresponding DVM
Admin Menu > Extendable Lookup > Meter Configuration Type	Define your meter configuration types.	FS_Order_MeterConfigurationType

Meter Location

A meter can be associated with the on-site installation location.

Navigation	Guideline	Corresponding DVM
Admin Menu > Extendable Lookup > Meter Location	Define your meter location codes.	FS_Order_MeterLocationCode

Stock Locations

A stock location is a physical or logical location at which meters and/or items are stored while they are not installed at a service point.

The codes defined here must exactly match values in the AIA configuration file for the Item and/or Meter Stock Location Codes indicated.

Navigation	Guideline	AIAConfigurationProperties.xml
Admin Menu > Extendable Lookup > Stock Location	Define stock location codes.	FS_ItemStockLocationCode FS_MeterStockLocationCode

Time of Use

Every meter register can be associated with a time of use code.

The codes defined here must exactly match values in the DVM for Register time of use indicated.

Navigation	Guideline	Corresponding DVM
Admin Menu > Extendable Lookup > Time Of use	Define your time of use codes.	FS_Order_RegisterTimeOfUseCode

Unit of Measure

Every meter register must be associated with a unit of measure (read type) code.

The codes defined here must exactly match values in the DVM for Read type indicated.

Navigation	Guideline	Corresponding DVM
Admin Menu > Extendable Lookup > Unit Of Measure	Define your unit of measure codes.	FS_Order_RegisterReadUnitCode

Configure XAI

The following sections identify settings required to communicate using XAI.

Activity Status Outbound Message Type

To create the outbound message type used to send activity status updates to integration layer

Create a new Outbound Message Type which maps to the appropriate business object.

1. **Navigate to Admin Menu, Outbound Message Type, and select plus.**
2. **Enter a unique Outbound Message Type and Description (for example, CM-ACTSTATUS).**
3. **Populate values as follows:**

   Business Object = ***M2-ActivityStatusUpdate***

   Priority = ***50***. You can set this to any other value as needed.

Activity Completion Outbound Message Type

To create the outbound message type used to send activity completion details to integration layer:

Create a new Outbound Message Type which maps to the appropriate business object.

1. **Navigate to Admin Menu, Outbound Message Type, and select plus.**
2. **Enter a unique Outbound Message Type and Description (for example, CM-ACTCOMPLT).**
3. **Populate values as follows:**

   Business Object = ***M2-ActivityCompletionDetails***

   Priority = ***50***. You can set this to any other value.

Pickup Order (New Activity) Outbound Message Type

To create the outbound message type used to send new activity details to integration layer

Create a new Outbound Message Type which maps to the appropriate business object.

1. **Navigate to Admin Menu, Outbound Message Type, and select plus.**
2. **Enter a unique Outbound Message Type and Description (for example, CM-NEWACTVTY).**
3. **Populate values as follows:**

   Business Object = ***M2-ActivityDataDetails***

   Priority = ***50***. You can set this to any other value.

Device Verification Outbound Message Type

To create the outbound message type used to request device verification from integration layer

Create a new Outbound Message Type which maps to the appropriate business object.

1. **Navigate to Admin Menu, Outbound Message Type, and select plus.**
2. **Enter a unique Outbound Message Type and Description (for example CM-DEVVERIFY).**
3. **Populate values as follows:**

   Business Object = ***M2-DeviceVerificationMessage***

   Priority = ***50***. You can set this to any other value.

XAI Sender for Pickup Orders (New Activities)

To create an HTTP sender configured to communicate with integration layer

Create a new XAI Sender which points to the Oracle Utilities Mobile Workforce Management Requester ABCS for the Create Field Order integration point.

1. **Navigate to Admin Menu, XAI Sender.**
2. **Enter a unique XAI Sender and Description.**
3. **Populate values as follows:**

   Invocation Type = ***Real-time***

   XAI Class = ***RTHTTPSNDR***. This is the class for real-time sender to route messages using HTTP.

   MSG Encoding = ***UTF-8 message encoding***

4. **Select the Active check box.**
5. **Select the Context tab and set values for the following Context Types:**
   - **Character Encoding** – ***UTF-8***
   - **HTTP Login User** – User ID for the url to be accessed
   - **HTTP Login Password** – Password for the url to be accessed
   - **HTTP Header – *SOAPAction: "ProcessOrderCreate"***
   - **HTTP Method (POST/GET)** – ***POST***
   - **HTTP Transport Method** – ***SendReceive***
   - **HTTP Timeout: 60** (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 **Order Create Requester ABCS**.
   - **For example**: http://sdc60017sems.us.oracle.com:8095/soa-infra/services/default/ProcessWorkOrderCreateOUMWMUtilitiesReqABCSImplV2/ProcessWorkOrderCreateOUMWMUtilitiesReqABCSImplV2

XAI Sender for Activity Status Updates

To create an HTTP sender configured to communicate with integration layer

Create a new XAI Sender which points to the Oracle Utilities Mobile Workforce Management Requester ABCS for the Field Order Status Update integration point.

1. **Navigate to Admin Menu, XAI Sender.**
2. **Enter a unique XAI Sender and Description.**
3. **Populate values as follows:**

   Invocation Type = ***Real-time***

   XAI Class = ***RTHTTPSNDR***. This is the class for real-time sender to route messages using HTTP.

   MSG Encoding = ***UTF-8 message encoding***

4. **Select the Active check box.**
5. **Select the Context tab and set values for the following Context Types:**
   - **Character Encoding** – ***UTF-8***
   - **HTTP Login User** – User ID for the url to be accessed
   - **HTTP Login Password** – Password for the url to be accessed
   - **HTTP Header – *SOAPAction: "ProcessOrderStatus"***

- **HTTP Method (POST/GET)** – ***POST***
- **HTTP Transport Method** – ***SendReceive***
- **HTTP Timeout: 60** (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 **Order Status Requester ABCS**.
- **For example**: http://sdc60017sems.us.oracle.com:8095/soa-infra/services/default/ProcessWorkOrderStatusOUMWMUtilitiesReqABCSImplV2/ProcessWorkOrderStatusOUMWMUtilitiesReqABCSImplV2

XAI Sender for Activity Completion Details

To create an HTTP sender configured to communicate with integration layer

Create a new XAI Sender which points to the Oracle Utilities Mobile Workforce Management Requester ABCS for the Field Order Completion integration point.

1. **Navigate to Admin Menu, XAI Sender.**
2. **Enter a unique XAI Sender and Description.**
3. **Populate values as follows:**

   Invocation Type = ***Real-time***

   XAI Class = ***RTHTTPSNDR***. This is the class for real-time sender to route messages using HTTP.

   MSG Encoding = ***UTF-8 message encoding***

4. **Select the Active check box.**
5. **Select the Context tab and set values for the following Context Types:**
   - **Character Encoding** – ***UTF-8***
   - **HTTP Login User** – User ID for the url to be accessed
   - **HTTP Login Password** – Password for the url to be accessed
   - **HTTP Header – *SOAPAction: "ProcessOrderComplete"***
   - **HTTP Method (POST/GET)** – ***POST***
   - **HTTP Transport Method** – ***SendReceive***
   - **HTTP Timeout:** 60 (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 **Order Complete Requester ABCS**.
   - **For example**: http://sdc60017sems.us.oracle.com:8095/soa-

infra/services/default/ProcessWorkOrderCompleteOUMWMUtilitiesReqABCSImplV2/ProcessWorkOrderCompleteOUMWMUtilitiesReqABCSImplV2

XAI Sender for Device Verification Messages

To create an HTTP sender configured to communicate with integration layer

Create a new XAI Sender which points to the Oracle Utilities Mobile Workforce Management Requester ABCS for the Validate Installed Product integration point.

1. **Navigate to Admin Menu, XAI Sender.**
2. **Enter a unique XAI Sender and Description.**
3. **Populate values as follows:**

   Invocation Type = ***Real-time***

   XAI Class = ***RTHTTPSNDR***. This is the class for real-time sender to route messages using HTTP.

   MSG Encoding = ***UTF-8 message encoding***

   Select the ***Active*** check box.

4. **Select the Context tab and set values for the following Context Types:**
   - **Character Encoding** – ***UTF-8***
   - **HTTP Login User** – User ID for the url to be accessed
   - **HTTP Login Password** – Password for the url to be accessed
   - **HTTP Header** – ***SOAPAction: "ValidateInstalledProduct"***
   - **HTTP Method (POST/GET)** – ***POST***
   - **HTTP Transport Method** – ***SendReceive***
   - **HTTP Timeout: 60** (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 **Validate Installed Product Requester ABCS**.
   - **For example**: http://sdc60017sems.us.oracle.com:8095/soa-infra/services/default/ValidateInstalledProductOUMWMUtilitiesReqABCSImplV2/ValidateInstalledProductOUMWMUtilitiesReqABCSImplV2

External System

Create a new External System for the Process Integration Pack for Oracle Utilities Field Work.

1. **To define an External System, open** Admin Menu, External System**.**
2. **Enter a unique External System and Description.**

3. **Set Our Name in Their System to** *MWM.*
4. **Add the four outbound message types created above.**
    - Activity Data Details Outbound Message Type – created above
    - Processing method – Real-time
    - XAI Sender – new XAI Sender for New Activities created above
    - Message XSL – M1-AddEnvelope-SOAP1-2.xsl
    - Response XSL – M2DataDetails_Response.xsl
    - Activity Status Update Outbound Message Type – created above
    - Processing method – Real-time
    - XAI Sender – new XAI Sender for Activity Status Updates created above
    - Message XSL – M1-AddEnvelope-SOAP1-2.xsl
    - Activity Completion Details Outbound Message Type – created above
    - Processing method – Real-time
    - XAI Sender – new XAI Sender for Activity Completion Details created above
    - Message XSL – M1-AddEnvelope-SOAP1-2.xsl
    - Device Verification Outbound Message Type – created above
    - Processing method – Real-time
    - XAI Sender – new XAI Sender for Device Verification Messages created above
    - Message XSL – M1-AddEnvelope-SOAP1-2.xsl
    - Response XSL – M2DeviceVerification_Response.xsl

Feature Configuration – Schema Constants

To manage feature configuration

1. **Navigate to Admin Menu > Feature Configuration.**
2. **Create new feature configuration with** *Schema Constants* **as the Feature Type and enter required values for the outbound message types you have created for this integration.**

Option	Notes
Activity Status Outbound Message Type	Enter name of Activity Status Outbound Message Type created
Activity Completion Outbound Message Type	Enter name of Activity Completion Outbound Message Type created
New Activity Outbound Message Type	Enter name of New Activity Outbound Message Type created
Device Verification Outbound	Enter name of Device Verification Outbound Message Type created

Option	Notes
Message Type	

Scenario 2: CC&B - MWM

In this scenario, the integration product coordinates the flow of information between:

- Oracle Utilities Customer Care and Billing
- Oracle Utilities Mobile Workforce Management

Scenario 3: MWM – WAM

In this scenario, the integration product coordinates the flow of information between:

- Oracle Utilities Mobile Workforce Management
- Oracle Utilities Work and Asset Management

Note: Oracle Utilities Mobile Workforce Management v2.x does not support passing Timesheet, Direct Charges, and Stock Charges to Oracle Utilities Work and Asset Management.

Scenario 4: CC&B - WAM

In this scenario, the integration product coordinates the flow of information between:

- Oracle Utilities Customer Care and Billing
- Oracle Utilities Work and Asset Management

Configuration Considerations for Scenario 4

Oracle Utilities Mobile Workforce Management is not configured for Scenario 4.

Setting up the Field Work Process Integration Pack

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

Scenario 1: CC&B – MWM - WAM

In this scenario, the integration product coordinates the flow of information between three Oracle Utilities application products based on the configuration settings described. All three application products and the integration product must be configured to enable this business scenario. This section of the document describes the configuration required for one of the application products.

To configure Process Integration Pack for Oracle Utilities Field Work Integration for Scenario 1:

- AIAConfigurationProperties.xml
- Domain Value Maps
- Error Handling

Setting AIA Configuration Properties

Various configurations that apply to the entire Oracle AIA system, Core Infrastructure

Components, and specific process integration services are stored in the

AIAConfigurationProperties.xml file located in <AIA.HOME>/aia_instance/<INSTANCE_NAME>/AIAMetadata/config/ and the AIAConfigurationProperties.xml is stored in Metadata Service (MDS).

This section lists the configurations in this file that are used by the Oracle Utilities Field Work Process Integration Pack. These configurations hold several configurable values that are picked up by the integration at runtime to:

- Default some business entity value sent to the target edge applications when the data is moved from one system to another. These configuration values may need to be updated to your implementation specific values for the integration to work correctly. These properties are described in this section in detail.
- Activate custom implemented extension points available inside the ABCS. By default these properties are set not to invoke any of the extension points as the extension points need to be implemented using the AIA ABCS Extension guidelines before being activated. These properties need to be changed only if you decide to extend the core functionality provided by this Process integration Pack, using the predefined ABCS extension points. These properties are not listed in this section but can be identified in the AIAConfigurationProperties.xml file as the name of these Service Configuration properties start with ABCSExtension and are available in the file under each ABCS Name.

For more information on extending the ABCS using extension points, see Extensibility Options.

- Get the endpoint URLs for Provider ABCS. These properties are set to appropriate values during the installation of Process Integration Pack, based on the information specified during the installation. You should not have to modify the values.

For more information about requirements for working with AIAConfigurationProperties.xml, see *Oracle Fusion Middleware Developer's Guide for Oracle Application Integration Architecture Foundation Pack 11g Release 1*, "Building AIA Integration Flows," How to Set Up AIA Workstation."

Settings for System Properties

Two sets of configuration properties are described in this section:

- Module Configurations are the properties that are shared by multiple integration flows within this Process Integration Pack for Oracle Utilities Field Work.
- Service Configurations are the properties that are used by a specific ABCS.

Module Configurations

Module Name	Property Name	Default / Shipped Value	Integration Point	Description
OUFieldWorkPIPWorkOrderActionCodes	WorkOrder.ActionCode.CREATE	CREATE	Work Order	This is internally used by the integration to identify the messages sent for Work order creation. Do not change the value of this property.
OUFieldWorkPIPWorkOrderActionCodes	WorkOrder.ActionCode.UPDATE	UPDATE	Work Order	This is internally used by the integration to identify the messages sent for Work order updates. Do not change the value of this property.
OUFieldWorkPIPWorkOrderActionCodes	WorkOrder.ActionCode.COMPLETE	COMPLETE	Work Order	This is internally used by the integration to identify the messages sent for Work order completion. Do not change the value of this property.
OUFieldWorkPIPWorkOrderActionCodes	WorkOrder.ActionCode.CANCEL	CANCEL	Work Order	This is internally used by the integration to identify the messages sent for Work order cancellation. Do not change the value of this property.
OUFieldWorkPIPWorkOrderActionCodes	WorkOrder.ActionCode.INCOMPLETE	IN-COMPLETE	Work Order	This is internally used by the integration to identify the messages sent for Work order incomplete transactions. Do not change the value of this property.
OUFieldWorkPIPWorkOrderActionCodes	WorkOrder.ActionCode.STATUSUPDATE	STATUSUPDATE	Work Order	This is internally used by the integration to identify the messages sent for Work order status updates. Do not

Module Name	Property Name	Default / Shipped Value	Integration Point	Description
				change the value of this property.
OUWAM	WAM.WorkOrder.Default.MessageID	0000000000	Work Order	This is a default message ID used for Work Order messages sent from WAM. Do not change the value of this property.
OUWAM	WAM.Default.PLANT	FWI	Timesheet	Default Plant on the Timesheets sent from MWM to WAM. Change this value to the appropriate WAM plant code. Refer to Mapping to Plant for configuration details.
OUMWM	OUMWM.TransactionCode.CREATE	M2AD	Work Order	The MWM transaction code set on the Work Order Create messages inbound to MWM v2.x. Do not change the value of this property for MWM v2.x. For MWM v1.x set this property to 0001
OUMWM	OUMWM.TransactionCode.UPDATE	M2UP	Work Order	The MWM transaction code set on the Work Order Update messages inbound to MWM v2.x. Do not change the value of this property for MWM v2.x. For MWM v1.x set this property to 0002
OUMWM	OUMWM.TransactionCode.CANCEL	M2CA	Work Order	The MWM transaction code set on the Work Order Cancel messages inbound to MWM v2.x. Do not change the value of this property for MWM v2.x. For MWM v1.x set this property to0003
OUMWM	OUMWM.TransactionCode.COMPLETE	M2CO	Work Order	The MWM transaction code set on the Work Order Cancel messages inbound to MWM v2.x. Do not change the value of this property for MWM v2.x.
OUMWM	OUMWM.timeUsageWindow	M1EF	Work Order	This specifies the timeUsageWindow in MWM v2.x. Do not change the value of this property.
OUMWM	OUMWM.Plant	FWI	ALL IPs	This specifies the WAM plant

Module Name	Property Name	Default / Shipped Value	Integration Point	Description
				that MWMv2.x is integrated with.
OUMWM	OUMWM.External System	FWI-PIP	ALL IPs	This is the external system configured in the MWM v2.x. For MWM v1.x router, set this value to **FWI**. Refer to Transaction Processing Tables for configuration details

ABCS Configurations

ABCS Name	Property Name	Default / Shipped Value	Description
CreateCustomerInteractionOUWAMUtilitiesReqABCSImpl	ContactClass	SVC	Used by the customer interaction flow to specify an CC&B Contact Class to be used when a customer contact is created in CC&B by this flow. Specify the contact class created above for this property. Refer to Customer Contact for configuration details.
CreateCustomerInteractionOUWAMUtilitiesReqABCSImpl	ContactType	MISC	Used by the customer interaction flow to specify an CC&B Contact Type to be used when a customer contact is created in CC&B by this flow. Specify the contact type created above for this property. Refer to Customer Contact for configuration details.
CreateCustomerInteractionOUWAMUtilitiesReqABCSImpl	Description	Added with WAM Requester ABCS to create Customer Contact in CC&B	This is the Description that is specified on the Customer Contact when it is created in CC&B by the customer interaction. You can change this to the text that you wish to have on these customer contacts.
CreateCustomerInteractionOUWAMUtilitiesReqABCSImpl	ToDoRole	SUPPORT	Used by the customer interaction flow to specify a CC&B ToDORole to be used when a ToDo is created in CC&B by this flow. Set this property to the created/identified To Do Role for this

ABCS Name	Property Name	Default / Shipped Value	Description
			purpose. Refer to To Do Type/ To Do Role for configuration details.
CreateCustomerInteractionOUWAMUtilitiesReqABCSImpl	TriggerDay	20	This property is for future use. Do not modify.
CreateCustomerInteractionOUWAMUtilitiesReqABCSImpl	TriggerToDo	YES	This property is for future use. Do not modify.
CreateInvoiceOUCCBUtilitiesProvABCSImpl	CCB.BillableChargeSATypeCode	MI-SUBCH	This is the CC&B SA Type used by Billable Charge Integration flow for finding or creating a Billable Charge SA. Set this to the appropriate CC&B SA Type that you use for this purpose.
CreateInvoiceOUCCBUtilitiesProvABCSImpl	CCB.CisDivisionCode	OH	This is the default CIS Division to use for finding or creating a Billable Charge SA in CC&B. This is only used when CC&B cannot find the CIS Division for the input Account or SP. Set this to the appropriate CC&B CIS Division that you use for this purpose.
CreateInvoiceOUCCBUtilitiesProvABCSImpl	CCB.OrderIDCharacteristicTypeCode	CI_SOLID	This is the Characteristic Type to use for storing the common Work Order ID in the Billable Charge Upload Line Characteristics.
CreateInvoiceOUCCBUtilitiesProvABCSImpl	CCB.SAStartOption	<blank>	This is the SA Start Option used for finding or creating a Billable Charge SA. This is an optional field. You can specify a valid CC&B SA Start Option to be used for this purpose.
CreateInvoiceOUCCBUtilitiesProvABCSImpl	CCB.ToDoMessageCategory	90000	Set this to a valid CC&B Message Category that you want to be used for To Do entries created by the Billable Charge flow. Set this property to the created/identified To Do Message Category for this purpose. Refer to To Do Type/ To Do Role for configuration details.
CreateInvoiceOUCCBUtilitiesProvABCSImpl	CCB.ToDOMessageNumber	5010	Set this to a valid CC&B Message Number that you want to be used for To Do entries created by the Billable

ABCS Name	Property Name	Default / Shipped Value	Description
			Charge flow. Set this property to the created/identified To Do Message Number for this purpose. Refer to To Do Type/ To Do Role for configuration details.
CreateInvoiceOUCCBUtilitiesProvABCSImpl	CCB.ToDoRole	<blank>	CC&B To Do Role to be used by Billable Charge flow, for the creation of a To Do Entry when multiple accounts are linked to an SP. This is an optional field. Set this property to the created/identified To Do Role for this purpose if needed. Refer to To Do Type/ To Do Role for configuration details.
CreateInvoiceOUCCBUtilitiesProvABCSImpl	CCB.ToDOTypeCode	CI_WRNMU	CC&B To Do Type to use by Billable Charge flow, for the creation of a To Do Entry when multiple accounts are linked to an SP. Set this property to the created/identified To Do Type for this purpose.
CreateTimeSheetOUWAMUtilitiesProvABCSImpl	WAM.Default.Craft.Code	ADMN	This property is used by the Timesheet flow to default a WAM Craft code to be used for all timesheets sent from MWM to WAM. Set the Craft code specified here as one of the valid craft codes on the WAM Craft Rates Business rule.
CreateTimeSheetOUWAMUtilitiesProvABCSImpl	WAM.ServiceRequestCharge.Type	R	This is used by the Timesheet flow to specify the WAM Charge Type to be used for a Timesheet row that corresponds to Service Request in WAM. The default value used by WAM for Service Request is R. Set this value to match the corresponding value from the WAM Timekeeping Charge Types business rule.
CreateTimeSheetOUWAMUtilitiesProvABCSImpl	WAM.WorkOrderCharge.Type	R	This is used by the Timesheet flow to specify the WAM Charge Type to be used for a Timesheet row that

ABCS Name	Property Name	Default / Shipped Value	Description
			corresponds to Work Order in WAM. The default value used by WAM for Work Order is W. Set this value to match the corresponding value from the WAM TIMEKEEPING CHARGE TYPES business rule.
GetWOLineApptWinAvailOUCCBUtilitiesReqABCSImpl	CCB.ResponseCodeForErrorAppointment	100	This is the response code used by Appointments when there is an error retrieving the appointment slots. For internal use only. Do not modify.
GetWOLineApptWinAvailOUCCBUtilitiesReqABCSImpl	CCB.ResponseCodeForSuccessWithoutAvailableAppointment	101	This is the response code used by Appointments when no appointment slots were found for the search criteria specified. For internal use only. Do not modify.
GetWOLineApptWinAvailOUCCBUtilitiesReqABCSImpl	GeoCodeLatitude GeoCodeLongitude	LAT LONG	Specify the value for the CC&B Geo Types used on service point to indicate geographic coordinates. Refer to Geographic Type for configuration details.
GetWOLineApptWinAvailOUMWMUtilitiesProvABCSImpl	24hours.Default.Value	2400	This value is for internal use by this integration, Do not modify.
GetWOLineApptWinAvailOUMWMUtilitiesProvABCSImpl	destination.Default.Value	RTS	This value is for scheduler system use for routing appointment request to end MWM application. This value is for internal use. Do not modify.
GetWOLineApptWinAvailOUMWMUtilitiesProvABCSImpl	FONumber.Default.Value	00000	This is the default Field Order Number used by the Appointments when the order number is missing in the Request for appointment slots sent from CC&B. For internal use only. Do not modify.
GetWOLineApptWinAvailOUMWMUtilitiesProvABCSImpl	MaxUnits.Default.Value	1000000	This is the maximum unit count sent to MWM for retrieving the appointment slots. It is not needed to change this value.
GetWOLineApptWinAvailOUMWMUtilitiesProvABCSImpl	SlotGroup.Default.Value	2	Default slot group used when the request is sent to MWM for appointment slots. It is not needed to change this value.
GetWOLineApptWinAvailOUMWMUtilitiesProvABCSImpl	SlotMaxCount.Default.Value	10	This is used to specify the maximum number of slots to be retrieved from MWM by the Appointments flow. Set

ABCS Name	Property Name	Default / Shipped Value	Description
			this value to a desired value or you may just use the default of 10.
GetWOLineApptWinAvailOUMWMUtilitiesProvABCSImpl	SlotStartTime.Default.Value	0001	This is the default Slot Start Time sent to MWM for retrieving the appointment slots. It is not needed to change this value.
GetWOLineApptWinAvailOUMWMUtilitiesProvABCSImpl	zerohours.Default.Value	000	This value is for internal use by this integration, Do not modify.
GetWOLineApptWinAvailOUMWMUtilitiesProvABCSImplV2	MaxApptWinCount.Default.Value	1000	Default value of Max Appointment Window Count
GetWOLineApptWinAvailOUMWMUtilitiesProvABCSImplV2	MaxCostUnits.Default.Value	1e99	Default value of Max Cost Units.
ProcessWorkOrderCompleteOUMWMUtilitiesReqABCSImpl	Default.MeterReadSource	SPL MWM	This property is used by Work Order Flow, when meter readings are sent from WAM to CC&B for completed orders. Set this value to a valid meter read source code in CC&B. Refer to Meter Read Source for configuration details.
ProcessWorkOrderCompleteOUMWMUtilitiesReqABCSImpl	Default.Cancel.Reason	Canceled/Completed in WAM	This is the cancellation reason text sent to WAM when MWM cancels a Work Order. You can change this to the text that you wish to use for this purpose.
ProcessWorkOrderCompleteOUMWMUtilitiesReqABCSImplV2	Default.Cancel.Reason	Canceled/Completed in WAM	This is the cancellation reason text sent to WAM when MWM v2.x cancels a Work Order. You can change this to the text that you wish to use for this purpose.
ProcessWorkOrderCompleteOUMWMUtilitiesReqABCSImpl	Default.Plant	FWI	This is the default Plant Information sent from MWM v1.x to WAM
ProcessWorkOrderCompleteOUMWMUtilitiesReqABCSImplV2	Default.Plant	FWI	This is the default Plant Information sent from MWM v2.x to WAM
ProcessWorkOrderCompleteOUMWMUtilitiesReqABCSImpl	MWM.Pass.Representative.Information	false	This is used to indicate if the representative ID is to be passed to CC&B. If the property is false indicating that the representative ID should not be

ABCS Name	Property Name	Default / Shipped Value	Description
			passed to CC&B, then the CC&B Provider uses the generic representative configured in the AIA Configuration. If the property is true indicating that the representative ID should be passed, the MWM requester passes the representative ID to the Integration layer. The integration layer looks up the new DVM and passes the value configured in the DVM. If the Crew Data is synchronized between CC&B and MWM, this DVM can be left empty. When DVM is left empty, integration layer passes the CrewID coming from MWM directly to CC&B without any transformation.
ProcessWorkOrderCompleteOUMWMUtilitiesReqABCSImplV2	MWM.Pass.Representative.Information	false	This is used to indicate if the representative ID is to be passed to CC&B. If the property is false indicating that the representative ID should not be passed to CC&B, then the CC&B Provider uses the generic representative configured in the AIA Configuration. If the property is true indicating that the representative ID should be passed, the MWM requester passes the representative ID to the Integration layer. The integration layer looks up the new DVM and passes the value configured in the DVM. If the Crew Data is synchronized between CC&B and MWM, this DVM can be left empty. When DVM is left empty, integration layer passes the CrewID coming from MWM directly to CC&B without any transformation.
ProcessWorkOrderCompleteOUWAMUtilitiesReqABCSImpl	WAM.Pass.Representative.Information	true	This is the WAM Pass Representative Information

ABCS Name	Property Name	Default / Shipped Value	Description
ProcessWorkOrderCompleteOUWAMUtilitiesReqABCSImpl	Default.Cancel.Reason	Canceled/Completed in WAM	This is the cancellation reason text sent to CC&B/MWM with the cancellation request, when WAM cancels a Work Order. You can change this to the text that you wish to use for this purpose.
ProcessWorkOrderCreateOUMWMUtilitiesReqABCSImpl	CreateCustomerContact.Flag	false	Set to either True or False to indicate whether a customer contact is to be created in CC&B along with field activities that are created by the integration. This property is used by Work Order Flow, when an Order Create request is sent from MWM v1.x to CC&B.
ProcessWorkOrderCreateOUMWMUtilitiesReqABCSImplV2	CreateCustomerContact.Flag	false	Set to either True or False to indicate whether a customer contact is to be created in CC&B along with field activities that are created by the integration. This property is used by Work Order Flow, when an Order Create request is sent from MWM v2.x to CC&B.
ProcessWorkOrderOUCCBUtilitiesReqABCSImpl	GeoCodeLatitude GeoCodeLongitude	GRID_X GRID_Y	Specify the value for the CC&B Geo Types used on service point to indicate geographic coordinates. Refer to Geographic Type for configuration details.
ProcessWorkOrderCreateOUWAMUtilitiesReqABCSImpl	Default.Dispatch.Group	FWIUSER	This is the dispatch group used by Work Order flow for all Order Creates sent from WAM to CC&B. Set this value to match with one of the values in the DVM FS_Order_DispatchGroup under column OU_WAM_01.
ProcessWorkOrderCreateOUWAMUtilitiesReqABCSImpl	Default.Enrichment.For.Meter.SystemID	OU_CCB_01	This is used by the Work Order flow to identify the application used for retrieving meter and register information for Order Create messages sent from WAM. Do not modify.
ProcessWorkOrderOUCCBUtilitiesProvABCSImpl	CCB.CustomerContact.Class	CC	This is the CC&B Customer Contact Class that is used by Work Order Flow when this flow creates a new Field Activity in CC&B as a result of Order Create Request from WAM or

ABCS Name	Property Name	Default / Shipped Value	Description
			MWM. Set this property to the created/identified Customer Contact Class for this purpose. Refer to Customer Contact for configuration details.
ProcessWorkOrderOUCCBUtilitiesProvABCSImpl	CCB.CustomerContact.Desc	New SR created from Field Work Integration.	This is the Description that is specified on the Customer Contact when it is created in CC&B by the Work Order Flow when this flow creates a new Field Activity in CC&B as a result of Order Create Request from WAM or MWM. You can change this to the text that you wish to have on customer contacts.
ProcessWorkOrderOUCCBUtilitiesProvABCSImpl	CCB.CustomerContact.Type	INQUIRE	This is the CC&B Customer Contact Type that is used by Work Order Flow when this flow creates a new Field Activity in CC&B as a result of Order Create Request from WAM or MWM. Set this property to the created/identified Customer Contact Type for this purpose. Refer to Customer Contact for configuration details.
ProcessWorkOrderOUCCBUtilitiesProvABCSImpl	CCB.Representative.FACompletion	MWMCR1	The Representative to be used when MWM or WAM send an order completion message to CC&B. Must be valid in CC&B for the CC&B Dispatch Group(s) used for sending orders to WAM and MWM v1.x.
ProcessWorkOrderOUCCBUtilitiesProvABCSImpl	CCB.ToDoRole	CIACTIV	Specify the value for the CC&B user role that the To DoEntry created by the Work Order flow should be assigned to. Set this property to the created/identified To Do Role for this purpose. Refer to To Do Type/ To Do Role for configuration details.
ProcessWorkOrderOUWAMUtilitiesProvABCSImpl	Default.Employee.For.InventoryLog	MWM, INTEGRATION	This is the default WAM checkout employee used by the Work Order flow for the inventory log

ABCS Name	Property Name	Default / Shipped Value	Description
			transactions sent from MWM to WAM with the Order Completion message. All the inventory log transactions are created for this WAM employee. Set this to a valid WAM employee name to be used for this purpose. The name is to be specified in the format <Employee Last Name>, <Space><Employee First Name>. Refer to Employees for Checkout Transactions
ProcessWorkOrderResponseOUCCBUtilitiesProvABCSImpl	Default.Create.FA.Log	true	Values are true and false. This is used by Work Order Integration flow while sending positive or negative acknowledgements back into CC&B and determines if a FA Log entry is to be created in CC&B on the receipt of the acknowledgement.
ProcessWorkOrderResponseOUCCBUtilitiesProvABCSImpl	Default.Notification.External.ID	AIA-FS	This is the CC&B Notification External ID used by the Work Order Integration flow while sending positive or negative acknowledgements back into CC&B for Order messages sent out by CC&B. Set this to a valid External System. See Setting Up CC&B > Configure Download and XAI section for more information.
ProcessWorkOrderResponseOUCCBUtilitiesProvABCSImpl	Default.Reply.To.Message.Source	AIA-FS	This is the CC&B Reply To Message Source used by the Work Order Integration flow while sending positive or negative acknowledgements back into CC&B for Order messages sent out by CC&B. Set this to a valid External System. See Setting Up CC&B > Configure Download and XAI section for more information.
ProcessWorkOrderUpdateOUWAMUtilitiesReqABCSImpl	Default.Dispatch.Group	FWIUSER	This is the dispatch group used by Work Order flow for all Order Creates sent from WAM to CC&B. This value must match the value of the Default.Dispatch.Group, which was set for Create messages in a previous step.

ABCS Name	Property Name	Default / Shipped Value	Description
ProcessWorkOrderUpdateOUWAMUtilitiesReqABCSImpl	IntermediateStatus	CREX	This is used to identify the intermediate status code sent by WAM for Work Order Update messages. Do not modify.
ProcessWorkOrderCompleteOUWAMUtilitiesReqABCSImpl	WAM.Pass.Representative.Information	false	This is used to indicate if the representative ID is to be passed to CC&B. If the property is false indicating that the representative ID should not be passed to CC&B, then the CC&B Provider uses the generic representative configured in the AIA Configuration. If the property is true indicating that the representative ID should be passed, the WAM requester passes the representative ID to the Integration layer. The integration layer looks up the new DVM and passes the value configured in the DVM. If the Crew Data is synchronized between CC&B and WAM, this DVM can be left empty. When DVM is left empty, integration layer passes the CrewID coming from WAM directly to CC&B without any transformation.
ValidateInstalledProductOUMWMUtilitiesReqABCSImplV2	Transaction.Code	Read	Default value of Transaction Code. Do not change this property value

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. The DVMs are stored in Metadata Service (MDS).For example, **FOOT** and **FT** or **US** and **USA**.

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

To maintain the information within the domain value maps:

1. **Open a browser and access the SOA Composer (http://soa-server:soa-port/soa/composer) for your installation.**

2. **On the SOA Composer application open DVM.**
3. **Search and select the relevant DVM you wish to maintain.**
4. **Set up the required values for each integrated application.**

The Process Integration Pack for Oracle Utilities Field work includes the following DVMs:

DVM	Integration Points	Description
FS_Invoice_ChargeLineTypeCode	BillableCharge	DVM mapping for charge line type code
FS_Order_ChargeType	WorkOrder	DVM mapping for charge type
FS_Order_DisconnnectLocationCode	WorkOrder	DVM mapping for disconnect location code
FS_Order_DispatchGroup	WorkOrder, AvailableAppointment	DVM mapping for dispatch group
FS_Order_Division	WorkOrder, AvailableAppointment	DVM mapping for division
FS_Order_ExpenseTypeCode	WorkOrder	DVM mapping for expense type code
FS_Order_ItemStatusCode	WorkOrder	DVM mapping for item status code
FS_Order_ItemStockLocationCode	WorkOrder	DVM mapping for item stock location code
FS_Order_ItemTypeCode	WorkOrder	DVM mapping for item type code
FS_Order_MeterConfigurationType	WorkOrder, InstalledProduct	DVM mapping for meter configuration type
FS_Order_MeterStatusCode	WorkOrder	DVM mapping for meter status code
FS_Order_MeterStockLocationCode	WorkOrder	DVM mapping for meter stock location code
FS_Order_MeterTypeCode	WorkOrder	DVM mapping for meter type code
FS_Order_OperationsArea	WorkOrder, AvailableAppointment	DVM mapping for operations area. For WAM, this is set up as **Dept**Area**
FS_Order_ReadTypeCode	WorkOrder	DVM mapping for meter read type code
FS_Order_RegisterReadUnitCode	WorkOrder, InstalledProduct	DVM mapping for register read unit code
FS_Order_RegisterTimeOfUseCode	WorkOrder, InstalledProduct	DVM mapping for register read time of use code
FS_Order_ServicePointTypeCode	WorkOrder, AvailableAppointment	DVM mapping for service point type code
FS_Order_Status	WorkOrder	DVM mapping for order status

DVM	Integration Points	Description
FS_Order_SubStatus	WorkOrder	DVM mapping for order sub status
FS_Order_TypeCode	WorkOrder, AvailableAppointment	DVM mapping for order type code. For WAM, this is set up as **Service Request Type**Problem Code**
FS_TimeSheet_CrewCode	Timesheet	DVM mapping for timesheet crew code
FS_TimeSheet_LaborEarningType	Timesheet	DVM mapping for labor earning type
FS_TimeSheet_ShiftCode	Timesheet	DVM mapping for shift code
FS_Order_Worker	WorkOrder	DVM mapping for Representative ID values
FS_Order_RemarksCode	WorkOrder	DVM mapping for Remarks Code values
FS_Order_StepType	WorkOrder	DVM mapping for Step Type values
FS_Order _SlotGroup	AvailableAppointment	DVM mapping for Slot group for an Appointment values
FS_Order_MeterLocationCode	WorkOrder	DVM mapping for Meter Location Code values
FS_Order_PriorityCode	WorkOrder	DVM mapping for Priority Code values
FS_Order_TimeZone	WorkOrder	DVM mapping for passing Time Zone Code values
FS_Country_Code	WorkOrder	DVM mapping to pass Country Codes
FS_Language_Code	InstalledProduct	DVM mapping to pass Language Codes
FS_Order_TypeCode_UseReadingOnBill	WorkOrder	DVM mapping to map UseOnBill Indicator based on Order Type Code
FS_Order_ManufacturerCode	WorkOrder	DVM mapping to map Manufacturer code of Meter/Item.
FS_Order_ServiceWarnings	WorkOrder	DVM mapping to map service warnings
FS_Order_ServiceInstructions	WorkOrder	DVM mapping to map service instructions

For more information about DVMs, see *Oracle Fusion Middleware Developer's Guide for Oracle Application Integration Architecture Foundation Pack*, "Understanding Message Transformation, Enrichment, and Configuration," or "Working with Message Transformations" or *Oracle Fusion Middleware Developer's Guide for Oracle SOA Suite*, "Working with Domain Value Maps. For information on matching values for each DVM, refer to the applicable section in Setting up Oracle Utilities Customer Care and Billing for OU_CCB_01, Setting up Oracle Utilities Work and Asset Management for OU_WAM_01 and to Setting up Oracle Utilities Mobile Workforce Management for OU_MWM_01.

FS_Invoice_ChargeLineTypeCode

Bill charge line types simplify the creation of billable charges in Oracle Utilities Customer Care and Billing. Each line type contains values that are defaulted onto the line details associated with the uploaded billable charges.

When billing information is sent from Oracle Utilities Work and Asset Management to Oracle Utilities Customer Care and Billing, using the Invoice integration point, this DVM is used to populate the appropriate value for the bill charge line type. This bill charge line type is then used within Oracle Utilities Customer Care and Billing to control the behavior of the billable charge.

Common	OU_CCB_01	OU_WAM_01	OU_CCB_SHOW_ON_BILL
AIA common value: Describes the type of charge line. Must be unique for each DVM row.	Must match values for **Bill Charge Line Type**.	Must match values for **Category** in the EXPENSE CODE Business Rule.	This information is used to populate the **Description on Bill** information for the Billable Charge Upload Staging Line. This is the description of the charge line that appears on the customer's bill in CC&B.
Note that since MWM is not involved in the Invoice integration point that uses this DVM, the OU_MWM_01 column is not used and should be left blank.			

FS_Order_ChargeType

Maps the Charge Type between Oracle Utilities Mobile Workforce Management v1.x and Oracle Utilities Work and Asset Management for Direct Charge transactions when Oracle Utilities Mobile Workforce Management to Oracle Utilities Work and Asset Management orders are completed.

Common	OU_CCB_01	OU_WAM_01	OU_MWM_01
AIA common value: Describes the type of charge. Must be unique for each DVM row.	Leave blank.	Must match the Charge Type value on the WAM business rule TIMEKEEPING CHARGE TYPES that corresponds to Service Request on the business rule. By default the value is R	MWM only supports a W value for Charge Type. There must be one row in the DVM where this column is set to W. The corresponding WAM value is set in the Timekeeping Charge Types business rule.

FS_Order_DisconnnectLocationCode

When a service point is disconnected from the supply source, a disconnect location must be specified. This location defines where service was severed.

Common	OU_CCB_01	OU_WAM_01	OU_MWM_01
AIA common value: Describes the disconnect location. Must be unique for each DVM row.	Must match values for **Disconnect Location**	Must match values for Disconnect Location in Code Table 246.	Must match values for Disconnect Location Code. MWM v2.x uses the Disconnect Location Extendable Lookup

FS_Order_DispatchGroup

A dispatch group is a logical group of representatives located at an operations area. When a Field Activity is created, the system assigns it to a dispatch group based on the type of activity, the type of service point, and the operations area that manages the service point.

Each of the edge applications in use may refer to a dispatch group differently. To account for these differences, create the mapping between the dispatch groups in each application using this DVM.

Common	OU_CCB_01	OU_WAM_01	OU_MWM_01
AIA common value: Describes the dispatch group. Must be unique for each DVM row.	Must match values for **Dispatch Group**	WAM does not store a Dispatch Group. This column can be blank except for one row where the value is set to the default WAM Dispatch Group as specified in the AIA Configuration Properties. The property is Default.Dispatch.Group for WAM create and update requester.	Must match values for Service Area.

FS_Order_Division

Maps CIS Division in Oracle Utilities Customer Care and Billing to Division in Oracle Utilities Mobile Workforce Management v1.x. It also maps Oracle Utilities Work and Asset Management Plant to Oracle Utilities Mobile Workforce Management Division when work orders are sent from Oracle Utilities Work and Asset Management to Oracle Utilities Mobile Workforce Management v1.x.

Common	OU_CCB_01	OU_WAM_01	OU_MWM_01
This is the AIA common value, which describes the Division. Must be unique for each DVM row.	Must match values for **CIS Division**	Must match value for WAM Plant. For each valid WAM Plant there must be one row in the DVM where the value in the column is the WAM Plant code with corresponding MWM column containing valid MWM Division code.	Must match values for Division.

FS_Order_ExpenseTypeCode

Maps ODC codes while sending direct charge expense information from Oracle Utilities Mobile Workforce Management v1.x to Oracle Utilities Work and Asset Management.

Common	OU_CCB_01	OU_WAM_01	OU_MWM_01
AIA common value: Describes the type of direct charge expense. Must be unique for each DVM row.	Leave blank.	Must match values for **Direct Charge Types** in the DIRECT CHARGE TYPES Business Rule.	Must match values for WAM Direct Charge Type Codes.

FS_Order_ItemStatusCode

Maps Item Status code from Oracle Utilities Mobile Workforce Management to Oracle Utilities Customer Care and Billing when Oracle Utilities Mobile Workforce Management sends Order Completion to Oracle Utilities Customer Care and Billing with Item information.

Common	OU_CCB_01	OU_WAM_01	OU_MWM_01
AIA common value: Describes the Status. Must be unique for each DVM row.	Must match with valid On-Off Status in CC&B related to Items. The values in CC&B are 0 for OFF and 1 for ON.	Leave blank.	Specify values from the MWM v1.x configuration table DHTMTRST, column METER_STATUS_CD that corresponds to ON and OFF values in CC&B. MWM v2.x uses the M2_DEVICE_STATUS_FLG Lookup.

FS_Order_ItemStockLocationCode

A stock location is a physical or logical location at which items are stored while they are not installed at a service point. When an item is removed from a service point the stock location must be entered. Each edge application involve may have different codes for the various stock locations.

Common	OU_CCB_01	OU_WAM_01	OU_MWM_01
AIA common value: Describes the item stock location. Must be unique for each DVM row.	Must match values for 'Stock Location'.	Leave blank.	Must match values in the MWM v1.x configuration table DHTSTKLO, column STOCK_LOC_CD. MWM v2.x uses the Stock Location Extendable Lookup

FS_Order_ItemTypeCode

Items are any type of equipment, other than meters. Every item has an item type that defines characteristics common to all items with this type. Each edge application involve may have different codes for the item types.

Common	OU_CCB_01	OU_WAM_01	OU_MWM_01
AIA common value: Describes the item type. Must be unique for each DVM row.	Must match values for **Item Type**.	Leave blank.	Must match values in the MWM v1.x configuration table DHTITTYP, column ITEM_TYPE_CD.

FS_Order_MeterConfigurationType

Every meter configuration must reference a meter configuration type. Each edge application involve may have different codes for the meter configuration types.

Common	OU_CCB_01	OU_WAM_01	OU_MWM_01

AIA common value: Describes the meter configuration type. Must be unique for each DVM row.	Must match values for **Meter Configuration Type**.	Must match the CC&B value on the corresponding rows.	Must match values in the MWM v1.x configuration table. DHTPRGID, column PROGRAM_ID. MWM v2.x uses the Meter Configuration Type Extendable Lookup

FS_Order_MeterStatusCode

Maps the Meter Status code between Oracle Utilities Mobile Workforce Management, Oracle Utilities Work and Asset Management and Oracle Utilities Customer Care and Billing when Oracle Utilities Mobile Workforce Management or Oracle Utilities Work and Asset Management sends Order Completion to Oracle Utilities Customer Care and Billing with Meter information.

Common	OU_CCB_01	OU_WAM_01	OU_MWM_01
AIA common value: Describes the Status. Must be unique for each DVM row.	Must match valid Meter On-Off Status in CC&B. The values in CC&B are 0 for OFF and 1 for ON.	Must match valid Meter Status in WAM. The values in WAM are 0 for OFF and 1 for ON.	Specify values from the MWM v1.x configuration table DHTMTRST, column METER_STATUS_CD that corresponds to ON and OFF values in CC&B. MWM v2.x uses the M2_DEVICE_STATUS_FLG Lookup.

FS_Order_MeterStockLocationCode

A stock location is a physical or logical location at which meters are stored while they are not installed at a service point. When a meter is removed from a service point its stock location must be input. Each edge application involve may have different codes for the various stock locations.

Common	OU_CCB_01	OU_WAM_01	OU_MWM_01
AIA common value: Describes the meter stock location. Must be unique for each DVM row.	Must match values for **Stock Location**	Must match the MWM value on the corresponding rows.	Must match values in the MWM v1.x configuration table DHTSTKLO, column STOCK_LOC_CD. MWM v2.x uses the Stock Location Extendable Lookup

FS_Order_MeterTypeCode

Every meter references a meter type. The meter type defines the type of service and common characteristics shared by its meters. Each edge application involved may have different codes for the various meter types.

Common	OU_CCB_01	OU_WAM_01	OU_MWM_01
AIA common value: Describes the meter type. Must be unique for each	Must match values for **Meter Type**	Must match the CC&B value on the corresponding rows.	Must match the CC&B value on the corresponding rows.

DVM row.			

FS_Order_OperationsArea

When a service point is set up, the operation areas that manage its fieldwork are defined. Each edge application involved may have different codes for the various operation areas. In addition to mapping codes, this DVM is used to specify a default Oracle Utilities Work and Asset Management account code to be used on the Service Request.

Common	OU_CCB_01	OU_WAM_01	OU_MWM_01	OU_WAM_05
AIA common value: Describes the operation area. Must be unique for each DVM row.	Must match values for Operation Area	Set to a combination of valid WAM department code and area code. Use the format: <department_code>**<area_code>.	Must match values in the MWM configuration table DHTDIST, column DISTRICT.	Specify a valid WAM account code to be used as the default account for each combination of WAM department and area, to be used on the SR.

FS_Order_ReadTypeCode

Read type indicates who read a meter and how it was read. This information accompanies meter register reading data. Each edge application involved may have different codes for read types.

This DVM is shipped with required values populated. You should not need to change these values.

Common	OU_CCB_01	OU_WAM_01	OU_MWM_01
AIA common value: Describes the read type code. Must be unique for each DVM row.	CC&B values for this column are 60 and 70.	CC&B values for this column are 60 and 70.	CC&B values for this column are 60 and 70.

FS_Order_RegisterReadUnitCode

Register read unit code indicates the units of measure of the register reading. This information accompanies meter register reading data. Each edge application involved may have different codes for units of measure.

Common	OU_CCB_01	OU_WAM_01	OU_MWM_01
AIA common value: Describes the register read unit code. Must be unique for each DVM row.	Specify a list of Unit of measure valid in CC&B.	Must match the CC&B value on the corresponding rows.	Must match values in the MWM v1.x configuration table DHTRTYPC, column READ_TYPE_CD. MWM v2.x uses the Unit Of Measure Extendable Lookup

FS_Order_RegisterTimeOfUseCode

Maps register time of use (TOU) codes between Oracle Utilities Customer Care and Billing, Oracle Utilities Work and Asset Management and Oracle Utilities Mobile Workforce Management.

Common	OU_CCB_01	OU_WAM_01	OU_MWM_01
AIA common value: Describes the register TOU. Must be unique for each DVM row.	Specify a list Time Of Use Codes valid in CC&B.	Must match the CC&B value on the corresponding rows.	Must match values in the MWM v1.x configuration table DHTRDUCD, column READ_USE_CD. MWM v2.x uses the Time Of Use Extendable Lookup

FS_Order_ServicePointTypeCode

Every service point must reference a service point (SP) type. The SP type controls almost all aspects of the service point behavior (for example, the type of Field Activity that may be dispatched to it, the type of service agreement that may be linked to it, the type of meter that may be installed at it). Each edge application involved may have different codes for SP Type.

Common	OU_CCB_01	OU_WAM_01	OU_MWM_01
AIA common value: Describes the service point type. Must be unique for each DVM row.	Specify a list of Service Point Types valid in CC&B.	Must match values for Asset Type Codes Code Table. The Asset Type codes in this code table that correspond to the CC&B Service Point type codes need to be listed in this DVM.	Must match values in the MWM v1.x configuration table DHTSPTYP, Column SPT_TYPE_CD.

FS_Order_Status

Order status indicates the current state or status of the order such as Active, Held, or Finished. Each edge application involved may have different codes for Status.

This DVM is shipped with required values predefined. You should not need to change these values.

Common	OU_CCB_01	OU_WAM_01	OU_MWM_01	OU_WAM_01_CANCELED
AIA common value: Describes the order status. Must be unique for each DVM row.	A list of valid CC&B FA Statuses has been specified in this column.	A list of valid WAM SR Statuses has been specified in this column.	A list of valid MWM FO Statuses has been specified in this column.	A list of valid WAM statuses for canceled messages in WAM.

FS_Order_SubStatus

For status updates from Oracle Utilities Work and Asset Management to Oracle Utilities Customer Care and Billing, this maps Oracle Utilities Work and Asset Management status codes to Oracle Utilities Customer Care and Billing Intermediate Status Codes. For status updates from Oracle Utilities Mobile Workforce Management to Oracle Utilities Customer Care and Billing, this maps Oracle Utilities Mobile Workforce Management Transaction codes to Oracle Utilities Customer Care and Billing Intermediate Statuses.

Common	OU_CCB_01	OU_WAM_01	OU_MWM_01
AIA common value: Describes the intermediate status. Must be unique for each DVM row.	Specify a list of valid CC&B intermediate statuses.	Must match values for WAM Service Request status and must contain a row with the value **CREX** in this column with the corresponding CC&B value also specified as CREX.	Specify MWM transaction IDs corresponding to the intermediate status in CC&B. A list of values is shipped for this DVM.

FS_Order_TypeCode

The order type code is used for two important functions:

- Mapping Field Activity Type values, Service Request Type and Problem Code Values, and Field Order Type values between the edge applications involved in the integration,
- Determining which applications an order is routed to when it is created.

Column	Description
COMMON	AIA common value: Describes the order type. Must be unique for each DVM row.
OU_CCB_01	Must match values for **Field Activity Types**
OU_WAM_01	This holds a concatenation of two values: Service Request Type (WAM Code table 240) Problem Code (WAM Code table 241) These are separated by "**" for example in the format: <WAM SR Type>**<WAM Problem Code>.
OU_MWM_01	Must match values for Order Type in MWM v1.x and Activity Types in MWM v2.x.
ROUTE_TO_CCB	When this value is set to **Y** orders of this type are routed to CC&B when they are created by either WAM or MWM. When set to **N** orders are not routed.
ROUTE_TO_WAM	When this value is set to **Y** orders of this type are routed to WAM when they are created by either CC&B or MWM.
ROUTE_TO_MWM	When this value is set to **Y** orders of this type are routed to MWM when they are created by either WAM or CC&B. When set to **N** orders are not routed.

FS_TimeSheet_CrewCode

Crew code indicates the crew associated with a timesheet entry. Each edge application involved may have different codes for Crew Code.

Common	OU_CCB_01	OU_WAM_01	OU_MWM_01
AIA common value: Describes the crew code. Must be unique for each DVM row.	Leave blank. CC&B is not involved in the timesheet integration.	Must match values for WAM Crew codes.	Must match values in the MWM v1.x configuration table DHTCREW, column CREW.

FS_TimeSheet_LaborEarningType

This indicates the Earning Code associated with a timesheet entry. Each edge application involved may have different codes for Earning Code.

Common	OU_CCB_01	OU_WAM_01	OU_MWM_01
AIA common value: Describes the labor earning code. Must be unique for each DVM row.	Leave blank. CC&B is not involved in the timesheet integration.	Must match values for Earning Code in the TIMEKEEPING LABOR EARNING TYPE Business Rule	Must match values in the MWM v1.x configuration tables DHTWAMREGEARN and DHTWAMPREMEARN, column EARN_CD.

FS_TimeSheet_ShiftCode

This indicates the Shift Code associated with a timesheet entry. This information is used for establishing the shift differential rates to be used for cost accounting. Each edge application involved may have different codes for Shift Code.

Common	OU_CCB_01	OU_WAM_01	OU_MWM_01
AIA common value: Describes the shift code. Must be unique for each DVM row.	Leave blank. CC&B is not involved in the timesheet integration.	Must match values for Shift Code in the SHIFT DIFFERENTIAL RATES Business Rule.	Must match values in the MWM v1.x configuration table DHTWAMSHIFTDIFF, column SHIFTDIFF_CD.

FS_Order_Worker

This indicates the Representative ID of the person who worked on the Order. This information is used for identifying the exact Crew who worked on any particular Order. This is an optional setup and required only if the crews are not synchronized between the edge applications.

Common	OU_CCB_01	OU_WAM_01	OU_MWM_01
AIA common value: Describes the representative ID. Must be unique for each DVM row.	CC&B Representative ID value	Must match Crew ID	Must match WorkedBy Field

FS_Order_RemarksCode

This indicates the Remarks Codes associated with an Order. Remarks codes are mapped from Oracle Utilities Mobile Workforce Management and/or Oracle Utilities Work and Asset Management into Oracle Utilities Customer Care and Billing.

Oracle Utilities Mobile Workforce Management v1.x can send only one Standard Remarks Code while Oracle Utilities Mobile Workforce Management v2.x and Oracle Utilities Work and Asset Management can send a list of codes to Oracle Utilities Customer Care and Billing.

Common	OU_CCB_01	OU_WAM_01	OU_MWM_01
AIA common value: Describes the remarks code. Must be unique for each DVM row.	CC&B Remarks Code value	WAM Remarks code value	MWM Remarks Code value

FS_Order_StepType

This indicates the Step Types associated with an Order sent from Oracle Utilities Customer Care and Billing. Step Types are mapped between Oracle Utilities Customer Care and Billing, Oracle Utilities Mobile Workforce Management and Oracle Utilities Work and Asset Management.

This DVM only maps Oracle Utilities Customer Care and Billing Step type to Common Step type. Oracle Utilities Mobile Workforce Management or Oracle Utilities Work and Asset Management step types are not mapped. The implementation can customize and use this DVM to map to Oracle Utilities Work and Asset Management or Oracle Utilities Mobile Workforce Management step types if needed.

Common	OU_CCB_01	OU_WAM_01	OU_MWM_01
AIA common value: Describes the step type. Must be unique for each DVM row.	CC&B Step Type value	WAM Step Type value	MWM Step Type value

FS_Order _SlotGroup

This indicates the Slot Group associated with an Appointment. Slot Group is mapped between Oracle Utilities Customer Care and Billing and Oracle Utilities Mobile Workforce Management v1.x.

Common	OU_CCB_01	OU_WAM_01	OU_MWM_01
AIA common value: Describes the slot group. Must be unique for each DVM row.	CC&B Slot Group value		MWM Slot Group value

FS_Order_MeterLocationCode

This indicates the Location of a Meter. This DVM is applicable only to Oracle Utilities Customer Care and Billing and Oracle Utilities Mobile Workforce Management v2.x

Common	OU_CCB_01	OU_WAM_01	OU_MWM_01
AIA common value: Describes the meter location. Must be unique for each DVM row.	CC&B Meter Location Code value		MWM v2.x Meter Location Code value

FS_Order_PriorityCode

This indicates the Priority Code of Orders. This DVM is used to map Priority Codes between Oracle Utilities Customer Care and Billing, Oracle Utilities Work and Asset Management and Oracle Utilities Mobile Workforce Management v1.x/ v2.x.

Note: In Oracle Utilities Mobile Workforce Management v2.x the Priority Code is mapped to the Queue.

Common	OU_CCB_01	OU_WAM_01	OU_MWM_01
AIA common value: Describes the Priority Code. Must be unique for each DVM row.	CC&B Priority Code value	WAM Priority Code value	MWM PriorityCode value

FS_Order_TimeZone

This DVM is used to map Time Zones between Oracle Utilities Customer Care and Billing, Oracle Utilities Work and Asset Management and Oracle Utilities Mobile Workforce Management v2.x

Common	OU_CCB_01	OU_WAM_01	OU_MWM_01
AIA common value: Describes the Time Zone. Must be unique for each DVM row.	CC&B Time Zone value	WAM Time Zone value	MWM Time Zone value

FS_Country_Code

This DVM is used to map Country Codes between Oracle Utilities Customer Care and Billing, Oracle Utilities Work and Asset Management and Oracle Utilities Mobile Workforce Management v2.x

Common	OU_CCB_01	OU_WAM_01	OU_MWM_01
AIA common value: Describes the Country Code. Must be unique for each DVM row.	CC&B Country Code value	WAM Country Code value	MWM Country Code value

FS_Language_Code

This DVM is used to map Language Codes between Oracle Utilities Customer Care and Billing, Oracle Utilities Work and Asset Management and Oracle Utilities Mobile Workforce Management. Currently the language code is only passed from Oracle Utilities Mobile Workforce Management v2.x to Oracle Utilities Customer Care and Billing for Installed Product.

Common	OU_CCB_01	OU_WAM_01	OU_MWM_01
AIA common value: Describes the Language Code. Must be unique for each DVM row.	CC&B Language Code value	WAM Language Code value	MWM Language Code value

FS_Order_TypeCode_UseReadingOnBill

This DVM is used to map the Use on Bill Indicator on a Reading depending on the Order Type. The Use on Bill Indicator can be either true or false.

OU_CCB_ORDER_TYPE_CODE	USE_READING_ON_BILL
CC&B Order Type Code value	Use On Bill Indicator.

FS_Order_ManufacturerCode

This indicates the Manufacturer of a Meter or Item. This DVM is applicable only to Oracle Utilities Customer Care and Billing and Oracle Utilities Mobile Workforce Management v2.x

Common	OU_CCB_01	OU_WAM_01	OU_MWM_01
AIA common value: Describes the meter/item manufacturer. Must be unique for each DVM row.	CC&B Meter/Item Manufacturer Code value		MWM v2.x Meter/Item Manufacturer Code value stored as extendable lookup

FS_Order_ServiceWarningsCode

This indicates the Service Warnings associated with a Service Point. This DVM is applicable only to Oracle Utilities Customer Care and Billing and Oracle Utilities Mobile Workforce Management v2.x.

Common	OU_CCB_01	OU_WAM_01	OU_MWM_01
AIA common value: Describes the service warnings code associated with a service point. Must be unique for each DVM row.	CC&B Service Warnings Code value		MWM v2.x Service Warnings Code value stored as extendable lookup

FS_Order_ServiceInstructionsCode

This indicates the Service Instructions associated with a Service Point. This DVM is applicable only to Oracle Utilities Customer Care and Billing and Oracle Utilities Mobile Workforce Management v2.x.

Common	OU_CCB_01	OU_WAM_01	OU_MWM_01
AIA common value: Describes the service instructions code associated with a service point. Must be unique for each DVM row.	CC&B Service Instructions Code value		MWM v2.x Service Instructions Code value stored as extendable lookup

Cross-References

Cross-references map and connect the records within the application network, and enable these applications to communicate in the same language. The integration server stores the relationship in a persistent way so that others can refer to it.

These are the cross-references for Process Integration Pack for Oracle Utilities Field Work:

Note: During implementation you do not need to do anything with this table. This table is populated by the integration processes as orders are created.

XREFTABLENAME	COLUMN NAME	DESCR	USAGE
FS_ORDER_ID	OU_CCB_01	CC&B FA ID	Populated by work order create business flow for orders that involve CC&B
	COMMON		Populated by work order create business flow
	OU_MWM_01	MWM FO ID	Populated by work order create business flow for orders that involve MWM
	OU_WAM_01	WAM SR ID	Populated by work order create business flow for orders that involve WAM
	ROUTED_TO_CCB		Populated by work order create business flow for orders that are routed to CC&B
	ROUTED_TO_WAM		Populated by work order create business flow for orders that are routed to WAM
	ROUTED_TO_MWM		Populated by work order create business flow for orders that are routed to MWM

For more information about cross-references, see *Oracle Fusion Middleware Developer's Guide for Oracle Application Integration Architecture Foundation Pack,* "Understanding Message Transformation, Enrichment, and Configuration," Creating Cross-References."

Updating MDS with AIA Meta Data

If new artifacts are created, if extensions or customizations are made on the artifacts, or if DVM changes are made in AIAMetaData, you must upload the artifacts to MDS.

Oracle Metadata Services (MDS) repository contains all metadata. The contents under <AIA_HOME>/AIAMetaData are uploaded to SOA-MDS > apps/AIAMetaData. This includes specific schemas, WSDLS, DVMs, Cross Reference metada, default faultPolicies, AIAConfigurationProperties.xml and AIAEHNotification.xml

For more information about updating MDS, see *Oracle Application Integration Architecture – Foundation Pack: Integration Developers Guide,* "Updating MDS."

Error Notification Setup

Based on the roles defined for the services, email notifications are sent if a service errors out.

For more information about AIA error handling and error notifications; see the Oracle Application Integration Architecture – *Foundation Pack: Core Infrastructure Components Guide,* "Setting Up Error Handling and Logging, Using Error Notifications."

SOA Infrastructure Common Properties

Payload Validation property defined in SOA Infrastructure should be turned off.

This property is defined on SOA level under Common Properties and can be overridden for each process.

Make sure your implementation always has Payload Validation disabled.

Chapter 11: Monitoring, Error Handling and Troubleshooting

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

- Monitor from Oracle Utilities Customer Care and Billing
- Monitor from Oracle Utilities Mobile Workforce Management
- Monitor from Oracle Utilities Work and Asset Management
- Monitor from the Integration Layer
- Manage Failure Scenarios

Monitoring from Oracle Utilities Customer Care and Billing

This section discusses:

- CC&B Error Logs
- Field Activity Creation
- Connection Errors

CC&B Error Logs

Errors related to online integration are logged into XAI and MPL logs. Outgoing Messages in error can be found and resubmitted using Notification Download Staging and XAI Download Staging pages. Log files are written to the file designated during installation.

- spl.log - used to log errors in Oracle Utilities Customer Care and Billing
- xai.trc - used to log request messages received by XAI and responses to these messages
- xai.log - used to log any activities performed by XAI
- mpl.trc - used to log to log request messages received by MPL and responses to these messages
- mpl.log - used to log any activities performed by MPL. It is very important to verify that this log does not show any errors after MPL is started.

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

Field Activity Creation

Use the Notification Download Staging table to check the message status for created or updated field activities.

- When a Field Activity is successfully created, the NDS record is in Complete status.
- An XDS file is also created and stored in Complete status.
- If the NDS record is in Pending status this indicates that MPL is not started.
- If the NDS record indicates an error, check xai and mpl log files for error details.
- If the NDS record is not created, verify whether you have an FA Integration algorithm defined on the dispatch group for the Field Activity

Connection Errors

If the connection is not successful, make sure that MPL is running and then verify that the mpl.log exists in Oracle Utilities Customer Care and Billing. Use mpl.log to locate errors on outgoing messages. Refer to xai.trc for incoming messages.

Monitoring from Oracle Utilities Mobile Workforce Management v1.x

Oracle Utilities Mobile Workforce Management processing errors are logged to and displayed in the appropriate Oracle Utilities Mobile Workforce Management applications:

- Server
- Router
- Dispatch Workstation
- Mobile Workstation

User notifications are displayed to logged-on Dispatch Workstation and Mobile Workstation users. No new error messages or notifications were added for this integration.

For more information about errors and notifications see the Oracle Utilities Mobile Workforce Management Dispatcher Workstation and Mobile Workstation documentation.

Steps to follow from MWM

Oracle Utilities Mobile Workforce Management Router logs all transactions sent to the external application web service, and all responses received from it, in the Router trace log file (MfTraceLog@.txt). Trace log files are located in the Router\MfLogs subdirectory within the Oracle Utilities Mobile Workforce Management installation directory.

The trace log file is the first place to look for web service errors on transactions to Oracle Utilities Customer Care and Billing. If the response indicates a failure, the transaction is retried based on the value of the DHTWBCNG.RETRY_MESSAGE column. If the transaction receives an error and returns a SOAP fault, the transaction is not retried; instead, the SOAP fault is written to the trace log.

Verify whether the order was received by the Router

Look for a **Successfully received** message in the Audit list box on the Router dialog.

This message indicates that the Router received the transaction from the Web Service. If this message is not present, then the Router did not receive the transaction. Either it was not sent to Oracle Utilities Mobile Workforce Management or the data was in error. Any error messages are returned in the SOAP fault.

Verify whether the order was processed by the Router

Look for a **Sent ICD[##] to connection…** message in the Audit list box on the Router dialog

This message indicates that the Router received the transaction and sent it to the Server for processing. If this message is not present, the Router failed to process the transaction. Check for any error messages in the list box on the Router dialog. Open the full message by selecting the item in the list.

Verify whether the order was processed by the Server

Look for the following message in the Audit list box on the Router dialog:

Successfully wrote transaction [####] to OutputDirectory for connection FWI

(This may vary depending on the Oracle Utilities Mobile Workforce Management *configuration)***.**

This indicates that the Server processed the order transaction and has sent a transaction acknowledgement to the Router for delivery back to Oracle Utilities Customer Care and Billing. The order transaction may have files to process, but this validates that the Oracle Utilities Mobile Workforce Management components and Integration layer are communicating properly

Notifications

If Oracle Utilities Mobile Workforce Management can successfully send a transaction to the integration web service AND successfully received a transaction from the integration, the Router dialog displays the text **FWI Connected** and the indicator light is green. Otherwise, the light is red and the word 'Disconnected' appears next to the indicator light.

If communication cannot be established or fails at any time, notifications are sent from the Router application to the Server application and forwarded to all logged on Dispatch Workstation users. Log entries are also written to the router trace log file.

Notifications:

Notification	Description
Router and FWI connected	Indicates that a transaction was successfully sent to the integration web service.
Router and FWI disconnected	Indicates that an error occurred sending a transaction to the integration web service.
FWI connected to Router listener	Indicates that a transaction has been received from the integration connection.

Connection Errors

If the connection is not successful, check the following settings:

- Verify that the Oracle Application server with AIA installation is up and running.
- Verify that a value in the router.ini file is set to **FWI, WEB**.
- Verify that the external URLs in the web service definition table - DHTWBCNG are configured correctly for the transaction ID having a connection problem.
- Check the Router and Server dialogs in Oracle Utilities Mobile Workforce Management to locate errors in processing. You can also check the Router and Server log files directly.

Monitoring from Oracle Utilities Mobile Workforce Management v2.x

- Errors related to XAI integration are logged into XAI logs. Log files are written to the file designated during installation. spl.log - used to log errors in Oracle Utilities Mobile Workforce Management
- xai.trc - used to log request messages received by XAI and responses to these messagesxai.log - used to log any activities performed by XAI

Errors in sending new activity and activity completion outbound messages result in Activity To Host records created in the Remote Message table. The system monitors these records and attempts to resend the messages until successful.

For more information about errors and notifications see the Oracle Mobile Workforce Management documentation.

Steps to follow from MWM

Verify whether the activity was received by Oracle Utilities Mobile Workforce Management

When an activity is sent to Oracle Utilities Mobile Workforce Management, a response is returned to the integration layer indicating success or failure. If the transaction failed, the response contains an error message indicating the reason for the failure. If the activity was successful, the task ID is returned in the response.

To Verify Receipt of an Activity

1. **Navigate to the Service Management > Activity to access the Activity portal.**
2. **Select the Activity Identifier Query option and enter the returned task ID in the Activity ID field.**
   Alternatively, you can enter the PIP Common ID in the Host External ID.
3. **Select Refresh.**
   The activity appears in the list.

Connection Errors

If the connection is not successful, check the following settings:

- Verify that the urls specified in the XAI Senders are correct for the environment.
- Verify that the Oracle Application server with AIA installation is up and running.

Monitoring from Oracle Utilities Work and Asset Management

Errors related to Oracle Utilities Work and Asset Management are processed as follows:

Database Procedure – Errors are written to the Oracle Utilities Work and Asset Management Job Manager Log. This log can be viewed from within Oracle Utilities Work and Asset Management.

Inbound messages - Errors are logged in **xt_web_services_inbound_log**.

Detailed errors are logged to the Oracle Utilities Work and Asset Management **OC4J** instance in the redirected output/errors log (default pathname is <oracle-home>\opmn\logs\OC4J~OC4J_<instance name>~default_island~1).

Outbound messages – Errors are logged in the **xt_web_services_outbound_log** table as well as in the Job Manager Log module. Detailed errors are logged in the same way as inbound errors.

For more information about errors and notifications see the Oracle Utilities Work and Asset Management Job Manager Log documentation.

Service Request Creation

When monitoring processing related to the creation of Service Requests from field activities, consider the following:

1. If a Service Request is successfully created, the Service Request table, SA_SERVICE_REQUEST, shows the newly created record.
2. You can also look at the interface table, SAIF_SERVICE_REQUEST, to see if a record related to the FA has been sent from Oracle Utilities Customer Care and Billing.

   If the Field Activity is not found in the SAIF_SERVICE_REQUEST table, check the SIA logs found on the Oracle Utilities Work and Asset Management application server. Check this file for error messages related to the FA_ID or Service Request ID in question.

3. The XT_WEB_SERVICE_INBOUND_LOG table also shows a record related to the Field Activity in question. The FA_MSG_ID indicated in the SAIF table can be used to find a record in the XT log table where:

   EXTERNAL_MSG_ID = FA_MSG_ID

   Evaluate the STATUS field for the EXTERNAL_MSG_ID.

   - If the status = ERROR

   Review the message text in this record and follow the instructions.

   Check the Job Manage Log related to the Service Request Interface database procedure. Obtain the SR number from the SAIF table related to the FA in question. Check the job manager log for errors related to this Service Request.

   - If the status = COMPLETED

   An SR should have been successfully created. If you still cannot find the record in any of the tables indicated in this section, contact the Oracle Utilities Work and Asset Management system administrator.

   - If the status is not ERROR or COMPLETED, contact Oracle Utilities Work and Asset Management system administrator.

Connection Errors

If the connection is not successful then check the following:

- Verify that the urls specified in the Web services gateway business rule are correct for the environment.
- Check the Job Manager Log in Oracle Utilities Work and Asset Management to locate errors in batch processing. You can also check xt_web_services_inbound_log and

xt_web_services_outbound_log for error information.

Monitoring from the Integration

The components of the integration layer which may require unique procedures to troubleshoot include:

- EM - Oracle Enterprise Manager

For more information about e-mail notifications and worklist configuration, see Configuration Guidelines.

Steps to follow in Oracle Enterprise Manager

1. The Administrator user receives a notification e-mail for any failures in integration flows.
2. The notification e-mail includes an error text and description and a link to the failed instance of the composite on Oracle EM console.
3. On logging into the Enterprise Manager Console, the user can see more details about the instance.
4. The status of the ABCS instance, payload and child processes can be monitored form the EM Console.
5. If the composite is a BPEL process, the BPEL process flow indicates which step the failure has occurred on and also gives the error details.

For more information about error notifications, see *Oracle Fusion Middleware Developer's Guide for Oracle Application Integration Architecture Foundation Pack 11g Release 1,* "Working with Error Handling and Logging," Using Error Notifications.

Message Resubmission

This section explains the actions that users can take to fix transactions failing in the edge applications. Also if there are any errors then this section explains how the failed messages can be resubmitted.

The error scenarios are divided into two categories

1. Business Errors

   These are errors which occur in the Edge applications or in the Integration layer because of incorrect data setup. For these errors the message has to be resubmitted after the data has been corrected.

   For example, CCB initiated FA and Order Type missing in the FS_Order_TypeCode DVM for Oracle Utilities Work and Asset Management column.

2. Technical Errors

   These errors are usually connection failures. This occurs when one of the three systems is unreachable. These messages are moved to the Exception Queue and can be resubmitted from the exception queue once the edge application is reachable.

   For example, CCB initiated Order and Oracle Utilities Work and Asset Management server is down.

   In case of Oracle Utilities Customer Care and Billing if the message reaches Oracle Utilities Customer Care and Billing and fails a ToDo is created. For Oracle Utilities Work and Asset Management and Oracle Utilities Mobile Workforce Management e-mail is sent out to the administrator and an Oracle Worklist application task is created.

Business Errors

The business errors in the edge applications can be handled as follows:

#	Initiating Application	Failure in Application	Resubmitting the message
1	CCB	WAM	Resend the message from Oracle Utilities Customer Care and Billing as explained in CCB Outgoing Messages Resend
2	CCB	MWM	Resend the message from Oracle Utilities Customer Care and Billing as explained in CCB Outgoing Messages Resend
3	WAM	CCB	Submit the message in Oracle Utilities Customer Care and Billing using XAI Upload Staging as explained in CCB Message Upload
4	WAM	MWM	Submit the message from BPEL as explained in MWM Resubmit from BPEL
5	MWM	CCB	Submit the message in Oracle Utilities Customer Care and Billing using XAI Upload Staging as explained in CCB Message Upload
6	MWM	WAM	Submit the message from BPEL as explained in WAM Resubmit from BPEL or upload the message from WAM interface table as explained in WAM Message Upload

Outgoing Messages Resend

Oracle Utilities Customer Care and Billing Outgoing Messages Resend

Currently only Oracle Utilities Customer Care and Billing has message resend ability for outgoing messages.

Triggering Event

Creation, Update, or Cancellation of a Field Activity in Oracle Utilities Customer Care and Billing with a Dispatch Group that is associated to an external system (this is controlled by an algorithm on Dispatch Group).

Retry for Business Errors

If any of the target applications returns a business error while processing the inbound message, a negative acknowledgement is returned to Oracle Utilities Customer Care and Billing. Oracle Utilities Customer Care and Billing can be configured to create a To Do Entry on negative acknowledgements.

- If the error is caused because of missing configuration information, the user can add or revise the configuration information and resend the original message by changing the status of the message back to Pending. This is done on the Oracle Utilities Customer Care and Billing Notification Download Staging page (using the Oracle Utilities Customer Care and Billing user interface). This sends another create, update or cancel message.
- If the error requires that something is changed on the Field Activity, the user can make updates to the data on the Field Activity in Oracle Utilities Customer Care and Billing to fix the business error. The update causes another outbound message (this time update) to be sent from Oracle Utilities Customer Care and Billing to the target application(s).

Incoming Messages Upload

Currently Oracle Utilities Customer Care and Billing and Oracle Utilities Work and Asset Management have ability to reload the messages which reach the Oracle Utilities Customer Care and Billing and Oracle Utilities Work and Asset Management staging tables but are not able to get into the application because of some configuration or data issues.

Oracle Utilities Customer Care and Billing Message Upload

If an incoming Field Activity fails in Oracle Utilities Customer Care and Billing then an Oracle Utilities Customer Care and Billing ToDo is created and the message is stored in the XAI Upload staging.

- Navigate in Oracle Utilities Customer Care and Billing to the **Main Menu ->XAI -> XAI Upload Staging**. Search for messages where XAI Upload Staging Status is in **Error**
- If there is a configuration issue in Oracle Utilities Customer Care and Billing, the configuration in Oracle Utilities Customer Care and Billing can be fixed and the message can be uploaded from the XAI Upload staging in CCB.
- If there is a data issue in the message, the xml message can be corrected in Oracle Utilities Customer Care and Billing XAI Upload staging and message uploaded from there.
- To upload the message, change the XAI Upload Staging status to **Pending** and save the message. This way XAI tries to upload the message again in Oracle Utilities Customer Care and Billing.
- For XAI Upload Staging to store the incoming error the Post Error flag has to be set on the

XAI Inbound Service **C1AddFAandCustomerContact** (This service is used for adding Field Activity in Oracle Utilities Customer Care and Billing).

- The list of XAI Inbound Services for which the Post Error Flag has to be set on is as follows
    - C1RetCreateBillableChargeSA
    - BillableChargeUploadMaintenance
    - F1AutomaticToDoEntry
    - C1CustomerContactMaintenance
    - C1AddFAandCustomerContact
    - C1FieldActivityMaintenance
    - C1FACompletionExtSysStruct
    - FAResponse

Oracle Utilities Work and Asset Management Message Upload

If an incoming Service Request fails in Oracle Utilities Work and Asset Management then an Oracle worklist task is created and e-mail sent out to the administrator. The message is also stored in the Oracle Utilities Work and Asset Management Interface tables.

Once the data is corrected the messages can be uploaded from the interface tables to the application tables in Oracle Utilities Work and Asset Management by running the batch program **sdbp_ccb_service_req_interface**.

Edge Application Errors – Resubmit from Integration

There exist three BPEL Provider processes, which directly invoke the Edge application (Oracle Utilities Customer Care and Billing, Oracle Utilities Work and Asset Management and Oracle Utilities Mobile Workforce Management) web services. If the Work Order calls fail in any of the edge applications then a ToDo is created in Oracle Utilities Customer Care and Billing and an e-mail notification and a worklist application entry is created for Oracle Utilities Mobile Workforce Management or Oracle Utilities Work and Asset Management.

Oracle Utilities Customer Care and Billing has failed messages upload capability using the XAI Staging Upload table. For Oracle Utilities Work and Asset Management and Oracle Utilities Mobile Workforce Management the message can be resubmitted from BPEL.

Note: The message in the Provider is already converted to the EBO model and has the COMMON column values where DVMs are used. If the data correction is addition of a new row in the DVM then the COMMON column value needs to be set in the Provider request xml.

Oracle Utilities Work and Asset Management Resubmit from Enterprise Manager

The error notification e-mail includes a link to the worklist task. The worklist task shows the Instance ID of the Oracle Utilities Work and Asset Management Provider in failure.

To resubmit the message to Oracle Utilities Work and Asset Management from Enterprise Manager the following needs to be done:

1. **Log in into the EM console.**
2. **Go to SOA, soa-infra and click the Instances tab and search for the instance ID in failure.**
3. **Click the instance and go to Oracle Utilities Work and Asset Management Provider link.**
4. **Click the Oracle Utilities Work and Asset Management Provider Flow tab.**
   The flow of the BPEL process is displayed.
5. **Click the first activity in the flow ReceiveWorkOrder and copy the xml displayed in the activity to notepad or any other text editor.**
6. **Remove the ProcessWorkOrderReqMsg and part tag from the beginning and the end of the xml.**
7. **Add soap envelope tags at the beginning and the end of the remaining message as noted below:**
   Add: **<soap:Envelope xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/">**
   Add: **<soap:Body>**
   Remove: **<ProcessWorkOrderReqMsg><part xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" name="ProcessWorkOrder">**
   Do not change: **<ProcessWorkOrderEBM xmlns:aia="http://www.oracle.com/XSL/Transform/java/oracle.apps.aia.core.xpath.AIAFunctions" xmlns:hashmap="http://www.oracle.com/XSL/Transform/java/java.util.HashMap" xmlns:xref="http://www.oracle.com/XSL/Transform/java/oracle.tip.xref.xpath.XRefXPathFunctions" xmlns:UtilityWorkOrder="http://xmlns.oracle.com/EnterpriseObjects/Core/EBO/WorkOrder/V1" xmlns="http://xmlns.oracle.com/EnterpriseObjects/Core/EBO/WorkOrder/V1">**
   ….
   ….
   …..
   Do not change: **</ProcessWorkOrderEBM>**
   Remove: **</part></ProcessWorkOrderReqMsg>**
   Add: **</soap:Body>**
   Add: **</soap:Envelope>**
8. **Correct any data which needs to be corrected, if applicable.**
   Now the corrected data can be submitted from the EM Console.
9. **On the EM Console, go to SOA, soa-infra, default and select the process for the Oracle Utilities Work and Asset Management Provider named ProcessWorkOrderOUWAMUtilitiesProvABCSImpl.**
10. **Click the Test tab, enter security credentials and select the Input Arguments - XML View from the Drop down.**

11. **Click Post XML Message at the bottom of the screen.**
    Completing this action causes the Oracle Utilities Work and Asset Management Provider to resubmit the message to the Oracle Utilities Work and Asset Management system.

Oracle Utilities Mobile Workforce Management Resubmit from Enterprise Manager

The error notification e-mail contains a link to the worklist task. The worklist task has the Instance ID of the Oracle Utilities Mobile Workforce Management Provider in failure.

To resubmit the message to Oracle Utilities Mobile Workforce Management from EM Console the following needs to be done

1. **Log in into the EM console.**
2. **Go to SOA, soa-infra and click the Instances tab and search for the instance ID in failure.**
3. **Click on the instance and go to the Oracle Utilities Mobile Workforce Management Provider link. Then click the Oracle Utilities Mobile Workforce Management Provider Flow tab. The flow of the BPEL process is displayed.**
4. **Click on the first activity in the flow ReceiveOrder and copy the xml displayed in the activity to notepad or any other editor.**
5. **Remove the ProcessOrderReqMsg and part tag from the beginning and the end of the xml.**

6. **Add soap envelope tags at the beginning and the end of the remaining message as noted below:**
   Add: **<soap:Envelope xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/">**
   Add: **<soap:Body>**
   Remove: **<ProcessOrderReqMsg><part xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" name="ProcessOrder">**
   Do not change: **<ProcessWorkOrderEBM xmlns:aia="http://www.oracle.com/XSL/Transform/java/oracle.apps.aia.core.xpath.AIAFunctions" xmlns:hashmap="http://www.oracle.com/XSL/Transform/java/java.util.HashMap" xmlns:xref="http://www.oracle.com/XSL/Transform/java/oracle.tip.xref.xpath.XRefXPathFunctions" xmlns:UtilityWorkOrder="http://xmlns.oracle.com/EnterpriseObjects/Core/EBO/WorkOrder/V1" xmlns="http://xmlns.oracle.com/EnterpriseObjects/Core/EBO/WorkOrder/V1">**
   Do not change: **<corecom:EBMHeader xmlns:Orderabo="http://splwg.com/ExtractFAInfo.xsd" xmlns:corecom="http://xmlns.oracle.com/EnterpriseObjects/Core/Common/V2">**
   ….
   ….
   …..
   Do not change: **</ProcessWorkOrderEBM>**
   Remove: **</part></ProcessOrderReqMsg>**
   Add: **</soap:Body>**
   Add: **</soap:Envelope>**
7. **Correct any data which needs to be corrected, if applicable. Now the corrected data can be submitted from the EM Console.**
8. **On the EM Console, go to SOA, soa-infra, default and select the process for the Oracle Utilities Work and Asset Management Provider named ProcessWorkOrderOUMWMUtilitiesProvABCSImpl.**
9. **Click the Test tab, enter security credentials and select the Input Arguments - XML View from the Drop down.**
10. **Click Post XML Message at the bottom of the screen.**
    Completing this action causes the Oracle Utilities Mobile Workforce Management Provider to resubmit the message to the Oracle Utilities Mobile Workforce Management system.

Technical Errors

Resubmit from JMS Error Queue

If there is a connection failure on the provider end, transactions are moved to a JMS Error queue per application. Log on to the Weblogic Console to monitor the JMS Queues and move messages from the Error Queue to the Main Queue once the reason for failure is resolved.

Queue	Error Queue	JMS Module

Customer Care and Billing			
Invoice	AIA_OUCCBInvoiceJMSQueue	AIA_OUCCBInvoiceJMSQueue_ErrorQ	AIAJMSModule
Work Order	AIA_OUCCBWorkOrderJMSQueue	AIA_OUCCBWorkOrderJMSQueue_ErrorQ	AIAJMSModule
Work and Asset Management			
Work Order	AIA_OUWAMWorkOrderJMSQueue	AIA_OUWAMWorkOrderJMSQueue_ErrorQ	AIAJMSModule
Mobile Workforce Management			
Work Order	AIA_OUMWMWorkOrderJMSQueue	AIA_OUMWMWorkOrderJMSQueue_ErrorQ	AIAJMSModule

Resubmitting Transactions using Message Resubmission Utility

The Message Resubmission Utility API enables external programs to utilize the functionality of enabling a message that is in error state to resent for a transaction. Typically this utility runs after the problem is fixed.

For more information about running the Message Resubmission Utility, see *Oracle Fusion Middleware Infrastructure Components and Utilities User's Guide for Oracle Application Integration Architecture Foundation Pack 11g Release 1,* "Using the Message Resubmission Utility."

Managing Triggering Events and Retry Processing

This section explains the events in the edge applications that cause messages to be sent to the integration, and the actions required to fix issues.

In general, if any of the target applications returns an error while processing the inbound message the integration layer sends an e-mail notification is sent to the designated user and creates a work list entry.

The following sections describe possible error scenarios and how to resolve them.

CC&B Originated Messages

	Order Create, Update or Cancel from Oracle Utilities Customer Care and Billing.
Triggering Event	Creation, Update, or Cancellation of a Field Activity in CC&B with a Dispatch Group that is associated to an external system (this is controlled by an algorithm on Dispatch Group).
Retry for Business errors	If any of the target applications returns a business error while processing the inbound message, a negative acknowledgement is returned to CC&B. CC&B can be configured to create a To Do Entry on negative acknowledgements.

	• If the error is caused because of missing configuration information, the user can fix the issue then resend the original message by changing the status of the message back to Pending. This is done on the Oracle Utilities Customer Care and Billing Notification Download table (using the Oracle Utilities Customer Care and Billing user interface). This sends another create, update or cancel message. • If the error requires that something is changed on the Field Activity, the user can make updates to the data on the Field Activity in Oracle Utilities Customer Care and Billing to fix the business error. The update causes another outbound message (this time update) to be sent from Oracle Utilities Customer Care and Billing to the target application(s).

Oracle Utilities Work and Asset Management Originated Messages

Oracle Utilities Work and Asset Management does not provide a mechanism to re-send failed messages

	Order Create From WAM
Triggering Event	Creation of a Service Request in WAM and the status of the Service Request changed to Active.
Retry for Business errors	The WAM user must cancel the Service Request and Create a new one once the root cause of the issue has been fixed.

	Order Update From WAM
Triggering Event	WAM user updates either schedule date or problem description on the Service Request that was previously sent to the other application(s). This action sends send an update message.
Retry for Business errors	WAM user can try resending the Update by making additional changes to the Problem Description on the Service Request after the root cause of the issue has been fixed.

	Status Update From WAM
Triggering Event	The status is changed on a Service Request that was previously sent to the other application(s). This sends a status update from WAM.
Retry for Business errors	Once the root cause of the issue has been fixed, additional Status updates sent from WAM for the same order are sent successfully.

	Order Cancellation From WAM
Triggering Event	The status on a WAM Service Request is changed to canceled.
Retry for Business errors	The corresponding orders can be canceled manually in CC&B and/or MWM.

	Order Completion From WAM

Triggering Event	The status on a WAM Service Request is changed to Finished.
Retry for Business errors	There is no corresponding update required in CC&B or MWM.

	Charge Create From WAM
Triggering Event	A WAM Service Request status changed to Closed and Billable Indicator is true.
Retry for Business errors	The message can be resent from BPEL or it can manually be created in CC&B.

Oracle Utilities Mobile Workforce Management v1.x Originated Messages

	Pick-up Order Create From MWM
Triggering Event	Creation of Pick-Up Field Order in MWM for a Field Order that was earlier received from the integration.
Retry for Business errors	If the Order failed in CC&B, the CC&B user can re-process the inbound order from the CC&B upload staging table after resolving the issue that caused it to fail. If the order failed in WAM, it can be re-imported in WAM from the WAM interface table. This requires running an SQL in the WAM database.

	Order Status Update From MWM
Triggering Event	Field Order status change in MWM send an update to CC&B.
Retry for Business errors	The CC&B user can re-process the inbound order from the CC&B upload staging table after resolving the issue that caused it to fail.

	Order Cancel From MWM
Triggering Event	Field Order cancellation in MWM and the integration sends an update.
Retry for Business errors	If the transaction failed in CC&B, the user can re-process the inbound order from the CC&B upload staging table, after resolving the issue that caused it to fail. If the transaction failed in WAM, it can be re-imported in WAM from the WAM interface table. This requires running SQL in the WAM database.

	Order In-completion From MWM
Triggering Event	Field Order is marked as incomplete in MWM and the integration sends an update.
Retry for Business errors	The CC&B user can re-process the inbound order from the CC&B upload staging table, after resolving the issue that caused it to fail.

	Order Completion From MWM
Triggering Event	Field Order is completed in MWM and the integration sends an update. The same update is triggered when a Pickup Order is completed.
Retry for Business errors	If the transaction failed in CC&B, the CC&B user can re-process the inbound order completion from the CC&B upload staging table after resolving the issue that caused it to fail. If the transaction failed in WAM, it can be re-imported in WAM from the WAM interface table. This requires running SQL in the WAM database.

	Timesheet Create From MWM
Triggering Event	An Oracle Utilities Mobile Workforce Management worker enters crew time for an order and sends it.
Retry for Business errors	If a business error occurs while processing the inbound create message, WAM handles this within the application and sends an alert to an internal WAM user. Business errors need to be handled within WAM.
Retry for Technical errors	If the integration encounters any Technical errors (for example, Communication problems), the source application (MWM) receives a notification and MWM uses its own functionality for auto retries.

Oracle Utilities Mobile Workforce Management v2.x Originated Messages

	Pick-up Order Create From MWM
Triggering Event	Creation of Pick-Up Field Order in MWM for a Field Order that was earlier received from the integration.
Retry for Business errors	If the Order failed in CC&B, the CC&B user can re-process the inbound order from the CC&B upload staging table after resolving the issue that caused it to fail. If the order failed in WAM, it can be re-imported in WAM from the WAM interface table. This requires running an SQL in the WAM database.

	Order Status Update From MWM
Triggering Event	Field Order status change in MWM send an update to CC&B.
Retry for Business errors	The CC&B user can re-process the inbound order from the CC&B upload staging table after resolving the issue that caused it to fail.

	Order Cancel From MWM
Triggering Event	Field Order cancellation in MWM and the integration sends an update.
Retry for Business errors	If the transaction failed in CC&B, the CC&B user can re-process the inbound order from the CC&B upload staging table, after resolving the issue that caused it to fail. If the transaction failed in WAM, it can be re-imported in WAM from the WAM interface table. This requires running SQL in the WAM database.

	Order Completion From MWM
Triggering Event	Field Order is completed in MWM and the integration sends an update. The same update is triggered when a Pickup Order is completed.
Retry for Business errors	If the transaction failed in CC&B, the CC&B user can re-process the inbound order completion from the CC&B upload staging table after resolving the issue that caused it to fail. If the transaction failed in WAM, it can be re-imported in WAM from the WAM interface table. This requires running SQL in the WAM database.

Managing Work Order Failure Scenarios

The following section describes failure scenarios and possible resolutions.

Oracle Utilities Customer Care and Billing Originated message - Requester Failure

The Oracle Utilities Customer Care and Billing create message can fail before getting to the target queue(s) because of the following

- Failure in Oracle Utilities Customer Care and Billing requester
- EBS is not reachable
- One of the target queue is down

The NDS Record is in error. User can set the NDS record to retry after the issue is resolved. This causes the message to go out again from Oracle Utilities Customer Care and Billing.

Oracle Utilities Customer Care and Billing Originated message - Provider Failure

If the Oracle Utilities Customer Care and Billing message reaches the target queue(s) and then it either fails in Oracle Utilities Work and Asset Management or Oracle Utilities Mobile Workforce Management provider or there is a business error, Oracle Utilities Customer Care and Billing receives the acknowledgement. The –acknowledgement is visible in the FA log UI and the NDS record is in Completed state. The same message can be sent again after resolving the issue by setting the status in NDS back to pending. If the resolution of the issue requires the FA to be updated then Oracle Utilities Customer Care and Billing user can update the FA and save the changes, which triggers an outbound update message.

In case of any provider error also standard AIA error notification framework is invoked - e-mail sent and work list entry created to notify users of the failure.

Oracle Utilities Mobile Workforce Management v1.x Originated message - Requester Failure

The Oracle Utilities Mobile Workforce Management v1.x create message can fail before getting to the target queue(s) because of the following

- Failure in Oracle Utilities Mobile Workforce Management v1.x requester
- EBS is not reachable
- One of the target queue is down

The router resends a message if no response is received from the integration layer.

Oracle Utilities Mobile Workforce Management v1.x Originated message - Provider Failure

If the Oracle Utilities Mobile Workforce Management v1.x message reaches the target queue(s) and then it either fails in Oracle Utilities Work and Asset Management or CCCB provider or there is a business error, Oracle Utilities Mobile Workforce Management v1.x does not receive any acknowledgement. Standard AIA error notification framework is invoked - e-mail sent and work list entry created to notify users of the failure.

Oracle Utilities Mobile Workforce Management v2.x Originated message - Requester Failure

The Oracle Utilities Mobile Workforce Management v2.x create message can fail before getting to the target queue(s) because of the following

- Failure in Oracle Utilities Mobile Workforce Management v2.x requester
- EBS is not reachable
- One of the target queue is down

The Outbound message is in error. Oracle Utilities Mobile Workforce Management creates an Activity To Host record in the Remote Message table for a new activity or activity completion outbound message that failed. The Activity To Host Message has a monitor algorithm that regenerates and sends the outbound message back to the integration layer.

Oracle Utilities Mobile Workforce Management v2.x Originated message - Provider Failure

If the Oracle Utilities Mobile Workforce Management v2.x message reaches the target queue(s) and then it either fails in Oracle Utilities Work and Asset Management or CCCB provider or there is a business error, Oracle Utilities Mobile Workforce Management v2.x does not receive any acknowledgement. Standard AIA error notification framework is invoked - e-mail sent and work list entry created to notify users of the failure.

Oracle Utilities Work and Asset Management Originated message - Requester Failure

When Oracle Utilities Work and Asset Management creates a Service Request and the message fails before getting to the target queue(s). Oracle Utilities Work and Asset Management user receives an error on the Oracle Utilities Work and Asset Management UI. After resolving the root cause of the failure the user can try re-sending the message by setting the status of the Service Request to **Created** and back to **Active**. This sends another create message from Oracle Utilities Work and Asset Management.

Oracle Utilities Work and Asset Management Originated Message - Provider Failure

If the Oracle Utilities Work and Asset Management message reaches the target queue(s) and then it either fails in Oracle Utilities Customer Care and Billing or Oracle Utilities Mobile Workforce Management provider or there is a business error from one or both the applications. The Oracle Utilities Work and Asset Management Service Request can be populated with an external ID. An e-mail notification is sent to the e-mail address indicated during configuration to notify users of the failure. The Oracle Utilities Work and Asset Management user can cancel the Service Request in Oracle Utilities Work and Asset Management and re-create the Service Request after ensuring that the root cause of the error has been fixed.

Provider Application Connection Failure - Resend from Queue

If the message reaches the target queue(s) and then it fails to reach the Provider because either of the two applications is down the message stays in the error queue of the provider. The message in the error queue can be resent from that queue to the application once the application comes up by the Administrator by running AIA provided Message Resubmission Utility script as explained in the previous section.

Error Handling Summary

S.No	Integration Flow	Type of error	Action	Notification Type	Retry
A1	Order Process from CC&B	CC&B cannot reach Req ABCS	Process error response to CC&B	The Notification Download Staging table is marked with an error and CC&B creates a To Do Entry.	Resend the message by changing the status in the CC&B Notification Download table.
A2		Internal failure in Req ABCS	Process error response to CC&B	The Notification Download Staging table is marked with an error and CC&B creates a To Do Entry.	Resend the message by changing the status in the CC&B Notification Download table.

S.No	Integration Flow	Type of error	Action	Notification Type	Retry
A3		Requester ABCS cannot reach Mediator Process for routing	Process error response to CC&B	The Notification Download Staging table is marked with an error and CC&B creates a To Do Entry.	Resend the message by changing the status in the CC&B Notification Download table.
A4		Mediator cannot communicate to the JMS Queue	Process error response to CC&B	The Notification Download Staging table is marked with an error and CC&B creates a To Do Entry.	Resend the message by changing the status in the CC&B Notification Download table.
A5		JMS consumer is down	Messages queue up		Start JMS consumer
A6		Provider ABCS cannot be reached	Message goes from the queue to the corresponding error queue. + AIA error handling.	E-mail notification and worklist entry	After ensuring that the prov ABCS is up again, the admin must run a script to restore the messages from the error to the main queue and then re-start the consumption from the queue.
A7		Internal failure in Provider ABCS	Negative acknowledgement back to CC&B	CC&B To do, E-mail notification and worklist entry	Fix the issue, Resend the original message by changing the status in the CC&B Notification Download table.
A8		Provider ABCS cannot reach target web service endpoint	Message goes from the queue to the corresponding error queue. + AIA error handling.	E-mail notification and worklist entry	After ensuring that the web service end-point is up again, the admin must run a script to restore the messages from error to the main queue and then re-start the consumption from the queue.
A9		Error response from target (valid business response)	Negative acknowledgement back to CC&B	CC&B creates a To Do Entry.	Fix the data, Resend the original message by changing the status in the CC&B Notification Download table.
A10		The CC&B Ack ABCS cannot be reached.	AIA error handling.	E-mail notification and worklist entry	

S.No	Integration Flow	Type of error	Action	Notification Type	Retry
A11		CC&B Ack web service (FA Response) cannot be reached or returns an error	AIA error handling	E-mail notification and worklist entry	
B1	Order Process from WAM	WAM cannot reach Req ABCS	Process error response to WAM	An on screen error is displayed.	Resend the message by selecting the appropriate action on the WAM Service Request. (This works for create, update, cancel messages. Not for completions). When the resend link is selected a create message is sent to ABCS.
B2		Internal failure in Req ABCS	Process error response to WAM	An on screen error is displayed.	
B3		Requester ABCS cannot reach the Mediator process for Routing	Process error response to WAM	An on screen error is displayed.	
B4		Mediator cannot communicate to the JMS Queue	Process error response to WAM	An on screen error is displayed.	
B5		JMS consumer is down	Messages queue up		Start JMS consumer
B6		Provider ABCS cannot be reached	Message goes from the queue to the corresponding error queue. + AIA error handling.	E-mail notification and worklist entry	After ensuring that the prov ABCS is up again, the admin must run a script to restore the messages from error to the main queue and then re-start the consumption from the queue.

S.No	Integration Flow	Type of error	Action	Notification Type	Retry
B7		Internal failure in Provider ABCS	Negative acknowledgement to the WAM ABCS.	E-mail notification and worklist entry	Resend the message by selecting the appropriate action on the WAM Service Request. (This action works for create, update, cancel messages, but not for completions). When the resend link is clicked a create message is sent to ABCS.
B8		Provider ABCS cannot reach target web service endpoint	Message goes from the queue to the corresponding error queue. + AIA error handling.	E-mail notification and worklist entry	After ensuring that the web service end-point is up again, the admin must run a script to restore the messages from error to the main queue and then re-start the consumption from the queue.
B9		Error response from target	Negative acknowledgement to the WAM ABCS.	E-mail notification and worklist entry	Resend the message by selecting the appropriate action on the WAM Service Request. (This action works for create, update, cancel messages, but not for completions). When the resend link is clicked a create message is sent to ABCS.
B10		Ack ABCS for WAM cannot be reached.	AIA error handling.	E-mail notification and worklist entry	
B11		Internal failure in Ack ABCS for WAM	AIA error handling	E-mail notification and worklist entry	
C1	Order Process from MWM v1	MWM cannot reach Req ABCS	Process error response to MWM		MWM automatically tries resending
C2		Internal failure in Req ABCS	Process error response to MWM		MWM automatically tries resending

S.No	Integration Flow	Type of error	Action	Notification Type	Retry
C3		Requester ABCS cannot reach the Mediator Process for Routing	Process error response to MWM		MWM automatically tries resending
C4		Mediator cannot communicate to the JMS Queue	Process error response to MWM		MWM automatically tries resending
C5		JMS consumer is down	Messages queue up		Start JMS consumer
C6		Provider ABCS cannot be reached	Message goes from the queue to the corresponding error queue. + AIA error handling.	E-mail notification and worklist entry	After ensuring that the prov ABCS is up again, the admin must run a script to restore the messages from error to the main queue and then re-start the consumption from the queue.
C7		Internal failure in Provider ABCS	Negative acknowledgement to the MWM ABCS.	E-mail notification and worklist entry	
C8		Provider ABCS cannot reach target web service endpoint	Message goes from the queue to the corresponding error queue. + AIA error handling.	E-mail notification and worklist entry	After ensuring that the web service end-point is up again, the admin must run a script to restore the messages from error to the main queue and then re-start the consumption from the queue.
C9		Error response from target	Negative acknowledgement to the MWM ABCS.	E-mail notification and worklist entry	
C10		Ack ABCS for MWM cannot be reached.	AIA error handling.	E-mail notification and worklist entry	
C11		Internal failure in the MWM Ack ABCS	AIA error handling	E-mail notification and worklist entry	

S.No	Integration Flow	Type of error	Action	Notification Type	Retry
D1	Order Process from MWM v2	MWM cannot reach Req ABCS	Process error response to MWM		No technical retry, user can resend from the application -meter/tem validation Pick-up orders – resent using a monitor algorithm.
D2		Internal failure in Req ABCS	Process error response to MWM		No technical retry, user can resend from the application -meter/tem validation Pick-up orders – resent using a monitor algorithm.
D3		Requester ABCS cannot reach the Mediator Process for Routing	Process error response to MWM		No technical retry, user can resend from the application -meter/tem validation Pick-up orders – resent using a monitor algorithm.)
D4		Mediator cannot communicate to the JMS Queue	Process error response to MWM		No technical retry, user can resend from the application -meter/tem validation Pick-up orders – resent using a monitor algorithm.)
D5		JMS consumer is down	Messages queue up		Start JMS consumer
D6		Provider ABCS cannot be reached	Message goes from the queue to the corresponding error queue. + AIA error handling.	E-mail notification and worklist entry	After ensuring that the prov ABCS is up again, the admin must run a script to restore the messages from error to the main queue and then re-start the consumption from the queue.
D7		Internal failure in Provider ABCS	Negative acknowledgement to the MWM ABCS.	E-mail notification and worklist entry	

S.No	Integration Flow	Type of error	Action	Notification Type	Retry
D8		Provider ABCS cannot reach target web service endpoint	Message goes from the queue to the corresponding error queue. + AIA error handling.	E-mail notification and worklist entry	After ensuring that the web service end-point is up again, the admin must run a script to restore the messages from error to the main queue and then re-start the consumption from the queue.
D9		Error response from target	Negative acknowledgement to the MWM ABCS.	E-mail notification and worklist entry	
D10		Ack ABCS for MWM cannot be reached.	AIA error handling.	E-mail notification and worklist entry	
D11		Internal failure in the MWM Ack ABCS	AIA error handling	E-mail notification and worklist entry	

Chapter 12: General Extensibility Options

One of the key principles for the design of Application Integration Architecture (AIA) is its extensibility model. AIA offers extensibility in different shapes.

EBOs - The design of the enterprise business objects (EBOs) includes mechanisms to extend generic objects in an upgrade-safe manner by providing hooks to plug in additional industry-specific or customer specific information.

XSLs/ABCS - The transformations (XSLs) provided with ABCS have custom transformation templates available to map to/from customer specific elements. The ABCS also provide extension points to extend their own functionality.

This chapter provides guidelines on extending the Field Work Process Integration Pack, and discusses how to:

- Extend an EBO
- Extend ABC Services
- Pass Data without customizing the EBO
- Invoke Customer Modified XAI Inbound Services

Extending EBOs

The EBOs provided with the integration were carefully defined to represent a typical business process; however, these definitions do not contain any attributes that are customer specific. To meet the needs of customers with more tailored processing, the integration pack provides the means to extend EBOs in a nonintrusive way.

For example, if your business process requires more information when creating a work order, you can extend EBOs to include the additional information.

XSDs

A custom schema definition file (XSD) is provided for every EBO that is shipped with the integration. The EBO can be modified by changing these custom files. The XSDs are incorporated into the EBOs so that any custom extensions that are added to the EBOs are protected when patches or upgrades are applied.

EBO Customization

The following sections describe a sample scenario of when and how to customize EBOs. To extend EBOs, add custom elements to the EBO then complete custom mapping for the requester and for the provider.

To add custom elements to the EBO

1. **From the Work Order EBO, identify which section or EBO Type needs to be extended.**
2. **Add the custom elements to the correct custom EBO Type section in the custom Work Order xsd file.**

```
targetNamespace="http://xmlns.oracle.com/EnterpriseObjects/Core/Custom/EBO/WorkOrder/V1" elementFormDefault="qualified"
attributeFormDefault="unqualified" version="1.0.00" >
<!-- ================================================================== -->
<!-- ==============  Imports and Includes   ============================= -->
<!-- ================================================================== -->
<xsd:import namespace="http://xmlns.oracle.com/EnterpriseObjects/Core/Common/V2" schemaLocation="../../../../Common/V2/CommonComponents.xsd"/>
<xsd:import namespace="http://xmlns.oracle.com/EnterpriseObjects/Core/Common/V2" schemaLocation="../../../../Common/V2/CodeLists.xsd"/>
<xsd:import namespace="http://xmlns.oracle.com/EnterpriseObjects/Core/Common/V2" schemaLocation="../../../../Common/V2/DataTypes.xsd"/>
<!-- ================================================================== -->
<!-- ==============  WorkOrder Custom Components ================ -->
<!-- ================================================================== -->

<xsd:complexType name="CustomWorkOrderEBOType">
   <xsd:sequence>
      <xsd:element name="WorkOrderInstructions" type="xsd:string"/>
      <xsd:element name="WorkOrderPriority"     type="xsd:string"/>
   </xsd:sequence>
</xsd:complexType>

<!--
<xsd:complexType name="CustomWorkOrderEBOType"/>
-->
<xsd:complexType name="CustomWorkOrderActualMaterialType" />
<xsd:complexType name="CustomWorkOrderDirectChargeExpenseType" />
<xsd:complexType name="CustomWorkOrderDirectChargeExpenseLineType" />
```

For more information about Extending EBOs, see *Oracle Fusion Middleware Developer's Guide for Oracle Application Integration Architecture Foundation Pack,* "Extensibility for Oracle AIA Artifacts – Extending EBOs".

To map the EBO to the requester

Continuing the example from the previous section:

1. **Navigate to the Oracle Utilities Customer Care and Billing Work Order Requester process BPEL composite ProcessWorkOrderOUCCBUtilitiesReqABCSImpl and open the custom ABM to EBM transformation. (For example, Xform_OrderABMReqMsg_to_WorkOrderEBMReqMsg_Custom.xsl)**
2. **Map the elements from Oracle Utilities Customer Care and Billing to the custom EBO elements.**
3. **Make sure the elements are added to the correct section or extension type that needs to be extended.**

```
<xsl:stylesheet version="2.0"
                xmlns:UtilityWorkOrder="http://xmlns.oracle.com/EnterpriseObjects/Core/EBO/WorkOrder/V1"
                xmlns:corecomcust="http://xmlns.oracle.com/EnterpriseObjects/Core/Custom/Common/V2"
                xmlns:Orderabo="http://splwg.com/ExtractFAInfo.xsd"
                xmlns:aia="http://www.oracle.com/XSL/Transform/java/oracle.apps.aia.core.xpath.AIAFunctions"
                xmlns:corecom="http://xmlns.oracle.com/EnterpriseObjects/Core/Common/V2"
                xmlns:xacml="urn:oasis:names:tc:xacml:2.0:context:schema:cd:04"
                xmlns:xref="http://www.oracle.com/XSL/Transform/java/oracle.tip.xref.xpath.XRefXPathFunctions"
                xmlns:xp20="http://www.oracle.com/XSL/Transform/java/oracle.tip.pc.services.functions.Xpath20"
                xmlns:bpws="http://schemas.xmlsoap.org/ws/2003/03/business-process/"
                xmlns:xsl="http://www.w3.org/1999/XSL/Transform"
                xmlns:ora="http://schemas.oracle.com/xpath/extension"
                xmlns:ehdr="http://www.oracle.com/XSL/Transform/java/oracle.tip.esb.server.headers.ESBHeaderFunctions"
                xmlns:orcl="http://www.oracle.com/XSL/Transform/java/oracle.tip.pc.services.functions.ExtFunc"
                xmlns:ids="http://xmlns.oracle.com/bpel/services/IdentityService/xpath"
                xmlns:hwf="http://xmlns.oracle.com/bpel/workflow/xpath"
                xmlns:wsa="http://schemas.xmlsoap.org/ws/2003/03/addressing"
                xmlns:hashmap="http://www.oracle.com/XSL/Transform/java/java.util.HashMap"
                exclude-result-prefixes="xsl xref xp20 bpws ora ehdr orcl ids hwf sbldata xacmlctx coresalesorder corecom hashmap wsa aia">

 <xsl:template name="ProcessWorkOrderType_ext">
    <!-- Customers add tranformations here -->
          <UtilityWorkOrder:Custom>
            <corecomcust:WorkOrderInstructions>
              <xsl:value-of select="/Orderabo:ExtractFAInfo/Orderabo:ExtractFAInfoService/Orderabo:ExtractFAInfoDetails/@Instructions"/>
            </corecomcust:WorkOrderInstructions>
            <corecomcust:WorkOrderPriority>
              <xsl:value-of select="/Orderabo:ExtractFAInfo/Orderabo:ExtractFAInfoService/Orderabo:ExtractFAInfoDetails/@FieldActivityPriority"/>
            </corecomcust:WorkOrderPriority>
          </UtilityWorkOrder:Custom>
    </xsl:template>
```

Note: This will vary from integration point to integration point. The sample snippet is given above. It is recommended to use the custom transformation file as available in the BPEL composite business process in order to get the correct Xpath.

To map the EBO to the provider

1. **Navigate to the Oracle Utilities Mobile Workforce Management Work Order Provider BPEL composite** ProcessWorkOrderOUMWMUtilitiesProvABCSImplV2 **and open the custom EBM to ABM transformation under xsl folder. (For example, Xform_WorkOrder_To_FieldOrder_Create_Update_Custom.xsl)**
2. **Map the elements from the custom EBO elements to the ABM.**
3. **Make sure the elements are added to the correct section or extension type that needs to be extended. Example snippet is given below.**

```
<xsl:stylesheet version="2.0"
                xmlns:bpws="http://schemas.xmlsoap.org/ws/2003/03/business-process/"
                xmlns:ehdr="http://www.oracle.com/XSL/Transform/java/oracle.tip.esb.server.headers.ESBHeaderFunctions"
                xmlns:aia="http://www.oracle.com/XSL/Transform/java/oracle.apps.aia.core.xpath.AIAFunctions"
                xmlns:corecomcust="http://xmlns.oracle.com/EnterpriseObjects/Core/Custom/Common/V2"
                xmlns:ebocontext="http://xmlns.oracle.com/EBO/BusinessContext/V1"
                xmlns:xsd="http://www.w3.org/2001/XMLSchema"
                xmlns:corecomEBO="http://xmlns.oracle.com/EnterpriseObjects/Core/CommonEBO/V1"
                xmlns:svcdoc="http://xmlns.oracle.com/Services/Documentation/V1"
                xmlns:wsa="http://schemas.xmlsoap.org/ws/2003/03/addressing"
                xmlns:hwf="http://xmlns.oracle.com/bpel/workflow/xpath"
                xmlns:xp20="http://www.oracle.com/XSL/Transform/java/oracle.tip.pc.services.functions.Xpath20"
                xmlns:xref="http://www.oracle.com/XSL/Transform/java/oracle.tip.xref.xpath.XRefXPathFunctions"
                xmlns:xacml-context="urn:oasis:names:tc:xacml:2.0:context:schema:cd:04"
                xmlns:ns1="http://www.splwg.com/WebServices/"
                xmlns:corecomcust="http://xmlns.oracle.com/EnterpriseObjects/Core/Custom/Common/V2"
                xmlns:xsl="http://www.w3.org/1999/XSL/Transform"
                xmlns:ora="http://schemas.oracle.com/xpath/extension"
                xmlns:ns0="http://xmlns.oracle.com/EnterpriseObjects/Core/EBO/WorkOrder/V1"
                xmlns:ids="http://xmlns.oracle.com/bpel/services/IdentityService/xpath"
                xmlns:orcl="http://www.oracle.com/XSL/Transform/java/oracle.tip.pc.services.functions.ExtFunc"
                xmlns:xacml="urn:oasis:names:tc:xacml:2.0:policy:schema:cd:04"
                xmlns:corecom="http://xmlns.oracle.com/EnterpriseObjects/Core/Common/V2"
                exclude-result-prefixes="xsl coreservicerequestcust ebocontext xsd corecomEBO svcdoc wsa xacml-context corecomcust ns0 xacml corecom
                ora ids orcl">

  <!--  User Defined Templates  -->

  <xsl:template name="HeaderDataType_ext"/>

  <xsl:template name="CommonDataType_ext">
   <!-- <ns1:ExternalPriority>
      <xsl:value-of select="/ns0:ProcessWorkOrderEBM/ns0:DataArea/ns0:ProcessWorkOrder/ns0:Custom/coreservicerequestcust:WorkOrderPriority"/>
    </ns1:ExternalPriority> -->
  </xsl:template>

  <xsl:template name="ExtendedDataType_ext">
     <ns1:RequestDescription>
        <xsl:value-of select="/ns0:ProcessWorkOrderEBM/ns0:DataArea/ns0:ProcessWorkOrder/ns0:Custom/coreservicerequestcust:WorkOrderInstructions"/>
     </ns1:RequestDescription>
  </xsl:template>

  <xsl:template name="SPLWFMCreateUpdateOrderType_ext"/>
</xsl:stylesheet>
```

Note: This will vary from integration point to integration point. The sample snippet is given above. It is recommended to use the appropriate custom transformation file as available in the BPEL Composite business process for getting the correct Xpath.

Note: The namespace used in the requester and provider must match.

4. **Copy the modified EBO xsd file(s) to the correct location on the application server. Ex: <AIA_HOME>/AIAMetaData/AIAComponents/EnterpriseObjectLibrary/<Path_to_xsd>**
5. **Update the modified xsd in the above step to the MDS Repository for the changes to take effect.**
6. **Follow the steps below to deploy the modified Requester and Provider BPEL processes**
7. **Run the <AIA_HOME>/aia_instances/<instance_name>/bin aiaenv.bat or aiaenv.sh depending on the operating system. This sets the environment variables required by the build process.**
8. **Take backup of the AIA_HOME>/aia_instances/<INSTANCE_NAME>/AIAMetaData/config/AIAConfigurationProperties.xml. The properties for the Requesters and Providers to be deployed get overwritten and any user defined properties need to be set again after the processes are deployed.**
9. **Write your own customDP files for updating the metadata and deploying the processes, which are changed as part of customization. The sample code snippet's for the same is given below.**

10. **The custom file for the Metadata update would look as below.**

```
<DeploymentPlan component="FieldWork" version="3.0">
<Configurations>
    <UpdateMetadata wlserver="pips.FieldWork">
        <fileset dir="${AIA_HOME}/AIAMetaData">
            <include name="<Path_of_file>/<file_to_getUpdated>" />
        </fileset>
    </UpdateMetadata>
 </Configurations>
 </DeploymentPlan>
```

11. **The custom DP script for deployment is as follows. The one, which is changed, should be deployed and the sample script for the same will be as follows.**

```
<DeploymentPlan component="FieldWork" version="3.0">
  <Deployments>
        <Composite compositeName="<processname>"
        compositedir="${AIA_HOME}/services/industry/Utilities/OUCCB/Reque
        storABCS/<processname>" revision="1.0" wlserver="pips.FieldWork"
        action="deploy" />
  </Deployments>
</DeploymentPlan>
```

12. **Once the custom scripts are ready the we can execute the custom scripts using the following command**

```
ant -f $AIA_HOME/Infrastructure/Install/AID/AIAInstallDriver.xml -
DDeploymentPlan=$AIA_HOME/pips/FieldWork/DeploymentPlans/CustomDP.xml -
DPropertiesFile=$AIA_HOME/aia_instances/<instance_name>/config/AIAInstallProperti
es.xml -l $AIA_HOME/pips/FieldWork/DeploymentPlans/CustomDeploy.log
```

13. **Test to make sure the mapping is correct and the information is passed from one application to the other.**

Extending ABC Services

All Requester and Provider ABC Services provided with this integration pack have extension points available to extend the functionality. For example extension points can be used for additional data enrichment, if required.

There exist two or more extension points in each ABCS depending on the number of services it invokes and the message exchange pattern for those services.

Customers can develop add-ins and have them hooked to these extensibility points. These customer-developed services behave as an extension to the delivered ABC service.

For more information about Extending ABCS, see *Oracle Fusion Middleware Developer's Guide for Oracle Application Integration Architecture Foundation Pack,* "Extensibility for Oracle AIA Artifacts – Extending ABC Services".

Pass Data without Extending the EBO

In some cases it is necessary to pass a number of fields from one application to another without using the integration layer transformation.

For example, the Oracle Utilities Mobile Workforce Management task completion process can be customized to pass information to Oracle Utilities Customer Care and Billing to be stored in Oracle Utilities Customer Care and Billing as characteristics or in a CLOB field. If this information does not need to be translated using DVMs, it can simply pass through the integration layer.

In this case Oracle Utilities Mobile Workforce Management uses a custom BO to pass additional information on completion.

Please refer to the Oracle Utilities Mobile Workforce Management Implementation guide for information of custom extensions.

To Pass Data without Customizing EBO

1. **Configure the source application to pass the new custom element in escaped xml format.**

   This can be done using XSL on the outbound message in the source application.

2. **Configure a custom xsl in the integration layer Requester ABCS (for example, Oracle Utilities Mobile Workforce Management Requester ABCS) to map the source data (for example, Oracle Utilities Mobile Workforce Management ABM element) to a custom element in EBM (for example, custom area on Work Order EBM)**

   This data can then be passed across to the target.

3. **Configure a custom xsl in the integration layer Provider ABCS (for example, CCB Provider ABCS) to map the custom element in EBM to the Oracle Utilities Customer Care and Billing service ABM.**

4. **The target application is now able to receive the escaped xml in a custom element and process it.**

Invoke Customer Modified XAI Inbound Service

It is possible to invoke Customer Modified XAI Inbound Services using OUAF framework from the integration layer.

To invoke Customer Modified XAI Inbound Service

1. **Make sure the new Customer Modified XAI Inbound Service is available on the edge application.**
2. **Change the soapAction of the wsdl of the Inbound Service to be invoked to the Customer Modified XAI Inbound Service. The wsdl is located at <AIA_HOME>/ /AIAMetaData/AIAComponents/ApplicationObjectLibrary/OUXXX/Vx/wsdls/xxx.wsdl**

Eg: In <AIA_HOME>/ /AIAMetaData/AIAComponents/ApplicationObjectLibrary/OUCCB/V1/wsdls/FAResponse.wsdl change SOAPAction

Change from

<soap:operation soapAction="http://ouaf.oracle.com/spl/XAIXapp/xaiserver/FAResponse"/>

To

<soap:operation soapAction="http://ouaf.oracle.com/spl/XAIXapp/xaiserver/CM-FAResponse"/>

3. **Upload the modified wsdl to MDS as descibed in the Updating MDS section.**
4. **Change the appropriate Service Configuration property of End Point URI in the AIAConfigurationProperties.xml**

Example: In <AIA_Instance>/AIAMetaData/config/AIAConfigurationProperties.xml change property from

<Property name="Routing.FAResponsePortType.OU_CCB_01.EndpointURI">http://sf-ugbu-22.us.oracle.com:9000/spl/XAIApp/xaiserver/FAResponse</Property>

To

<Property name="Routing.FAResponsePortType.OU_CCB_01.EndpointURI">http://sf-ugbu-22.us.oracle.com:9000/spl/XAIApp/xaiserver/CM-FAResponse</Property>

5. **Upload the modified AIAConfigurtionProperties.xml to MDS**
6. **Redeploy the modified Service**
7. **When XAI Inbound Service is now invoked, XAI will redirect the call to the Customer Modified XAI Inbound service on the target application based on the modified SOAP Action.**

Refer to Framework Bug# 10219423 - PASS SERVICE NAME TO XAI INBOUND SERVICE TO ALLOW REDIRECT THE CALL for further details.

Your implementation will need to provide an xsl on the custom XAI Inbound Service to map the message schema of the original XAI Inbound Service with the Customer Modified XAI Inbound, otherwise the invocation will fail.

Chapter 13: Custom Extensions for Oracle Utilities Customer Care and Billing and Oracle Utilities Mobile Workforce Management

Note: This functionality is only applicable on the following:
Oracle Utilities Customer Care and Billing 2.3.1 SP5 or higher
Oracle Utilities Mobile Workforce Management 2.1 SP2 or higher

As part of Bug 13611755 - 80037 MWM - CCB Activity Completion Integration included in SP5 and BUG 13247584 - Foundation Pack roll up patch for AIA release 11.2 release using 11.1.1.5 foundation pack/SOA.

The integration can be extended further to support the following functionality:

- Provide Oracle Utilities Mobile Workforce Management with additional information related to activities
- Provide Oracle Utilities Customer Care and Billing with additional completion information. This can be updates to service point, meter or item information as well as any other information captured by the crew.

As an example, if a crew needs to correct the badge number for an item or update a meter configuration, the information cannot be updated automatically since this may affect billing or other areas which need to be monitored. Instead the system creates a ToDo Entry to prompt user intervention and manually update the data.

This section provides steps on how to configure the extensions in both applications followed by additional information to help explain those configurations.

Passing Additional Information Related to Activities from Oracle Utilities Customer Care and Billing through Middleware

The middleware has been coded out of the box to pass through the additional information between Oracle Utilities Customer Care and Billing and Oracle Utilities Mobile Workforce Management without having to make any additional changes to the Application Business Connector Services (ABCS). The additional information is passed between the two applications using the WorkOrderLineAttachment component that is part of the WorkOrder EBO. There are no transformations performed in the middleware for this additional information.

Provide Oracle Utilities Mobile Workforce Management with Additional Information Related to Activities

Follow this procedure to extend the information provided from Oracle Utilities Customer Care and Billing to Oracle Utilities Mobile Workforce Management for an activity.

The process describes how to extend Oracle Utilities Mobile Workforce Management business objects and their user interface as well as the integration XAI Inbound Service with your custom elements.

If elements already exist in the FA Extract then follow the steps to extend Oracle Utilities Customer Care and Billing to forward them to Oracle Utilities Mobile Workforce Management.

If they are not part of the extract then follow the steps on how to request them using a callback from Oracle Utilities Mobile Workforce Management to Oracle Utilities Customer Care and Billing.

Extending Oracle Utilities Mobile Workforce Management Business Objects

Extending the Oracle Utilities Mobile Workforce Management business objects involves extending the data structures and extending the user interface to receive the additional elements passed from Oracle Utilities Customer Care and Billing.

Extending the Data Structures

Create customer modification (CM) data areas and use them to extend the corresponding Oracle Utilities Mobile Workforce Management data areas. After this is done, implement the relevant CM UI Map Fragments.

Refer to List of Available CM Extended UI Map Fragments for the exact fragment names.

Type of Information	How to Extend
Common Activity Details	For read only details common to any type of activity, extend the base M2-CommonActivityDetails data area. The base data area is already included in all base activity and assignment business objects so extending it automatically extends all these business objects. It is also included in the XAI Inbound Service maintaining an activity so the service is automatically extended as well. Notice that this information is not sent back as completion details.

Type of Information	How to Extend
Service Point, Meter or Item Details	For service points, meter or item information extend the respective corresponding data area: Service Point Details (M2-SPDataDetails) Meter Details (M2-MeterDataDetails) Item Details (M2-ItemDataDetails) These data areas are already included in relevant base activity and assignment business objects so extending them automatically extends all these business objects. It is also included in the XAI Inbound Service maintaining an activity so the service is automatically extended as well. The data areas are also included in the completion part of the assignments and outbound messages so extending them also allows these details to be sent back as part of completion. When designing your custom UI map fragments choose which details to display and what to allow the crew to update.
Custom Activity Business Object Details	If the details are relevant to a specific type of activity that is not provided with the base product you need to design and configure custom activity and assignment business objects to handle such an activity. Use custom data areas to describe the details sent from the host for this type of activity and include them in your business objects. Refer to the Oracle Utilities Mobile Workforce Management configuration guide for more information on how to design new custom activity business objects. Once custom business objects are configured you need to extend the XAI Inbound Service to accommodate your custom details. To do that you need to extend the M2-DataDetails data area with your custom data area. Notice that this information is not sent back as completion details.

Extending the User Interface

To extend the Implement activity and assignment CM UI Map Fragments to display your custom details as needed, refer to the List of Available CM Extended UI Map Fragments for more information.

Obtaining the Data from Oracle Utilities Customer Care and Billing

To obtain data from Oracle Utilities Customer Care and Billing you must first send field activity extract details to Oracle Utilities Mobile Workforce Management then pull the data from Oracle Utilities Customer Care and Billing.

Sending Field Activity Extract Details to Oracle Utilities Mobile Workforce Management

Follow this procedure to send additional details that already exist on the Field Activity Extract service schema to Oracle Utilities Mobile Workforce Management.

Note. This procedure assumes that all details which will be forwarded to Oracle Utilities Mobile Workforce Management are already extracted by the base Field Activity Extract service.

Use an XSL on the Field Activity Extract message Route Type to transform these details to corresponding Oracle Utilities Mobile Workforce Management element names under a Custom Schema Data group node:

- FA Type Characteristics
- FA Characteristics
- SP Type Characteristics
- SP Characteristics
- Premise Characteristics
- Meter Characteristics
- Item Characteristics
- Service Point Geographic Value
- Premise Geographic Value

Refer to Characteristics and Geographic Values XSL Template in Oracle Utilities Customer Care and Billing for information on how to configure custom elements of these types.

For other types of elements, use a custom XSL to transform the elements from their source location to the corresponding XPath below the Custom Schema Data node in the target Oracle Utilities Mobile Workforce Management message of the element. This should include the element name.

Obtain Additional Information from Oracle Utilities Customer Care and Billing

There are several options available for your implementation to obtain additional information from Oracle Utilities Customer Care and Billing to send to Oracle Utilities Mobile Workforce Management:

- Create a callback from Oracle Utilities Customer Care and Billing Work Order Requestor or Oracle Utilities Mobile Workforce Management Work Order Provider process using extension points to invoke a new implementation created XAI Inbound Service in Oracle Utilities Customer Care and Billing and pass the additional information over to Oracle Utilities Mobile Workforce Management.
- Directly obtain the additional information from Oracle Utilities Customer Care and Billing in Oracle Utilities Mobile Workforce Management.

Below is the procedure to directly obtain additional details from Oracle Utilities Customer Care and Billing that do not exist on the Field Activity Extract service schema using a callback from Oracle Utilities Mobile Workforce Management.

Note: This process of obtaining Additional Information does not invoke the process integration pack. It is the responsibility of the implementation team to configure and test the edge applications to communicate with each other.

Configuration in Oracle Utilities Customer Care and Billing

- Create a service script that extracts the additional information.
- Expose the service script as an XAI Inbound Service.

Configuration in Oracle Utilities Mobile Workforce Management

Set up an outbound message:

- Define an outbound message business object to match the XAI Inbound Service created in Oracle Utilities Customer Care and Billing.
- Define an outbound message type which references the outbound message business object.
- Set up a real time XAI Sender to communicate with the external system, if one does not already exist.
    - Invocation Type = Real Time
    - XAI Class = Sender routes messages via HTTP real-time (RTHTTPSNDR)
    - Context = set up the link to the external system
- Set up an External System record for the external system, if one does not already exist.
- Add the outbound message type to the External System list of messages.
    - Reference the XAI Sender
    - Use Real Time Processing Method
    - Add xsl to add the SOAP envelope to the message being sent out
- Create an Activity business object Pre-Processing plug-in as follows:
    - Populate the outbound message business object and call the outbound message dispatcher service to send it to the external system
    - Populate the activity business object with the information returned

Use the steps mentioned in option 2 to configure Oracle Utilities Customer Care and Billing and Oracle Utilities Mobile Workforce Management and create a new Integration process (using BPEL/ mediator) to pass the additional information between Oracle Utilities Customer Care and Billing and Oracle Utilities Mobile Workforce Management.

Provide Oracle Utilities Customer Care and Billing with Additional Completion Information

Follow this procedure to extend the activity completion information captured by the crew and sent from Oracle Utilities Mobile Workforce Management to Oracle Utilities Customer Care and Billing.

The process describes how to extend Oracle Utilities Mobile Workforce Management business objects and their user interface as well as the integration outbound messages with your custom elements.

If the information is not already processed by the FA Completion logic in Oracle Utilities Customer Care and Billing the procedure describes how to extend the FA Completion business object to handle such logic.

Extending Oracle Utilities Mobile Workforce Management Business Objects

To extend the Oracle Utilities Mobile Workforce Management business objects you must first extend the data structures by creating CM data areas, and then extend the user interface.

Extending the Data Structures

Create CM data areas and use them to extend the corresponding Oracle Utilities Mobile Workforce Management data areas. After this is done, implement the relevant CM UI Map Fragments.

Refer to List of Available CM Extended UI Map Fragments for the exact fragment names.

Type of Information	How to Extend
Common Completion Details	For completion details common to all activity types extend the base M1-CommonActivityIntCmplDtls data area. The base data area is already included in all base assignment business objects so extending it automatically extends all these business objects. It is also included in the outbound message sending completion information to the host system so the service is automatically extended as well.

Type of Information	How to Extend
Service Point, Meter or Item	For service points, meter or item completion information extend the respective corresponding data area: Service Point (M2-SPDataDetails) Meter (M2-MeterDataDetails) Item (M2-ItemDataDetails) These data areas are already included in relevant base activity and assignment business objects so extending them automatically extends all these business objects. These data areas describe the entity. They are included once on the activity and assignment business objects to describe information as sent from the host. They are included once more in the assignment completion group of information to capture modifications to these details made by the crew. Information as sent from host is assumed to be displayed as read only whereas the modifiable copy of the details may be presented as editable as needed. When designing your custom UI map fragments choose which completion details are editable.
Custom Assignment Business Object Completion Details	If certain completion details are relevant to a specific type of activity that is not provided with the base product you need to design and configure custom activity and assignment business objects to handle such an activity. Use custom data areas to describe the details captured by the crew for this type of activity and include them in your assignment business object. Refer to the Oracle Utilities Mobile Workforce Management configuration guide for more information on how to design new custom activity business objects. Once custom business objects are configured you need to extend the activity completion outbound message to accommodate your custom completion details. To do that you need to extend the M2-CompletionDetails data area with your custom data area.

Extending the User Interface

Implement assignment CM UI Map Fragments to display your custom details as needed. Refer to the List of Available CM Extended UI Map Fragments for more information.

Middleware Configuration to Invoke Oracle Utilities Customer Care and Billing XAI Inbound service C1FACompletionFieldWork

In order to support a more customizable integration with Oracle Utilities Mobile Workforce Management on Completion, a special XAI Inbound Service, C1FACompletionFieldWork, is available in Oracle Utilities Customer Care and Billing.

The FA Completion in Oracle Utilities Customer Care and Billing now handles the following additional completion updates as well as support an easier extension to data and rules by implementation teams.

- Create customer contact

  Customer contact class is assumed to be the same for all field initiated contacts and is designed to be specified as a schema constant.

  Customer contact is designed as an extendable lookup in Oracle Utilities Mobile Workforce Management to reflect same exact values as defined in Oracle Utilities Customer Care and Billing.

- Change SP

  Allowed only for changing the existing SP details

- Change Meter

  Allowed only for the meter currently installed on the SP.

- Change Item

  Allowed only for the item currently installed on the SP.

- Create a To Do Entry to notify a user with a message from the crew

It is possible to invoke this XAI Inbound Services using OUAF framework from the integration layer.

To invoke C1FACompletionFieldWork XAI Inbound Service

1. **Make sure the C1FACompletionFieldWork XAI Inbound Service is available on the edge application.**
2. **Change the soapAction of the wsdl of the Inbound Service to be invoked to the C1FACompletionFieldWork XAI Inbound Service.**
   The wsdl is located at <AIA_HOME>/
   /AIAMetaData/AIAComponents/ApplicationObjectLibrary/OUCCB/V1/wsdls/
   C1FACompletionExtSysStruct.wsdl

   Change from

   <soap:operation
   soapAction="http://ouaf.oracle.com/spl/XAIXapp/xaiserver/C1FACompletionExtSysStruct"/>

   To

   <soap:operation
   soapAction="http://ouaf.oracle.com/spl/XAIXapp/xaiserver/C1FACompletionFieldWork"/>
3. **Upload the modified wsdl to MDS as described in the Updating MDS section.**
4. **Change the appropriate Service Configuration property of End Point URI in the AIAConfigurationProperties.xml**

   Example: In <AIA_Instance>/AIAMetaData/config/AIAConfigurationProperties.xml change property from

<Property
name="Routing.C1FACompletionExtSysStructPortType.OU_CCB_01.EndpointURI">http://sf-ugbu-39.us.oracle.com:9200/spl/XAIApp/xaiserver/ C1FACompletionExtSysStruct
</Property>

To

<Property
name="Routing.C1FACompletionExtSysStructPortType.OU_CCB_01.EndpointURI">http://sf-ugbu-39.us.oracle.com:9200/spl/XAIApp/xaiserver/C1FACompletionFieldWork</Property>

5. **Upload the modified AIAConfigurtionProperties.xml to MDS**
6. **Redeploy the modified Service**
7. **When XAI Inbound Service is now invoked, XAI will redirect the call to C1FACompletionFieldWork XAI Inbound service on the target application based on the modified SOAP Action.**

Refer to Framework Bug# 10219423 - PASS SERVICE NAME TO XAI INBOUND SERVICE TO ALLOW REDIRECT THE CALL for further details.

Extend Field Activity Completion Process in Oracle Utilities Customer Care and Billing

To extend the field activity completion process in Oracle Utilities Customer Care and Billing you must first extend the field activity completion message then extend the field activity completion rules.

Extending the Field Activity Completion Message

Type of Information	How to Extend

Type of Information	How to Extend
Service Point, Meter or Item	Create a CM service point, meter or item data area with the same details as the corresponding Oracle Utilities Mobile Workforce Management CM data area and use it to extend these data areas: SP(C1-FWSPBODetails) Meter(C1-FWMeterBODetails) Item(C1-FWItemBODetails) These data areas are included in a corresponding business object used to update the entity. By extending these base data areas you automatically extend the entity business object and hence when the object is updated so are the custom details. Create yet another service point, meter or item interface data area and include in it the corresponding CM data area you have just created for the business object update. Use this to extend the interface data areas: Service Point (C1-FWSPInterfaceDetails) Meter (C1-FWMeterInterfaceDetails) Item (C1-FWItemInterfaceDetails) The interface data area includes the business object data area to ensure they have same elements allowing each to extend another data area.
Other Completion Details	For completion details common to all activity types create a custom data area and use it to extend the base data area: C1-FACompletionCommonDetails For activity type specific details create a activity specific custom data area and use it to extend the base data area: C1-FACompletionActSpecDetails Refer to Extending FA Completion Rules for more information on how to process this additional information.

Note. You must use the same element names as in both Oracle Utilities Customer Care and Billing and Oracle Utilities Mobile Workforce Management. If element names are different, implementations will be able to pass data between applications using the standard PIP implementation approach, but not the simplified bypass approach.

Extending Field Activity Completion Rules

The FA Completion message is stored as a Sync Request record and processed by the FA Completion business object (C1-FieldActivityCompletion).

If you have extended the FA Completion message with other completion details extend the FA Completion business object with a custom "Enter" plug-in on the Process Message state to process these details as needed.

Since the completion process is managed by a business object you may leverage other extension techniques to replace base rules with your own custom rules as needed.

- To process the additional information, extend the FA Completion business object rules on: C1-FieldActivityCompletion

  For example, add an "Enter" plug-in on the Process Message state to process your custom information as needed.

Configure To Do Type/ To Do Role Related to the Extended Functionality

Create the To Do Type, To Do Role, and Error Message (as needed) to be used to create the following:

- Crew follow up request (To Do type)
- FA completion error (To Do type)

Appropriate To Do roles must be created to handle To Do entries created for these To Do Types coming from the external systems. Navigate to the To Do Type portal under the Admin menu to create these roles.

Configure Customer Contact Class and Type Related to the Extended Functionality

Define customer contact types in Oracle Utilities Mobile Workforce Management for the conditions that create customer contacts for the following:

- When a crew completes an activity and needs to record contact they made with the customer

When crews complete activities, they have the option to record contact that they made with customers. This information is set to Oracle Utilities Customer Care and Billing as part of the field activity completion process. The system creates a Customer Contact record for the person associated with the field activity.

Since Oracle Utilities Mobile Workforce Management does not send the customer contact class with the contact update, Oracle Utilities Customer Care and Billing needs to be configured to default the customer class. To implement this connection:

- Set up a customer contact class to represent contacts made in the field.
- Navigate to Feature Configuration and select the Schema Constant record and reference that customer contact class as the value for the customer contact class option.
  The system uses the value referenced on the schema constant feature configuration as the default customer contact class when creating customer contacts.

Additional Configuration Information

This section provides:

- Lists of available customer modification (CM) Extended UI Map Fragments in Oracle Utilities Mobile Workforce Management on the server and for mobile.
- Information on the characteristics and geographic values XSL Template

List of Available CM Extended UI Map Fragments in Oracle Utilities Mobile Workforce Management

The following is a list of the CM extended UI map fragments that can be created to extend base maps in Oracle Utilities Mobile Workforce Management.

Note. Unless otherwise specified all CM Fragments are included at the end of the base map.

The examples below show how to extend M2-SPDataDetails with the following elements in a new custom Service Point Data Area

```
<cmAddlSPDataDetails type="group" mapXML="BO_DATA_AREA">
   <serialNumber mdField="CM_SERIAL_NUMBER"/>      -- activity
detail that can be modified
   <condition mdField="CM_CONDITION"/>       -- completion detail
only
</cmAddlSPDataDetails>
```

Oracle Utilities Mobile Workforce Management Server - Activity

Note. These maps are used to maintain and display activity information as sent by the host system. Completion information to be sent back to the host is recorded on the assignment only.

Base UI Map Fragment	CM Extended UI Map Fragment
Activity Maintenance (M2-ActivityMaint)	End of Customer Information section CM-CustomerInfoMaint_ext End of Map CM-ActivityMaint_ext
Activity Display (M2-ActivityMainDisplay)	End of Customer Information section CM-CustomerInfoDisp_ext End of Map CM-ActivityDisplay_ext

Base UI Map Fragment	CM Extended UI Map Fragment
Service Point Details Maintenance (M2-SPDetailsMaint)	CM-SPDetailsMaint_ext Refer to example
Service Point Details Display (M2-SPDetailsDisp)	CM-SPDetailsDisp_ext Refer to example
Meter Details Maintenance (M2-MeterDetailsMaint)	CM-MeterDetailsMaint_ext
Meter Details Display (M2-MeterDetailsDisp)	CM-MeterDetailsDisp_ext
Item Details Maintenance (M2-ItemDetailsMaint)	CM-ItemDetailsMaint_ext
Item Details Display (M2-ItemDetailsDisp)	CM-ItemDetailsDisp_ext
Collection Details Maintenance (M2-CollectionDetailsMaint)	CM-CollectionDetailsMaint_ext
Collection Details Display (M2-CollectionDetailsDisp)	CM-CollectionDetailsDisp_ext

Example - Service Point Activity Display Map Fragment

CM Service Point Activity Details Display Map fragment - CM-SPDetailsDisp_ext
This fragment will contain a row for every activity detail element

```
<div
oraLoad="oraDisplayNone(item,'boGroup/cmAddlSPDataDetails/serialNumb
er','')">
  <label
oraLabel="boGroup/cmAddlSPDataDetails/serialNumber"></label>
  <span oraField="boGroup/cmAddlSPDataDetails/serialNumber" ></span>
</div>
```

Example - Service Point Activity Maintenance Map Fragment

CM Service Point Activity Details Maintenance Map fragment - CM-SPDetailsMaint_ext
This fragment will contain a row for every activity detail element

```
<tr>
  <td oraLabel="boGroup/cmAddlSPDataDetails/serialNumber"></td>
  <td><input class="oraInput"
oraField="boGroup/cmAddlSPDataDetails/serialNumber"></td>
</tr>
```

Oracle Utilities Mobile Workforce Management Server - Assignment

Some of the following completion fragments allow the crew to modify details sent from the host. These are designed to have the original values sent from the host displayed on the left column of the map and modifiable details on the right column.

The original values should be read only. This only includes the details that the crew is allowed to modify in the modifiable section. A separate CM fragment is provided on the left and right columns.

Base logic initializes the modifiable values with the original values. Details that were not changed by the crew and displayed in a different font than those that were changed. Refer to base examples in the base maps you extend to follow these display patterns.

Base UI Map Fragment	CM Extended UI Map Fragment
Service Point Completion Details Maintenance (M2-SPCmplDetailsMaint)	End of Values As Sent from Host on Left Column. CM-SPCmplDetailsMaint_ext End of Values As Modified by Crew on Right Column. CM-SPCmplModifiedMaint_ext Refer to example
Service Point Completion Details Display (M2-SPCmplDetailsDisp)	End of Values As Sent from Host on Left Column CM-SPCmplDetails_ext End of Values As Modified by Crew on Right Column CM-SPCmplModified_ext Refer to example
Meter Completion Details Maintenance (M2-MeterCmplDetailsMaint)	End of Values As Sent from Host on Left Column CM-MeterCmplDetailsMaint_ext End of Values As Modified by Crew on Right Column CM-MeterCmplModifiedMaint_ext
Meter Completion Details Display (M2-MeterCmplDetailsDisp)	End of Values As Sent from Host on Left Column CM-MeterCmplDetailsDisp_ext End of Values As Modified by Crew on Right Column CM-MeterCmplModifiedDisp_ext
New Meter Completion Details Maintenance (M2-NewMeterCmplDetailsMaint)	CM-NewMeterDetailsMaint_ext
New Meter Completion Details Display (M2-NewMeterCmplDetailsDisp)	CM-NewMeterDetailsDisp_ext
Item Completion Details Maintenance (M2-ItemCmplDetailsMaint)	End of Values As Sent from Host on Left Column CM-ItemCmplDetailsMaint_ext End of Values As Modified by Crew on Right Column CM-ItemCmplModifiedMaint_ext
Item Completion Details Display (M2-ItemCmplDetailsDisp)	End of Values As Sent from Host on Left Column CM-ItemCmplDetailsDisp_ext End of Values As Modified by Crew on Right Column CM-ItemCmplModifiedDisp_ext

Base UI Map Fragment	CM Extended UI Map Fragment
New Item Completion Details Maintenance (M2-NewItemCmplDetailsMaint)	CM-NewItemDetailsMaint_ext
New Item Completion Details Display (M2-NewItemCmplDetailsDisp)	CM-NewItemDetailsDisp_ext
Common Completion Maintenance (M1-AssignmentCmnCmplMaint)	CM-AssignmentCmnCmplMaint_ext
Common Completion Display (M1-AssignmentCmnCmplDisplay)	CM-AssignmentCmnCmplDisp_ext

Example - Service Point Completion Display Map Fragment s

CM Service Point Completion Activity Details Map fragment - CM-SPCmplDetails_ext

This fragment should look very similar to the html in the browse division of the laptop fragment (CM-MCPSPDetails_ext). The fields are the same, but the server display uses different html elements

```
(<div>,<label>,<span> instead of <tr>, <td>)
```

We recommend that the CM fragment has the activity detail fields first followed by completion only fields.

```
<div>
  <label
oraLabel="boGroup/cmAddlSPDataDetails/serialNumber"></label>
  <span oraField="boGroup/cmAddlSPDataDetails/serialNumber"></span>
</div>
<div>
  <label
oraLabel="boGroup/utilityCompletionInformation/servicePointCompletio
nDetails/cmAddlSPDataDetails/condition"></label>
  <span
oraField="boGroup/utilityCompletionInformation/servicePointCompletio
nDetails/cmAddlSPDataDetails/condition"></span>
</div>
```

CM Service Point Completion Modified Details Map fragment - CM-SPCmplModified_ext

This fragment should look very similar to the html in the browse division of the laptop fragment (CM-MCPSPModified_ext). The fields are the same, but the server display uses different html elements

```
(<div>,<label>,<span> instead of <tr>, <td>)
```

- Each activity detail field that can be modified, should have a row in this fragment.
- Each row should contain a <label>, a for the modified detail field, and a for the activity detail field.
    - The for the modified detail field must have an id (e.g. id=”CMNewSerialNumber”)

- The for the activity detail field should have a style so that it will not be displayed (e.g. style=display:none")
- The for the activity detail field should call grayOutUnmodifiedDetails() in an oraLoad, passing to it the id of the modified detail field (e.g. oraLoad="grayOutUnmodifiedDetails('CMNewSerialNumber')")

```
<div>
  <label
oraLabel="boGroup/utilityCompletionInformation/servicePointCompletio
nDetails/cmAddlSPDataDetails/serialNumber"></label>
  <span
oraField="boGroup/utilityCompletionInformation/servicePointCompletio
nDetails/cmAddlSPDataDetails/serialNumber"
id="CMNewSerialNumber"></span>
  <span style="display:none"
oraField="boGroup/cmAddlSPDataDetails/serialNumber"
oraLoad="grayOutUnmodifiedDetails('CMNewSerialNumber')"></span>
</div>
```

Example - Service Point Completion Maintenance Map Fragments

CM Service Point Completion Details Maintenance Map fragment - CM-SPCmplDetailsMaint_ext

This fragment can contain the same html as the in the completion division of the laptop fragment (CM-MCPSPDetails_ext).

```
<tr>
  <td><span
oraLabel="boGroup/cmAddlSPDataDetails/serialNumber"></span></td>
  <td><span
oraField="boGroup/cmAddlSPDataDetails/serialNumber"></span></td>
</tr>
<tr>
  <td
oraLabel="boGroup/utilityCompletionInformation/servicePointCompletio
nDetails/cmAddlSPDataDetails/condition"></td>
  <td><input class="oraInput"
oraField="boGroup/utilityCompletionInformation/servicePointCompletio
nDetails/cmAddlSPDataDetails/condition"/></td>
</tr>
```

CM Service Point Completion Modified Map fragment - CM-SPCmplModifiedMaint_ext

This fragment can contain the same html as the in the completion division of the laptop fragment (CM-MCPSPModified_ext).

```
<tr>
  <td
oraLabel="boGroup/utilityCompletionInformation/servicePointCompletio
nDetails/cmAddlSPDataDetails/serialNumber"></td>
  <td><input class="oraInput"
oraField="boGroup/utilityCompletionInformation/servicePointCompletio
nDetails/cmAddlSPDataDetails/serialNumber"/></td>
```

```
</tr>
```

Oracle Utilities Mobile Workforce Management Mobile Application – Laptop

Some of the following completion fragments allow the crew to modify details sent from the host. These are designed to have the original values sent from the host displayed on the left column of the map and modifiable details on the right column.

The original values should be read only. This only includes the details that the crew is allowed to modify in the modifiable section. A separate CM fragment is provided on the left and right columns.

Base logic initializes the modifiable values with the original values. Details that were not changed by the crew and displayed in a different font than those that were changed. Refer to base examples in the base maps you extend to follow these display patterns.

Base UI Map Fragment	CM Extended UI Map Fragment
Activity Details Fragment (M2-MCPActivityMainDispFrag)	End of Customer Information section CM-MCPCustomerInfo_ext End of Map CM-MCPActivityMain_ext
Collections Details Fragment (M2-MCPCollectionsInfoDispFrag)	CM-MCPCollectionDetails_ext
Service Point Details Fragment (M2-MCPSPDetailsMaintFrag)	End of Values As Sent from Host on Left Column CM-MCPSPDetails_ext End of Values As Modified by Crew on Right Column CM-MCPSPModified_ext Refer to example
Meter Details Fragment (M2-MCPExistingMeterMaintFrag)	End of Values As Sent from Host on Left Column CM-MCPMeterDetails_ext End of Values As Modified by Crew on Right Column CM-MCPMeterModified_ext
New Meter Details Fragment (M2-MCPNewMeterMaintFrag)	CM-MCPNewMeterDetails_ext
Item Details Fragment (M2-MCPExistingItemMaintFrag)	End of Values As Sent from Host on Left Column CM-MCPItemDetails_ext End of Values As Modified by Crew on Right Column CM-MCPItemModified_ext
New Item Details Fragment (M2-MCPNewItemMaintFrag)	CM-MCPNewItemDetails_ext

Base UI Map Fragment	CM Extended UI Map Fragment
Common Completion Fragment (M2-MCPCommonCmplMaintFrag)	CM-MCPCommonCompletion_ext

Example -Service Point Laptop Maintenance Map Fragment

CM Service Point Activity Details Map fragment - CM-MCPSPDetails_ext

The map fragment should contain 2 groups of elements; one to be displayed in ***Completion*** mode and one to be displayed in ***Browse*** mode.

We recommend that the CM fragment has the activity detail fields first, followed by completion only fields.

```
<!-- Browse section -->
    <tr oraLoad="oraDisplayNone(item,'common/mode', 'Completion');">
        <td><span
oraLabel="boGroup/cmAddlSPDataDetails/serialNumber"></span></td>
        <td><span
oraField="boGroup/cmAddlSPDataDetails/serialNumber"></span></td>
    </tr>
    <tr oraLoad="oraDisplayNone(item,'common/mode', 'Completion');">
        <td><span
oraLabel="boGroup/utilityCompletionInformation/servicePointCompletio
nDetails/cmAddlSPDataDetails/condition"></span></td>
        <td><span
oraField="boGroup/utilityCompletionInformation/servicePointCompletio
nDetails/cmAddlSPDataDetails/condition"></span></td>
    </tr>
<!-- completion section -->
    <tr oraLoad="oraDisplayNone(item,'common/mode', 'Browse');">
        <td><span
oraLabel="boGroup/cmAddlSPDataDetails/serialNumber"></span></td>
        <td><span
oraField="boGroup/cmAddlSPDataDetails/serialNumber"></span></td>
    </tr>
    <tr oraLoad="oraDisplayNone(item,'common/mode', 'Browse');">
        <td
oraLabel="boGroup/utilityCompletionInformation/servicePointCompletio
nDetails/cmAddlSPDataDetails/condition"></td>
        <td><input class="oraInput"
oraField="boGroup/utilityCompletionInformation/servicePointCompletio
nDetails/cmAddlSPDataDetails/condition"/></td>
    </tr>
```

CM Service Point Modified Activity Details Map fragment - CM-MCPSPModified_ext

The map fragment should contain 2 ; one to be displayed in Completion mode and one to be displayed in Browse mode.

- Each activity detail field that can be modified, should have a row in this fragment.
- In the Browse division:
- Each row should contain an oraLabel <td>, an oraField <td> for the modified detail field, and an oraField <td> for the activity detail field.

- The oraField <td> for the activity detail field should have a class of mcpHidden since it will not be displayed (e.g. class="mcpHidden")

```
<!-- Browse section -->
    <tr oraLoad="oraDisplayNone(item,'common/mode', 'Completion');">
        <td><span
oraLabel="boGroup/utilityCompletionInformation/servicePointCompletio
nDetails/cmAddlSPDataDetails/serialNumber"></span></td>
        <td><span
oraField="boGroup/utilityCompletionInformation/servicePointCompletio
nDetails/cmAddlSPDataDetails/serialNumber"></span></td>
        <td class="mcpHidden"
oraField="boGroup/cmAddlSPDataDetails/serialNumber"></td>
    </tr>
<!—Completion section -->
    <tr oraLoad="oraDisplayNone(item,'common/mode', 'Browse');">
        <td
oraLabel="boGroup/utilityCompletionInformation/servicePointCompletio
nDetails/cmAddlSPDataDetails/serialNumber"></td>
        <td><input class="oraInput"
oraField="boGroup/utilityCompletionInformation/servicePointCompletio
nDetails/cmAddlSPDataDetails/serialNumber"/></td>
    </tr>
```

Oracle Utilities Mobile Workforce Management Mobile Application – Handheld

Some of the following completion maps allow the crew to modify details sent from the host. Because of real estate considerations on the handheld these maps are designed to have a Modify button on them that when clicked by the crew it opens up an editable element below each field that is allowed to be modified. The same map in browse mode would only display the modified value if it is different from the original value.

Refer to base examples in the base maps you extend to follow these display patterns.

Base UI Map Fragment	CM Extended UI Map Fragment
Customer Information (M2-MCPCustomerInfoDisp)	CM-MCPWMCustomerInfo_ext
Collections Details (M2-MCPCollectionsDetailsDisp)	CM-MCPWMCollectionDetails_ext
Service Point Details (M2-MCPSPDetailsMaint)	CM-MCPWMSPDetails_ext This map supports the Modify button. Refer to example
Meter Details (M2-MCPExistMeterDetailsMaint)	CM-MCPWMMeterDetails_ext This map supports the Modify button.
New Meter Details (M2-MCPNewMeterDetailsMaint)	CM-MCPWMNewMeterDetails_ext
Item Details Maintenance (M2-MCPExistItemDetailsMaint)	CM-MCPWMItemDetails_ext This map supports the Modify button.

New Item Details Maintenance (M2-MCPNewItemDetailsMaint)	CM-MCPWMNewItemDetails_ext
Common Completion (M1-MCPCommonCompletionMaint)	CM-MCPWMCommonCompletion_ext

Example - Service Point Handheld Maintenance Map

CM MCP WM Service Point Details Map fragment - CM-MCPWMSPDetails_ext

The map fragment should contain 2 groups of elements; one to be displayed in ***Completion*** mode and one to be displayed in ***Browse*** mode.

We recommend that the CM fragment has the activity detail fields first, followed by completion only fields. Each activity detail field that can be modified, should be immediately followed by a modified detail row.

- In the ***Browse*** section:
  - The oraField <td> in each activity detail row must have an id (e.g. id=”CMOrigSerialNumber”)
  - The oraField <td> in each modified detail row must have an id (e.g. id=”CMNewSerialNumber”)
  - The oraField <td> in each modified detail row will call mcpHideUnmodifiedDetails() in an oraLoad, passing to it the id of the modified detail field and the id of the activity detail field (e.g. oraLoad=”mcpHideUnmodifiedDetails(‘CMNewSerialNumber’,’CMOrigSerialNumber)”)

```
<!-- Browse section-->
    <tr oraLoad="oraDisplayNone(item,'common/mode', 'Completion');">
        <td class="oraLabel oraTableLabel"><span
oraLabel="boGroup/cmAddlSPDataDetails/serialNumber"></span></td>
        <td class="oraNormal oraTableData"><span
oraField="boGroup/cmAddlSPDataDetails/serialNumber"
id="CMOrigSerialNumber"></span></td>
    </tr>

    <tr oraLoad="oraDisplayNone(item,'common/mode', 'Completion');">
        <td> </td>
        <td class="oraNormal oraTableData"><span
oraField="boGroup/utilityCompletionInformation/servicePointCompletio
nDetails/cmAddlSPDataDetails/serialNumber" id="CMNewSerialNumber"
oraLoad="mcpHideUnmodifiedDetails('CMNewSerialNumber','CMOrigSerialN
umber')"></span></td>
    </tr>

    <tr oraLoad="oraDisplayNone(item,'common/mode', 'Completion');">
        <td class="oraLabel oraTableLabel"><span
oraLabel="boGroup/utilityCompletionInformation/servicePointCompletio
nDetails/cmAddlSPDataDetails/condition"></span></td>
        <td class="oraNormal oraTableData"><span
oraField="boGroup/utilityCompletionInformation/servicePointCompletio
nDetails/cmAddlSPDataDetails/condition"></span></td>
    </tr>
```

- In the ***Completion*** section:
  - Each modified detail row should call oraDisplayNone in an oraLoad to not display the row if the modifyButtonClicked is false (e.g. oraLoad="oraDisplayNone(item,'boGroup/utilityCompletionInformation/servicePointCompletionDetails/modifyButtonClicked','false');")

```
<!-- Completion division -->
    <tr oraLoad="oraDisplayNone(item,'common/mode', 'Browse');>
        <td class="oraLabel oraTableLabel"><span
id="CMlblSerialNumber"
oraLabel="boGroup/cmAddlSPDataDetails/serialNumber"></span></td>
        <td class="oraNormal oraTableData"><span id="CMSerialNumber"
oraField="boGroup/cmAddlSPDataDetails/serialNumber"></span></td>
    </tr>

    <tr oraLoad=" oraDisplayNone(item,'common/mode',
'Browse');oraDisplayNone(item,'boGroup/utilityCompletionInformation/
servicePointCompletionDetails/modifyButtonClicked', 'false');">
        <td> </td>
        <td><input class="oraInput" id="CMModSerialNumber"
oraField="boGroup/utilityCompletionInformation/servicePointCompletio
nDetails/cmAddlSPDataDetails/serialNumber"/></td>
    </tr>

    <tr oraLoad="oraDisplayNone(item,'common/mode', 'Browse');>
        <td class="oraLabel oraTableLabel"><span id="CMlblCondition"
oraLabel="boGroup/utilityCompletionInformation/servicePointCompletio
nDetails/cmAddlSPDataDetails/condition"></span></td>
        <td><input class="oraInput" id="CMCondition"
oraField="boGroup/utilityCompletionInformation/servicePointCompletio
nDetails/cmAddlSPDataDetails/condition"/></td>
    </tr>
```

Characteristics and Geographic Values XSL Template in Oracle Utilities Customer Care and Billing

This section provides information about the XSL Template and how to use the template to pass characteristic and geographic values from Oracle Utilities Customer Care and Billing to Oracle Utilities Mobile Workforce Management.

About the XSL Template

All custom elements should be sent to Oracle Utilities Mobile Workforce Management under a **customSchemaData** node. Within that node the element must be placed at the same XPath location as defined on the activity business object.

The base product provides an XSL template that facilitates the mapping of characteristics and geographic values of a given entity to corresponding locations in the Oracle Utilities Mobile Workforce Management target schema.

The calling XSL should establish the surrounding group node structure starting from the **customSchemaData** node and then call the XSL template to handle all the characteristics and geographic values for a specific entity.

The list of characteristic types and geographic value types and corresponding element names in Oracle Utilities Mobile Workforce Management is defined in an input file **CM-InputCharacteristicsGeoCodesCollection.xml** located in the same directory where the Route Type XSL files reside.

For example, if you have extended the service point details in Oracle Utilities Mobile Workforce Management with characteristics and geographic types, call the XSL Template once for the "Service Point Characteristics" entity and once for the "Service Point Geographic Value" entity.

```
<customSchemaData>
  <yourCMgroupForSPDetailsAsDefinedInMWM>
    <xsl:call-template name="C1FieldWorkExtensionTemplate">
      <xsl:with-param name="entityName"
select="'SPCharacteristics'"/>
    </xsl:call-template>
    <xsl:call-template name="C1FieldWorkExtensionTemplate">
      <xsl:with-param name="entityName" select="'ServicepointGeo'"/>
    </xsl:call-template>
    <someSPfield>
      </xsl…>
    </someSPfield>
  </yourCMgroupForSPDetailsAsDefinedInMWM>
</customSchemaData>
```

If all custom elements of all entities are just characteristics and geographic values the surrounding group node structure may be defined as part of the element name in the input file allowing you to make a single call to the template:

```
<customSchemaData>
  <xsl:call-template name="C1FieldWorkExtensionTemplate"/>
</customSchemaData>
```

Using the Template

1. Locate the file, **CM-InputCharacteristicsGeoCodesCollection.xml.**
   This should be located in the same directory where the Route Type XSL files reside.

2. Use the following XML format to update the file with an entry for each custom characteristic and geographic value to be forwarded to Oracle Utilities Mobile Workforce Management.

```
<CharacteristicsGeoCodesCollection>
   <CharacteristicGeoCode>
         <entityName>SPCharacteristics</entityName>
         <charType>PLANT</charType>
         <charTypeNode>CM-SPDetails/plant</charTypeNode>
      </CharacteristicGeoCode>
…
     <CharacteristicGeoCode>
         <entityName>ServicepointGeo</entityName>
         <geoType>DVCE</geoType>
         <geoTypeNode>CM-ServicePointGeo/geoCodeDevice</geoTypeNode>
   </CharacteristicGeocode>
```

```
…
</CharacteristicsGeoCodesCollection>
```

- **Entity Name.** Refers to different characteristics or geo type entity collections.
  - Valid values:

    FA Type Characteristics (FatyCharacteristic)

    FA Characteristics (FACharacteristics)

    SP Type Characteristics (ServicepointTypeCharacteristic)

    SP Characteristics (SPCharacteristics)

    Premise Characteristics (PremiseCharacteristics)

    Meter Characteristics (MeterCharacteristics)

    Item Characteristics (ItemCharacteristics)

    Service Point Geo Code (ServicepointGeo)

    Premise Geographic Value (PremiseGeoTypes)
- **Characteristic Type** uniquely identifies the characteristic value in the source collection.
- **Characteristic Type Node** If the template is called within an already established group node structure for a specific entity this is the element name only. If the template is called once for all entities this is the full XPath below the Custom Schema Data node in the target Oracle Utilities Mobile Workforce Management message.
- **Geo Type** uniquely identifies the geographic value in the source collection.
- **Geo Type Node** If the template is called within an already established group node structure for a specific entity this is the element name only. If the template is called once for all entities this is the full XPath below the Custom Schema Data node in the target Oracle Utilities Mobile Workforce Management message of the element, including the element name.

3. If you are currently using the base product XSLs on your FA Extract Route Types and all your custom extensions are characteristics and geographic values, replace them with the following new XSLs respectively.

   - C1FAIntExtOrderCancel.xsl
   - C1FAIntExtOrderCreate.xsl
   - C1FAIntExtOrderUpdate.xsl
   - C1FAIntExtOrderCreateUpdateCancel.xsl

   These new XSLs call an XSL Template once to handle all characteristics and geographic values you have defined in the template input file.

   Otherwise, enhance your existing custom XSL to call the XSL template as needed. Use either separate calls for each entity or one call for all entities.

Chapter 14: Security

This chapter describes the various security policies used for various services.

The Oracle Utilities Field Work Process Integration Pack has been enhanced with Oracle Web Services Manager (OWSM) to provide the following security enhancements:

- Attach security policies to services
- Pass username/password information through csf-keys
- Define and store declarative policies from a central location
- Enforce security and management policies through configurable agents

Applied Security Policies

This section identifies the security policies used for various services.

Global Service Policy

By default all AIA Services - Application Business Connector Services (ABCS), Enterprise Business Services (EBS) and Transport Adapter Services are secured with the following Global Service Policy:

oracle/aia_wss_saml_or_username_token_service_policy_OPT_ON

Applications invoking secured AIA Web Services need to send credentials.

Global Client Policy

Inter-AIA communication is handled by Global Client Policy. By default all Client services are secured with the Global Client Policy:

oracle/aia_wss_saml_or_username_token_client_policy_OPT_ON

Local Client Policy

All Client services to access edge applications (Oracle Utilities Customer Care and Billing, Oracle Utilities Work and Asset Management and Oracle Utilities Mobile Workforce Management v2.x) have overridden the above mentioned Global Client policy with a local security policy:

- oracle/wss_http_token_client_policy

This enables the credentials to be passed to the edge applications as part of the http header.

Following csf-keys have been created to enter credentials for the three edge applications as part of Install:

OU_CCB_01 for CCB

OU_MWM_01 for MWM

OU_WAM_01 for WAM

Upon install, the above mentioned csf-keys get created. Passwords can be changed in the Oracle Enterprise Manager.

The following table shows the **oracle/wss_http_token_client_policy** client policy attached to composites.

SOA Composite	Attached To	Csf-key
CCBGetMeterDataProvService	C1ExtractSPInfo	OU_CCB_01
CreateCustomerInteractionOUCCBUtilitiesProvABCSImp	C1CustomerContactMaintenancePortType	OU_CCB_01
CreateInvoiceOUCCBUtilitiesProvABCSImp	C1RetCreateBillableChargeSAPortType	OU_CCB_01
CreateInvoiceOUCCBUtilitiesProvABCSImp	F1AutomaticToDoEntryPortType	OU_CCB_01
CreateInvoiceOUCCBUtilitiesProvABCSImp	BillableChargeUploadMaintenancePortType	OU_CCB_01
ProcessWorkOrderResponseOUCCBUtilitiesProvABCSImpl	FAResponsePortType	OU_CCB_01
ValidateInstalledProductOUCCBUtilitiesProvABCSImpl	ValidateMeterItemResponsePortType	OU_CCB_01
ProcessWorkOrderOUCCBUtilitiesProvABCSImpl	C1FACompletionExtSysStructPortType	OU_CCB_01
ProcessWorkOrderOUCCBUtilitiesProvABCSImpl	C1FieldActivityMaintenancePortType	OU_CCB_01
ProcessWorkOrderOUCCBUtilitiesProvABCSImpl	C1AddFAandCustomerContactPortType	OU_CCB_01
GetWOLineApptWinAvailOUMWMUtilitiesProvABCSImpl	MWMIMInsertMessageXML	OU_MWM_01
GetWOLineApptWinAvailOUMWMUtilitiesProvABCSImplV2	M1-RouteAppointmentRequestToSchedulerPortType	OU_MWM_01
ProcessWorkOrderOUMWMUtilitiesProvABCSImpl	MWMServiceSoap	OU_MWM_01
ProcessWorkOrderOUMWMUtilitiesProvABCSImplV2	M2-MaintainUtilityActByHost	OU_MWM_01
ProcessWorkOrderOUMWMUtiliti	M2-	OU_MWM_01

SOA Composite	Attached To	Csf-key
esProvABCSImplV2	FinalizeUtilityActByHost	
CreateTimeSheetOUWAMUtilitiesProvABCSImpl	MWMTimesheetDatasetService	OU_WAM_01
ProcessWorkOrderOUWAMUtilitiesProvABCSImpl	ServiceRequestCompletionDatasetService	OU_WAM_01
ProcessWorkOrderOUWAMUtilitiesProvABCSImpl	ServiceRequestDatasetService	OU_WAM_01

Local Service Policy

All edge applications invoking the integration (i.e. Requestor ABCS) override the global service policy with a local security policy:

- oracle/wss_http_token_service_policy

The following table shows the **oracle/wss_http_token_service_policy** service policy attached to composites.

SOA Composite
ProcessWorkOrderOUCCBUtilitiesReqABCSImpl
GetWOLineApptWinAvailOUCCBUtilitiesReqABCSImpl
ProcessWorkOrderCompleteOUMWMUtilitiesReqABCSImpl
ProcessWorkOrderCompleteOUMWMUtilitiesReqABCSImplV2
ProcessWorkOrderCreateOUMWMUtilitiesReqABCSImpl
ProcessWorkOrderCreateOUMWMUtilitiesReqABCSImplV2
ProcessWorkOrderResponseOUMWMUtilitiesReqABCSImpl
ProcessWorkOrderStatusOUMWMUtilitiesReqABCSImpl
ProcessWorkOrderStatusOUMWMUtilitiesReqABCSImplV2
ValidateInstalledProductOUMWMUtilitiesReqABCSImpl
ValidateInstalledProductOUMWMUtilitiesReqABCSImplV2
ProcessWorkOrderCreateOUWAMUtilitiesReqABCSImpl
ProcessWorkOrderUpdateOUWAMUtilitiesReqABCSImpl
ProcessWorkOrderCompleteOUWAMUtilitiesReqABCSImpl
CreateInvoiceOUWAMUtilitiesReqABCSImpl
ValidateInstalledProductOUWAMUtilitiesReqABCSImp

Local Client No Authentication Policy

Some client services override the global client policy with a no authentication local security policy:

- oracle/no_authentication_client_policy

The following table shows the **oracle/** no_authentication_client_policy client policy attached to composites.

SOA Composite	Attached To
UtilitiesCustomerInteractionResponseEBS	CreateCustomerInteractionOUWAMUtilitiesReqABCSImpl_1_0
ProcessWorkOrderCreateOUWAMUtilitiesReqABCSImpl	WAMGetMeterDataReqService

Local Service No Authentication Policy

Some services override the global service policy with a no authentication local security policy:

- oracle/no_authentication_service_policy

The following table shows the **oracle/** no_authentication_service_policy service policy attached to composites.

SOA Composite	Attached To
ProcessWorkOrderCreateOUWAMUtilitiesReqABCSImpl	ProcessWorkOrderCreateOUWAMUtilitiesReqABCSImpl
CreateCustomerInteractionOUWAMUtilitiesReqABCSImp	CreateCustomerInteractionOUWAMUtilitiesReqABCSImpl

For more information about security validation and csf-key, see *Oracle Fusion Middleware Developer's Guide for Oracle Application Integration Architecture Foundation Pack 11g Release 1 (11.1.1.4.0)*, “Working with Security” and *Oracle Fusion Middleware Installation Guide for Oracle Application Integration Architecture Foundation Pack 11*g *Release 1 (11.1.1.4.0).*

Appendix A: Data Mapping

In order to view data mapping for online transactions, you need to view XSL files created for BPEL processes.

This chapter provides data mapping information for each integration point.

WAM Asset Module to CC&B Premise/Service Point

WAM Asset Module Field	Column Type	CC&B Table	CC&B Premise/Service Point Field	Comments
PLANT	VARCHAR2(3)	CI_WFM_OPT or CI_SP_OP_AREA or CI_SP_CHAR	Option Value or Operation Area Code or Char Value	The PLANT SOURCE Option Type defined in the Feature Configuration determines where the value is obtained
ASSET_RECORD_TYPE	VARCHAR(1)	Default value		
ASSET_ID	VARCHAR2(15)	CI_SP or CI_PREM	SP_ID or PREM_ID	
ASSET_TYPE	VARCHAR2(10)	CI_SP or CI_PREM	SP_TYPE_CD or PREM_TYPE_CD	
ASSET_DESC	VARCHAR2(2000)	Premise or SP Info Routine	Info Description	
LAST_UPDATE_DATE	DATE	Default value	System Date	
ASSET_STATUS	VARCHAR2(20)	Default Value		For Premise,use **ACTIVE** as the value. For Service Point, if the Service Point Status is **In Service**, then use **ACTIVE**. If the Service Point status is **Abolished**, then use **INACTIVE**. The CC&B batch job assigns the ASSET_STATUS based on the stated criteria.

WAM Asset Module Field	Column Type	CC&B Table	CC&B Premise/Service Point Field	Comments
PARENT_ASSET_ID	VARCHAR2(15)	CI_SP or CI_PREM		For Premise, if Premise Management module is being used, then use Par ent Premise ID. Otherwise this field is empty for a Premise. For Service Point, use Premise ID linked to the SP.
PARENT_ ASSET_RECORD_TYPE	VARCHAR2(1)			This field is empty. WAM inbound service to retrieve from Premise business rule.
CREATION_DATE	DATE	Default value	System Date	
LAST_UPDATE_USER	VARCHAR2(30)	Default value		CCB_INTEGRATION
CREATED_BY	VARCHAR2(30)	Default value		CCB_INTEGRATION
LOCATION_BASIS	VARCHAR2(20)	Default value		ADDRESS
STREET_NAME	VARCHAR2(40)	CI_PREM	ADDRESS1	
CROSS_STREET	VARCHAR2(40)	CI_PREM	ADDRESS2	
CITY	VARCHAR2(40)	CI_PREM	CITY	
STATE_PROVINCE	VARCHAR2(4)	CI_PREM	STATE	
POSTAL_CODE	VARCHAR2(10)	CI_PREM	POSTAL	
CCB_SOURCE	VARCHAR2(15)	Default value		PREMISE or SERVICE POINT
PARSE_ADDRESS	VARCHAR2(1)	Default value		Y
DEPARTMENT	VARCHAR2(10)	Default value		Based on setting of Default Accounts for Interfaces Business Rule.
AREA	VARCHAR2(10)	Default value		
ACCOUNT	VARCHAR2(75)	Default value		

WAM Customer Module to CC&B Account

WAM Customer Header Field	Column Type	CC&B Table	CC&B Account Field	Comments
RECORD_TYPE	CHAR(1)	Default Value	H	H is a customer record L is a customer address record A is a customer address SA record
PLANT	VARCHAR2(3)	CI_WFM_OPT or CI_SP_OP_AREA or CI_SP_CHAR	Option Value or Operation Area Code or Char Value	The PLANT SOURCE Option Type defined in the Feature Configuration determines from where the value is obtained
CUSTOMER_ID	VARCHAR2(20)	CI_ACCT	ACCT_ID	
COMPANY	VARCHAR2(60)	CI_PER_NAME	ENTITY_NAME	Person/Business flag = 'Business'
CUSTOMER_LAST_NAME	VARCHAR2(30)	CI_PER_NAME	Last Name of Entity Name	Person/Business flag = 'Person' parsing rules is applied to Person Name - a comma separating the last and first name – ***Smith,Patricia***
CUSTOMER_FIRST_NAME	VARCHAR2(30)	CI_PER_NAME	First Name of Entity Name	Person/Business flag = 'Person' parsing rules is applied to Person Name - a comma separating the last and first name – ***Smith,Patricia***
CUSTOMER_STATUS	VARCHAR2(20)	Default value		ACTIVE
LAST_UPDATE_DATE	DATE	Default Value	SYSTEM DATE	
CREATED_DATE	DATE	Default value	SYSTEM DATE	This is only populated for new records.
LAST_UPDATE_USER	VARCHAR2(30)	Default value		CCB_INTEGRATION
CREATED_BY	VARCHAR2(30)	Default value		CCB_INTEGRATION
CCB_ACCT_SETUP_DATE	DATE	CI_ACCT	SETUP_DT	
CCB_ACCT_BILL_CYCLE	VARCHAR2(30)	CI_ACCT	BILL_CYCLE_CD	
CCB_ACCT_MAIN_PERSON_ID	VARCHAR2(10)	CI_ACCT_PER	PER_ID	Primary Customer on the Account
CCB_ACCT_ADDRESS_SOURCE	VARCHAR2(10)	CI_ACCT_PER	BILL_ADDR_SRCE_FLG	Primary Customer Address Source on the Account

WAM Customer Address View to CC&B Account

WAM Customer Address Field	Column Type	Source	CC&B Account Field	Comments
RECORD_TYPE	CHAR(1)	Default Value	L	H is a customer record L is a customer address record A is a customer address SA record
PLANT	VARCHAR2(3)	CI_WFM_OPT or CI_SP_OP_AREA or CI_SP_CHAR	Option Value or Operation Area Code or Char Value	The PLANT SOURCE Option Type defined in the Feature Con figuration determines from where the value is obtained
CUSTOMER_ID	VARCHAR2(20)	CI_ACCT	ACCT_ID	
STREET_NAME	VARCHAR2(40)	CI_PREM	ADDRESS1	
CROSS_STREET	VARCHAR2(40)	CI_PREM	ADDRESS2	
CITY	VARCHAR2(40)	CI_PREM	CITY	
STATE_PROVINCE	VARCHAR2(4)	CI_PREM	STATE	
POSTAL_CODE	VARCHAR2(10)	CI_PREM	POSTAL	
CONTACT_INFO_IND	VARCHAR2(1)	Default Value		Set to **Y** for Mailing Address
PHONE_NO_HOME	VARCHAR2(30)	CI_PER_PHONE	PHONE	Phone Type Code = Home
PHONE_NO_WORK	VARCHAR2(30)	CI_PER_PHONE	PHONE	Phone Type Code = Business
PHONE_NO_WORK_EXT	VARCHAR2(5)	CI_PER_PHONE	EXTENSION	
FAX_NO	VARCHAR2(30)	CI_PER_PHONE	PHONE	Phone Type Code = Fax
EMAIL_ADDRESS	VARCHAR2(100)	CI_PREM	EMAIL	
CCB_ACCT_PREMISE_ID	VARCHAR2(10)	CI_PREM	PREM_ID	
PARSE_ADDRESS	VARCHAR2(1)	Default Value		Y
LAST_UPDATE_DATE	DATE	Default Value		SYSTEM DATE
CREATION_DATE	DATE	Default value		SYSTEM DATE

WAM Customer Address Field	Column Type	Source	CC&B Account Field	Comments
LAST_UPDATE_USER	VARCHAR2(30)	Default value		'CCB_INTEGRATION'
CREATED_BY	VARCHAR2(30)	Default value		'CCB_INTEGRATION'

WAM Customer Address to CC&B Service Agreement

WAM Customer Address Service Agreement Field	Column Type	Source	CC&B Service Agreement Field	Comments
RECORD_TYPE	CHAR(1)	Default Value	A	H is a customer record L is a customer address record A is a customer address SA record
PLANT	VARCHAR2(3)	CI_WFM_OPT or CI_SP_OP_AREA or CI_SP_CHAR	Option Value or Operation Area Code or Char Value	The PLANT SOURCE Option Type defined in the Feature Configuration determines from where the value is obtained
CUSTOMER_ID	VARCHAR2(20)	CI_ACCT	ACCT_ID	
CCB_ACCT_PREMISE_ID	VARCHAR2(10)	CI_PREM	PREM_ID	
CCB_SA_ID		CI_SA	SA_ID	
CCB_SA_STATUS		CI_SA	SA_STATUS_FLG	
CCB_SA_TYPE_DESC		CI_SA_TYPE_L	SA_TYPE_CD DESCR	
CCB_SA_START_DATE	DATE	CI_SA	START_DT	

Appendix B: Cross-References

The following sections provide references for where you can find more information on some of the terms and entities related to this integration.

ABCs

For more information, see *Oracle Fusion Middleware Developer's Guide for Oracle Application Integration Architecture Foundation Pack 11g Release 1*, "Designing and Constructing ABC Services" and *Oracle Fusion Middleware Concepts and Technologies Guide for Oracle Application Integration Architecture Foundation Pack 11g Release 1*, "Understanding ABC Services".

AggregatorAdapters

For more information, see Oracle Fusion Middleware Developer's Guide for Oracle Application Integration Architecture Foundation Pack 11g Release 1, "Describing the Event Aggregation Programming Model".

Creating Cross-References

For more information, see Oracle Fusion Middleware Concepts and Technologies Guide for Oracle Application Integration Architecture Foundation Pac 11g Release 1k, "Understanding Message Transformation, Enrichment, and Configuration," Cross-References.

DVMs

For more information on domain value maps shipped with this product, see Working with Domain Value Maps.

For more information, see *Oracle Fusion Middleware Developer's Guide for Oracle Application Integration Architecture Foundation Pack*, "Understanding Message Transformation, Enrichment, and Configuration," Domain Value Maps.

EBFs

For more information, see *Oracle Fusion Middleware Developer's Guide for Oracle Application Integration Architecture Foundation Pack*, "Designing and Constructing EBFs" and *Oracle Fusion Middleware Concepts and Technologies Guide for Oracle Application Integration Architecture Foundation Pack*, "Understanding EBSs," Enterprise Business Flow Processes.

EBOs

For detailed documentation of individual EBOs and EBMs, click the AIA Reference Doc link on EBO and EBM detail pages in Oracle Enterprise Repository.

EBOs can be extended, for instance, to add new data elements. These extensions are protected, and remain intact after a patch or an upgrade.

For more information about using the Oracle Enterprise Repository and configuring it to provide the AIA Reference Doc link, see *Oracle Fusion Middleware Concepts and Technologies Guide for Oracle Application Integration Architecture Foundation Pack*, "Configuring and Using Oracle Enterprise Repository as the Oracle AIA SOA Repository.

EBSs

For more information, see *Oracle Fusion Middleware Developer's Guide for Oracle Application Integration Architecture Foundation Pack*, "Designing and Developing EBSs" and Oracle Application Integration Architecture - Foundation Pack: Concepts and Technologies Guide, "Understanding EBSs".

Error Handling

For more information about the errors thrown by Siebel CRM or Oracle EBS, see the documentation for that product. For more information about AIA error handling, see the *Oracle Fusion Middleware Infrastructure Components and Utilities User's Guide for Oracle Application Integration Architecture Foundation Pack*, "Setting Up and Using Error Handling and Logging."

For more information on the Oracle Worklist Application, see Oracle Application Integration Architecture: Foundation Pack, "Infrastructure Components and Utilities User's Guide for Oracle Application Integration Architecture Foundation Pack, "Using the Error Console."

Error Roles

For more information about setting up error notifications using these values, see Oracle Fusion Middleware Infrastructure Components and Utilities User's Guide for Oracle Application Integration Architecture Foundation Pack, "Setting up Error Notifications and Trace Logging."

JMS Adapters (Producers and Consumers)

For more information, see Oracle Fusion Middleware Developer's Guide for Oracle Application Integration Architecture Foundation Pack, "Designing and Constructing JMS Adapter Services".

Setting Config Properties

For more information, see *Oracle Fusion Middleware Infrastructure Components and Utilities User's Guide for Oracle Application Integration Architecture Foundation Pack*, "Using the BSR," Loading Oracle AIA Configuration File Updates.

Appendix C: DHTWBCNG_DATA

(Oracle Utilities Mobile Workforce Management v1.x)

TRANSACTION_ID	11
TRANSACTION_NAME	Order Completion
DATA_FORMAT	XML
WSDL_LINK	http://<SOA_HOST>:<SOA_PORT>/orabpel/default/ProcessWorkOrderCompleteOUMWMUtilitiesReqABCSImpl/1.0/ProcessWorkOrderCompleteOUMWMUtilitiesReqABCSImpl?wsdl
WSML_LINK	
SERVICE_NAME	ProcessOrderComplete
PORT_NBR	
NS	
METHOD_NAME	ProcessOrderComplete
VERSION_NUMBER	1
DELETE_FLAG	N
HOST_SYSTEM	FWI
XSD_PATH	
XSL_PATH	
AUTH_USER	oc4jadmin
AUTH_PASSWORD	welcome1
ENDPOINT_URL	http://<SOA_HOST>:<SOA_PORT>/orabpel/default/ProcessWorkOrderCompleteOUMWMUtilitiesReqABCSImpl/1.0
NAMESPACE_URI	http://tugbu.com/ServiceRequest/Data
SOAP_ACTION	ProcessOrderComplete
DOCUMENT_NAME	SPLWFMOrderCompletion
USE_HIGHLEVEL	N
SYNCHRONOUS_FLAG	N
RESPONSE_DOCUMENT_NAME	
RESPONSE_XSD_PATH	
RESPONSE_XSL_PATH	
SEQUENCE_TAG	
VALIDATE_RESPONSE_XSL_PATH	

RETRY_MESSAGE	N
NAMESPACE_NAME	
ENCODING_STYLE	

TRANSACTION_ID	51
TRANSACTION_NAME	Create Order
DATA_FORMAT	XML
WSDL_LINK	http://<SOA_HOST>:<SOA_PORT>/orabpel/default/ProcessWorkOrderCreateOUMWMUtilitiesReqABCSImpl/1.0/ProcessWorkOrderCreateOUMWMUtilitiesReqABCSImpl?wsdl
WSML_LINK	
SERVICE_NAME	ProcessOrderCreate
PORT_NBR	
NS	
METHOD_NAME	ProcessOrderCreate
VERSION_NUMBER	1
DELETE_FLAG	N
HOST_SYSTEM	FWI
XSD_PATH	
XSL_PATH	
AUTH_USER	oc4jadmin
AUTH_PASSWORD	welcome1
ENDPOINT_URL	http://<SOA_HOST>:<SOA_PORT>/orabpel/default/ProcessWorkOrderCreateOUMWMUtilitiesReqABCSImpl/1.0
NAMESPACE_URI	http://mwm.splwg.com/WebServices/
SOAP_ACTION	ProcessOrderCreate
DOCUMENT_NAME	SPLWFMCreateUpdateOrder
USE_HIGHLEVEL	N
SYNCHRONOUS_FLAG	N
RESPONSE_DOCUMENT_NAME	
RESPONSE_XSD_PATH	
RESPONSE_XSL_PATH	
SEQUENCE_TAG	
VALIDATE_RESPONSE_XSL_PATH	
RETRY_MESSAGE	Y

NAMESPACE_NAME	ns1
ENCODING_STYLE	

TRANSACTION_ID	53
TRANSACTION_NAME	Order Completion
DATA_FORMAT	XML
WSDL_LINK	http://<SOA_HOST>:<SOA_PORT>/orabpel/default/ProcessWorkOrderCompleteOUMWMUtilitiesReqABCSImpl/1.0/ProcessWorkOrderCompleteOUMWMUtilitiesReqABCSImpl?wsdl
WSML_LINK	
SERVICE_NAME	ProcessOrderComplete
PORT_NBR	
NS	
METHOD_NAME	ProcessOrderComplete
VERSION_NUMBER	1
DELETE_FLAG	N
HOST_SYSTEM	FWI
XSD_PATH	
XSL_PATH	
AUTH_USER	oc4jadmin
AUTH_PASSWORD	welcome1
ENDPOINT_URL	http://<SOA_HOST>:<SOA_PORT>/orabpel/default/ProcessWorkOrderCompleteOUMWMUtilitiesReqABCSImpl/1.0
NAMESPACE_URI	http://tugbu.com/ServiceRequest/Data
SOAP_ACTION	ProcessOrderComplete
DOCUMENT_NAME	SPLWFMOrderCompletion
USE_HIGHLEVEL	N
SYNCHRONOUS_FLAG	N
RESPONSE_DOCUMENT_NAME	
RESPONSE_XSD_PATH	
RESPONSE_XSL_PATH	
SEQUENCE_TAG	
VALIDATE_RESPONSE_XSL_PATH	
RETRY_MESSAGE	N

NAMESPACE_NAME	ns1
ENCODING_STYLE	

TRANSACTION_ID	93
TRANSACTION_NAME	Validation Request
DATA_FORMAT	XML
WSDL_LINK	http://<SOA_HOST>:<SOA_PORT>/orabpel/default/ValidateInstalledProductOUMWMUtilitiesReqABCSImpl/1.0/ValidateInstalledProductOUMWMUtilitiesReqABCSImpl?wsdl
WSML_LINK	
SERVICE_NAME	ValidateInstalledProduct
PORT_NBR	
NS	
METHOD_NAME	ValidateInstalledProduct
VERSION_NUMBER	1
DELETE_FLAG	N
HOST_SYSTEM	FWI
XSD_PATH	
XSL_PATH	
AUTH_USER	oc4jadmin
AUTH_PASSWORD	welcome1
ENDPOINT_URL	http://<SOA_HOST>:<SOA_PORT>/orabpel/default/ValidateInstalledProductOUMWMUtilitiesReqABCSImpl/1.0
NAMESPACE_URI	http://splwg.com/SPLWFMValidationRequest.xsd
SOAP_ACTION	ValidateInstalledProduct
DOCUMENT_NAME	ValidateInstalledProduct
USE_HIGHLEVEL	N
SYNCHRONOUS_FLAG	N
RESPONSE_DOCUMENT_NAME	
RESPONSE_XSD_PATH	
RESPONSE_XSL_PATH	
SEQUENCE_TAG	
VALIDATE_RESPONSE_XSL_PATH	
RETRY_MESSAGE	N

NAMESPACE_NAME	ns1
ENCODING_STYLE	

TRANSACTION_ID	98
TRANSACTION_NAME	Transaction Ack
DATA_FORMAT	XML
WSDL_LINK	http://<SOA_HOST>:<SOA_PORT>/orabpel/default/ProcessWorkOrderResponseOUMWMUtilitiesReqABCSImpl/1.0/ProcessWorkOrderResponseOUMWMUtilitiesReqABCSImpl?wsdl
WSML_LINK	
SERVICE_NAME	ProcessOrderResponse
PORT_NBR	
NS	
METHOD_NAME	ProcessOrderResponse
VERSION_NUMBER	1
DELETE_FLAG	N
HOST_SYSTEM	FWI
XSD_PATH	
XSL_PATH	
AUTH_USER	oc4jadmin
AUTH_PASSWORD	welcome1
ENDPOINT_URL	http://<SOA_HOST>:<SOA_PORT>/orabpel/default/ProcessWorkOrderResponseOUMWMUtilitiesReqABCSImpl/1.0
NAMESPACE_URI	http://mwm.splwg.com/WebServices/
SOAP_ACTION	ProcessOrderResponse
DOCUMENT_NAME	ProcessOrderResponse
USE_HIGHLEVEL	N
SYNCHRONOUS_FLAG	N
RESPONSE_DOCUMENT_NAME	
RESPONSE_XSD_PATH	
RESPONSE_XSL_PATH	
SEQUENCE_TAG	
VALIDATE_RESPONSE_XSL_PATH	
RETRY_MESSAGE	N
NAMESPACE_NAME	

ENCODING_STYLE	

TRANSACTION_ID	132
TRANSACTION_NAME	MFFOStatus
DATA_FORMAT	XML
WSDL_LINK	http://<SOA_HOST>:<SOA_PORT>/orabpel/default/ProcessWorkOrderStatusOUMWMUtilitiesReqABCSImpl/1.0/ProcessWorkOrderStatusOUMWMUtilitiesReqABCSImpl?wsdl
WSML_LINK	
SERVICE_NAME	ProcessOrderStatus
PORT_NBR	
NS	
METHOD_NAME	ProcessOrderStatus
VERSION_NUMBER	1
DELETE_FLAG	N
HOST_SYSTEM	FWI
XSD_PATH	
XSL_PATH	
AUTH_USER	oc4jadmin
AUTH_PASSWORD	welcome1
ENDPOINT_URL	http://<SOA_HOST>:<SOA_PORT>/orabpel/default/ProcessWorkOrderStatusOUMWMUtilitiesReqABCSImpl/1.0
NAMESPACE_URI	http://tugbu.com/ServiceRequest/Data
SOAP_ACTION	ProcessOrderStatus
DOCUMENT_NAME	SPLWFMOrderStatus
USE_HIGHLEVEL	N
SYNCHRONOUS_FLAG	N
RESPONSE_DOCUMENT_NAME	
RESPONSE_XSD_PATH	
RESPONSE_XSL_PATH	
SEQUENCE_TAG	
VALIDATE_RESPONSE_XSL_PATH	
RETRY_MESSAGE	N
NAMESPACE_NAME	ns1
ENCODING_STYLE	

TRANSACTION_ID	158
TRANSACTION_NAME	WAM Time Sheet
DATA_FORMAT	XML
WSDL_LINK	http://<SOA_HOST>:<SOA_PORT>/orabpel/default/CreateTimeSheetOUMWMUtilityReqABCSImpl/1.0/CreateTimeSheetOUMWMUtilityReqABCSImpl?wsdl
WSML_LINK	
SERVICE_NAME	CreateTimeSheet
PORT_NBR	
NS	
METHOD_NAME	CreateTimeSheet
VERSION_NUMBER	1
DELETE_FLAG	N
HOST_SYSTEM	FWI
XSD_PATH	
XSL_PATH	
AUTH_USER	oc4jadmin
AUTH_PASSWORD	welcome1
ENDPOINT_URL	http://<SOA_HOST>:<SOA_PORT>/orabpel/default/CreateTimeSheetOUMWMUtilityReqABCSImpl/1.0
NAMESPACE_URI	http://tugbu.com/ServiceRequest/Data
SOAP_ACTION	CreateTimeSheet
DOCUMENT_NAME	SPLWAMTimeSheet
USE_HIGHLEVEL	N
SYNCHRONOUS_FLAG	N
RESPONSE_DOCUMENT_NAME	
RESPONSE_XSD_PATH	
RESPONSE_XSL_PATH	
SEQUENCE_TAG	
VALIDATE_RESPONSE_XSL_PATH	
RETRY_MESSAGE	Y
NAMESPACE_NAME	ns1
ENCODING_STYLE	

TRANSACTION_ID	3001
TRANSACTION_NAME	Create/Update Order
DATA_FORMAT	XML
WSDL_LINK	http://<SOA_HOST>:<SOA_PORT>/orabpel/default/ProcessWorkOrderCreateOUMWMUtilitiesReqABCSImpl/1.0/ProcessWorkOrderCreateOUMWMUtilitiesReqABCSImpl?wsdl
WSML_LINK	
SERVICE_NAME	ProcessOrderCreate
PORT_NBR	
NS	
METHOD_NAME	ProcessOrderCreate
VERSION_NUMBER	1
DELETE_FLAG	N
HOST_SYSTEM	FWI
XSD_PATH	
XSL_PATH	
AUTH_USER	oc4jadmin
AUTH_PASSWORD	welcome1
ENDPOINT_URL	http://<SOA_HOST>:<SOA_PORT>/orabpel/default/ProcessWorkOrderCreateOUMWMUtilitiesReqABCSImpl/1.0
NAMESPACE_URI	http://mwm.splwg.com/WebServices/
SOAP_ACTION	ProcessOrderCreate
DOCUMENT_NAME	SPLWFMCreateUpdateOrder
USE_HIGHLEVEL	N
SYNCHRONOUS_FLAG	N
RESPONSE_DOCUMENT_NAME	
RESPONSE_XSD_PATH	
RESPONSE_XSL_PATH	
SEQUENCE_TAG	
VALIDATE_RESPONSE_XSL_PATH	
RETRY_MESSAGE	Y
NAMESPACE_NAME	
ENCODING_STYLE	

Appendix D: Functional Enhancement Between Version 2.5 and Version 3.1

The following functional enhancements have been added to v3.1:

- **Priority Code is sent to Oracle Utilities Mobile Workforce Management**

  The Oracle Utilities Customer Care and Billing Customer Service Representative has the option to select a higher priority code than the default associated with the Field Activity Type. The desired priority code can be captured during the initial creation of the Field Activity or subsequent update of the Field Activity within Oracle Utilities Customer Care and Billing. The selected priority code should be sent to Oracle Utilities Mobile Workforce Management to be worked appropriately.

  The priority code on the Oracle Utilities Customer Care and Billing Field Activity is not captured on the Service Request in Oracle Utilities Work and Asset Management.

  This functionality is supported with Oracle Utilities Mobile Workforce Management v1.x and Oracle Utilities Mobile Workforce Management v2.x.

- **Standard Remarks Code is captured as Field Activity Remarks in Oracle Utilities Customer Care and Billing**

  When a field worker completes a Field Order or activity in Oracle Utilities Mobile Workforce Management and selects "Standard Remarks Code" as appropriate the Oracle Utilities Mobile Workforce Management Standard Remarks Code is sent to Oracle Utilities Customer Care and Billing and is captured as Field Activity Remarks on the Field Activity.

  The Standard Remarks Code on the Oracle Utilities Mobile Workforce Management Field Order or Activity is not captured on the Service Request in Oracle Utilities Work and Asset Management.

  This functionality is supported with Oracle Utilities Mobile Workforce Management v1.x with only a single Standard Remarks Code. It is supported in Oracle Utilities Mobile Workforce Management v2.x with multiple Standard Remarks Codes.

- **Appointment Booking Slot Group is based on user selection**

  The Appointment Booking slot group was defined in the AIA Configuration File in v2.5; therefore, the Oracle Utilities Customer Care and Billing Customer Service Representative could not filter by Appointment Booking Slot (Morning only, Afternoon only, etc) based on customer preference. A new drop-down was added on the Appointment Booking screen in Oracle Utilities Customer Care and Billing to allow the Customer Service Representative in Oracle Utilities Customer Care and Billing to select the desired value and pass it to Oracle Utilities Mobile Workforce Management.

  The values used for slot group in Oracle Utilities Customer Care and Billing are specific to the implementation and are defined based on the Oracle Utilities Mobile Workforce Management/Oracle Real-Time Scheduling setup.

This functionality is supported with Utilities Mobile Workforce Management v1.x and Utilities Mobile Workforce Management v2.x.

- **Service Request remarks are passed to Oracle Utilities Customer Care and Billing when the Service Request is moved to "Finished" status**

  In v2.5, Oracle Utilities Work and Asset Management Service Request Remarks were not sent to Oracle Utilities Customer Care and Billing when the Service Request moved to "Finished" status. In v3.1, Oracle Utilities Work and Asset Management sends these remarks when the Service Request moves to "Finished" Status. Remarks are stored as Field Activity Remarks in Oracle Utilities Customer Care and Billing.

  In v2.5, the remarks are entered as free-form text in Oracle Utilities Work and Asset Management. In v3.1, remarks are validated codes rather than free form. Oracle Utilities Work and Asset Management has been modified to support a code field instead of a free-form entry field.

  Oracle Utilities Work and Asset Management supports multiple Service Request Standard Remarks Codes.

- **External System Name is included in the Field Activity Log on acknowledgements**

  When a Field Activity is created, updated, or cancelled in Oracle Utilities Customer Care and Billing and passed to Oracle Utilities Work and Asset Management and Oracle Utilities Mobile Workforce Management, the acknowledgement returned to Oracle Utilities Customer Care and Billing creates entries on the Field Activity Log. In v2.5, the external system name was not identified; however it has been added to the log with v3.1.

- **Timesheet supports regular and premium hours in a single transaction.**

  In v2.5, only premium hours were received when Oracle Utilities Mobile Workforce Management sent timesheets with both regular and premium hours to Oracle Utilities Work and Asset Management.

  Version 3.1 supports passing timesheet data with both regular and premium hours in a single transaction.

  This functionality is supported with Oracle Utilities Mobile Workforce Management v1.x only. The support for this functionality by Oracle Utilities Mobile Workforce Management v2.x will be implemented in a future release.

- **Oracle Utilities Mobile Workforce Management sends Service Point ID for Installed Product Meter Validation on related Pickup Orders**

  In v2.5, Oracle Utilities Mobile Workforce Management sends an Order ID and Badge Number to validate meters. Oracle Utilities Customer Care and Billing gets the Service Point ID from the Field Activity and verifies if the meter can be installed. However, if the Field Activity does not yet exist in Oracle Utilities Customer Care and Billing, the validation fails. A patch for v2.5 was later introduced to prevent such validation failures.

In v3.1, Service Point ID was added to the validate meter message sent from Oracle Utilities Mobile Workforce Management to Oracle Utilities Customer Care and Billing so that the validation can succeed in this scenario. This approach provides a superior technical solution than the initial release and subsequent patch.

This functionality is supported by Oracle Utilities Mobile Workforce Management v1.x and Oracle Utilities Mobile Workforce Management v2.x.

- **UseOnBill Indicator for Meter Read data can be set during Field Activity completion based on Field Activity Type**

  In v2.5, the UseOnBill Indicator is always set to “TRUE”' in the middleware for meter reads coming in from an external system to Oracle Utilities Customer Care and Billing. This setting sometimes results in unwanted reads used in billing calculations and/or displayed on the bill. The UseOnBill Indicator for meter reads is NOT controlled/exposed in the Oracle Utilities Work and Asset Management or Oracle Utilities Mobile Workforce Management user interface and is not part of completion information that is send by those systems.

  In v3.1, the integration provides the ability to configure whether a particular meter read should be used in billing by setting the UseOnBill Indicator during Field Activity Completion via DVM based configuration tied to the particular Field Activity Type.

- **Service Point GEO Code and FA Step Information added to FA Extract Service**

  The FA Extract service used by Oracle Utilities Customer Care and Billing was enhanced to include two new collections of data – Service Point GEO Code Type/Value and Field Activity Steps.

  The Service Point GEO Code Type/Value is sent to Oracle Utilities Mobile Workforce Management v2.x. It is not used by Oracle Utilities Work and Asset Management or Oracle Utilities Mobile Workforce Management v1.x.

  The Field Activity Step information was mapped to the WorkOrder EBO; however, it was not mapped to Oracle Utilities Work and Asset Management or Oracle Utilities Mobile Workforce Management.

Appendix E: Mapping Changes Between Version 2.5 and Version 3.1

Following mapping has been changed from v2.5 to v3.1:

- **Billable Charge Indicator Mapping**

  In v2.5, the Billable Charge Indicator is mapped to the WorkOrderLine>FurtherActionCode element in the WorkOrder EBO

  In v3.1, a new attribute was added at the WorkOrderLine level of the WorkOrder EBO and the field was remapped accordingly.

  This functionality is supported with Oracle Utilities Mobile Workforce Management v1.x only. The support for this functionality by Oracle Utilities Mobile Workforce Management v2.x will be implemented in a future release.

  This mapping change only impacts the integration layer and does not impact how the data is stored in the participating applications.

- **Life Support Code and Description Mapping**

  In v2.5, the Life Support Code and Description were mapped to the WorkOrderLine>WorkOrderLineRemarks structure in the WorkOrder EBO.

  In v3.1, new elements were added at the WorkOrderLine level of the WorkOrder EBO and these fields were remapped accordingly.

  This functionality is supported by Oracle Utilities Mobile Workforce Management v1.x and Oracle Utilities Mobile Workforce Management v2.x.

  This mapping change only impacts the integration layer and does not impact how the data is stored in the participating applications.

- **Completion Comments**

  In v2.5, completion comments entered on order completion from Oracle Utilities Mobile Workforce Management were passed from Oracle Utilities Mobile Workforce Management to Oracle Utilities Work and Asset Management, but the comments overrode the Problem Description information on the Service Request in Oracle Utilities Work and Asset Management.

  In v3.1, a change has been made to store completion comments in Close Out Information field in Oracle Utilities Work and Asset Management.

  The mapping changes for completion comments should be reviewed by customers migrating from v2.5 to v3.1 to determine how they would want to handle the data conversion for their implementation.

  This functionality is supported by Oracle Utilities Mobile Workforce Management v1.x and Oracle Utilities Mobile Workforce Management v2.x.

Appendix F: Functional Diagrams

Please refer to the diagrams included in your installation media pack: *“Oracle Utilities Field Work 3.1 Functional Diagrams.zip.”*

Appendix G: CAVS Testing

The Composite Application Validation System (CAVS) is a framework that provides an approach to test integration of Oracle Application Integration Architecture services. CAVS includes test initiators that simulate web service invocations and simulators that simulate service endpoints.

The CAVs properties in AIAConfigurationProperties.xml are by default set to not route the messages to CAVS. CAVS related properties need to be changed only if you decide to use CAVS for testing. These properties can be identified in the AIAConfigurationProperties.xml file as the name of these Service Configuration properties ends with either RouteToCAVS or CAVS.EndpointURI, and are available in the file under each ABCS Name.

For more information, about CAVS; see the *Oracle Fusion Middleware Infrastructure Components and Utilities User's Guide for Oracle Application Integration Architecture Foundation Pack 11g Release 1,* “Introduction to the Composite Application Validation System”.