

**Oracle Utilities
Meter Data Framework**

User's Guide

Release 2.0.1 Service Pack 9

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Chapter 1

Overview

This User Guide describes how to work with the Oracle Utilities Meter Data Framework. This includes:

[Getting Started](#) on page 8

[User Documentation](#) on page 12

[System Administration](#) on page 45

[Reference Topics](#) on page 67

[FAQs](#) on page 78

This guide contains the same content as the Oracle Utilities Meter Data Framework section of the online help.

Chapter 2

Getting Started

This section provides an overview of Oracle Utilities meter data framework.

About Oracle Utilities Meter Data Framework

Oracle Utilities meter data framework provides shared functionality used by Oracle Utilities Meter Data Management, Oracle Utilities Smart Grid Gateway, and other Oracle Utilities products.

Oracle Utilities meter data framework has four primary functional areas:

- **Device Management:** Used by analysts and administrators in managing and defining the devices used to record and capture meter data. Device management involves working with devices, measuring components, and device configurations. See [Understanding Device Management](#) for more information about these concepts.
- **Device Installation:** Used by analysts and administrators in managing the installation of devices, including defining markets and service providers, service points and contacts, and installation events. Device installation also includes defining the schedules for manual meter reading. See [Understanding Device Installation](#) for more information about these concepts.
- **Device Communication:** Used by analysts and administrators in managing communications between devices and head-end systems. Device communication involves working with commands (activities), communications, completion events, and device events. See [Understanding Device Communication](#) for more information about these concepts.

Note: The communication, completion event, device event, and command functionality of the meter data framework is available only with Oracle Utilities Smart Grid Gateway.

- **Validation, Editing, and Estimation (VEE):** Used by analysts and administrators to define validation, editing, and estimation (VEE) rules to be applied to measurement data. See [Understanding VEE Rule Setup and Administration](#) for more information.

Starting the Application

Use this procedure to start Oracle Utilities meter data framework.

1. Click the desktop icon or program menu option to start the Oracle Utilities meter data framework server application.
2. Log in using your user ID and password.
3. If prompted, select a language.
4. Use the toolbar or menu bar (on the left edge of the screen) to select the function you want to perform.

Understanding the User Interface

This section provides basic information about the Oracle Utilities meter data framework user interface.

For information about the application's main toolbar, menu system, user setup and security, and user interface standards, see the System Wide Standards topic in the Framework Business Processes help.

Menus and Navigation

This topic describes the Oracle Utilities meter data framework menus and general rules for navigating the system.

The Oracle Utilities meter data framework menu displays on the left side of the application screen. The menu is configurable, so the options that appear may vary based on your user profile and your system's configuration.

Main Menu and Admin Menu

By default, the system provides two menus: the Main menu and the Admin menu.

The Main Menu is displayed by default. Click the Menu icon in the main toolbar to display a list of available menus, then select the menu you want to use. The selected menu appears on the left-side of the screen.

The Admin menu provides access to functions used for setup and administration. Only users who have administrative privileges will be able to see this menu. The main menu provides access to all other functions. The options displayed on each menu are based on the settings defined in your user profile. Your user profile also controls your access to different portals and dashboard zones.

Functional and Alphabetical Menus

The system supports two different menu styles: alphabetical and functional. The style used is specified on the Main tab of the Installation Options - Framework portal.

The functional menu groups menu options by function, such as Device, Device Installation, and VEE Rules. Thus, to add a new device type, you would first click the Device submenu, and then select the Device Type option.

Functional menu groups include the following:

- Common (Admin Menu)
- Communication (Admin and Main Menus)
- Customer Information (Admin and Main Menu)
- Device (Admin and Main Menus)
- Device Installation (Admin and Main Menus)
- VEE Rules (Admin Menu)

The alphabetical menu groups menu options by the first letter of the option name. Thus, to add a new device type, you would first click the D submenu, and then select the Device Type option.

The procedures in this documentation assume that you are using the functional menus. If you are using alphabetical menus instead, simply replace the functional submenu with the alphabetical submenu. For example, if the procedure instructs you to select:

Main Menu > Device > Device Type

then you would instead select:

Main Menu > D > Device Type

The menu system provides access to both Oracle Utilities Application Framework functions and Oracle Utilities meter data framework functions. If you have additional Oracle applications installed, the menu system will provide access to functions for that application as well. Framework functions are described in the Framework online help; Framework help topics are listed under the appropriate Framework heading in the help contents panel. Likewise, Oracle Utilities meter data framework topics are listed in the help contents panel under the appropriate Oracle Utilities meter data framework heading.

Navigating to Portals in Add or Edit Mode

Most menu options display a + sign next to the option name. If you click the plus sign, rather than the option name, you will go directly to a screen that lets you add a new record. For example, if you click the plus sign next to the **Device** option, the system navigates to the Device add/edit screen so you can begin creating a new device. This is referred to as 'navigating to the Device portal in add mode.' In this online help, using this option is notated as **Device+**.

If you click the option name, rather than the + sign, the system navigates to a search portal, where you can select the entity you want to view or edit. (For admin-level data maintenance, the system navigates to a screen that lists the entities and lets you select one from the list.) This is referred to as 'navigating to the Device portal in edit mode.' Once you have found the entity you want to work with, the system displays a maintenance portal listing all the actions you can take on that entity. The valid options will vary depending on the entity, your user privileges, and your system's configuration. Standard actions include Edit, Duplicate, and Delete. Valid actions also typically include changes to the entity's status.

Oracle Utilities Meter Data Framework Menu Options

This topic describes the menu options available through the meter data framework .

The following table lists the base meter data framework menu functions.

Note: Note that an implementation can add or remove any of these functions from the menu system, change the menu option name or the submenus under which they appear, or restrict access to the options for some or all users.

Menu (Admin or Main)	Functional Menu	Menu Option
Admin	Common	Exception Type
Admin	Common	Factor
Admin	Common	Service Quantity Identifier
Admin	Common	Service Type
Admin	Common	Time of Use
Admin	Common	Unit of Measure
Admin	Communications	Activity Type
Admin	Communications	Communication Type
Admin	Communications	Device Event Type
Admin	Communications	Market
Admin	Communications	Service Provider

Menu (Admin or Main)	Functional Menu	Menu Option
Admin	Communications	Service Task Type
Admin	Customer Information	Contact Type
Admin	Device	Device Configuration Type
Admin	Device	Device Type
Admin	Device	Manufacturer
Admin	Device	Measuring Component Type
Admin	Device Installation	Service Point Type
Admin	Device Installation	Measurement Cycle
Admin	Device Installation	Measurement Cycle Schedule
Admin	VEE Rules	VEE Group
Admin	VEE Rules	VEE Rule
Main	Customer Information	Contact
Main	Device Installation	Install Event
Main	Device Installation	Service Point
Main	Device	Device
Main	Device	Device Configuration
Main	Device	Measuring Component
Main	Communication	Activity
Main	Communication	Completion Event
Main	Communication	Communication
Main	Communication	Device Event
Main	Communication	Load IMDs / Events (XML)
Main	Initial Measurement Data	
Main	Data Synchronization	Sync Request Inbound
Main	Data Synchronization	Sync Request Inbound Exceptions
Main	Data Synchronization	Sync Request Outbound
Main	Total and Trends	Processing Statistics
Main	Service Task	

Chapter 3

User Documentation

This section describes the application functions that support day-to-day operations. These functions are available from the Oracle Utilities meter data framework application Main Menu.

Device Management

This section describes concepts and procedures related to managing meter-related objects such as meters, registers, and channels. This includes managing devices, device configurations, and measuring components.

Understanding Devices and Measuring Components

This section describes concepts related to device management.

About Devices

Devices are physical or virtual objects that hold one or more measuring components that can produce data to be handled by the system.

Examples of devices include meters, substations, transformers, demand response devices, weather stations, etc.

Attributes used to define devices include the following:

- The device type of the device
- One or more device identifiers such as serial number, badge number, meter number, etc.
- Manufacturer and model
- The status of the device (active, inactive, retired, etc.)

A device can have one or more device configurations over time. A device's measuring components are associated with the device's device configurations.

About Device Configurations

Device configurations represent specific configurations of a device as of a certain time.

Over time, a device can have many configurations. Device configurations are effective-dated, allowing a device to retain its identifiers (such as serial number, badge number, etc.) even while the quantities it measures change over time.

Attributes used to define device configurations include the following:

- The device configuration type
- The parent device
- The effective date and time of the device configuration
- The time zone in which the device operates
- The status of the device configuration (active, inactive, etc.)

Each device configuration can have one or more measuring components associated with it.

About Measuring Components

Measuring components are single points for which data will be received and stored in the system.

A measuring component can be associated to a physical device, which can have one or more measuring components, or it can be "virtual" or "stand-alone," meaning that it is not associated to a physical device. Examples of stand-alone measuring components include:

- **Aggregator:** A class of measuring component that stores measurements that represent a summarization of other measurements from a potentially diverse set of devices. For example, an aggregator may derive the sum of the natural gas consumption of all residential customers in a particular postal code within the utility's service territory.
- **Interval Scratchpad:** A class of measuring component that provides users with a means to manipulate "scratchpad" measurement data without affecting existing "live" measurement data.

Attributes used to define measuring components can include the following:

- The measuring component type
- The device configuration to which the measuring component is associated
- Details concerning how the measuring component is read, such as the number of digits, the type of read out (dials or digital), the meter multiplier, etc.
- The VEE groups used for validation and estimation of measurement data. The base package supports the following type of VEE groups:
 - **VEE Group for Initial Load:** the VEE group used for validation upon initial load of the measurement data
 - **VEE Group for Estimation:** the VEE group used for estimation of data for the measuring component
 - **VEE Group for Manual Override:** the VEE group used for when the measurement data is in the Manual Override state (this state allows users to edit data prior to VEE processing)

Working with Devices

This section describes common tasks related to working with devices.

Creating Devices

Use this procedure to create a new device.

Prerequisites: You must define at least one device type before you can create devices.

1. Select **Main Menu > Device > Device+** .

2. Select the device type for the device. This specifies the business object used to define the device.
3. Click **OK**.
4. Enter device identifier values (serial number, badge number, etc.) for the device.
5. Select a manufacturer and model for the device.
6. Complete the remaining fields and sections (if applicable).

Note: Remaining fields and sections are based on the device type you selected.

7. Click **Save**.
8. To define device configurations for the device, click the **Add** link in the Device Configuration Overview zone title bar. See [Creating Device Configurations](#) for more information.

Device Search

Use this procedure to search for a device on the Device Query portal.

1. Select **Main Menu > Device > Device**.
2. Enter your search criteria.
Base package search options include device information and address details.
3. Click **Refresh**.
4. In the search results list, click the link for the device you want to view or edit.

Maintaining Devices

Use this procedure to maintain an existing device.

You use the Device portal to maintain devices. This portal includes the following zones:

- **Device:** defines the basic attributes of the device
- **Device Configuration Overview:** lists the device configurations for the device
- **Device Activities:** lists activities related to the device in date descending order
- **Device Exceptions:** lists the first 50 VEE exceptions for all measuring components for the device, sorted by the exception creation date in descending order

To maintain a device:

1. Select **Main Menu > Device > Device** to navigate to the Device portal.
2. Search for and select the appropriate device.
3. Click the **Edit** or **Delete** button as appropriate.
4. To retire the device, click the **Retire** button.
5. To define device configurations for the device, click the **Add** link in the Device Configuration Overview zone title bar. See [Creating Device Configurations](#) for more information.
6. To initiate a command for the device click the **Initiate Command** link in the Device Activities zone title bar. See [Initiating Commands](#) for more information.

Working with Device Configurations

This section describes common tasks related to working with device configurations.

Creating Device Configurations

Use this procedure to create a new device configuration.

Prerequisites: You must define at least one device configuration type before you can create device configurations.

You create device configurations for a specific device, via the Device portal.

1. Navigate to the Device portal in edit mode.
2. Click the **Add** link in the Device Configuration Overview zone title bar.
3. Enter the effective date and time for the configuration.
4. Select the time zone for the device configuration.
5. Complete the remaining fields and sections (if applicable).

Note: Remaining fields and sections are based on the device type for the device.

6. Click **Save**.
7. To define measuring components for the device configuration, click the **Add** link in the Measuring Components zone title bar. See [Creating Measuring Components](#) for more information.

Device Configuration Search

Use this procedure to search for a device configuration on the Device Configuration Query portal.

1. Select **Main Menu > Device > Device Configuration** .
2. Enter your search criteria.

Base package search options include device information, measuring component information, and device configuration type.

3. Click **Refresh**.
4. In the search results list, click the link for the device configuration you want to view or edit.

Maintaining Device Configurations

Use this procedure to maintain an existing device configuration.

You use the Device Configuration portal to maintain device configurations. This portal includes the following zones:

- **Device Configuration:** Defines the basic attributes of the device configuration
- **Measuring Components:** lists the measuring components for the device

To maintain a device configuration:

1. Select **Main Menu > Device > Device Configuration** to navigate to the Device Configuration portal.
2. Search for and select the appropriate device configuration.
3. Click the **Edit** or **Delete** button as appropriate.
4. To define measuring components for the device configuration, click the **Add** link in the Measuring Components zone title bar. See [Creating Measuring Components](#) for more information.

Working with Measuring Components

This section describes common tasks related to working with measuring components.

Creating Measuring Components

Use this procedure to create a new measuring component.

Prerequisites: You must define at least one measuring component type before you can create measuring components.

You can also create measuring components for a specific device configuration, via the Device Configuration portal.

1. Select **Main Menu > Device > Measuring Component+** or navigate to the Device Configuration portal in edit mode and click the **Add** link in the Measuring Components zone title bar.
2. Select the measuring component type for the new measuring component. This specifies the business object used to define the measuring component.
3. Click **OK**.
4. Complete the fields in the Main section.
5. Select VEE groups for the measuring component.
6. Complete any remaining fields and sections (if applicable).

Note: Remaining fields and sections are based on the measuring component type you selected.

7. Click **Save**.

Measuring Component Search

Use this procedure to search for a measuring component on the Measuring Component Query portal.

1. Select **Main Menu > Device > Measuring Component** .
2. Enter your search criteria.
Base package search options include measuring component information, device information, and address details.
3. Click **Refresh**.
4. In the search results list, click the link for the measuring component you want to view or edit.

Maintaining Measuring Components

Use this procedure to maintain an existing measuring component.

You use the Measuring Component portal to maintain measuring components. This portal includes the following zones:

- **Measuring Component:** defines the basic attributes of the measuring component
- **Initial Measurement Data History:** lists the last 50 initial measurements for the measuring component, in date-descending order.
- **Measuring Component Profile Use:** lists all profile factors on which the measuring component is referenced as a factor value.
- **Measurements:** lists final measurements for the measuring component, including any derived values for each measurement.

To maintain a measuring component:

1. Select **Main Menu > Device > Measuring Component** to navigate to the Measuring Component portal.
2. Search for and select the appropriate measuring component.
3. Click the **Edit** or **Delete** button as appropriate.

- To view initial measurement data for the measuring component, click the initial measurement in the Initial Measurement Data History zone. The selected measurement opens in the Initial Measurement portal. See [Viewing Initial Measurement Data for a Measuring Component](#) for more information.

Viewing Initial Measurement Data for a Measuring Component

Use this procedure to view initial measurement data for a measuring component.

Prerequisite: You must be viewing a measuring component in the Measuring Component portal in order to view initial measurement data for that measuring component.

You use the Initial Measurement portal to view initial measurement data. This portal includes the following zones:

- Initial Measurement:** defines the basic attributes, pre-VEE, and post-VEE data for the measurement
- Measurements of Initial Measurement:** lists final measurements for the initial measurement
- Open Exception Summary:** displays a list of open exceptions for the initial measurement. This zone appears only if open exceptions exist for the initial measurement
- Raw Data, Pre-VEE and Post-VEE XML Data:** displays the pre- and post-VEE initial measurement data in XML.

To view initial measurement data:

- Navigate to the Measuring Component portal in edit mode.
- Click the initial measurement in the Initial Measurement Data History zone.

The initial measurement opens in the Initial Measurement portal.

- To view details of an exception, click the **Broadcast** icon in the Open Exception Summary zone. The broadcast exception opens in the Initial Measurement Exception Detail zone.
- To perform an action, click the appropriate button.

The specific actions available for a measurement are based on the current status of the measurement, and the measurement business object. The statuses in which each action are allowed are listed in parentheses. Action options include the following:

Options	Description
Trace	Turns Trace On or Off (Allowed Status: All) When tracing is On, details concerning VEE processing is captured in the IMD Trace Log on the Initial Measurement Log portal, including the VEE rules applied to the initial measurement, whether the initial measurement passed or failed each VEE rule, the type of exception generated (if applicable), and other information.
Edit	Allows user to edit the initial measurement. (Allowed Status: Pending, Error)
Delete	Deletes the initial measurement. (Allowed Status: Pending, Error)
Prepare for VEE	Prepares the initial measurement for VEE processing, and changes the status to VEE Ready, and then to either Error or VEE Complete. (Allowed Status: Pending, Error)
Remove from Processing	Removes the initial measurement from further processing (Allowed Status: Pending, Error)
Perform VEE	Performs VEE processing on the initial measurement, based on the VEE groups defined for the measuring component. This changes the status of initial measurements to VEE Complete and then either Exception (if the measurement falls one or more validations) or Complete (if the measurement passes all validations) (Allowed Status: Exception)
Force Complete	Changes the state of the initial measurement to Force Complete, regardless of whether or not the measurement passes VEE processing, (Allowed Status: Exception)
Re-Process	(Allowed Status: Error)

Options	Description
Discard	Discards the initial measurement. (Allowed Status: Error, Exception)

- To view the pre-VEE data, click the expand icon in the Pre-VEE Initial Measurement Data section in the Raw Data, Pre-VEE and Post-VEE XML Data zone.

This section displays the initial measurement data prior to VEE processing in XML format. For interval measurements, this includes a list of interval data values.

- To view the post-VEE data, click the expand icon in the Post-VEE Initial Measurement Data section in the Raw Data, Pre-VEE and Post-VEE XML Data zone.

This section displays the initial measurement data after VEE processing in XML format. For interval measurements, this includes a list of interval data values.

- To view an individual measurement, click the measurement in the Measurements of Initial Measurement zone. The selected measurement opens in the Measurement zone.

Viewing Final Measurements for a Measuring Component

Use this procedure to view final measurements for a measuring component.

Prerequisite: You must be viewing a measuring component in the Measuring Component portal in order to view final measurements for that measuring component.

You use the Measurement portal to view final measurements. This portal includes the following zones:

- **Measurement:** displays details of the final measurement, including:
 - **Measuring Component:** The parent measuring component of the measurement.
 - **Measurement Date/Time:** The date and time of the measurement in standard time.
 - **Condition:** The condition code of the measurement.
 - **Measurement Use:** A flag that indicates if the measurement should be used.
 - **User Edited:** A flag that indicates if the measurement has been manually edited.
 - **Initial Measurement:** The initial measurement the measurement was derived from.
 - **Measurement:** The value of the measurement.
 - **Local Date/Time:** The date and time of the measurement in local time.

To view final measurements:

- Navigate to the Measuring Component portal in edit mode
- Click the initial measurement in the Initial Measurement Data History zone.
- The initial measurement opens in the Initial Measurement portal.
- Click the final measurement you wish to view in the Measurements of Initial Measurement zone.

The selected measurement opens in the Measurement portal.

Device Installation

This section describes concepts and procedures related to managing installation of devices, including service points, contacts, install events, and activities.

Understanding Device Installation

This section describes concepts related to device installation.

About Service Points

Service points are locations at which a company supplies service.

Service points are used to store information describing the type of service supplied and how it is measured.

Attributes used to define service points can include the following:

- Basic information about the service point, including address, time zone, market, parent service point (if applicable), status, and main contact
- Specifics related to whether or not the current service point supplies service to life support equipment, or if the load supplied to the service point is considered sensitive.
- Information related to field work performed at the current service point, including any applicable warnings or instructions
- The measurement cycle, route, and route sequence for the service point

About Contacts

Contacts are individuals or business entities with which a company has contact.

Contacts are typically defined by contact information such as:

- Name (or names)
- Phone Numbers (business, home, mobile, etc.)
- Email addresses
- Other identifiers (social security number, license number, etc.)

About Install Events

An install event is a record of a device's installation information at a service point.

Install events link a single device configuration to a single service point, and represent both the installation and removal of a device at a service point, and also record turning the device on or off while it is installed at the service point.

Attributes used to define install events can include the following:

- The date and time of the installation.
- The installation constant for the device as installed.
- The current status of the device (On or Off).
- A history of the dates and times when the device was turned on or off.

Working with Service Points

This section describes common tasks related to working with service points.

Creating Service Points

Use this procedure to create a new service point.

Prerequisites: You must define at least one service point type before you can create service points.

1. Select **Main Menu > Device Installation > Service Point+** .

2. Select the service point type for the new service point. This specifies the business object used to define the service point.
3. Click **OK**.
4. Select a time zone, market, and status for the service point.
5. Search for and select a main contact for the service point.
6. Enter address information for the service point.
7. Complete the remaining fields and sections .

Note: Remaining fields and sections are based on the service point type you selected.

8. Click **Save**.

Service Point Search

Use this procedure to search for a service point on the Service Point Query portal.

1. Select **Main Menu > Device Installation > Service Point** .
2. Enter your search criteria.
Base package search options include address details, service point information, device information, and contact name.
3. Click **Refresh**.
4. In the search results list, click the link for the service point you want to view or edit.

Maintaining Service Points

Use this procedure to maintain an existing service point.

You use the Service Point portal to maintain service points. This portal includes the following zones:

- **Service Point:** defines the basic attributes of the service point
- **Device History:** lists all device configurations that have been installed for the service point, in reverse-chronological order
- **Usage Subscriptions:** lists all usage subscriptions linked to the service point, sorted in descending order by Start Date/Time of Usage Subscription/Service Point
- **Children Service Points:** lists the first 50 children service points of the parent service point
- **SP/Measurement Cycle Schedule Route List:** lists all the Measurement Cycle Schedule Routes linked to the service point.

To maintain a service point:

1. Select **Main Menu > Device Installation > Service Point** to navigate to the Service Point portal.
2. Search for and select the appropriate service point.
3. Click the **Edit** or **delete** button as appropriate.
4. To activate the service point, click the **Activate** button.
5. To deactivate the service point, click the **Deactivate** button.

Working with Contacts

This section describes common tasks related to working with contacts.

Creating Contacts

Use this procedure to create a new contact.

Prerequisites: You must define at least one contact type before you can create contacts.

1. Select **Main Menu > Customer Information > Contact+** .
2. Select the contact type for the new contact. This specifies the business object used to define the contact.
3. Click **OK**.
4. Complete the remaining fields and sections (if applicable).

Note: Remaining fields and sections are based on the contact type you selected.

5. Click **Save**.

Contact Search

Use this procedure to search for a contact on the Contact Query portal.

1. Select **Main Menu > Customer Information > Contact** .
2. Enter your search criteria.
Base package search options include name, identifiers, and contact ID.
3. Click **Refresh**.
4. In the search results list, click the link for the contact you want to view or edit.

Maintaining Contacts

Use this procedure to maintain an existing contact.

You use the Contact portal to maintain contacts. This portal includes the following zones:

- **Contact:** defines the basic attributes of the contact

To maintain a contact:

1. Select **Main Menu > Customer Information > Contact** to navigate to the Contact portal.
2. Search for and select the appropriate contact.
3. Click the **Edit** or **Delete** button as appropriate.

Working with Install Events

This section describes common tasks related to working with install events.

Creating Install Events

Use this procedure to create a new install event.

1. Select **Main Menu > Device Installation > Install Event+** .
2. Search for and select the device configuration for the install event.
3. Search for and select the service point for the install event.
4. Click **OK**.
5. Enter the installation date and time for the install event.
6. Enter installation constant for the install event.

7. Complete any remaining fields and sections .
8. Click **Save**.

Install Event Search

Use this procedure to search for an install event on the Install Event Query portal.

1. Select **Main Menu > Device Installation > Install Event** .
2. Enter your search criteria.
Base package search options include address details, service point information, and device information.
3. Click **Refresh**.
4. In the search results list, click the link for the install event you want to view or edit.

Maintaining Install Events

Use this procedure to maintain an existing install event.

You use the Install Event portal to maintain service points. This portal includes the following zones:

- **Install Event:** defines the basic attributes of the install event, the on/off history for the install event, and removal information.

To maintain a install event:

1. Select **Main Menu > Device Installation > Install Event** to navigate to the Install Event portal.
2. Search for and select the appropriate install event.
3. Click the **Edit** or **Delete** button as appropriate.
4. To turn the device off or on, click the **Off** or **On** button (as appropriate), enter the event date and time, and click **OK** in the **Enter Event Date/Time** dialog.
5. To change the commissioned/connection status of the device, do one or more of the following:
 - a) To commission the device, click the **Commission** button.
 - b) To connect the device, click the **Connect** button.
 - c) To disconnect the device, click the **Disconnect** button.
 - d) To decommission the device, click the **Decommission** button.

When using Oracle Utilities Smart Grid Gateway, commissioning, connecting, disconnecting, and decommissioning a device can be performed via commands. See [Initiating Commands](#) on page 35 for more information.

6. To remove the device, click the **Remove** button, enter the event date and time, and click **OK** in the **Enter Event Date/Time** dialog.
7. To undo the removal of the device, click the **Undo Removal** button, enter the event date and time, and click **OK** in the **Enter Event Date/Time** dialog.

Measurements

This section describes concepts and procedures related to uploading, searching, and viewing measurements, including initial and final measurements.

Understanding Measurements

This section describes concepts related to measurements.

About Initial Measurement Data

Initial measurement data is the term for measurement data in its initial (or raw) form when received from a head-end system.

Measurements read from a measuring component are referred to as “initial measurement data” (or initial measurements) and are used to record how much of the quantity (defined by UOM, TOU, and SQI) measured by the measuring component was consumed.

Initial measurement data for scalar measuring components contain a single “reading” or value, while initial measurement data for interval measuring components can contain multiple readings, one for each interval that falls between the start time and stop time of the measurement.

At a simple level, initial measurement data goes through the following process:

1. Initial measurements are loaded into the system.
2. Initial measurement data is validated, edited, and estimated.
3. Initial measurements are converted into final measurements.
4. If using Oracle Utilities Meter Data Management, final measurements are used to calculate usage (bill determinants, etc.).

Only initial measurements can be edited directly by end users.

Initial measurement data contains both the original and final versions of the quantities recorded by the measuring component.

- Pre VEE quantities are consumption values derived from the measurements recorded by the head-end system or meter reader.
- Post VEE quantities are the “final” values, after VEE processing.

Pre VEE and Post VEE quantities in an initial measurement often differ based on a number of conditions, including:

- The measuring component has a multiplier other than 1. In this case, the Post VEE value is equal to the Pre VEE value times the multiplier.
- The installation event has a constant other than 1. In this case, the Post VEE value is equal to the Pre VEE value times the installation constant.
- VEE rules have changed the quantities because they are missing or obviously wrong. In this, the Pre VEE values are adjusted based on the specifics of the VEE rules applied to the initial measurement to create the Post VEE values
- Manual changes by a user.

In addition to recorded consumption values, measurements also have condition codes, used to indicate the source and quality of a measurement. For example:

- Regularly recorded measurements might have a condition code of “Regular”
- Missing measurements might have a condition code of “Missing”
- Estimated measurements might have a condition code of “External Estimated” or “System Estimated” based on where the estimation was performed.

Both Pre VEE and Post VEE values have their own condition code, which can also change during VEE processing.

About Final Measurements

Final measurements are measurements that have been validated, and if necessary, edited & estimated, and is ready for use in downstream processing such as bill determinants calculations.

When an initial measurement is considered “final,” that is, it has passed all VEE processing and no additional modifications or changes need to be made, it is transformed into a Final Measurement, or simply a Measurement (the terms measurement, final measurement, and final consumption all reference this same “final” measurement data). Only one final measurement can exist for a given date/time for a given measuring component; one final measurement exists per interval, and likewise one final measurement exists for each scalar reading. In both cases, the final measurement value stored represents the amount consumed between its date/time and the prior final measurement's date/time

When creating final measurements from initial measurement data:

- Final measurements are created using Post VEE quantities
- Each final measurement's condition is copied from the Post VEE condition
- Initial measurements are normalized into final measurements where each final measurement is for a specific date and time.
- Because a single initial measurement may contain many “readings,” a separate final measurement is created for each interval in the initial measurement. For example, if an initial measurement contains 24 hours of 15 minute readings, 96 measurements will be created, each with a specific date and time.

About Daylight Saving Time

This section describes how the Oracle Utilities meter data framework and its related products support Daylight Saving Time (DST) for measurement data.

Types of Devices

In Oracle Utilities meter data framework initial measurement data processing, the application understands a device that is either:

- a) Aware of the fact that Local time in the device's time zone has been shifted from "Standard", or
- b) Unaware of any such shifting

Devices in the "unaware" category ("b") will always send Oracle Utilities meter data framework initial measurement data with measurements in Standard time. Devices in the "aware" category ("a") will always send the application initial measurement data in Local time.

Whether a device falls into category "a" (Aware) or "b" (Unaware) is configured via the **Incoming Data Shift** flag on the device type (which can be overridden on the device). The values of the flag are:

- Always in Local Time (used with "aware" devices, or category "a")
- Always in Standard Time (used with "unaware" devices, or category "b")

This flag is used by pre-processing algorithms (Perform Date/Time Adjustments and Undercount/Overcount Check) in the IMD Seeder business object to convert any date/times on the initial measurement into standard time. Note that this conversion is only done if the device falls into category "a."

Date/Time Storage and Display

Within the database, measurements are stored with two (2) date/times: Standard and Local. The meter data framework uses the date/time in Standard as part of the prime key of the measurement table. The presence of the Local date/time field facilitates querying measurement data using local time.

When displaying dates and times for initial measurement data:

- Display of the data on the Oracle Utilities Meter Data Management **360 View** is in Local time.
- The **IMD Lens** zone (in the Oracle Utilities Meter Data Management version of the Initial Measurement portal) also displays data in Local time.
- The **Raw Data, Pre-VEE and Post-VEE XML Data** zone on the Initial Measurement portal does not shift the data into Local time, so if that the pre-processing algorithm has shifted the data into standard time, the date/times displayed will be in Standard time.

Note: The only two date/times visible in that zone will typically be the Start date/time and End date/time of the initial measurement; the meter data framework strips off the date/times from the individual intervals of the initial measurement at pre-processing time.

- The **Measurement** zone shows both the local and standard date/times as-is.

Oracle Utilities Application Framework

Oracle Utilities Application Framework utilizes the configuration of an Olson DB time zone code on the time zone metadata. This Olson DB contains the shift date/times for every time zone across the globe.

In North America for example, the available Olson DB time zone codes are much more specific than "Eastern/Central/Mountain/Pacific", and include details for areas places such as Arizona and Indiana where there may or may not be shifting for daylight saving time.

Oracle Utilities Application Framework provides business services that wrap the application services that perform time shifting. These services use the time zone metadata to retrieve shift date/times using the Olson DB.

Typical Daylight Saving Time Scenarios

The following table illustrates typical daylight saving time scenarios.

Time Springs Forward		Other Days		Time Falls Back	
DST Shifted Meter in Local Time	Shift & Store time as standard in IMD	DST Shifted Meter in Local Time	Shift & Store time as standard in IMD	DST Shifted Meter in Local Time	Shift & Store time as standard in IMD
03/14/2011	03/14/2011	7/18/2011	7/18/2011	11/7/2011	11/7/2011
1:00	1:00	1:00	0:00	1:00	0:00
3:00	2:00	2:00	1:00	2:00	1:00
4:00	3:00	3:00	2:00	2:00	2:00
5:00	4:00	4:00	3:00	3:00	3:00
6:00	5:00	5:00	4:00	4:00	4:00
7:00	6:00	6:00	5:00	5:00	5:00
8:00	7:00	7:00	6:00	6:00	6:00
9:00	8:00	8:00	7:00	7:00	7:00
10:00	9:00	9:00	8:00	8:00	8:00
11:00	10:00	10:00	9:00	9:00	9:00
12:00	11:00	11:00	10:00	10:00	10:00
13:00	12:00	12:00	11:00	11:00	11:00
14:00	13:00	13:00	12:00	12:00	12:00
15:00	14:00	14:00	13:00	13:00	13:00
16:00	15:00	15:00	14:00	14:00	14:00
17:00	16:00	16:00	15:00	15:00	15:00
18:00	17:00	17:00	16:00	16:00	16:00
19:00	18:00	18:00	17:00	17:00	17:00
20:00	19:00	19:00	18:00	18:00	18:00
21:00	20:00	20:00	19:00	19:00	19:00
22:00	21:00	21:00	20:00	20:00	20:00

23:00	22:00	22:00	21:00	21:00	21:00
0:00	23:00	23:00	22:00	22:00	22:00
		0:00	23:00	23:00	23:00
				0:00	0:00
23 hours	23 hours	24 hours	24 hours	25 hours	25 hours

Bold-faced entries indicate times that are impacted by daylight saving time conversion.

Working with Measurements

This section describes common tasks related to working with measurements.

Initial Measurement Data Search

Use this procedure to search for initial measurement data using the IMD Query portal.

1. Select **Main Menu > Initial Measurement Data**.

2. Enter your search criteria.

Base package search options include measuring component/device, and initial measurement data identifier.

3. Click **Refresh**.

4. In the search results list, click the link for the initial measurement data you want to view.

The selected initial measurement is displayed in the Initial Measurement portal.

5. To view the initial measurement data's measuring component, click the Measuring Component link.

6. To view the initial measurement data's device, click the Device link.

Uploading Initial Measurement Data and Device Events

Use this procedure to manually upload initial measurement data and device events.

1. Select **Main Menu > Device > Online Upload for IMD and Events**.

2. Paste the contents of an XML document containing the initial measurement data or device events you wish to upload in the text box.

- Click the **Online IMD Upload** help icon (?) for the XML format for initial measurement data.
- Click the **Online Event Upload** help icon (?) for the XML format for device events.

3. Click **Submit**.

Viewing Initial Measurement Data

Use this procedure to view initial measurement data.

You use the Initial Measurement portal to view initial measurement data.

The Initial Measurement portal includes the following zones:

- **Initial Measurement:** defines the basic attributes, pre-VEE, and post-VEE data for the measurement
- **Measurements of Initial Measurement:** lists final measurements for the initial measurement
- **Open Exception Summary:** displays a list of open exceptions for the initial measurement. This zone appears only if open exceptions exist for the initial measurement

- **Raw Data, Pre-VEE and Post-VEE XML Data:** displays the pre- and post-VEE initial measurement data in XML.

The Initial Measurement Log portal includes the following zones:

- **Initial Measurement Log:** displays log entries for the initial measurement.
- **IMD Trace Log:** displays tracing information about the initial measurement, including details concerning VEE processing (the VEE rules applied to the initial measurement, whether the initial measurement passed or failed each VEE rule, the type of exception generated (if applicable), etc.). This zone only appears if tracing is enabled for the initial measurement.
- **Exception Summary:** displays a list of exceptions for the initial measurement. This zone appears only if exceptions exist for the initial measurement.
- **Initial Measurement Exception Detail:** displays details of a broadcast exception listed in the Exception Summary zone.
- **Audit List:** displays a list of changes made to the initial measurement, including the date and time of the individual measurement value, the date and time of the change, the quantity to which the measurement was changed, and the user who made the change.

To view initial measurement data:

1. Search for the initial measurement data to view as described in [Initial Measurement Data Search](#).
2. Click the link for the initial measurement data you wish to view.

The initial measurement opens in the Initial Measurement portal.

3. To view details of an exception, click the **Broadcast** icon in the Open Exception Summary zone. The broadcast exception opens in the Initial Measurement Exception Detail zone.
4. To perform an action, click the appropriate button.

The specific actions available for a measurement are based on the current status of the measurement, and the measurement business object. The statuses in which each action are allowed are listed in parentheses. Action options include the following:

Options	Description
Trace	Turns Trace On or Off (Allowed Status: All). When tracing is On, details concerning VEE processing is captured in the IMD Trace Log on the Initial Measurement Log portal, including the VEE rules applied to the initial measurement, whether the initial measurement passed or failed each VEE rule, the type of exception generated (if applicable), and other information.
Edit	Allows user to edit the initial measurement. (Allowed Status: Pending, Error)
Delete	Deletes the initial measurement. (Allowed Status: Pending, Error)
Prepare for VEE	Prepares the initial measurement for VEE processing, and changes the status to VEE Ready, and then to either Error or VEE Complete. (Allowed Status: Pending, Error)
Remove from Processing	Removes the initial measurement from further processing (Allowed Status: Pending, Error)
Perform VEE	Performs VEE processing on the initial measurement, based on the VEE groups defined for the measuring component. This changes the status of initial measurements to VEE Complete and then either Exception (if the measurement falls one or more validations) or Complete (if the measurement passes all validations) (Allowed Status: Exception)
Force Complete	Changes the state of the initial measurement to Force Complete, regardless of whether or not the measurement passes VEE processing, (Allowed Status: Exception)
Re-Process	(Allowed Status: Error)
Discard	Discards the initial measurement. (Allowed Status: Error, Exception)

5. To view the pre-VEE data, click the expand icon in the Pre-VEE Initial Measurement Data section in the Raw Data, Pre-VEE and Post-VEE XML Data zone.

This section displays the initial measurement data prior to VEE processing in XML format. For interval measurements, this includes a list of interval data values.

6. To view the post-VEE data, click the expand icon in the Post-VEE Initial Measurement Data section in the Raw Data, Pre-VEE and Post-VEE XML Data zone.

This section displays the initial measurement data after VEE processing in XML format. For interval measurements, this includes a list of interval data values.

7. To view an individual final measurement, click the measurement in the Measurements of Initial Measurement zone. The selected measurement opens in the Measurement zone.

Viewing Final Measurements

Use this procedure to view final measurement.

You use the Measurement portal to view final measurements.

The Measurement portal contains the following zones:

- **Measurement:** displays details of the final measurement, including:
 - **Measuring Component:** The parent measuring component of the measurement.
 - **Measurement Date/Time:** The date and time of the measurement in standard time.
 - **Condition:** The condition code of the measurement.
 - **Measurement Use:** A flag that indicates if the measurement should be used.
 - **User Edited:** A flag that indicates if the measurement has been manually edited.
 - **Initial Measurement:** The initial measurement the measurement was derived from.
 - **Measurement:** The value of the measurement.
 - **Local Date/Time:** The date and time of the measurement in local time.

To view final measurements:

1. Search for the initial measurement data to view as described in [Initial Measurement Data Search](#).

2. Click the link for the initial measurement data you wish to view.

The initial measurement opens in the Initial Measurement portal.

3. Click the measurement you wish to view in the Measurements of Initial Measurement zone. The selected measurement opens in the Measurement zone.

The selected measurement opens in the Measurement portal.

Device Communication

This section describes concepts and procedures related to managing device communication, including activities, communications, completion events, device events, and meter commands.

Note: The communication, completion event, device event, and command functionality of the meter data framework is available only with Oracle Utilities Smart Grid Gateway.

Understanding Device Communication

This section describes concepts related to device communication.

About Activities

An activity is a record of a communication or event related to a device, measuring component, or other entity in the system.

Commands issued to devices, such as remote connect, remote disconnect, and others are activities.

In addition, statistics related to the uploading of initial measurement data and device events sent from a head-end system are captured as activities. See [About Upload Statistics](#) for more information.

About Communications

Communications are records of messages sent between Oracle Utilities Smart Grid Gateway and an external system, such as a head-end system or edge application as a result of initiating a command for a device. Communications can flow both inbound and outbound, and can be both one-way and two-way.

Attributes used to define communications include the following:

- **Device ID:** the ID of the device related to the communication. All communications (and their related commands) are related to a device.
- **AMI Device Identifier Number:** the identifier for the device used by the head-end system.
- **Event Date/Time:** the date and time of the message.
- **Command Information:** details concerning the command that created the communication, including:
 - **Recipient:** the recipient of the command (recipients are defined as service providers)
 - **Transaction ID:** an ID for the command that created the communication.
 - **External Transaction ID:** ID for the command that created the communication in the external system that sent or received the communication.
 - **Event Date/Time:** the date and time of the command that created the communication.

About Completion Events

Completion events are created upon successful receipt of inbound communications related to an activity or command, and are used to create or update data to reflect the effect of an activity. For example, a commission device command could result in the creation or update of an install event, while a on-demand read command could result in the creation of an initial measurement.

Attributes used to define completion device events include the following:

- **Activity:** the activity (command) that initiated the completion event.
- **Sequence:** defines the relative order by which completion events for the activity are executed (in the event that more than one completion event is created for an activity).
- **Inbound Communication:** the inbound communication that triggered the completion event.
- **Event Date/Time:** the date and time of the completion event.

About Device Events

Device events are events of some sort that have taken place relative to a device, and can include power outages, power restorations, tampering alerts, command completions, and other events.

Attributes used to define device events include the following:

- **Device Event Date/Time:** the date and time of the event. For events with a duration, such as a power outage, this is the start date and time of the duration.

- Device Event End Date/Time: the end date and time of events with durations (such as power outages). Not applicable to events with no duration, such as a tampering alter or power restoration.

In addition, device events also reference details specific to the head-end system that sent the event, including the following:

- Sender: the head-end system (defined as a service provider in SGG) from which the event was sent.
- External Sender ID: the external ID for the head-end system that sent the event.
- External Event Name: the external, head-end-specific name for the event. This name is translated into a "standard" event name within SGG.
- External Source Identifier: an identifier for the source of the event.

About Commands

Commands are activities that represent messages sent from Oracle Utilities Smart Grid Gateway to devices to invoke a specific type of action.

Oracle Utilities Smart Grid Gateway supports the following types of commands:

- Commission Device: A command issued to establish communication between a device and the head-end system. The goal is to ensure connectivity has been established with the device, that any information needed to communicate with the device has been defined in both Oracle Utilities Smart Grid Gateway and the head-end system, and that the device will begin capturing usage and events.
- Decommission Device: A command issued to inform the head-end system when a device needs to be removed from a service point, so that no further reads or events will arrive from the device. Decommissioning is invoked when a device must be removed or deactivated. The goal is to stop any communication between the device and the head-end system.
- Device Status Check: A command used to test whether the device is communicating with the network, determine the connection status of the device, and when possible, and check if there are any known malfunctions.
- On-Demand Read: A request for the most up-to-date reading from a particular device. These commands are not guaranteed to return immediately. In some cases, completing the command might require a person to manually read the device. The purposes are to check the operational status of the device and/or obtain a more recent reading than is currently available.
- Remote Connect: A command issued when a device needs to be connected at a service point.
- Remote Disconnect: A command issued when a device needs to be disconnected or shut off at a service point.

Attributes used to define commands include the following:

- Parent Activity: the parent activity (if any) for the command.
- Command Effective Date/Time: the date and time on which the command takes effect. Commands issued prior to this date and time remain in the "Waiting for Effective Date" status until this time, at which time the command is executed.
- Command Expiration Date/Time: the date time when the command expires. The command cannot be executed after this date and time.
- Priority: the priority for the command.
- Requester: the application sending the command.
- Requester User: the user who initiated the command.
- Requester Transaction ID: an ID for the command, defined by the requester.
- Utility Device ID: ID of the device used by the utility. Used to derive the device ID if the device ID is not provided.

About Service Tasks

Service tasks are tasks performed by users of other Oracle Utilities applications, such as Oracle Utilities Customer Self Service.

Attributes used to define service tasks include the following:

- Service Task Type: the type of service task (service task types define basic attributes of specific types of service tasks).
- Service Task User ID: the user ID of the user who created the service task.
- Email Address: the email address of the user who created the service task.
- IP Address: The IP address of the server hosting the application used to create the service task.

Self service meter read service tasks also reference details specific to the meter and meter read submitted:

- Usage Subscription.
- Service Point
- Device Configuration:
- Meter Read Details: details of the meter read, including read sequence, measuring component, reading, and initial measurement created from the meter reading.

Working with Activities

This section describes common tasks related to working with activities.

Creating Activities

Use this procedure to create a new activity.

Prerequisites: You must create at least one activity type before you can create new activities.

Activities are related to a specific device. Some types of activities require no user input, while others require the use to enter parameters for the activity. The steps below are based on creating an activity that requires user input.

1. Select **Main Menu > Communication > Activity+ .**

Activities can be created using the device's context menu by selecting **Go To Activity+** on the context menu of the device for which you wish to create the activity.

2. Select the activity type for the activity. This specifies the business object used to define the activity.
3. Click **OK**.
4. Search for and select the parent activity (if applicable).
5. Search for and select the device ID for the device for which you wish to create the activity.
6. Enter the Start and End date and time for the activity.
7. Complete any remaining fields and sections.

Note: Remaining fields and sections are based on the activity type you selected.

8. Click **Save**.

Activity Search

Use this procedure to search for an activity on the Activity Query portal.

1. Select **Main Menu > Communication > Activity .**
2. Enter your search criteria.

Base package search options include name and address, related object, identifier, and payload statistics. See [Searching Upload Statistics](#) for more information about searching payload statistics.

3. Click **Refresh**.
4. In the search results list, click the link for the activity you want to view or edit.

Maintaining Activities

Use this procedure to maintain an existing activity.

You use the Activity portal to maintain activities. This portal includes the following zones:

- **Activity:** defines the basic attributes of the activity, based on the activity type.
- **Activity Hierarchy Tree:** displays activities, communications, and device events related to the activity.
- **Activity Related Completion Event:** displays completion events (if any) related to the activity.

To maintain an activity:

1. Select **Main Menu > Communication > Activity** to navigate to the Activity portal.
2. Search for and select the appropriate activity.
3. To perform a action, click the appropriate button.

The specific actions available for an activity are based on the current status of the activity, and the activity business object. The statuses in which each action are allowed are listed in parentheses. Action options include the following:

Options	Description
Commission Ready	Used with commission device commands to initiate the command. (Allowed Status: Waiting for Effective Date)
Communication in Progress	Used with commands to changes the status to "Communication In Progress" and initiates communication with the head-end system. (Allowed Status: Waiting for Effective Date)
Complete	Attempts to complete the activity. (Allowed Status: Waiting)
Connect	Used with remote connect commands to complete the command. (Allowed Status: Waiting for Effective Date)
Delete	Deletes the activity. (Allowed Status: Communication In Progress, Validation Error, Waiting, Waiting for Effective Date)
Discard	Discards the activity. (Allowed Status: Communication In Progress, Validation Error, Waiting, Waiting for Effective Date)
Edit	Allows user to edit the activity. (Allowed Status: Communication In Progress, Validation Error, Waiting, Waiting for Effective Date)
Retry	Used with commands to re-initiate the command. (Allowed Status: Communication In Progress)
Revalidate	Used with commands to re-validate the command, (Allowed Status: Validation Error)

Working with Communications

This section describes common tasks related to working with communications.

Creating Communications

Use this procedure to create a new communication.

Prerequisites: You must create at least one communication type before you can create new communications.

Communications are related to a specific device, and most often created as a result of an activity (such as a meter command) related to the device.

1. **Main Menu > Communication > Communication+ .**
2. Select the communication type for the communication. This specifies the business object used to define the communication.
3. Click **OK**.
4. Search for and select the device ID of the device related to the communication.

5. Complete any remaining fields and sections.

Note: Remaining fields and sections are based on the communication type you selected.

6. Click **Save**.

Communication Search

Use this procedure to search for a communication on the Communication Query portal.

1. Select **Main Menu > Communication > Communication**.

2. Enter your search criteria.

Base package search options include name and address, device information, and communication identifier.

3. Click **Refresh**.

4. In the search results list, click the link for the communication you want to view or edit.

Maintaining Communications

Use this procedure to maintain an existing communication.

You use the Communication portal to maintain communications. This portal includes the following zones:

- **Communication:** defines the basic attributes of the communication, based on the communication type.

To maintain an communication:

1. Select **Main Menu > Communication > Communication** to navigate to the Communication portal.

2. Search for and select the appropriate communication.

3. Click the **Edit** or **Delete** button as appropriate.

Note: Other actions available for the communication are based on the business object used to define the communication, and the current status of the communication.

Working with Completion Events

This section describes common tasks related to working with completion events.

Creating Completion Events

Use this procedure to create a new completion event.

Completion events are most often created upon successful receipt of inbound communications related to an activity or command, and are used to create or update data to reflect the effect of activity. However, users can also create completion events using the following procedure.

1. **Main Menu > Communication > Completion Events+ .**

2. Select the completion event business object for the completion event.

3. Click **OK**.

4. Search for and select the activity (the command) to which the completion event is related.

5. Enter a sequence for the completion event. This defines the relative order by which completion events for the related activity (command) are executed.

6. Search for and select the inbound communication to which the completion event is related (if applicable).

7. Search for and select the device to which the completion event is related. This is the device for which the related activity (command) was initiated.

8. Enter the date and time of the event (if applicable).
9. Complete any remaining fields and sections.

Note: Remaining fields and sections are based on the completion event business object you selected.

10. Click **Save**.

Completion Event Search

Use this procedure to search for completion events on the Completion Events Query portal.

1. Select **Main Menu > Communication > Completion Events** .
2. Enter your search criteria.

Base package search options include completion event and related foreign key object (service point, device, initial measurement data, or install event).

3. Click **Refresh**.
4. In the search results list, click the link for the completion event you want to view or edit.

Maintaining Completion Events

Use this procedure to maintain an existing completion event.

You use the Completion Event portal to maintain completion events. This portal includes the following zones:

- **Completion Event:** defines the basic attributes of the completion event.
- **Completion Event Related Objects:** displays objects related to the completion event, such as devices, service points, or initial measurement data.

To maintain an completion event:

1. Select **Main Menu > Communication > Completion Events** to navigate to the Completion Event portal.
2. Search for and select the appropriate completion event.
3. Click the **Edit** or **Delete** button as appropriate.

Note: Other actions available for the completion event are based on the business object used to define the completion event, and the current status of the event.

Working with Device Events

This section describes common tasks related to working with device events. This section describes common tasks related to working with activities.

Creating Device Events

Use this procedure to create a new device event.

Device events are most often imported into the application from a head-end system. However, users can also create device events using the following procedure.

1. **Main Menu > Communication > Device Events+** .
2. Search for and select the device event type on which the device event is based.
3. Enter a date and time for the device event. For events with a duration, such as a power outage, this is the start date and time of the duration.

4. Enter an end date and time for the device event. For events with a duration, such as a power outage, this is the end date and time of the duration. Not applicable to events with no duration, such as a tampering alert or power restoration.
5. Enter the device identifier number for the device to which the device event is related (if known). This field is used in place of the device ID field, and should be used only if the user can't locate the device via the device ID field.
6. Search for and select the device to which the device event is related.
7. Complete the fields in the **Sender** section to identify the system from which the device event was received.
8. Complete the fields in the **Event Information** section to provide additional details of the device event.
9. Click **Save**.

Device Event Search

Use this procedure to search for device events on the Device Events Query portal.

1. Select **Main Menu > Communication > Device Events**.
2. Enter your search criteria.
Base package search options include device and device event ID.
3. Click **Refresh**.
4. In the search results list, click the link for the device event you want to view or edit.

Maintaining Device Events

Use this procedure to maintain an existing device event.

You use the Device Event portal to maintain device events. This portal includes the following zones:

- **Device Event:** defines the basic attributes of the device event.

To maintain a device event:

1. Select **Main Menu > Communication > Device Event** to navigate to the Device Event portal.
2. Search for and select the appropriate device event.
3. Click the **Edit** or **Delete** button as appropriate.

Note: Other actions available for the device event are based on the device event type and business object used to define the device event, and the current status of the event.

Working with Commands

This section describes common tasks related to working with commands.

Initiating Commands

Use this procedure to initiate a command for a device.

You initiate commands via the Device portal.

1. Select **Main Menu > Device > Device** to navigate to the Device portal.
2. Search for and select the appropriate device.
3. Click the **Initiate Command** link in the Device Activities zone title bar.
4. Select the command to initiate from the **Command Request BO** drop-down list.
5. Click **Save**.
6. Search for and select a parent activity for the command, if applicable.

7. Enter a Command Effective date and time for the command.

This is the date and time on which the command takes effect. Commands issued prior to this date and time remain in the "Waiting for Effective Date" status until this time, at which time the command is executed.

8. Enter a Command Expiration date and time.

This is the date and time when the command expires. The command cannot be executed after this date and time.

9. Select the priority for the command.

10. Select the requesting system for the command. Requesting systems are defined as service providers.

11. Search for and select a requester user. This is the user who is initiating the command.

12. Enter a requester transaction ID for the command.

13. Complete any remaining fields.

Note: Remaining fields and sections are based on the command request business object you selected. For example, remote connect commands can optionally retrieve a start measurement from the device and remote disconnect commands can optionally retrieve a final measurement from the device. For these types of commands, you must provide details concerning if and how those measurements are retrieved.

Canceling Commands

Use this procedure to cancel a command for a device.

You cancel commands via the Device portal.

1. Select **Main Menu > Device > Device** to navigate to the Device portal.
2. Search for and select the appropriate device.
3. Click the **Cancel Command** link in the Device Activities zone title bar.
4. Search for and select the parent activity for the command to cancel, if applicable.
5. Select the requesting system for the command to cancel. Requesting systems are defined as service providers.
6. Search for and select a requester user. This is the user who is canceling the command.
7. Select the recipient of the command cancellation. This is the external system (defined as a service provider) that will receive notification of the cancellation.
8. Select the priority for the command cancellation.
9. Search for and select the command to cancel.

When searching for the command to cancel, the **Retrieve Command to Cancel** dialog automatically displays commands currently in the "Waiting" status. You can refresh this list by searching for and selecting a device and specifying the "On or Before Creation" date and time.



Uploading Measurements and Device Events

Use this procedure to upload an initial measurement or device event.

This feature allows users to manually upload initial measurements and device events in XML format.

1. Select **Main Menu > Device Communication > Load IMDs / Events (XML)**.

The Online IMD and Event Upload screen opens.

2. Enter an XML document that contains the initial measurement or device event in the box.
 - To view the XML format for initial measurements, click the Online IMD Upload help icon .
 - To view the XML format for device events, click the Online Event Upload help icon .

3. Click **Submit**.

Searching and Viewing Service Tasks

Use this procedure to search for and view service tasks using the Service Tasks Query portal.

1. Select **Main Menu > Service Tasks**.

2. Enter your search criteria.

Base package search options include self-service task and service task ID.

Self-service task search criteria include:

- Self-Service User ID (required)
- Email Address
- Service Task Type
- On or Before Creation Date/Time

3. Click **Refresh**.

4. In the search results list, click the link for the service task you want to view or edit.

The selected service task opens in the Service Task portal.

Data Synchronization

This section describes concepts and procedures related to managing data synchronization between customer information systems (such as Oracle Utilities Customer Care and Billing) and products that utilize the meter data framework, including Oracle Utilities Meter Data Management and Oracle Utilities Smart Grid Gateway.

Understanding Data Synchronization

This section describes concepts related to data synchronization.

About Inbound Data Synchronization Requests

Inbound data synchronization requests (or inbound sync requests) are messages sent from an external system used to synchronize data between the external system and the target system (in this case, Oracle Utilities Meter Data Management or Oracle Utilities Smart Grid Gateway).

Inbound data synchronization is done most often between a customer information system (such as Oracle Utilities Customer Care and Billing) and Oracle Utilities Meter Data Management. In a typical implementation, the customer information system serves as the "system of record" for accounts, customers, contacts, and meters (devices). When this data is updated, the corresponding data in Oracle Utilities Meter Data Management must be updated accordingly.

In addition, inbound sync requests can be received from other systems, such as an asset management system (such as Oracle Utilities Operational Device Management) to synchronize asset/device data.

Inbound data synchronization can be performed for any maintenance object defined in Oracle Utilities Meter Data Management (the target system), but the primary maintenance objects used for data synchronization are Contact, Service Point, Device, Device Configuration, Measuring Component, Install Event, and Usage Subscription.

There are two types of data synchronization requests:

- Initial synchronization requests are used to initially populate data with Oracle Utilities Meter Data Management from the customer information system.
- Ongoing synchronization requests are used to receive updates from the customer information system

About Data Synchronization Request Exceptions

Data synchronization request exceptions (or sync request exceptions) are errors that occur as part of the data synchronization process.

Typical types of errors that occur during data synchronization include:

- Missing Data (one or more required data elements is missing from the sync request)
- Invalid Data (one or more data elements contain invalid data. This type of error includes situations where specific combinations of data are not valid, such as Manufacturer/Model, as well as situations where the values provided are not valid.)
- Duplicate Request (a sync request already exists for the maintenance object, external system, and external primary key).

Data synchronization request exceptions are based on message types defined using the Message administration portal (accessed via **Admin > System > Message**).

About Outbound Data Synchronization Requests

Outbound data synchronization requests (or outbound sync requests) are messages sent from Oracle Utilities Meter Data Management (or other Meter Data Framework based application) to an external system to synchronize data between the external system and the target system (such Oracle Utilities Operational Device Management).

Outbound data synchronization is done most often between Oracle Utilities Meter Data Management and an asset management system (such as Oracle Utilities Operational Device Management). In a typical implementation, Oracle Utilities Meter Data Management serves as the "system of record" for contacts, service points, and install events. When this data is updated, the corresponding data in Oracle Utilities Operational Device Management must be updated accordingly.

Outbound data synchronization can be performed for any maintenance object defined in Oracle Utilities Meter Data Management, but the primary maintenance objects used for data synchronization are Contact, Service Point, and Install Event.

Working with Synchronization Requests

This section describes common tasks related to working with data synchronization requests.

Searching Inbound Synchronization Requests

Use this procedure to search for inbound synchronization requests using the Sync Request Inbound Query portal.

1. Select **Main Menu > Data Synchronization > Sync Request Inbound**.
2. Enter your search criteria.

Base package search options include sync request inbound information (maintenance object, external system, and external primary keys) and sync request inbound ID.

Note: Wildcards are NOT supported in this query zone.

3. Click **Refresh**.
4. In the search results list, click the link for the synchronization request you want to view or edit.

Viewing Inbound Synchronization Requests

Use this procedure to maintain an existing inbound synchronization requests.

You use the Sync Request Inbound portal to maintain inbound synchronization requests. This portal includes the following zones:

- **Sync Request Inbound:** defines the basic attributes of the synchronization request, including the original request (in XML format), and the transformed request (also in XML)
- **Sync Request Inbound Exceptions:** lists any exceptions associated with the synchronization request

To maintain an inbound sync request:

1. elect **Main Menu > Data Synchronization > Sync Request Inbound** to navigate to the Sync Request Inbound portal in edit mode.
2. Search for and select the appropriate inbound sync request.
3. Click the action button as appropriate.

Available actions include:

- **Discard:** discards the request.
- **Send Negative Acknowledgement:** sends an acknowledgement to the external system that sent the request indicating that an error has occurred.
- **Synchronize with Error:** used after an error occurs during the Additional Processing stage (for example, to perform connection or commissioning activities for a smart device). Sends a positive acknowledgement to the external system that sent the request indicating that the request has been received.

Note: Actions available for the request are based on the business object used to define the request, and the current status of the request.

Searching Outbound Synchronization Requests

Use this procedure to search for outbound synchronization requests using the Sync Request Outbound portal.

1. Select **Main Menu > Data Synchronization > Sync Request Outbound**.
2. Enter your search criteria.

Base package search options include sync request inbound information (maintenance object, external system, and external primary keys) and sync request inbound ID.

Note: Wildcards are NOT supported in this query zone.

3. Click **Refresh**.
4. In the search results list, click the link for the synchronization request you want to view or edit.

Viewing Outbound Synchronization Requests

Use this procedure to maintain an existing outbound synchronization requests.

You use the Sync Request Display portal to maintain outbound synchronization requests. This portal includes the following zones:

- **Sync Request Outbound:** defines the basic attributes of the synchronization request, including the initial snapshot (in XML format), and the final snapshot (also in XML)
- **Sync Request Outbound Exceptions:** lists any exceptions associated with the synchronization request
- **Related Sync Requests:** displays related outbound synchronization requests in a non-final state for the same object (contact, service point, or install event) and primary key as the request being displayed

To maintain an outbound sync request:

1. elect **Main Menu > Data Synchronization > Sync Request Outbound** to navigate to the Sync Request Outbound portal in edit mode.

2. Search for and select the appropriate outbound sync request.
3. Click the action button as appropriate.

Available actions include:

- **Send Request:** sends the request to the external system. Used with outbound sync requests in an error state.
- **Cancel:** cancels the request.

Note: Actions available for the request are based on the business object used to define the request, and the current status of the request.

Working with Synchronization Request Exceptions

This section describes common tasks related to working with data synchronization request exceptions.

Searching Synchronization Request Exceptions

Use this procedure to search for inbound synchronization request exceptions using the Sync Request Inbound Exceptions portal.

1. Select **Main Menu > Data Synchronization > Sync Request Inbound Exceptions**.

The **Sync Inbound Request Exception Summary** zone displays a list of exceptions grouped by the following:

- **Maintenance Object:** the maintenance object related to the sync requests which generated the exceptions
- **Message Category:** the message category for the exceptions
- **Message Number:** the message number for the exceptions
- **Count:** the number of exceptions in the group
- **Message Text:** the default message text (displaying message tokens) for the exceptions

2. In the **Sync Inbound Request Exception Summary** zone, click the broadcast icon for the group of exceptions you wish to view or edit.

The selected exception type opens in the **Sync Request Inbound Exception Details** zone.

Viewing Synchronization Request Exceptions

Use this procedure to maintain an existing inbound synchronization request exceptions.

You use the Sync Request Inbound Exceptions portal to view inbound synchronization requests and associated exceptions. This portal includes the following zones:

- **Sync Request Inbound Exception Summary:** lists groups of inbound sync request exceptions, grouped by maintenance object, message category, and message number.
- **Sync Request Inbound Exception Details:** displays a list of sync requests that generated exceptions for a broadcast group of exceptions listed in the **Sync Request Inbound Exception Summary** zone.

To view inbound sync request exceptions:

1. Select **Main Menu > Data Synchronization > Sync Request Inbound Exceptions** to navigate to the Sync Request Inbound Exceptions portal.
2. Click the broadcast icon for the exception group you wish to view.
The selected group is displayed in the **Sync Request Inbound Exception Details** zone.
3. To view a specific inbound sync request, click the **Sync Request** link.

The selected sync request opens in the Sync Request Inbound portal. See [Viewing Inbound Synchronization Requests](#) for more information about viewing synchronization requests.

Initial Measurement and Device Event Upload Statistics

This section describes concepts and procedures related to searching and viewing statistics related to uploading of initial measurement data and device events from head-end systems.

Note: The upload statistics functionality of the meter data framework is available only with Oracle Utilities Smart Grid Gateway.

Understanding Upload Statistics

This section describes concepts related to initial measurement and device event upload statistics.

About Upload Statistics

Upload statistics (or upload stats) are statistics related to the uploading of initial measurement data and device events sent from a head-end system.

Upload statistics are defined as activities in Oracle Utilities Smart Grid Gateway.

There are three types of upload statistics activities:

- **Payload Statistics:** Contains statistics related to a specific payload (file) containing one or more initial measurements or device events. Payload Statistics activities contain:
 - Basic information about the payload (head-end system, file name, and status)
 - Middleware statistics including specifics about the file, the total number of initial measurements or device events processed, the number of initial measurement or device events errors, and total processing time
 - Initial measurement statistics including the number of initial measurements processed
 - Device event statistics including the number of device events processed
- **Payload Error Notification:** Contains details concerning processing errors encountered in an individual payload (file) containing one or more initial measurements or device events. Payload Error Notification activities are related to Payload Statistics activities.
- **Payload Summary:** Contains processing summary statistics for an individual payload (file) containing one or more initial measurements or device events. Payload Summary activities are related to Payload Statistics activities, and are used to update related payload statistics upon the completion of payload processing.

Upload statistics activities are created during processing of payload files as follows:

- When processing begins for a payload, a Payload Statistics activity is created to record the process.
- If an error occurs during processing, a Payload Error Notification activity is created.
- When payload processing is complete, a Payload Summary activity is created, which in turn, updates the Payload Statistics activity with details concerning the processing of the payload, including (the start and end time of the processing, the total processing time, the number of initial measurements or device events processed, and the number of initial measurement or device event errors (if any)).

About Head-End System Processing Statistics

Head-end system processing statistics are summarized processing statistics for payloads received from a given head-end system.

As Oracle Utilities Smart Grid Gateway processes payloads containing initial measurements or device events, statistics for each payload are captured in Payload Statistics activities. Over time, payload statistics for each head-end system are summarized to allow administrators to view statistics summary for the head-end system.

Head-end system processing statistics are stored as aggregated measurements for aggregator measuring components. A separate aggregator measuring component must be set up for each head-end system for which processing statistics will be aggregated.

Working with Upload Statistics

This section describes common tasks related to working with upload statistics and head-end system processing statistics.

Searching Upload Statistics

Use this procedure to search for upload statistics using the Activity Query portal.

1. Select **Main Menu > Activity**.
2. Select "Payload Statistics Query" from the **Query Option** drop-down list.
3. Enter your search criteria.
Base package search criteria include head-end system, file name, status, and creation date/time.
4. Click **Refresh**.
5. In the search results list, click the link for the upload statistics activity you want to view or edit.

Viewing Upload Statistics

Use this procedure to view and maintain upload statistics.

You use the Activity portal to view and maintain upload statistics. This portal includes the following zones:

- **Activity**: defines the attributes of the selected Payload Statistics, Payload Error Notification, or Payload Summary activity.

To view or maintain an upload statistics activity:

1. Select **Main Menu > Activity** to navigate to the Activity Query portal.
2. Search for and select the appropriate upload statistics activity.
3. Click the action button as appropriate.

Available actions include:

- **Edit**: allows you to edit the upload statistics activity
- **Delete**: deletes the upload statistics activity
- **Inactive**: changes the status of the activity to "Inactive." Applicable only if the activity has a current status of "Active."
- **Validate**: validates the upload statistics activity
- **Accumulate Statistics**: calculates and updates statistics for the upload statistics activity. Applicable only to Payload Statistics activities.

Note: Actions available for the activity are based on the business object used to define the activity, and the current status of the activity.

Searching Head-End System Processing Statistics

Use this procedure to search for head-end system processing statistics using the Processing Statistics portal.

1. Select **Main Menu > Total and Trends > Processing Statistics** .
2. Enter your search criteria.
Base package search criteria include head-end system.
3. Click **Refresh**.
4. In the search results list, click the link for the processing statistics you want to view or edit.
Processing statistics are represented as aggregator measuring components.

Viewing Head-End System Processing Statistics

Use this procedure to view and maintain head-end system processing statistics.

You use the Total and Trends portal to view and maintain head-end system processing statistics. This portal includes the following zones:

- **Measuring Component:** defines the basic attributes of the aggregator measuring component that stores processing statistics for the head-end system
- **Statistics Summary View:** displays processing statistics aggregated from the upload statistics activities for the head-end system. The statistics displayed are based on the Value Identifiers configured on the aggregator measuring component's type. The base package can calculate the following statistics:
 - **Total:** the total number of initial measurements or device events processed for the head-end system
 - **Outstanding:** the total number of outstanding initial measurements or device events for the head-end system, calculated by subtracting the number of initial measurements or device events completed from the number processed
 - **Errors:** the total number of initial measurement or device event errors for the head-end system
 - **Pending:** the total number of pending initial measurements or device events still to be processed for the head-end system
 - **Completed:** the total number of initial measurements or device events successfully uploaded for the head-end system
- **Final Values Overlay Zone:** allows users to graphically view measurement data that represents processing statistics.

Note: This zone is only displayed if Oracle Utilities Meter Data Management is installed alongside Oracle Utilities Smart Grid Gateway.

To view or maintain an upload statistics record:

1. Select **Main Menu > Total and Trends > Processing Statistics** to navigate to the Processing Statistics portal.
2. Search for and select the appropriate processing statistics aggregator measuring component.
3. Use the Statistics Summary View zone to view aggregated statistics for the head-end system.
4. Use the Final Values Overlay zone (if present) to view graphic representations of the processing statistics for the head-end system.

About Bulk Commands

A Bulk command is an activity that is sent to multiple devices. For example, you can use a bulk command to send commissioning commands to a set of meters installed on a particular day.

Attributes used to define a bulk command include the following:

- **Activity Type:** the activity type for the command
- **Business Object:** The business object for the command
- **Creation Method:** the creation method for the command
- **Expiration Date/Time:** the date and time when the command expires. The command cannot be executed after this date and time
- **Requester:** the application sending the command
- **Requester User:** the user who initiated the command
- **External Bulk Header ID:** an ID for the command, defined by the requester

Initiating Bulk Commands

Use this procedure to initiate a bulk command for multiple devices.

Initiate bulk commands via the Device portal.

1. Select **Main Menu** > **Device** to navigate to the Device portal.
2. Search for the appropriate devices.
3. Use the select boxes in the search results zone to select the appropriate devices.
4. Click the **Initiate Command for All Selected** link in the search results zone title bar.
5. Select the command to initiate from the **Activity Type** drop-down list.
6. Click **OK**.

The Activity portal displays information about your bulk command request.

Chapter 4

System Administration

This section describes the functions available from the Oracle Utilities meter data framework Admin Menu. It provides conceptual information and instructions for performing various setup and administration tasks.

General Data Administration

This section describes concepts and common tasks related to general data administration.

Understanding General Data Setup and Administration

This section describes general data entities used in device management, device installation, and VEE rule management.

About Exception Types

Exception types define the properties common to many exceptions.

When creating validation, editing, and estimation (VEE) rules, you might create an exception type for each VEE rule. You might also create more general exception types, such as "Insufficient Data" to be used to signify that a measurement didn't have sufficient data for the VEE rule to execute.

About Factors

Factor are a centrally stored set of values for use in validation rules, bill determinants calculations, and other processes.

A factor can have different values depending upon some definable attribute of a system object, such as customer size associated with a service point. Examples of factors can include minimum/maximum thresholds, loss factors, etc. Classes of factors are defined that can have numeric values (as in the above examples), or values pointing to profile measuring components, or VEE groups.

A factor's values are effective-dated values - either a number, a profile measuring component, a VEE group, or some custom-defined value - assigned to a factor and associated to the value of some attribute of a system object. For example, consider a service point can be classified as residential, commercial, or industrial. The tolerance percentage by which a customer's consumption can exceed last month's consumption can be based on the service point category. For this example,

factor values for a single factor called "tolerance percentage" could be: Residential - 20% Commercial - 10% Industrial - 5%.

Factor values are retrieved based on the following options:

- **Factor Characteristic Type:** The characteristic type for the factor. Refer to the Oracle Utilities Application Framework online help for more information about characteristic types.
- **Characteristic Source Algorithm:** The algorithm that returns the characteristic value for the characteristic type defined in the Factor.

About Service Providers

Service providers are external entities that serve various roles relative to the application.

Service providers can include head-end systems, billing systems to which the application sends bill determinant data, market participants in a deregulated environment, outage management systems that receive meter event data from the application, or other parties that require or provide information to the system.

Service providers can have one or more associated processing methods that define the format or means by which a service provider receives and/or sends data from and/or to the application, such as bill determinants, interval data, or meter events. Processing methods are also used to define how to create information internal to the application such as initial measurement data, device events, and usage transactions. Processing methods can also be used to define the information an external system wishes to subscribe to receive from our application. A business object or batch extract code are the typical processing methods defined for the transmission of data to and/or from a service provider.

Note: Batch controls and business objects are mutually exclusive and one or the other must be defined for each processing method (when applicable). A batch control should only be supplied for processing methods that can be handled by a batch process (typically sending outbound information to a service provider via a batch process).

The Oracle Utilities meter data framework contains the following base package processing roles/methods:

Processing Role / Processing Method	Description
Activity Notification / How to Send Activity Related Information	Used to define how activity-related information is sent to the service provider. Can be based on activity type or device type.
Device Commission / How to Create OB Communication/Send OB Message	Used to send outbound communications to a head-end system service provider for device commission commands. The processing method defines the specific type of communication and outbound message type to send for the service provider. Can be based on a default or on device type.
Device Decommission / How to Create OB Communication/Send OB Message	Used to send outbound communications to a head-end system service provider for device decommission commands. The processing method defines the specific type of communication and outbound message type to send for the service provider. Can be based on a default or on device type.
Device Event Mapping / How to Process Device Related Information	Used to define the device event business object to use for device events for the head-end system service provider. Can be based on a default or on device type.
Device Status Check / How to Create OB Communication/Send OB Message	Used to send outbound communications to a head-end system service provider for device status check commands. The processing method defines the specific type of communication and outbound message type to send for the service provider. Can be based on a default or on device type.
Event Processing Default Configuration / How to Process (Send) Device Event Related Info	Used to send device events to a service provider. Can be based on device event category or device event type.
Initial Measurement Creation / How to Create MC Related Information	Used to define how measuring component-related information is created for the service provider, including initial measurement data. Can be based on a default or on measuring component type.
Obtain AMI Device Identifier / How to Create OB Communication/Send OB Message	Used to send outbound communications to a head-end system service provider for retrieving the AMI device identifier. The processing method defines the specific type of communication and outbound message type to send for the service provider. Can be based on a default or on device type.
On-Demand Read (Interval) / How to Create OB Communication/Send OB Message	Used to send outbound communications to a head-end system service provider for on-demand read (interval) commands. The processing method defines the specific type of communication and outbound message type to send for the service provider. Can be based on a default or on device type.

On-Demand Read (Scalar) / How to Create OB Communication/Send OB Message	Used to send outbound communications to a head-end system service provider for on-demand read (scalar) commands. The processing method defines the specific type of communication and outbound message type to send for the service provider. Can be based on a default or on device type.
Outbound Message Creation / Send Outbound Communication Related Info	Used to define the outbound message type sent to a head-end system service provider. The processing method defines the specific type of outbound message type to send for the service provider. Can be based on a default or on communication type.
Remote Connect / How to Create OB Communication/Send OB Message	Used to send outbound communications to a head-end system service provider for remote connect commands. The processing method defines the specific type of communication and outbound message type to send for the service provider. Can be based on a default or on device type.
Remote Disconnect / How to Create OB Communication/Send OB Message	Used to send outbound communications to a head-end system service provider for remote disconnect commands. The processing method defines the specific type of communication and outbound message type to send for the service provider. Can be based on a default or on device type.
Response - Fail / How to Send Activity Related Information (or Response)	Used to define the outbound message type sent to a service provider for "failure" responses to an activity. Can be based on a default or on activity type.
Response - Received / How to Send Activity Related Information (or Response)	Used to define the outbound message type sent to a service provider for received responses to an activity. Can be based on a default or on activity type.
Response - Success / How to Send Activity Related Information (or Response)	Used to define the outbound message type sent to a service provider for "successful" responses to an activity. Can be based on a default or on activity type.
Send Device Event / How to Process Device Event Related Info	Used to send device events to a service provider. Can be based on device event category or device event type.
UOM Mapping / How to Process Device Related Information	Used to define how UOM codes are mapped for devices of the head-end system service provider. Can be based on a default or on device type.

Other Oracle Utilities products may provide additional processing methods.

About Service Quantity Identifiers

Service Quantity Identifiers (SQI) are used to further distinguish between measured quantities that have identical UOM/TOU combinations, including situations in which the distinguishing identifier of a UOM is not accurately described as a TOU.

SQIs can also be used as a stand-alone representation of a service quantity that is not measured (one that is not properly described as a UOM) within a usage service quantity collection (such as a billing determinant).

About Service Types

Service Types define specific types of service for which usage can be recorded and captured, such as electric, gas, steam, etc.

About Time of Use

Time of Use (TOU) periods are modifiers for a given unit of measure that indicate a period of time during which a quantity has been used, such as On-Peak (meaning during a time when the greatest quantity of some consumable is being used), Off-Peak (meaning during a time when the least amount of some consumable is being used), etc.

About Units of Measure

Units of Measure (UOM) identify quantities measured and recorded, such as KWH, KW, cubic feet, degrees Celsius, etc. UOMs are based on a specific service type.

Units of Measure can be defined by the following:

- Service Type: the type of service (electric, gas, etc.) measured by the UOM

- **Decimal Positions:** the number of decimal places used when presenting a quantity for this UOM in Usage service quantities
- **Allowed on Measuring Component:** a flag that indicates if the UOM is allowed on Measuring Components
- **Measures Peak Quantity:** a flag that indicates if the UOM is used to measure peak quantities or not. An example of a UOM that measures peak quantities is kilowatts (KW).
- **Magnitude:** a number that indicates the relative size of the UOM as compared to a single unit of the UOM specified under "Base Unit of Measure." For example, megawatt hours (MWH) have a magnitude of 1,000 as compared to a single kilowatt hour (KWH).
- **Base Unit of Measure:** the UOM upon which the current UOM is based. Used in conjunction with magnitude when converting measurements of related UOMs and when graphing measurement data in the 360 Degree View. For example, the base unit of measure for megawatt hours (MWH) with a magnitude of 1,000 would be kilowatt hours (KWH). If a UOM does not specify a Base Unit of Measure, its Base Unit of Measure is assumed to be the same as the UOM.

Defining Exception Types

Use this procedure to define exception types, such as exception types used with specific VEE rules or other processing.

To maintain existing exception types, select **Admin Menu > Common > Exception Type**, then use *standard actions* to edit or delete an exception type.

To define a new exception type, follow these steps:

1. Select **Admin Menu > Common > Exception Type+** .

Note: If your system supports more than one exception type business object, you will be prompted to select a business object for this exception type.

2. Enter a name and a meaningful description for the exception type.
3. Select the business object to use when creating exceptions of this type
4. Select the Reporting Category for the exception type.
5. Click **Save**.

You can now use this exception type when creating VEE rules.

Defining Factors

Use this procedure to define factors, such as exception types used with specific VEE rules or other processing.

Prerequisites: You must define factor characteristic source algorithms, factor characteristic types, and factor characteristic values before you can create a factor. Refer to the Oracle Utilities Application Framework online help for more information about algorithms, characteristic types, and characteristic values.

To maintain existing factors, select **Admin Menu > Common > Factors**, then use *standard actions* to edit, duplicate, or delete a factor.

To define a new factor, follow these steps:

1. Select **Admin Menu > Common > Factor+** .
2. Select the Business Object that defines the type of factor you wish to create (number, profile, VEE group, or a custom type) and click **OK**.
3. Enter a name and a meaningful description for the factor.
4. Specify whether or not a Usage Subscription should be checked for override factor values before retrieving the factor values for the factor.

This field applies only to number-type factors.

5. Select the Characteristic Source Algorithm. This is the algorithm that returns the characteristic value.
6. Select the Factor Characteristic Type.
7. Specify one or more factor characteristic values for the factor. Select the value from the drop-down list. To add another value, click the plus sign and select the value.
8. Click **Save**.

Once the factor has been saved, you must define values for the factor in the Factor Char Value and Factor Value List zone.

Defining Factor Values

Use this procedure to define factor values.

Prerequisites: If creating profile or VEE group factor values, you must define the measuring component to be used as the profile or the VEE group prior to defining the factor value.

You can add, edit, and delete factor values using the Factor Char Value and Factor Value List zone. Use *standard actions* to edit or delete a factor value.

To define a new factor value, follow these steps:

1. Click the plus sign next to the factor characteristic value.
2. Enter the effective date and time for the factor value.
3. Specify the value as of the effective date and time for the factor.
 - For number factors, enter the numeric value.
 - For profile factors, search for and select the measuring component that will be used as the profile.
 - For VEE Group factors, search for and select the VEE group.
4. Click **Save**.

You can now use this factor in VEE rules. Factors are also used in usage rules when using Oracle Utilities Meter Data Management.

Defining Service Providers

Use this procedure to define service providers.

To maintain existing service providers, select **Admin Menu > Communications > Service Provider**, then use *standard actions* to edit, duplicate, or delete a service provider.

To define a new service provider, follow these steps:

1. Select **Admin Menu > Communications > Service Provider+** .

Note: If your system supports more than one service provider business object, you will be prompted to select a business object for this service provider.

2. Enter a name and a meaningful description for the service provider.
3. Complete the fields in the Main section.
4. Click **Save**.

Once the service provider has been saved, you can define processing methods for the service provider in the Processing Methods zone.

Defining Processing Methods

Use this procedure to define processing methods for service providers.

Prerequisites: You must define service providers before you can create processing methods.

You can add, edit, and delete processing methods using the Processing Methods List zone. Use *standard actions* to edit or delete a processing method.

To define a new processing method, follow these steps:

1. Click **Add** in the Processing Methods zone title bar.
2. Select the processing role and business object for the processing method and click **OK**.
3. Enter a meaningful description and select the status in the Main section.
4. Specify the details for the processing method in the Processing Method section.

Note: The available options in this section are based on the processing role and business object you selected.

5. Click **Save**.

Defining Service Quantity Identifiers

Use this procedure to define service quantity identifiers (SQIs).

To maintain existing service quantity identifiers, select **Admin Menu > Common > Service Quantity Identifier**, then use *standard actions* to edit, duplicate, or delete a service quantity identifier.

To define a new service quantity identifier, follow these steps:

1. Select **Admin Menu > Common > Service Quantity Identifier+** .

Note: If your system supports more than one service quantity identifier business object, you will be prompted to select a business object for this service quantity identifier.

2. Enter a name and a meaningful description for the service quantity identifier.
3. Specify the number of decimal places for values based on the service quantity identifier in the **Decimal Positions** field.
4. Click **Save**.

You can now use this service quantity identifier when creating value identifiers for measuring component types.

Defining Service Types

Use this procedure to define service types, such as electric service, gas service, water service, etc.

To maintain existing service types, select **Admin Menu > Common > Service Type**, then use *standard actions* to edit, duplicate, or delete a service type.

To define a new service type, follow these steps:

1. Select **Admin Menu > Common > Service Type+** .

Note: If your system supports more than one service type business object, you will be prompted to select a business object for this service type.

2. Enter a name and a meaningful description for the service type.
3. Click **Save**.

You can now use this service type when creating units of measure, device types, device configuration types, and measuring component types.

Defining Time of Use

Use this procedure to define time of use periods (TOUs), such as On-Peak, Off-Peak, etc..

To maintain existing TOUs, select **Admin Menu > Common > Time of Use**, then use *standard actions* to edit, duplicate, or delete a TOU.

To define a new TOU, follow these steps:

1. Select **Admin Menu > Common > Time of Use+** .

Note: If your system supports more than one TOU business object, you will be prompted to select a business object for this TOU.

2. Enter a name and a meaningful description for the TOU.
3. Specify the HTML Color code for the color to be used on graphs when displaying data for the TOU in the **Color** field.

Some sample HTML color codes include:

- Red: #FF0000
- Orange: #FFA500
- Yellow: #FFFF00
- Green: #008000
- Blue: #0000FF
- Indigo: #4B0082
- Black: #000000

4. Specify the priority for the TOU in the **Priority** field.
5. Click **Save**.

You can now use this TOU when creating value identifiers for measuring component types, and when creating TOU maps and TOU map templates in Oracle Utilities Meter Data Management

Defining Units of Measure

Use this procedure to define units of measure (UOMs), such kilowatt hours (kWh), CCF, or therms.

Prerequisites: You must define service types before you can associate them with a unit of measure.

To maintain existing UOMs, select **Admin Menu > Common > Unit of Measure**, then use *standard actions* to edit, duplicate, or delete a UOM.

To define a new UOM, follow these steps:

1. Select **Admin Menu > Common > Unit of Measure+** .

Note: If your system supports more than one UOM business object, you will be prompted to select a business object for this TOU.

2. Enter a name, meaningful description, and shorthand description for the UOM.
3. Select the service type for the UOM.
4. Specify the number of decimal places for values based on the UOM in the **Decimal Positions** field.
5. Specify whether or not the UOM is allowed for use with measuring components.
6. Specify whether or not the UOM measures peak quantity.

7. Enter the magnitude of the UOM.
8. If the UOM is based on a another UOM, select the Base Unit of Measure.
9. Click **Save**.

You can now use this unit of measure when creating value identifiers for measuring component types.

Device Management Administration

This section describes concepts and common tasks related to device management administration.

Understanding Device Management Setup and Administration

This section describes entities used to support the management of devices.

About Device Configuration Types

Device configuration types define the properties of device configurations of this type, including the valid types of measuring components that can be configured for device using configurations of this type.

About Device Types

Device types define information about a class of devices, including properties that apply to all devices of a type.

Properties defined for a device type can be overridden for an individual device.

About Manufacturers

Manufacturers are the companies that makes devices.

A device's manufacturer is defined as an attribute of the device itself.

Each manufacturer can have zero or more models defined. Models for a single manufacturer can have diverse service types.

About Measuring Component Types

Measuring component types define the most important properties of a measuring component.

Measuring component types define what a measuring component measures (KWH, temperature, etc.), how regularly it measures it, and whether it should be connected to a physical device, or if it's used as a scratchpad measuring component or an aggregator measuring component. Measuring component types also specify how the measuring component's final measurements should be stored, how the measuring component's user-defined values should be calculated, and specific rules governing validation, editing, and estimation (VEE) for measuring components of the type. In addition, measuring component types define display properties and valid attribute values for measuring components belonging to the type.

Some important characteristics defined for measuring component types include:

- **Value Identifiers:** These store the values of UOM, TOU, and SQI that identify the measured amounts for measuring components of this type. Value identifiers specify the quantities stored on the measurement records for measuring components of this type.
- **Valid VEE Groups:** These define the VEE groups considered valid for measuring components of this type.
- **Fallback VEE Groups:** These define default VEE groups that can be used with all measuring components of this type. This alleviates the need to specify the same VEE groups on multiple measuring components of the same type. Each VEE group is designated a VEE group role that indicates when and how the VEE group is used (for initial load, manual override, or estimation).

- **Eligible Profile Factors (interval only):** These define the profile factors that are considered to be eligible for interval measuring components of this type. You can also specify one or more profile factors as a default.
- **Valid Profile Factors for Conversion from Scalar to Interval (scalar only):** These define the profile factors that are considered to be eligible for scalar measuring components of this type when converting scalar measurements to interval measurements. You can also specify one or more profile factors as a default.
- **Valid Scratchpad Measuring Component Types:** These define the scratchpad measuring component types considered valid for measuring components of this type.
- **Display Properties:** Defines how measurement data for measuring components of this type is displayed, including:
 - **Display Configuration:** Details related to how measurements are displayed, including the number of hours of data to display, the default TOU map used, the TOU by Day Profile factor used, and default measurement condition.
 - **Event Bar Profiles:** The event bar profiles used when displaying measurement data for measuring components of this type. Event bar profiles are defined as values for the 360 View Event Bar Profile extendable lookup.
 - **Final Values Overlay Profiles:** The final values overlay profiles used when displaying measurement data for measuring components of this type. Final values overlay profiles are defined as values for the Final Values Overlay Profile extendable lookup.

Defining Device Configuration Types

Use this procedure to define device configuration types.

Prerequisites: You must define service types before you can create a device configuration type. To specify valid measuring component types for the device configuration type, you must first define the measuring component types.

To maintain existing device configuration types, select **Admin Menu > Device > Device Configuration Type**, then use *standard actions* to edit, duplicate, or delete a device configuration type.

To define a new device configuration type, follow these steps:

1. Select **Admin Menu > Common > Device Configuration Type+** .

Note: If your system supports more than one device configuration type business object, you will be prompted to select a business object for this device configuration type.

2. Enter a name and a meaningful description for the device configuration type.
3. Select the business object to use when creating device configurations of this type.
4. Select the Service Type.
5. To add or remove valid measuring component types for this device configuration type, click the + or – sign in the Valid Measuring Component Types section, select the measuring component type, and specify whether or not the measuring component type is Optional or Required.
6. Click **Save**.

Now you can create device configurations based on the device configuration type.

Defining Device Types

Use this procedure to define device types, such as manual meters, smart meters, etc.

Prerequisites: You must define service types before you can create a device type. To specify valid device configuration types for the device type, you must first define the device configuration types.

To maintain existing device types, select **Admin Menu > Common > Device Type**, then use *standard actions* to edit, duplicate, or delete a device type.

To define a new device type, follow these steps:

1. Select **Admin Menu > Device > Device Type+** .

2. Select the business object that defines the type of device type you wish to create and click **OK**.
3. Enter a name and a meaningful description for the device type.
4. Select the business object to use when creating devices of this type.
5. Select the Service Type.
6. To add or remove valid device configuration types for this device type, click the + or – sign in the Valid Device Configuration Types section and select the device configuration type.
7. Click **Save**.

Now you can create devices based on the device type.

Defining Manufacturers

Use this procedure to define manufacturers.

Prerequisites: You must define service types before you can create models for a manufacturer.

To maintain existing manufacturers, select **Admin Menu > Device > Manufacturer**, then use *standard actions* to edit, duplicate, or delete a manufacturer.

To define a new manufacturer, follow these steps:

1. Select **Admin Menu > Common > Manufacturer+** .

Note: If your system supports more than one manufacturer business object, you will be prompted to select a business object for this manufacturer.

2. Enter a name and a meaningful description for the manufacturer.
3. To add or remove models for this manufacturer, click the + or – sign in the Models section, enter a name and description for the model, and select the service type.
4. Click **Save**.

Now you can specify this manufacturer when you create devices.

Defining Measuring Component Types

Use this procedure to define measuring component types.

Prerequisites: You must define service types before you can create measuring component types. To create value identifiers, you must first create UOMs, TOUs, and SQIs. To associate VEE groups, profile factors, scratchpad measuring component types, or event bar or final values overlay profiles to a measuring component type, you must first create those objects.

To maintain existing measuring component types, select **Admin Menu > Device > Measuring Component Type**, then use *standard actions* to edit, duplicate, or delete a measuring component type.

To define a new measuring component type, follow these steps:

1. Select **Admin Menu > Common > Measuring Component Type+** .
2. Select the business object that defines the type of measuring component type you wish to create and click **OK**.
3. Enter a name and a meaningful description for the measuring component type.
4. Select the business object to use when creating measuring components of this type.
5. Select the Measurement business object to use for measurements for measuring components of this type.
6. Select the Service Type.
7. Specify whether or not measuring components based on this type allow negative consumption.
8. Specify if measuring components based on this type are consumptive or subtractive.

9. Complete the remaining fields in the Main section.

Note: The fields in this section are based on the measuring component type business object you selected.

10. To add or remove value identifiers to this measuring component type, click the + or – sign in the Value Identifiers section and specify the following for each:

- Value Identifier Type
- Description
- UOM
- TOU
- SQI
- Algorithm (the algorithm used to derive values for the identifier)

11. To add or remove valid VEE groups to this measuring component type, click the + or – sign in the Valid VEE Groups section and select the VEE group.

12. To add or remove VEE groups to this measuring component type, click the + or – sign in the VEE Groups section and select the VEE Group Role and VEE Group for each.

13. To add or remove profile factors to this measuring component type, click the + or – sign in the Valid for Conversion from Scalar to Interval Factors or Valid Profile Factors section, and select the profile factor and indicate if it is the default.

14. To add or remove valid scratchpad measuring component types to this measuring component type, click the + or – sign in the Valid Scratchpad Measuring Component Types section and select the measuring component type.

15. Fill out the fields in the Display Configuration section.

Note: The fields in this section are based on the measuring component type business object you selected.

16. To add or remove event bar profiles to this measuring component type, click the + or – sign in the Event Bar Profiles section, and select the event bar profile and indicate if it is the default.

17. To add or remove final values overlay profiles to this measuring component type, click the + or – sign in the Final Values Overlay Profiles section, and select the overlay profile and indicate if it is the default.

18. Click **Save**.

Device Installation Administration

This section describes concepts and common tasks related to device installation administration.

Understanding Device Installation Setup and Administration

This section describes entities used to support the management of device installations.

About Markets

Markets define the jurisdictions or regulatory environments in which a service point participates.

Markets also define market relationships for valid service providers and their roles within a market (distributor, etc.).

While each service point specifies only one market, a utility may serve more than one market, and different service points throughout the utility's service territory can be linked to different markets.

For each service provider defined for a market, you can also specify a fallback service provider.

About Service Point Types

Service point types define a specific type of point at which service is delivered.

Specifically, service point types define how the application manages many aspects of the service point's behavior. A service point type may have one or more valid device types defined that limit the types of devices that can be installed at service points of this type.

About Contact Types

Contact types define the properties of a class of entities (businesses, persons).

About Measurement Cycles

Measurement cycles define the schedule for manual meter reading of devices at service points in that cycle.

Measurement cycles can have one or more associated routes used to collect measurements.

When used with Oracle Utilities Meter Data Management, measurement cycles can also be configured to define when to create usage transactions for usage subscriptions associated to service points in the cycle.

About Measurement Cycle Schedules

Measurement cycle schedules define the dates on which devices are scheduled to be read for a given measurement cycle and the routes used to collect measurements for the measurement cycle.

Defining Markets

Use this procedure to define markets.

Prerequisites: You must define service providers before you can create market relationships for a market.

To maintain existing markets, select **Admin Menu > Communications > Market**, then use *standard actions* to edit, duplicate, or delete a market.

To define a new market, follow these steps:

1. Select **Admin Menu > Communications > Market+** .

Note: If your system supports more than one market business object, you will be prompted to select a business object for this market.

2. Enter a name and a meaningful description for the market.
3. To add or remove market relationships for this market, click the + or – sign in the Market Relationships section, select the market relationship type and the service provider. You can also specify a fallback service provider along with start and stop dates.
4. Click **Save**.

Now you can use the market when creating service points.

Defining Service Point Types

Use this procedure to define service point types.

Prerequisites: You must define service types before you can create service point types.

To maintain existing service point types, select **Admin Menu > Device Installation > Service Point Type** , then use *standard actions* to edit, duplicate, or delete a service point type.

To define a new service point type, follow these steps:

1. Select **Admin Menu > Device Installation > Service Point Type+**.

Note: If your system supports more than one service point type business object, you will be prompted to select a business object for this service point type.

2. Enter a name and a meaningful description for the service point type.
3. Select the service type for the service point type.
4. Select a parent service point (if applicable).
5. Select the business object to use when creating service points of this type.
6. To add or remove valid device types for this service point type, click the + or – sign in the Valid Device Types section and select the device type.
7. Click **Save**.

Now you can use this service point type when creating service points.

Defining Contact Types

Use this procedure to define contact types.

To maintain existing contact types, select **Admin Menu > Customer Information > Contact Type**, then use *standard actions* to edit, duplicate, or delete a contact type.

To define a new contact type, follow these steps:

1. Select **Admin Menu > Customer Information > Contact Type+**.

Note: If your system supports more than one contact type business object, you will be prompted to select a business object for this contact type.

2. Enter a name and a meaningful description for the contact type.
3. Select the business object to use when creating contacts of this type.
4. Click **Save**.

Now you can use this contact type when creating contacts.

Defining Measurement Cycles

Use this procedure to define measurement cycles.

To maintain existing measurement cycles, select **Admin Menu > Device Installation > Measurement Cycle**, then use *standard actions* to edit, duplicate, or delete a measurement cycle.

To define a new measurement cycle, follow these steps:

1. Select **Admin Menu > Device Installation > Measurement Cycle+**.

Note: If your system supports more than one measurement cycle business object, you will be prompted to select a business object for this measurement cycle.

2. Enter a name and a meaningful description for the measurement cycle.
3. Select the business object to use when creating measurement cycle schedules for measurement cycles of this type.
4. To add or remove measurement cycle route business objects for this service point type, click the + or – sign in the Measurement Cycle Route Business Object section and select the business object.
5. Click **Save**.

Once the measurement cycle has been saved, you can define routes for the measurement cycle in the Measurement Cycle List zone.

Defining Measurement Cycle Routes

Use this procedure to define measurement cycle routes.

Prerequisites: You must define measurement cycles before you can create measurement cycle routes.

You can add, edit, and delete measurement cycle routes using the Measurement Cycle Route List zone. Use *standard actions* to edit or delete a processing method.

To define a new measurement cycle route, follow these steps:

1. Click **Add** in the Measurement Cycle Route List zone title bar.
2. Enter a meaningful description for the measurement cycle route.
3. Select the service provider for the route.
4. Select the schedule type for the route.
5. Click **Save**.

Now you can use this measurement cycle route when creating measurement cycle schedules.

Working with Measurement Cycle Schedules

This section describes common tasks related to working with measurement cycle schedules.

Creating Measurement Cycle Schedules

Use this procedure to create a new measurement cycle schedule.

Prerequisites: You must define measurement cycles before you can create measurement cycle schedules.

1. Select **Admin Menu > Device Installation > Measurement Cycle Schedule+**.

Note: If your system supports more than one measurement cycle business object, you will be prompted to select a business object for the measurement cycle the schedule will be based on.

2. Enter the schedule selection date and expected work date for the schedule.
3. To add or remove measurement cycle routes for this schedule, click the + or – sign, and select the Service Route, Schedule Type, and Schedule Status for each.
4. Click **Save**.

Measurement Cycle Schedule Search

Use this procedure to search for a measurement cycle schedule on the Measurement Cycle Schedule Query portal.

1. Select **Admin Menu > Device Installation > Measurement Cycle Schedule**.

2. Enter your search criteria.

Base package query options include measurement cycle and schedule selection date.

3. Click **Refresh**.
4. In the search results list, click the link for the measurement cycle schedule you want to view or edit.

Maintaining Measurement Cycle Schedules

Use this procedure to maintain an existing measurement cycle schedule.

1. Select **Admin Menu > Device Installation > Measurement Cycle Schedule** to navigate to the Measurement Cycle Schedule portal
2. Search for and select the appropriate measurement cycle schedule.
3. Click the **Edit, Duplicate, or Delete** button as appropriate.
4. Click **Save**.

Device Communication Administration

This section describes concepts and common tasks related to device communication administration.

Understanding Device Communication Setup and Administration

This section describes entities used to support the management of device communication.

About Activity Types

Activity types define properties common to a specific type of activity.

Activity types include types of communications between an application and a head-end system, such as a connection requests, meter ping requests, or on-demand meter readings, as well as device event types.

About Communication Types

Communication types define properties common to a specific type of communication

Communication types include types of communications between an application and a head-end system, such as notifications (used to notify an head-end system of a command request), or message responses (sent from a head-end system to confirm receipt of a message).

About Device Event Types

Device event types define properties common to specific types of events.

Device event types represent different types of events that can take place relative to a device. Examples of device events include power outages, power restoration, tampering alerts, and other events.

Device event types can be defined by the following attributes

- **Standard Event Name:** the "standard" name of the event type in Smart Grid Gateway. Device vendors may have their own specific names for device events.
- **Device Event Category:** a category (defined as an Extendable Lookup) used to group device event types.
- **Reporting Category:** a category used to group device event types for reporting purposes.
- **Activity Type:** the activity type for activities created for device events of this type.

About Service Task Types

Service task types define properties common to specific types of service tasks.

Service task types represent different types of tasks that can be performed by users of other Oracle Utilities applications, such Oracle Utilities Customer Self Service or Oracle Utilities Network Management System. Examples of service tasks include self service meter reads, in which users enter their own meter reads via the Customer Self Service application.

Service task types can be defined by the following attributes

- Service Task Type: the name of the task type.
- Service Task Business Object: the business object instantiated when service tasks of this type are created.
- Service Task Class: a category used to service task types for reporting purposes (outage, self-service, etc.).
- Other data based on the specific type of service task (Service Provider, Data Source, Exception Handling, etc.)

Defining Activity Types

Use this procedure to define activity types.

Prerequisites: You must create at least one activity type business object and related activity business object before you can create new activity types.

To maintain existing activity types, select **Admin Menu > Communications > Activity Type**, then use *standard actions* to edit or delete an activity type.

To define a new activity type, follow these steps:

1. Select **Admin Menu > Communication > Activity Type** .

The Activity Type portal opens displaying the Activity Type List zone.

2. Click the **Add** icon in the row of the activity/activity type for which you wish to create an activity type.
3. Enter a name and a meaningful description for the activity type.
4. Complete any remaining fields and sections .

Note: Remaining fields and sections are based on the activity type business object.

5. Click **Save**.

Activities can now be created based on this activity type.

Defining Communication Types

Use this procedure to define communication types.

Prerequisites: You must create at least one communication type business object and related communication business object before you can create new communication types.

To maintain existing communication types, select **Admin Menu > Communications > Communication Type**, then use *standard actions* to edit or delete an communication type.

To define a new communication type, follow these steps:

1. Select **Admin Menu > Communication > Communication Type** .

The Communication Type portal opens displaying the Communication Type List zone.

2. Click the **Add** icon in the row of the communication/communication type for which you wish to create an communication type.
3. Enter a name for the communication type.
4. Search for and select the business object for the communication type (if not populated).
5. Search for and select the related transaction business object for the communication type (if not populated).
6. Select the communication flow for the communication type (inbound or outbound).
7. Enter an external communication type for the communication type (the name of the communication type used by the external system which will send or receive communications based on this type).
8. Select the status of the communication type (active or inactive).
9. Enter a meaningful description for the communication type.

10. Complete any remaining fields and sections .

Note: Remaining fields and sections are based on the communication type business object.

11. Click **Save**.

Communications can now be created based on this communication type.

Defining Device Event Types

Use this procedure to define device event types.

To maintain existing device event types, select **Admin Menu > Communications > Device Event Type**, then use [standard actions](#) to edit, duplicate, or delete a device event type.

To define a new device event type, follow these steps:

1. Select **Admin Menu > Communications > Device Event Type+** .

Note: If your system supports more than one device event type business object, you will be prompted to select a business object for this device event type.

2. Enter a name and a meaningful description for the device event type.

3. Select a status for the device event type.

4. Select the business object to use when creating device events of this type.

5. Search for and select the standard event name for device events of this type. Standard event names are defined as values for the Standard Event Name extendable lookup.

Note that each device event type must have a unique standard event name.

6. Select a device event and reporting category for device events of this type.

7. If applicable, select an activity type that corresponds to device events of this type. This is used to define the activity type for activities created based on device events of this type.

8. Click **Save**.

Now you can use this device event type when creating device events.

Defining Service Task Types

Use this procedure to define service task types.

To maintain existing service task event types, select **Admin Menu > Communications > Service Task Type**, then use [standard actions](#) to edit, duplicate, or delete a service task type.

To define a new service task type, follow these steps:

1. Select **Admin Menu > Communications > Service Task Type+** .

Note: If your system supports more than one service task type business object, you will be prompted to select a business object for this service task type.

2. Enter a name and a meaningful description for the service task type.

3. If needed, select the business object to use when creating service tasks of this type.

4. Select the service task class applicable to service tasks of this type.

Service tasks types used with Oracle Utilities Customer Self Service have a default class of “Self-service”.

5. Enter a detailed description for the service task type

6. Complete the remaining fields and sections (if applicable).

7. If applicable, select a To Do type and corresponding To Do role to use when creating To Do entries related to service tasks of this type.

The base package contains a “Service Task Type To Do” To Do type for use with service task types.

8. Click **Save**.

This service task type can now be used when service tasks are received from other Oracle Utilities applications, such as Oracle Utilities Customer Self Service.

VEE Rule Administration

This section describes concepts and common tasks related to Validation , Editing, and Estimation (VEE) rule administration.

Understanding VEE Rule Setup and Administration

This section describes entities used to support the management of VEE rules.

About VEE Groups

VEE groups are collections of VEE rules that are applied to initial measurement data.

VEE groups can be associated to a specific measuring component, or to a measuring component type (or both). VEE groups associated with a measuring component type are applied to all measuring components of that type, while those associated to a specific measuring component are applied only to that measuring component.

VEE groups can also be referenced by individual Execute VEE Group VEE rules. See [About VEE Rules](#) for more information.

About VEE Rules

VEE rules are standard and custom Validation, Estimation and Editing (VEE) rules that perform checking and/or manipulation of initial measurement data.

VEE rules are created for a specific VEE group. For example, if you were configuring two VEE groups and both included a specific VEE rule, you would need to create two instances of the VEE rule, one for each group.

Attributes used to define VEE rules typically include the following:

- **Basic Information:** Basic information about the VEE rule, including its name and description, the VEE group to which the rule belongs, the sequence of the rule within the group, the category, and start and end dates. This information is standard for most VEE rules.
- **Parameters:** The parameters used by the rule. Parameters are specific to each rule.
- **Exception Types and Severity:** Details about how to handle exceptions, including the Exception Type and Exception Severity for exceptions created by the rule. There are three levels of Exception Severity:
 - **Information:** Used to highlight minor issues, but not sufficient to cause the initial measurement data to be put into the exception state. Exceptions of this category can be used to report on the frequency of interesting, but not fatal issues
 - **Issues:** Used to report a problem that will prevent the initial measurement data from being finalized. Multiple "issue exceptions" can be created during VEE processing. If at least one issue exists after all rules have been applied, the initial measurement data is transitioned to the exception state
 - **Terminate:** Used to report a severe issue that will cause the VEE process to stop and the initial measurement data to be transitioned immediately to the exception state. Only one terminate exception can be issued (as the first one causes VEE processing to stop on an initial measurement data).

The Oracle Utilities meter data framework includes the following "generic utility" base package VEE rule types that can be used when configuring VEE groups and rules with Oracle Utilities Meter Data Management:

- **Exception Handler:** used to define options and logic to terminate the VEE process when a set of user configured criteria are met. VEE rules of this type can be included in a group to specify how exceptions are handled for that group, and allow for creation of a single "parent" exception for the group. Exception Handler rules use the following options:
 - **Exception Handler:** defines the exception type for "parent" exceptions created when one or more VEE rules within the VEE group fail, along with the To Do Type and To Do Role for To Do entries for this exception.
 - **Comparison Results:** defines the conditions under which the "parent" exception is generated. A "parent" exception is created when a user-specified combination of exceptions (of user-specified quantities and exception types) are generated by the rules within the VEE group. For example, a "parent" exception might be generated when 3 exceptions of one type **and** 2 exceptions of another type are triggered, or if 2 exceptions of one type **or** 2 exceptions of a different type are triggered.
- **Execute VEE Group:** used to define business logic to allow reference to a VEE group. This allows rules that are used frequently to be bunched under a single VEE group, which can be referenced/called by other rules as needed. For example, if a set of standard rules should be applied to all initial measurement data for a certain type of measuring component, this set of rules can be configured as part of a VEE group, which is referenced by a single VEE rule of this type. Execute VEE Group rules use the following options:
 - **Referred VEE Group:** defines the VEE Group referenced by the rule.
 - **Insufficient Input Data Exception:** defines the Exception Type and Exception Severity for exceptions created when there is insufficient data to execute the VEE rule.
- **Successful Termination:** used to define options and logic to successfully terminate VEE processing for any initial measurement that passes a pre-defined set of validations before accumulating a pre-defined number of exceptions. For example, a set of validation rules can be executed early in the overall sequence of rules that proves that the data is good enough to use, such that no further rules need to be executed. Successful Termination rules use the following options:
 - **Comparison Results:** defines the conditions under which processing is successfully terminated. Processing is terminated if fewer than a user-specified combination of exceptions (of user-specified quantities and exception types) are generated by the rules within the VEE group. For example, processing might terminate when less than 3 exceptions of one type **AND** less than 2 exceptions of another type have been issued, or if less than 2 exceptions of one type **OR** less than 2 exceptions of a different type have been issued.
- **VEE Rule Group Matrix (Factor):** used to define business logic to allow reference to a factor (of type VEE group) where the values of the factor are a list of VEE groups. This allows creating a VEE rule that can select from a list of VEE groups (referred to as a matrix) whose rules to execute next. One example of this might be to call geographically-specific VEE groups from within a larger-purpose group. A residential VEE group might contain a rule that will pick the VEE group to execute based on service point location, where the matrix specifies:

Service Point Location	VEE Group to Execute
Service Point in the North	VEE Group N
Service Point in the East	VEE Group E
Service Point in the South	VEE Group S

Group Matrix (Factor) rules use the following options:

- **VEE Group Matrix (Factor):** defines the VEE Group factor referenced by the rule, and what to do if the group cannot be found.
- **Insufficient Input Data Exception:** defines the Exception Type and Severity for exceptions created when there is insufficient data to execute the VEE rule.

Other Oracle Utilities products, such as Oracle Utilities Meter Data Management, provide standard "out-of-the-box" VEE rule types that can be used when creating VEE rules.

About VEE Rule Eligibility Criteria

VEE rule eligibility criteria are user-definable conditions that could cause a given VEE rule to be applied or skipped. This can involve the evaluation of some attribute of the device or measuring component, or something else entirely.

A VEE rule can have multiple eligibility criteria for determining if the rule should be applied or skipped, based on a user-defined sequence. Each eligibility criteria uses the following settings:

- **Criteria Comparison:** defines the specific comparison for the criteria, based on the following:
 - **Criteria Field:** the algorithm used to retrieve the value of the criteria field
 - **Comparison Operator:** the operator used in the comparison
 - **Value:** a user-specified value to which the retrieved value is compared (using the comparison operator)
- **Comparison Results:** defines how the rule should behave, based on the results of the comparison defined under Criteria Comparison:
 - **If True:** the action to take if the comparison is true
 - **If False:** the action to take if the comparison is false
 - **If Insufficient Data:** the action to take if there is insufficient data to perform the comparison

Working with VEE Groups

This section describes common tasks related to working with VEE groups.

Creating VEE Groups

Use this procedure to create a new VEE group.

1. Select **Admin Menu > VEE Rules > VEE Group+** .

Note: If your system supports more than one VEE group business object, you will be prompted to select a business object for the VEE group.

2. Enter the name, description, and detailed description for the VEE group.
3. Click **Save**.
4. To add a VEE rule to the VEE group, click the **Add Rule** link in the VEE Rules List zone title bar. See [Creating VEE Rules](#) for more information about creating VEE rules.

Now you can create VEE rules for this group.

VEE Group Search

Use this procedure to search for a VEE Group on the VEE Group Query portal.

1. Select **Admin Menu > VEE Rules > VEE Group** .
2. Enter your search criteria.

You can search by VEE Group or description, or VEE Group Factor.
3. Click **Refresh**.
4. In the search results list, click the link for the VEE group you want to view or edit.

Maintaining VEE Groups

Use this procedure to maintain an existing VEE group.

You use the VEE Group portal to maintain VEE groups. This portal includes the following zones:

- **VEE Group:** Defines basic information about VEE group
- **VEE Rules List:** lists the VEE rules belonging to the group
- **Referencing VEE Rules List:** lists the VEE rules that reference the group
- **Referencing VEE Group Factors List:** lists the VEE group factors that reference the group
- **Referencing Measuring Component Type List:** lists the measuring component types that reference the group
- **Referencing Measuring Component List:** lists the measuring components that reference the group

To maintain a VEE group:

1. Select **Admin Menu > VEE Rules > VEE Group** to navigate to the VEE Group portal.
2. Search for and select the appropriate VEE group.
3. Click the **Edit, Duplicate, or Delete** button as appropriate.
4. To add a VEE rule to the VEE group, click the **Add Rule** link in the VEE Rules List zone title bar. See [Creating VEE Rules](#) for more information about creating VEE rules.
5. To change the sequence of VEE rules for the group, click the **Resequence Rules** link in the VEE Rules List zone title bar, edit the Execution Sequence in the Resequence Rules dialog, and click **Save**.

Working with VEE Rules

This section describes common tasks related to working with VEE rules.

Creating VEE Rules

Use this procedure to create a new VEE rule.

Prerequisites: You must define at least one VEE group before you can create VEE rules.

1. Select **Admin Menu > VEE Rules > VEE Rule+** .
2. Search for and select the VEE group to which the new VEE rule will belong.
3. Select the business object that will define the VEE rule.
4. Click **OK**.
5. Enter a name, sequence number, description, and detailed description for the rule.
6. Select the category for the rule.
7. Enter the Start Date and (optional) Stop Date for the rule.
8. Complete the remaining fields and sections.

Note: The remaining fields and sections are based on the VEE rule business object you selected.

9. Click **Save**.
10. To define eligibility criteria for the rule, click the **Add** link in the Eligibility Criteria List zone title bar. See [Defining Eligibility Criteria for a VEE Rule](#) for more information.

VEE Rule Search

Use this procedure to search for a VEE Rule on the VEE Rule Query portal.

1. Select **Admin Menu > VEE Rules > VEE Rule** .
2. Enter your search criteria.
You can search by VEE Rule or description.

3. Click **Refresh**.
4. In the search results list, click the link for the VEE rule you want to view or edit.

Maintaining VEE Rules

Use this procedure to maintain an existing VEE rule.

You use the VEE Rule portal to maintain VEE rules. This portal includes the following zones:

- **VEE Rule:** Defines the VEE rule, including parameters used when executing the rule
- **Eligibility Criteria List:** lists the eligibility criteria defined for the rule

To maintain a VEE rule:

1. Select **Admin Menu > VEE Rules > VEE Rule** to navigate to the VEE Rule portal.
2. Search for and select the appropriate VEE rule.
3. Click the **Edit**, **Duplicate**, or **Delete** button as appropriate.
4. To define eligibility criteria for the rule, click the **Add** link in the Eligibility Criteria List zone title bar. See [Defining Eligibility Criteria for a VEE Rule](#) for more information.

Defining Eligibility Criteria for a VEE Rule

Use this procedure to define eligibility criteria for a VEE rule.

Prerequisites: You must create a VEE rule before you can define eligibility criteria.

1. Click the **Add** link in the Eligibility Criteria List zone title bar.

Note: If your system supports more than one eligibility criteria business object, you will be prompted to select a business object for the eligibility criteria.

2. Enter a sequence number, description, and detailed description for the criteria.
3. Complete the Criteria Comparison section as follows:
 - **Criteria Field:** the algorithm used to retrieve the value of the criteria field
 - **Comparison Operator:** the operator used in the comparison
 - **Value:** a user-specified value to which the retrieved value is compared (using the comparison operator)
4. Complete the Comparison Results section as follows:
 - **If True:** the action to take if the comparison is true
 - **If False:** the action to take if the comparison is false
 - **If Insufficient Data:** the action to take if there is insufficient data to perform the comparison
5. Click **Save**.

Chapter 5

Reference Topics

This section provides reference information to support tasks.

Glossary

This glossary provides definitions of commonly used terms.

[A-C](#) [D-G](#) [H-K](#) [L-O](#) [P-R](#) [S-U](#) [V-Z](#)

Activity	A record of a communication related to a device, measuring component, etc. Every activity must reference an activity type.
Activity Type	Defines properties common to a specific type of activity.
Aggregator	A class of measuring component that stores measurements that represent an summarization of other measurements from a potentially diverse set of devices. For example, an aggregator may derive the sum of the natural gas consumption of all residential customers in a particular postal code within the utility's service territory.
Advanced Metering Infrastructure (AMI)	Refers to systems that measure, collect and analyse energy usage, and interact with advanced devices such as electricity meters, gas meters, heat meters, and water meters, through various communication media either on request (on-demand) or on pre-defined schedules.
Automatic Meter Reading (AMR)	The technology of automatically collecting consumption, diagnostic, and status data from water meter or energy metering devices (water, gas, electric) and transferring that data to a central database for billing, troubleshooting, and analyzing.
Business Service - Add Scalar Value To Intervals	Business service that uses the Apply Formula measurement service to add a scalar value to the value of a specified set of interval data.

Business Service - Adjust Intervals to Supplied Value	Business service that uses the Apply Formula measurement service to adjust the total value of a specified set of interval data to a scalar value.
Business Service - Divide Intervals By Scalar Value	Business service that uses the Apply Formula measurement service to divide the values of a specified set of interval data by a scalar value.
Business Service - Multiply Intervals By Scalar Value	Business service that uses the Apply Formula measurement service to multiply the values of a specified set of interval data by a scalar value.
Business Service - Subtract Scalar Value From Intervals	Business service that uses the Apply Formula measurement service to subtract a scalar value from the value of a specified set of interval data.
Consumption	A measurement by a given device of the amount of energy, water, gas, etc. consumed over a given time period. Synonymous with the term "measurement".
Consumptive	Describes a measuring component for which readings are equivalent to the consumption. For example, if we receive a reading of 400 on January 15 and a reading of 600 on February 15, a consumptive measuring component's consumption between January 15 and February 15 would be 600 (not 200).
Contact	An individual or a business entity with which a company has contact. Each contact must reference a contact type.
Contact Type	Defines the properties of a class of entities (businesses, persons).
Contact - Email	Email addresses related to a contact
Contact - Identifier	Identifiers related to a contact, such as social security number, driver's license number, or the contact's ID in a prior system.
Contact - Name	Names related to a contact
Contact - Phone	Phone numbers related to a contact
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Demand	The rate at which a commodity is delivered at a given instant or averaged over a designated time. For electricity, demand is often expressed in kilowatts (kW) or kilovolt-amperes (kVa).
Device	A physical or virtual object that holds one or more measuring components that can produce data to be handled by the system. Devices can include meters, substations, transformers, demand response devices, weather stations, etc.
Device Configuration	A specific configuration of a device. Over time, a device can have many configurations. Use of effective-dated device configuration allows the device to retain its identifier(s) even while the quantities it is measuring are changing.
Device Configuration Type	Defines the properties of device configurations of this type, including the valid types of measuring components that can be configured for the device.
Device Type	Information about a class of devices, including properties that apply to all devices of a type, but can be overridden for an individual device.
Distribution Company (DISCO)	A utility company that constructs and maintains the distribution network that delivers a commodity to customers. Depending upon the regulations within the territory, a distribution company may or may not be responsible for billing the customer.
Exception Type	Defines properties common to many exceptions, including the category of the exception.
Factor	A centrally stored set of values for use in validation rules, bill determinants calculations, and other processes. A factor can have different values

depending upon some definable attribute of a system object, such as customer size associated with a service point. The values are effective-dated so that changes over time are retained. Examples of factors can include minimum/maximum thresholds, loss factors, etc. Classes of factors are defined that can have numeric values (as in the above examples), or values pointing to profile measuring components or VEE groups.

Factor Value

An effective-dated value - either a number, a profile measuring component, a VEE group, or some custom-defined value - assigned to a factor and associated to the value of some attribute of a system object. For example, let's assume that a service point can be classified as residential, commercial, or industrial. The tolerance percentage by which a customer's consumption can exceed last month's consumption can be tighter as the customer's SP increases in size. An example configuration of factor values for a single factor called "tolerance percentage" could be: Residential - 20% Commercial - 10% Industrial - 5%.

Final Measurement

Measurement data that has been validated, and if necessary, edited & estimated, and is ready for use in down-stream processing such as bill determinants calculations. Only one final measurement can exist for a given date/time for a given measuring component; one final measurement exists per interval, and likewise one final measurement exists for each scalar reading. In both cases, the final measurement value stored represents the amount consumed between its date/time and the prior final measurement's date/time.

Head-End System

A system that collects measurement data and meter events for eventual submission to the application. Many devices can communicate to the application through a single head-end system. A utility may have numerous head-end systems through which they communicate with devices.

Identifiers

Names, numbers, or other values used to identify an entity within the system, including devices, measuring components, service points, etc.

Inbound Communication

Communication sent to MDF (Meter Data Framework) from a head-end system or other external system. Each inbound communication has an associated communication type that defines common properties of the communication.

Independent System Operator (ISO)

The entity charged with reliable operation of the grid and provision of open transmission access to all market participants on a non-discriminatory basis.

Initial Measurement Data (IMD)

A set of one or more readings or measurements that have been loaded into the application, usually in a format that is standard for MDF (Meter Data Framework). Over its lifecycle (as pertains to MDM - Meter Data Management), any readings within the IMD are converted into consumption, which is then typically subject to VEE processing and then finalized - meaning stored as final measurements. Only initial measurements can be edited directly by end users of MDM. An IMD for a scalar measuring component will have a single measurement (along with a reading from which the measurement value is derived), while an IMD for an interval measuring component will usually contain multiple interval measurements.

Installation Constant

An installation constant is set to a value other than 1 as an indication that when calculating consumption, the installation requires that measurement data be multiplied by this value to get accurate results.

Installation Event	A device's installation information at a service point. The install event represents both the installation and removal of a device. It also records turning a device on or off while it is installed at a service point.
Installation On and Off History	A single installation event records each time the device is turned on and turned off while it is installed at a service point.
Interval Channel (Measuring Component)	A business object (BO) that represents channels associated to a device.
Interval Channel Type – Physical (Measuring Component Type)	A business object (BO) that maps properties of interval measuring component types for those Measuring Components that are part of physical devices.
Interval Channel Type – Scratchpad (Measuring Component Type)	A business object (BO) that maps properties relevant to stand-alone measuring components functioning as scratchpads for interval data manipulation.
Interval Data	Time-series data in which measurements are captured in pre-defined intervals (5 minutes, 15 minutes, 1 hour, etc.). A set of interval measurements for an interval measuring component composes an individual initial measurement data record.
Interval Data Services	Services used to access and manipulate interval measurements.
Interval Scratchpad (Measuring Component)	A stand-alone measuring component that provides the user with a means to manipulate measurement data without affecting existing measurements.
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Manual Meter	A business object (BO) used to model a meter that does not accommodate two-way communications and must be read manually.
Manual Meter Installation Event	A business object (BO) that defines the lifecycle of the installation of a manual meter at a service point.
Manual Meter Type	A business object (BO) used to model properties for meters that are manually read.
Manufacturer	The company that makes devices, defined as an attribute of the device itself.
Market	The jurisdiction or regulatory environment in which a service point participates, defining the valid service providers and their roles. While each service point specifies only one market, different service points throughout the utility's service territory can be linked to different markets.
Market Participant	A variety of service provider; a company with a role within a given market such as a retailer or a distribution company.
Market - Fallback Service Provider	For a given market relationship type, a fallback service provider may be defined at the market level, rather than storing the information redundantly on each service point. For example, an entire market might have only one ISO, and if the utility wants to store this information, they can identify the ISO as a fallback service provider for the market and the market relationship type of ISO.
Market - Relationship Type	The valid roles within a market (ISO, Distribution Company, Retailer, etc.) that have some business significance in the application.
Market - Valid Service Provider	The valid service providers for each market relationship type relevant for a given market. The service providers referenced on a service point must be valid for the combination of the service point's market and the market relationship type.
Measurement	A measurement in MDM is synonymous with consumption, which implies that constants or multipliers may have been applied to its value. This

Measurement Condition	term can be used in the context of an IMD or in reference to Final Measurements.
Measuring Component	Codes that indicate the circumstances (estimated, missing, etc.) of individual measurements. Conditions are assigned to both scalar and interval measurement data both for initial measurement data and final measurements.
Measuring Component Summary	A single point for which data will be received and stored in the system. A measuring component can be associated to a physical device, which can have one or more measuring components, or it can be stand-alone, meaning that it is not associated to a physical device (for example, an aggregator or interval scratchpad).
Measuring Component Type	A zone shown on the VEE Group portal that displays a list of measuring components that reference a given VEE group.
Measuring Component Types Referencing Group	The definition of the most important properties of a measuring component, including what it measures, how regularly it measures it, whether it should be connected to a physical device or if it's used as a scratchpad or an aggregator, how its final measurements should be stored and how its user-defined values should be calculated, what rules govern VEE for Measuring Components of the type, as well as numerous display properties that are relevant within MDM. The measuring component type also defines sets of valid attribute values for groups of measuring components belonging to the type.
Measurement Cycle	A zone shown on the VEE Group portal that displays a list of Measuring Component types that reference the VEE group being viewed.
Measurement Cycle Route	The measurement cycle can serve two purposes: it can define the schedule for manual meter reading of devices at service points in that cycle, and it can also be configured to define when to create usage transactions for usage subscriptions associated to service points in the cycle.
Measurement Cycle Route Sequence	The route used to collect measurements for a given measurement cycle.
Measurement Cycle Schedule	The sequence in which measurements are collected along a measurement route.
Measurement Service	Defines the dates on which devices are scheduled to be read.
Measurement Service - Apply Formula	Java services that can be invoked to manipulate interval and scalar measurements. Measurement services are invoked by measurement functions (available through certain zones within MDM), and are also used within processing of usage and VEE rules.
Measurement Service - Apply TOU Map To Interval Measuring Component	Service used to apply a formula to a specified set of interval data, either by applying a summary function against all intervals of the set, or by manipulating each individual interval in series via a formula using declared constants, or within the context of other sets of input interval data.
Measurement Service - Axis Conversion	Service used to apply a TOU map to a set of intervals for a specified date/time range, thereby isolating and summarizing those intervals that occurred during a specific time of use.
Measurement Service - Convert Scalar Consumption To Interval	Service used to convert interval data between units of measure (UOMs) and interval sizes (SPIs), including the conversion between peak and consumption-oriented UOMs.
	Service used to convert a scalar consumption value to a set of interval measurements.

Measurement Service - Create Intervals	Service used to create interval data based on supplied parameters (UOM, SPI, number of intervals, value, etc.)
Measurement Service - Extract Subset of Intervals	Service used to extract a subset of interval data from a specified set of intervals.
Measurement Service - Identify Spikes	Service used to identify spikes in a specified set of interval data based on a spike percentage tolerance.
Measurement Service - Insert Intervals	Service used to insert one or more intervals into a set of interval measurements.
Measurement Service - Merge Intervals	Service used to merge a subset of interval data with a specified set of intervals (where overlaps occur, the subset intervals replace the original intervals).
Measurement Service - Remove Intervals	Service used to remove one or more intervals from a set of interval measurements.
Measurement Service - Retrieve Interval Consumption	Service used to retrieve one or more interval measurements.
Measurement Service - Retrieve Scalar Consumption	Service used to retrieve one or more scalar measurements.
Measurement Service - Set Condition	Service used to set the condition (status) code of a specified set of interval data.
Measurement Service - Shift Intervals	Service used to shift one or more intervals forward or backward in time.
Meter	A device used to measure a quantity of a service (electricity, gas, etc.) delivered to a service point.
Meter Read Download Activity Type	The structure and business rules applicable to downloading meter read information onto a handheld device.
Model	A specific model of a device produced by a manufacturer. Models for a single manufacturer can have diverse service types.
Multiplier	A value that may be applied to adjust the consumption values calculated for a device. Examples include meter/device multiplier, installation constant, loss factor, etc.
Normalized storage	Storing measurement data in a manner that allows for aggregation and reporting of data through database logic (SQL). Applies to both scalar and interval measurements.
Off-Peak Period	A time period during which the least amount of some consumable is being used. OR A period of relatively low system demand as specified by the supplier.
On-Peak Period	A time period during which the greatest quantity of some consumable is being used OR A period of relatively high system demand as specified by the supplier.
Outbound Communication	Communication sent from product MDF (Meter Data Framework) to a head-end system or other external system.
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Peak	The maximum value for some measurable quantity recorded over a specified time period. A measuring component that measures peak quantities will record the highest value for the quantity over a period of time.
Peak Demand	The maximum rate of commodity consumption over a specific period of time.
Processing Method	Methods used to define the format or means by which a service provider receives data from the application, such as bill determinants, interval data,

or meter events. Processing methods are also used to define how to create information internal to the application such as initial measurement data and usage transactions. Processing methods can also be used to define the information an external system wishes to subscribe to receive from our application. A BO or batch extract code are the typical processing methods defined for the transmission of data to a service provider.

Processing Role

Each processing method has a processing role, which defines the purpose of the processing method. Some examples of processing roles include:
* Initial Measurement Creation (D1) * Device Activity Notification (D1) * Usage Transaction Notification (D2) * Usage Transaction Creation (D2)

Reading

The value recorded by a measuring component at a given point in time. A reading often needs to be interpreted in the context of an earlier reading in order to derive a consumption value that would be stored as a measurement. For example, a reading of 1000 for a subtractive measuring component taken on February 1 in the context of a prior reading of 600 taken on January 15 would result in a consumption (measurement) of 400. Readings can either be consumptive or subtractive.

Register (Measuring Component)

A business object (BO) that represents a scalar register found on a standard or smart meter. It does not have a lifecycle, and should be associated with a device configuration.

Register Type – Physical (Measuring Component Type)

Measuring component type business object (BO) that enumerates the properties used by scalar registers.

Retail Company

A company that is authorized to buy and re-sell a commodity (such as electricity or gas) directly to customers based on territorial regulations.

Scalar Usage

A measurement of the amount of energy, water, gas, etc. consumed for a given measuring component for a given time period.

Seconds Per Interval

Seconds Per Interval, a way of expressing the length of time between which measurements are taken.

Service Order Requests

Requests that orchestrate the field activities (FAs) and smart meter messages (commands) necessary to change the service point and its installation, to enable or disable service, cut service for non-payment, etc.

Service Point

A location at which a company supplies service. Used to store information describing the type of service and how it is measured.

Service Point Identifier

A collection of identifiers for a given service point.

Service Point Identifier Type

Specific types of service point identifiers.

Service Point Parent

The parent of one or more service points.

Service Point Type

A specific type of service point. Defines how the application manages many aspects of the service point's behavior.

Service Provider

External entities that serve various roles relative to the application. These can be a head-end system, a billing system to which the application sends bill determinant data, a market participant in a deregulated environment, an outage management system that receives meter event data from the application, or other parties that require or provide information to the system.

Service Quantity Identifier

Service Quantity Identifier - further distinguishes between measured quantities that have identical UOM/TOU combinations, including situations in which the distinguishing identifier of a UOM is not accurately described as a TOU. SQIs can also be used as a stand-alone representation of

	a service quantity that is not measured (i.e. one that is not properly described as a UOM) within a Usage SQ collection (e.g. a billing determinant).
Service Type	Specific types of service, such as electric, gas, steam, etc.
Smart Meter	A business object (BO) used to model smart meters of different service types.
Smart Meter Installation Event	A business object (BO) that defines the lifecycle and rules for installing a smart meter at a service point.
Smart Meter Type	A business object (BO) for device type that references a head-end system as well as a collection of head-ends that are valid for devices of the type, and indicates whether incoming data incorporates the daylight savings time shift. Additionally, the smart meter type includes a list of valid device configurations for its devices.
Subtractive	Describes a measuring component for which consecutive readings must be subtracted to derive a consumption value.
Time of Use	Time of Use - modifiers for a given unit of measure that indicate a period of time during which a quantity has been used, such as On-Peak (meaning during a time when the greatest quantity of some consumable is being used), Off-Peak (meaning during a time when the least amount of some consumable is being used), etc.
TOU Group	A group of TOUs used to limit the set of TOUs usable in a TOU schedule. TOU Groups are used when defining a TOU schedule via a TOU map template.
TOU Map	A collection of TOU map data derived via a given TOU map template at a specific interval size (TOU). A TOU map is typically specified when configuring a usage calculation rule for TOU mapping. This TOU map's data will then be used when summarizing the interval data for each TOU period.
TOU Map Data	An interval date/time and its associated TOU as defined by a TOU map template. For example, if the schedule defined for a TOU map template specifies that the period on weekdays from 9 AM to 5 PM falls into On-Peak, and the data is hourly, rows would be stored in the TOU map data table with the date/time 5/3/2010 at 10 AM, 5/3/2010 at 11 AM, 5/3/2010 at 12 PM, etc., each with a value of On-Peak.
TOU Map Template	The schedule used for TOU map data generation, for example defining year, month, and day ranges and which TOUs should be used during each.
TOU Map Type	Defines certain important properties of TOU maps of the type, including the interval size (SPI) and the valid TOU map templates.
Unit of Measure	Unit of Measure - identifies quantities measured, such as KWH, KW, cubic feet, degrees Celsius, etc.
User-Defined Measurement Values	Additional values optionally stored with a given measurement that can be used in various calculations. For example, a customer's gas consumption might be measured in cubic feet, but needs to be sent to a billing system in therms. A user-defined value to convert consumption in cubic feet into therms can be configured, and the therm value will then be stored with the measurement in cubic feet.
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Validation, Estimation, and Editing (VEE)	The process by which initial measurement data is validated, estimated (if necessary) and edited (if necessary) based on a set of user-defined rules.

VEE Eligibility Criteria	User-definable conditions that could cause a given VEE rule to be applied or skipped. This could involve the evaluation of some attribute of the device or measuring component, or something else entirely.
VEE Exception	An exception generated during Validation, Estimation and Editing (VEE) processing of initial measurement data. Exceptions are assigned a severity that is used in determining whether or not the initial measurement data should be transitioned into an exception state.
VEE Group	A collection of VEE Rules.
VEE Group Matrix (Factor)	A VEE rule within a VEE group can be configured to pick from a list of VEE groups (referred to as a matrix) whose rules to execute next. This list of VEE groups is configured as the values of a factor. One example of its use could be to call geographically-specific VEE groups from within a larger-purpose group. A residential VEE group might contain a rule that will pick the VEE group to execute based on service point location, where the VEE Group Matrix specifies: SP in the North - VEE Group N SP in the East - VEE Group E SP in the South - VEE Group S
VEE Group Matrix (Factor) Referencing Group	A zone that displays a list of VEE group matrices (factors) that reference the VEE group being viewed in the VEE group portal.
VEE Rule	Standard and custom Validation, Estimation and Editing (VEE) Rules that perform checking and/or manipulation of initial measurement data.
VEE Rules Referencing Group	A zone that displays a list of VEE rules that reference the VEE group being viewed in the VEE group portal.

Standard Actions for Admin-Level Data Maintenance

A standard set of maintenance portals are used to define objects that are maintained from the Admin menu. These portals use a common interface and support a set of standard actions for creating and maintaining objects.

The following quick reference table provides the basic steps for performing any of the standard actions.

Action	Steps
Add	Click the Add link in the list or search zone title bar. Provide all necessary information and click Save .
Edit	Select the object you want to edit from the list zone, then click the Edit icon. Enter your changes and click Save .
Delete	Select the object you want to delete from the list zone, then click the Delete icon. Confirm the deletion.
Duplicate	Select the object you want to duplicate from the list zone, then click the Duplicate icon. Key fields will be cleared in the new record. Complete all required fields and click Save .
Broadcast	Select the object you want to broadcast from the list zone, then click the Broadcast icon. The details and available actions for the selected object are displayed in the appropriate zones.
Activate or Deactivate	Select the object you want to activate or deactivate from the list zone, then click Activate or Deactivate as appropriate.


Note: These actions only apply to objects that support an Active and Inactive status, such as activity types. When such an object is


Action	Steps
	deactivated, no new objects of this type can be created.
Sort	Click a column header in the list zone to resort by the values in that column. Click again to reverse the order (from ascending to descending or descending to ascending).
Filter	If a list zone supports filtering, a Filter icon is displayed in the list zone title bar (on the far right). Click the Filter icon, then select the field by which you want to filter and click Refresh .
View Record Information	Click the Record Information plus sign (+) to display details related to the current object, including ID, Business Object, and Create Date/Time (as applicable).
View or add log entries	Click the Log tab to view log entries. To add an entry, click the Add link in the list zone title bar and provide the requested information.

Standard Actions for Data Maintenance

This topic provides the basic steps for performing standard actions on data maintained from the Main Menu.

Note: The system displays buttons for all valid actions, based on the object's current status, your user privileges, and your system's configuration. The following table provide instructions for performing all standard actions.

Action	Steps
Edit	<p>From the Main Menu:</p> <ol style="list-style-type: none"> 1. Select the option for the object you want to maintain. A query portal is displayed. 2. Enter search criteria to locate the object. The maintenance portal is displayed. 3. Click the Edit button in the Record Actions section. 4. Enter your changes. Click  to display field descriptions. 5. Click Save.
Delete	<p>From the Main Menu:</p> <ol style="list-style-type: none"> 1. Select the option for the object you want to delete. A query portal is displayed. 2. Enter search criteria to locate the object. The maintenance portal is displayed. 3. Click the Delete button in the Record Actions section. A confirmation dialog opens asking you to confirm the deletion of the record. Click OK to delete the object.
Duplicate	<p>From the Main Menu:</p> <ol style="list-style-type: none"> 1. Select the option for the object you want to duplicate. A query portal is displayed. 2. Enter search criteria to locate the object. The maintenance portal is displayed.

Action	Steps
View Record Information	<ol style="list-style-type: none"> 3. Click the Duplicate button in the Record Actions section. A new record is created and the Add/Edit screen is displayed. Key fields will be cleared in the new record. 4. Complete all required fields. Click  to display field descriptions. 5. Click Save. <p>Click the Record Information plus sign (+) to display details related to the current object, including ID, Business Object, and Create Date/Time (as applicable).</p>
View or add log entries	<p>From the Main Menu:</p> <ol style="list-style-type: none"> 1. Select the option for the object you want to manage log entries for. A query portal is displayed. 2. Enter search criteria to locate the object. The maintenance portal is displayed. 3. Click the Log tab. 4. To add a log entry, click the Add link in the Log zone title bar. 5. Type the log detail and click Save.

Viewing and Adding Log Entries

Use the Log tab to view or add log entries for the current object.

The log displays a list of user and system actions associated with an object, such as when it was created, last updated, or transitioned to different status. For each log entry, the system displays the date and time the action occurred, the user/system that initiated the action, the type of action, and related object, if any.

To create a new log entry, click the **Add Log Entry** link in the zone title, then enter log entry details and click **Save**. Your user ID is saved with the log entry.

Chapter 6

FAQs

This section provides answers to commonly asked questions.

How Do I...?

This topic answers questions about how to perform day-to-day functions.

Q. How do I configure a change in a device's configuration?

A. When a device's configuration changes (for example, if a meter multiplier changes on a measuring component), you would do the following:

1. Edit the measuring components impacted by the change as appropriate (changing the multiplier in this example).
2. Create a new device configuration for the device, with an effective date that reflects the date of the change in the device's configuration.
3. Add the updated measuring components to the new device configuration.
4. Remove the active install event for the old device configuration.
5. Create a new install event for the new device configuration, using the service point from the previous install event.

Q. How do I configure a meter change out (a situation where a new physical meter recording the same values is installed at a service point)?

A. When a physical meter is changed or replaced, do the following:

1. Retire the device that represents the physical meter being replaced.
2. Create a new device that represents the new physical meter.
3. Create a new device configuration for the new device, with an effective date that reflects the date on which the new meter will be active.
4. Add the measuring components from the previous device (the device being replaced) to the new device configuration.
5. Remove the active install event for the previous device's device configuration.
6. Create a new install event for the new device configuration, using the service point from the previous install event.

Q. How do I re-use VEE rules? Can you provide an example of configuring VEE groups and rules that illustrates how groups and rules can be re-used?

A. The following is a simple example that shows how this might be done. Assume that you need to apply the following VEE rules:

- Three VEE rules to be applied to all measuring components (designated as A1, A2, and A3)
- Three VEE rules to be applied to interval measuring components only (designated as I1, I2, and I3)
- Two VEE rules to be applied to scalar measuring components only (designated as S1 and S2)

One approach would be as follows:

1. Create a VEE group for each set of VEE rules, named as follows:
 - ALL_RULES
 - INTERVAL_RULES
 - SCALAR_RULES
2. Create the VEE rules to be applied to all measuring components (A1, A2, and A3) in the ALL_RULES group.
3. Create the VEE rules to be applied to interval measuring components (I1, I2, and I3) in the INTERVAL_RULES group.
4. Create the VEE rules to be applied to scalar measuring components (S1 and S2) in the SCALAR_RULES group.
5. Create a Execute VEE Group VEE rule for each of the three groups as follows:
 - ALL_GRP (references the ALL_RULES group)
 - INTERVAL_GRP (references the INTERVAL_RULES group)
 - SCALAR_GRP (references the SCALAR_RULES group)
6. Create a VEE group to be used with interval measuring components called INTERVAL_MCS that contains the following rules:
 - ALL_GRP
 - INTERVAL_GRP
7. Create a VEE group to be used with scalar measuring components called SCALAR_MCS that contains the following rules:
 - ALL_GRP
 - SCALAR_GRP

Q. How do I configure VEE rules that are only applied under certain circumstances?

A. You can define eligibility criteria for VEE rules that specify that the rule should only be executed when specific circumstances apply.

Q. How do I apply a set of VEE rules to a group of measuring components?

A. You can define VEE groups for a measuring component type, in which case, all measuring components of that type will use the VEE groups defined for the measuring component type.

What's the Difference Between ...?

This topic describes the difference between terms and concepts that are closely related.

Q. What's the difference between Oracle Utilities meter data framework and Oracle Utilities Meter Data Management?

A. **Oracle Utilities meter data framework** provides shared functionality, including device management, device installation management, and Validation, Editing, and Estimation used by Oracle Utilities Meter Data Management, Oracle Utilities Smart Grid Gateway, and other Oracle Utilities products

Oracle Utilities Meter Data Management is an application based on Oracle Utilities meter data framework that provides additional device management, device installation management, and VEE functionality, in addition to usage management and analytic tools.

Q. What's the difference between a device and a measuring component?

A. A **device** is a physical or virtual object that holds one or more measuring components that produce data to be handled in the system.

A **measuring component** is a single point for which data will be received and stored in the system.

Q. What's the difference between a device type and device configuration?

A. A **device type** defines information about a class of devices, including properties that apply to all devices of a type.

A **device configuration** defines a specific configuration of a device as of a certain time.

Q. What's the difference between a measuring component and a scratchpad measuring component?

A. A **measuring component** is a single point for which data will be received and stored in the system.

A **scratchpad measuring component** is a measuring component that provides users with a means to manipulate "scratchpad" (or non-production) measurement data without affecting existing measurements.

Q. What's the difference between a service point and a service provider?

A. A **service point** is a location at which a company supplies service. Service points are used to store information describing the type of service and how it is measured.

A **service provider** is an external entity that serves a role relative to the application. These can be a head-end system, a billing system to which the application sends bill determinant data, a market participant in a deregulated environment, an outage management system that receives meter event data from the application, or other parties that require or provide information to the system.

Q. What's the difference between a measurement cycle and a measurement cycle route?

A. A **measurement cycle** defines the schedule for manual meter reading of devices at service points in that cycle.

A **measurement cycle route** is the route used to collect measurements for a given measurement cycle.

Q. What's the difference between a VEE rule and a VEE group?

A. A **VEE rule** is a standard or custom Validation, Estimation and Editing (VEE) rules that performs checking and/or manipulation of initial measurement data.

A **VEE group** is a collection of VEE rules .

Q. What's the difference between a VEE Group Factor VEE rule and a Execute VEE Group VEE rule?

A. A **VEE Group Factor VEE rule** is a VEE rule used to define business logic to allow reference to a factor (of type VEE group) where the values of the factor are a list of VEE groups. This allows creating a VEE rule that can select from a list of VEE groups (referred to as a matrix) whose rules to execute next.

An **Execute VEE Group VEE rule** is a VEE rule used to define business logic to allow reference to a VEE group. This allows rules that are used frequently to be bunched under a single VEE group, which can be referenced/called by other rules as needed. For example, if a set of standard rules should be applied to all initial measurement data for a certain type of measuring component, this set of rules can be configured as part of a VEE group, which is referenced by a single VEE rule of this type.

Q. What's the difference between a unit of measure and a service quantity identifier?

A. A **unit of measure** (UOM) identifies quantity that is measured by a measuring component, such as KWH, KW, cubic feet, degrees Celsius, etc.

A **service quantity identifier** further distinguishes between measured quantities that have identical UOM/time of use (TOU) combinations, including situations in which the distinguishing identifier of a UOM is not accurately described as a TOU. SQIs can also be used as a stand-alone representation of a service quantity that is not measured (i.e. one that is not properly described as a UOM) within a usage service quantity collection (such as a billing determinant).

Can I ...?

This topic answers questions about whether certain actions or configurations are permitted.

Q. Can I apply a set of VEE rules to a group of measuring components?

A. Yes. If the group of measuring components are all based on the same measuring component type, you can create a VEE group that contains the set of VEE rules you wish to apply, and assign the group to the measuring component type.

Q. Can I configure VEE rules that are only applied under certain circumstances?

A. Yes. By defining eligibility criteria for VEE rules, you can define the circumstances under which the rules are applied or skipped.

Q. Can I configure VEE rules so that different sets of rules are executed based on a specific property of a device or measuring component?

A. Yes. You can create a VEE Group Factor rule that references a factor whose values are a list of VEE groups. This rule can select from the list of VEE groups (referred to as a matrix) whose rules to execute next.

Q. Can I create VEE groups that can be reused by more than one measuring component or measuring component type?

A. Yes. You can create an Execute VEE Group rule that reference a VEE group. When this rule is executed, the rules within the referred VEE group are executed.