Oracle® Manufacturing Operations Center

Implementation Guide

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Oracle Manufacturing Operations Center Implementation Guide, Release 12.1

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Send Us Your Comments

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Preface

Intended Audience

Welcome to Release 12.1 of the *Oracle Manufacturing Operations Center Implementation Guide*.

See Related Information Sources on page xii for more Oracle E-Business Suite product information.

Deaf/Hard of Hearing Access to Oracle Support Services

To reach Oracle Support Services, use a telecommunications relay service (TRS) to call Oracle Support at 1.800.223.1711. An Oracle Support Services engineer will handle technical issues and provide customer support according to the Oracle service request process. Information about TRS is available at http://www.fcc.gov/cgb/consumerfacts/trs.html, and a list of phone numbers is available at http://www.fcc.gov/cgb/dro/trsphonebk.html.

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13 Setting Up Tags and Contextualization
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15 Setting Up the OBIEE Repository and Dashboards
16 Maintenance of Manufacturing Operations Center

Related Information Sources

Integration Repository

The Oracle Integration Repository is a compilation of information about the service endpoints exposed by the Oracle E-Business Suite of applications. It provides a complete catalog of Oracle E-Business Suite's business service interfaces. The tool lets users easily discover and deploy the appropriate business service interface for integration with any system, application, or business partner.

The Oracle Integration Repository is shipped as part of the E-Business Suite. As your instance is patched, the repository is automatically updated with content appropriate for the precise revisions of interfaces in your environment.

Oracle Advanced Planning Command Center User's Guide

Oracle Advanced Planning Command Center unifies all the Advanced Planning applications, such as Demand Management, Real-Time Sales and Operations Planning, Strategic Network Optimization, Advanced Supply Chain Planning, Distribution Requirements Planning, and Inventory Optimization. It provides a unified user interface and a single repository for all data. Its flexibility allows users to access data from external supply chain planning applications and make it available for reporting and analysis within a unified user interface based on Oracle Business Intelligence - Enterprise Edition.

Oracle Demand Signal Repository User Guide

Oracle Demand Signal Repository is used by manufacturers to collect detailed retailer point-of-sale and other demand data, and analyze the data to identify issues and opportunities. Typical retail data sources include daily point-of-sale, on-hand inventory, store orders and receipts, distribution center withdrawals, returns, store promotions and sales forecasts.

Oracle Service Parts Planning Implementation and User Guide

Oracle Service Parts Planning is used by repair service operations to ensure that the right parts are available at the right locations and at the right times, in usable condition. It allows planners to forecast and manage the distribution of individual parts in the most efficient manner possible.

Do Not Use Database Tools to Modify Oracle E-Business Suite Data

Oracle STRONGLY RECOMMENDS that you never use SQL*Plus, Oracle Data Browser, database triggers, or any other tool to modify Oracle E-Business Suite data unless otherwise instructed.

Oracle provides powerful tools you can use to create, store, change, retrieve, and maintain information in an Oracle database. But if you use Oracle tools such as SQL*Plus to modify Oracle E-Business Suite data, you risk destroying the integrity of your data and you lose the ability to audit changes to your data.

Because Oracle E-Business Suite tables are interrelated, any change you make using an Oracle E-Business Suite form can update many tables at once. But when you modify Oracle E-Business Suite data using anything other than Oracle E-Business Suite, you may change a row in one table without making corresponding changes in related tables. If your tables get out of synchronization with each other, you risk retrieving erroneous information and you risk unpredictable results throughout Oracle E-Business Suite.

When you use Oracle E-Business Suite to modify your data, Oracle E-Business Suite automatically checks that your changes are valid. Oracle E-Business Suite also keeps track of who changes information. If you enter information into database tables using

database tools, you may store invalid information. You also lose the ability to track who has changed your information because SQL*Plus and other database tools do not keep a record of changes.

1

Manufacturing Operations Center Introduction

This chapter covers the following topics:

- Manufacturing Operations Center Overview
- Technology Overview
- Architecture Overview
- Manufacturing Operations Center Instances
- Source Data Time Zone
- Unit of Measure Conversion
- Currency Conversion

Manufacturing Operations Center Overview

Oracle Manufacturing Operations Center enables you to monitor and improve plant performance by analyzing real-time plant floor data. You can use Oracle Manufacturing Operations Center (MOC) to integrate different types of data sources. It uses manufacturing operations data to generate real-time dashboards and reports, and it allows you to:

- Monitor production performance in real time.
- Build a foundation for continuous improvement programs.
- Facilitate data flow between ERP applications and plant floor systems.
- Enable virtual manufacturing.

Oracle Manufacturing Operations Center provides new capabilities to drive sustainability initiatives. Sustainability Aspect is a generic name used for continuous inputs consumed by companies to be able to operate and create goods or services.

Common examples of sustainability aspects are electricity, gas, oil, water, helium etc.

Oracle MOC enables you to monitor energy usage, reduce waste, and reduce green house gas emissions to help executives and managers meet the social and legislative pressures to go green.

The Sustainability Sensor Data Management system of Oracle MOC helps in accelerating sustainability improvements of companies focusing on manufacturing, innovation, or services, and enables you to:

- Monitor and analyze energy consumption, energy cost, and carbon emissions with dashboards and built-in KPIs, leveraged by Oracle Business Intelligence Enterprise Edition (OBIEE) technology.
- Integrate with smart meters, environmental management systems.
- Build automation systems and collect energy consumption and emissions data.
- Identify specific opportunities for improving energy efficiency and reduction in carbon emissions.
- Normalize and correlate energy consumption to operating conditions and production variables, and enable energy-aware manufacturing.
- Leverage as a certifiable data repository for energy usage reporting based on Global Reporting Initiative (GRI) framework and Green House Gas (GHG) protocol.

Oracle MOC enables you to convert highly granular tag data from devices into meaningful business data for reporting to business users such as Plant Managers and Operations Managers. Oracle MOC has a contextualization engine and functionality to define business meanings and processing rules for various types of tag data.

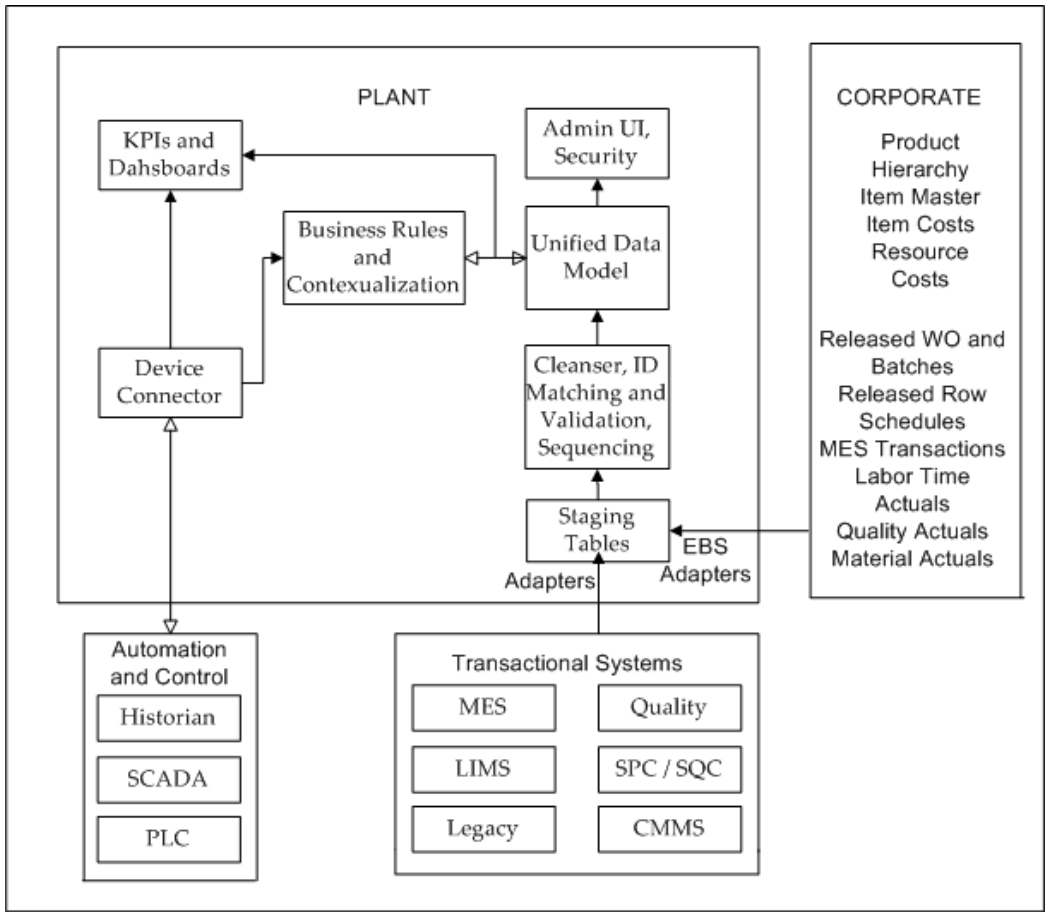
Technology Overview

Manufacturing Operations Center uses the following Oracle technologies:

- Oracle Data Warehouse Builder (OWB)
- Oracle Business Intelligence Enterprise Edition (OBIEE)
- Oracle E-Business Suite (EBS) Foundation

Architecture Overview

The following diagram provides an overview of Oracle Manufacturing Operations Center's architecture:



The diagram describes the following:

Data Model

Oracle MOC data model complies with ISA-95 standards and is optimized for intelligence and integration. ISA-95 is a standard for Enterprises to control system integration that includes batch, continuous, and discrete industries. Managed by ISA (Instrumentation, Systems and Automation Society), ISA-95 defines terminology, functional requirements, and borrows or is based on PRM (Purdue Reference Model) for manufacturing. The Oracle MOC Data model is open and scalable for capturing user specific attributes and building custom hierarchies, etc. and lets you incorporate data collection for energy consumption, energy costs, emissions of multiple sustainability aspects (i.e. electricity, gas etc.). The data model's granularity accommodates measurement frequencies collected down to a minute's level in order to perform accurate analysis and energy contextualization.

Extensibility

- Pluggable business rules (OWB mappings)

- Ad-hoc dashboards and reports with OBIEE

Connectivity

Oracle MOC supports heterogeneous systems including device data and provides wide range of options for collecting shop floor data, directly from Programmable Logic Controllers (PLCs), Supervisory Control and Data Acquisition (SCADA) systems, Meters, Sensors and Distributed Control Systems (DCSs). Oracle MOC leverages Oracle Warehouse Builder (OWB), the data warehousing tool to extract and process data. A concurrent program is used to process meter readings for sustainability aspect consumptions.

Prepackaging

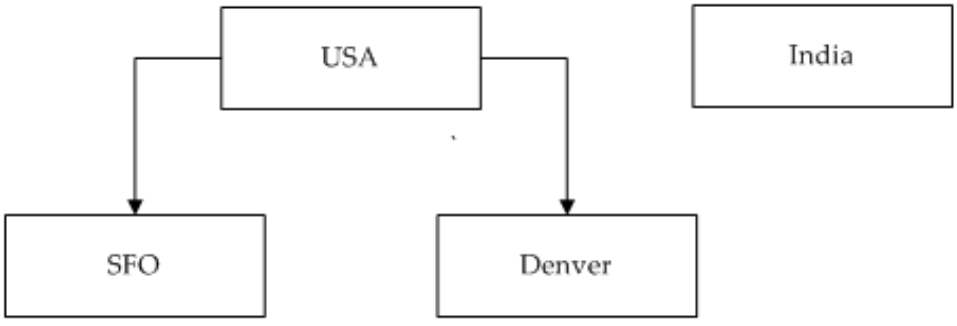
EBS Adapters: Oracle MOC is prepackaged with an EBS adapter for Release11*i*10.

KPIs and Dashboards: Oracle MOC is prepackaged with more than sixty metrics and role-based dashboards and reports.

Manufacturing Operations Center Instances

Typically, Oracle Manufacturing Operations Center (MOC) is installed locally at a plant location. There can be single or multiple plant installations. It can be installed on a server for a single plant or for multiple plants that are connected. A company may have several instances of Oracle MOC installed.

Consider the following example of a global manufacturing company with plants at two locations, in the U.S. and in India, and the U.S. has two different plant locations:



In this example, following options are available for installing MOC instances:

Option 1

- MOC Instance 01 - USA - SFO

- MOC Instance 02 - USA - Denver
- MOC Instance 03 - India

With this option, plants are not grouped together and an instance of MOC is installed at each plant and organized at the plant level.

Option 2

- MOC Instance 01 - USA
- MOC Instance 02 - India

With this option, plants are grouped by country. The plants at SFO and Denver have been grouped together into a single instance called USA.

Option 3

- MOC Instance 01 - USA & India

This option is a corporate installation for which all three of the individual plants are grouped into one instance called USA & India.

Source Data Time Zone

There is no out of the box data conversion for time zones. Use Oracle Warehouse Builder (OWB) utilities to convert data from the source time zone to the MOC time zone. MOC enables you to process the tag readings data in any valid time zone of your choice. If the tag data coming from the PLCs are from a time zone different from that of the MOC server, MOC ETLs for processing the tag readings allow the tag readings to be converted to the MOC server timezone during processing. Perform the following query to view a complete list of time zones:

```
SELECT tzname,tzabbrev FROM  v$timezone_names ;
```

Any entry from the tzabbrev column is a valid value.

Unit of Measure Conversion

There is no out of the box data conversion for unit of measure. Use OWB utilities to convert data for an item in one unit of measure for data in Manufacturing Operations Center.

Currency Conversion

There is no out of the box data conversion for currency. Use OWB utilities to convert currencies.

2

Responsibilities and Menus

Responsibilities and Menus Overview

The Menu structure for Manufacturing Operations Center Administrator responsibility is as follows:

Menu	Submenu
Setup	• Contextualization Setup • Sustainability Aspect • Site Home • Entity Hierarchy Home • Tag • Meter Home • Equipment Reason Code Setup • Event Setup • Run Requests • Lookups

Extensible Attributes Workbench	• Items • Equipments • Work Orders • Others • Batch Operation • User Defined Entities

The Menu structure for Manufacturing Operations Center User responsibility is as follows:

Menu	**Submenu**
Tag Data Workbench	• Manual Contextualization • Equipment Downtime Reasons • Equipment Scrap Reasons
Extensible Attributes Data	• Items • Equipments • Work Orders • Others • Batch Operation • User Defined Entities

Manufacturing Operations Center Analytics	• Manufacturing Operations Center Catalog • Plant Manager Dashboard • Facilities Manager Dashboard • Adhoc Analysis
Shift exceptions	Shift Exceptions
Data Entry	Meter Data Entry

3

Setup Overview

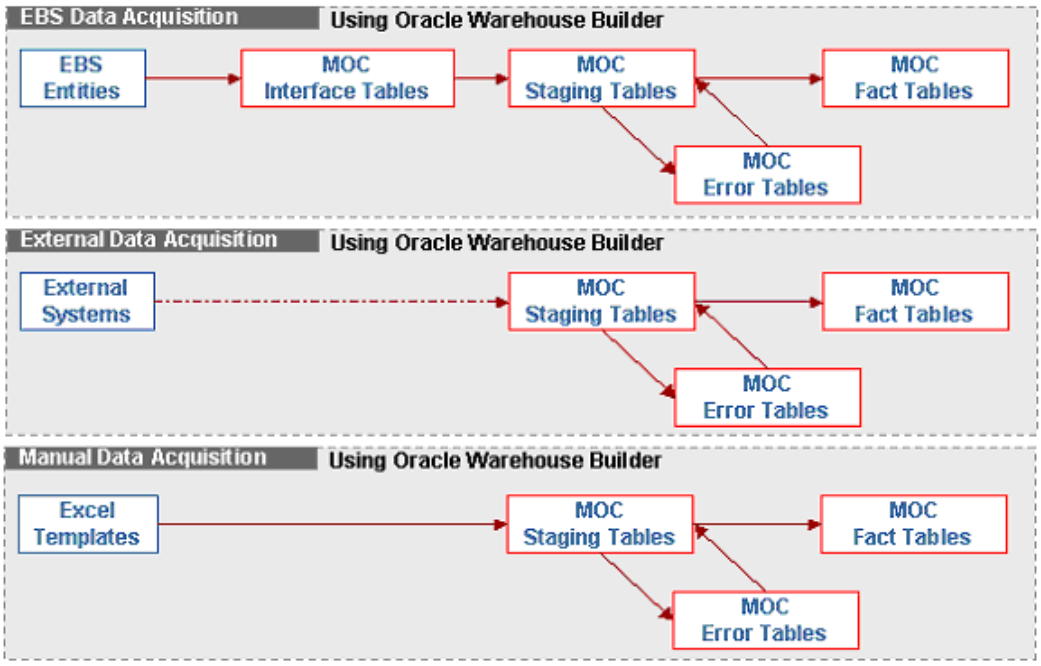
Oracle Manufacturing Operations Center Setup Overview

Set up the following for each instance of Oracle Manufacturing Operations Center:

- OWB (Oracle Warehouse Builder)
- Source systems
- Sites
- Sustainability aspect
- Site sustainability
- Time dimension
- Shifts
- Item dimension
- Equipment dimension
- Data collection setup
- Tag and data contextualization
- Meters
- Tag to Equipment Mapping
- Equipment reason codes
- Events

- Extensible attributes

Important: This document outlines the process of loading data into Oracle Manufacturing Operations Center from Oracle E-Business Suite (EBS) or Microsoft Excel templates. Loading data from any other source requires customization. Custom mappings are created in OWB and loaded into MOC staging tables as displayed in the diagram below:



4

Oracle Warehouse Builder Setup

This chapter covers the following topics:

- Oracle Warehouse Builder Setup Steps
- Customizing the OWB Repository for Two EBS Systems
- Customizing the OWB Repository for One EBS System and One Non-EBS System

Oracle Warehouse Builder Setup Steps

For more details on installation steps, refer to the *Oracle Manufacturing Operations Center (Release 12.1.1.01) Installation Readme file* (Doc ID: 818813.1).

Complete the following Oracle Warehouse Builder setup steps:

1. Set up the OWB repository.
2. Register users.
3. Import the Metadata Loaders (MDLs) in the order specified in the Readme file.
4. Create locations.
    - Source system locations:
        - The location of the EBS 11.5.10 system. The Service Name defined for EBS source systems must be same as the profile name in the source system MTH: System Global Name.
        - The location of other systems based on the database on which they are installed.
        - The location of .csv templates.
    - The target system location where the Manufacturing Operations Center data is

stored.

- The location of the workflow.

5. Configure the repository locations.
6. Set up the Control Center.
7. Deploy Dimensions, External Tables, Mappings, and Process flows in the order specified in the Readme file.

There is always one target system, but there can be many source systems including the location of the .csv templates. Oracle Manufacturing Operations Center (MOC) is designed to work out of the box with one EBS 11.5.10 source system and one file location. However, MOC can be customized to integrate with multiple source systems.

Troubleshooting Tips

To specify parameters when running a load:

1. In the OWB Design Center, navigate to Tools, Preferences, MTHUSER - Deployment Process.
2. Select the following options:
   - Prompt for Execution Parameters
   - Show Monitor

Customizing the OWB Repository for Two EBS Systems

In the first source system scenario, there are two EBS data sources for one installation of Oracle Manufacturing Operations Center (MOC). Complete the following steps to set up OWB for MOC with this source system combination:

1. In the Project Explorer area, navigate to MTH, Databases, Oracle.
   - EBS tables that are used as a data source are listed in MTH_SOURCE, Tables.
   - MOC tables used to load the data are listed in MTH_TARGET, Tables.
   - Pre-seeded mappings to an Oracle EBS instance are listed in MTH_TARGET, Mappings.
2. In the Connection Explorer area, navigate to Locations, Databases, Oracle.
3. To create a new location for the second EBS source, right-click on Oracle and

selecting New.

4. In the Project Explorer area, right-click on MTH_SOURCE and select Copy.

5. Right-click on Oracle and select Paste.

6. If required, rename the copied source.

   When you copy a source, source tables are also copied.

7. Map the source of the new module to the new location you created in the Connection Explorer.

8. Navigate to MTH, Databases, Oracle, MTH_Target, Mappings.

9. Edit the existing mappings or add a new map by copying and pasting.

10. Open the Mapping Editor.

11. Right-click and select Synchronize to swap the existing source in the mappings to the new source.

12. Create new joins and filters.

13. Deploy the Mappings

Customizing the OWB Repository for One EBS System and One Non-EBS System

In the second source system scenario there is an external EBS data source and a non-EBS external data source. Complete the following steps to set up OWB for Oracle Manufacturing Operations Center (MOC) with this source system combination:

1. In the Project Explorer area, browse to MTH, Databases, Oracle.
   - EBS tables that are used as a data source in MOC are listed in MTH_SOURCE, Tables.
   - MOC tables used to load the data are listed in MTH_TARGET, Tables.
   - Pre-seeded mappings to an Oracle EBS instance are listed in MTH_TARGET, Mappings.

2. In the Connection Explorer area, navigate to Locations, Databases, Oracle.

3. Create a non-EBS source location by providing the database link details for the non-EBS source.

4. In the Project Explorer area, create a new Data Source module in Oracle.

5. In Step 2 of the Create Module window, point the module to the Location that you created.

6. In the new Data Source module, right-click Tables and select Import. The Import Metadata Wizard appears.

7. Use the Import Metadata Wizard to select the tables to import from the source.

   Note: When you select tables, only their metadata is imported and not the actual tables.

8. In the MTH_Target module, edit existing mappings or create new mappings.

9. Open the Mapping Editor.

10. Right-click and select Synchronize to change the source of an existing table or view.

11. Close the Mapping Editor.

12. Deploy the edited or created mappings.

Refer to the *Oracle Warehouse Builder User's Guide* for more information.

5

Setting Up Source Systems

This chapter covers the following topics:

- Source System Setup Steps
- Source System Setup: Microsoft Excel Template
- Source Systems Setup Maintenance

Source System Setup Steps

Complete these steps to set up source systems:

1. In the source EBS system, set up the profile option MTH: System Global Name.
   - The name is used as a service name when the OWB location is specified for the EBS system.
   - The name defined should be configured as a service name in EBS.
2. In the Microsoft Excel template, update MTH_SYSTEMS_SETUP.csv with definitions for the source system.

   Configure MTH_SOURCE_LOCATION to populate the system identifier to be the same as the ones set up in the source system. Data collected from EBS is automatically stamped with the source system's identifier.
3. Run the mapping MTH_SYSTEMS_SETUP_XS_ALL_MAP under the MTH Utilities folder to load source systems into Oracle Manufacturing Operations Center (MOC).

Source System Setup: Microsoft Excel Template

This table displays the structure of the Microsoft Excel template that is used to define the source system:

System Code	System Type	System Name	USER_ATTR1	USER_ATTR2	USER_ATTR3	USER_ATTR4	USER_ATTR5
TESTSYST01	EXCEL	TESTSYST01	A	B	C	D	E

System Type can be any value, but it is recommended that you use one of the following choices which are available in a lookup table:

- Enterprise Resource Planning
- Manufacturing Execution Systems
- Advance Planning
- Device Data Source
- Historian
- Supervisory Control and Data Acquisition
- Quality Management System
- Statistical Process Control
- Maintenance Management System
- Legacy System
- Spreadsheet
- Other Sources

> **Note:** If the System Code and System Name are not unique, then errors display.

Source Systems Setup Maintenance

Unassigned Logic

Data rows are marked with Unassigned System if you collect data from a source for which the system name is not populated.

Update Logic

You can update the System Name, System Type, and User Attributes for the System Code. You must not delete the system name.

6

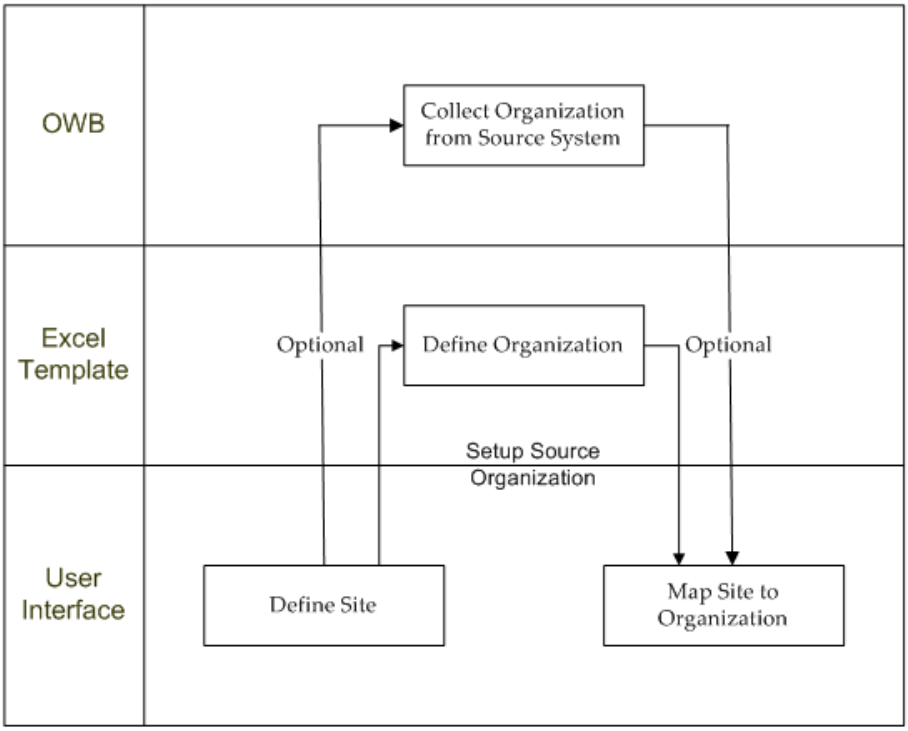
Setting Up Sites

This chapter covers the following topics:

- Overview of Sites
- Site Set Up Steps
- Plant Setup: Microsoft Excel Templates
- Site Maintenance
- Running Seed Data Process Flows
- Setting Up Sites
- Viewing Sites Summary
- Viewing Sites
- Updating Sites

Overview of Sites

The site definition is set up in Oracle Manufacturing Operations Center and mapped to source organizations in different systems. A Site can be a production or non-production facility with manufacturing units or can only have office buildings for administration, marketing, and research and development. In this guide, a plant refers to a site that is a production facility. The following diagram illustrates the site setup flow:



Site Set Up Steps

To set up a site:

1. Define MOC site using the Site Setup user interface.
2. Load the source organization from EBS.
   - For initial data collections (a full refresh), run the MTH_PLANTS_DIM_EBS_INIT_PF process flow in the MTHEBIIP module.
   - For incremental collections, run the MTH_PLANTS_DIM_EBS_INCR_PF process flow in the MTHEBICP module.
3. Define non-EBS source organizations in the Microsoft Excel template by updating the definitions in MTH_ORG.csv.
4. Load non-EBS source organizations by running MTH_ORG_XS_ALL_MAP in the OWB Mapping MTH Utilities project.
5. Update the organization with the plant identifier or site code in the Microsoft Excel

templates or using the Site Setup interface. Update MTH_ORG.csv with the following:

- Implement in Plant Flag
- Plant Identifier
- System Identifier

The organization is linked to the site.

6. Create an organization with the following:
   - The organization code same as plant code.
   - The system as Unassigned for loading data from Microsoft Excel.

   To perform this task, run MTH_PLANTS_ORG_ALL_MAP in MTH Utilities.

Plant Setup: Microsoft Excel Templates

This table displays the structure of the Microsoft Excel template used for the plant setup:

Plant Code	Plant Name	Source	Currency Code	From Date	To Date	Graveyard Shift Flag
RO5	PLANTFORRO5	1	USD	1/14/2008		1
RO3	PLANTFORRO3	1	USD	01/01/2007	01/05/2008	1

To define a plant, specify the following information:

- Plant code. (This value is unique to the plant.)
- Plant Name.
- Source. (A value of 1 if it is discrete, 2 if it is process.)
- Currency Code
- From Date. (The date from which the plant is operational.)
- To date. (The date to which the plant will be operational.)

- Graveyard Shift flag. (Possible values for this flag are 1 if it is Shift End Workday and 2 if it is Shift Start Workday.)

Organization Setup: Microsoft Excel Template

This table displays the structure of the Microsoft Excel template used for the organization setup:

Organization Name	Process Enabled Flag	Currency Code	EBS Organization ID	Primary Cost Method	Organization Code	Implement in Plant Flag	Plant Code	System Code
MTHORG	N	Rs	5248	1	MTH	Y	MTHHUB1	SCMC2MQ0

Site Maintenance

Unassigned Logic

Unassigned Site is provided in Manufacturing Operations Center. Data for equipment with no hierarchy is mapped to the unassigned site.

Update Logic

You can update this information:

- Site name and attributes for each site code.
- Site can only be end-dated and cannot be deleted.
- After a site is end-dated or made inactive, Manufacturing Operations Center stops collecting data.
- If a data collection end date is not specified, site data is collected indefinitely.
- The selected source organization can be updated for a different site.

Running Seed Data Process Flows

To load seed data, run the process flow MTH_SEED_DATA_PF in the MTHEXIIP module.

When seed data is run:

- MTH_LOOKUPS_D populates the lookup tables used for such things as work order status with the seed data.
- MTH_DIM_HIERARCHY populates the hierarchy table with seed data for seeded hierarchies.
- MTH_DIM_LEVEL_LOOKUP populates the level lookup table with seed data for each hierarchy level.
- MTH_ENTITIES populates various data elements like Output Quantity, Completion Quantity, etc., for Oracle Manufacturing Operations Center, which are used in tag setup.

When seed data is run, the following tables are populated with a value of Unassigned:

- MTH_SYSTEMS_SETUP
- MTH_PLANTS_D
- MTH_ITEMS_D
- MTH_ORGANIZATIONS_L
- MTH_EQUIPMENTS_D
- MTH_EQUIP_ENTITIES_MST
- MTH_PRODUCTION_SCHEDULES_F
- MTH_PRODUCTION_SEGMENTS_F
- MTH_RESOURCES_D
- MTH_ITEMS_CATEGORIES_D

Setting Up Sites

You can set up sites, define the currency for a site, and activate or inactivate the site using the Sites Summary page. You can also assign a site to a source organization.

To add a site:

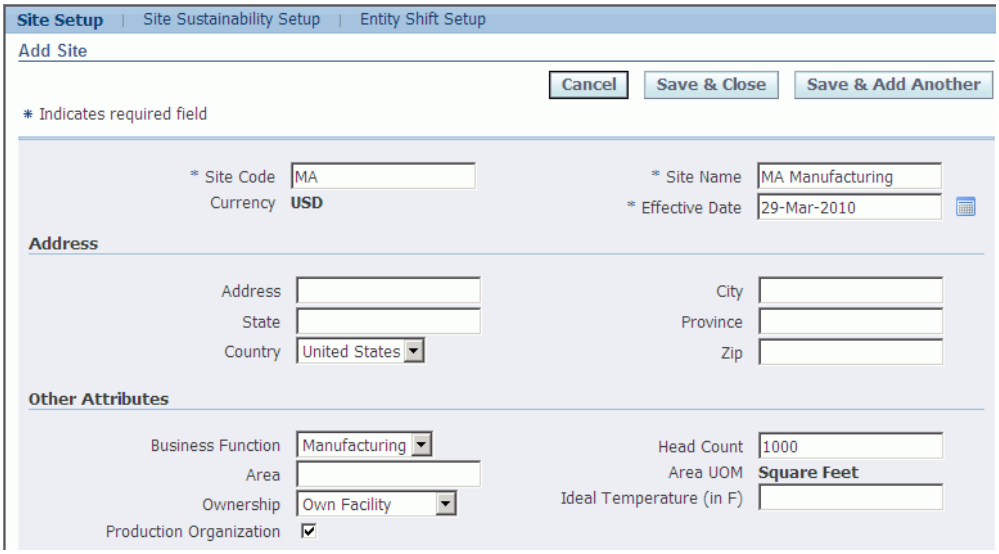
1. Using the Manufacturing Operations Center responsibility, click Site Home. The Sites Summary page appears.
2. Click Add Site. The Add Site page appears.

3. Enter the Site Code, Site Name, and Effective Date. Currency defaults from the currency UOM you define using the MTH: Global Currency UOM profile option. Refer to the "Setting Up Profile Options" topic for more information.

4. Enter the Address of the site.

5. In the Other Attributes page, enter the following:

   - Business Function. Valid values are: Administration, Maintenance, Manufacturing, Planning, Purchasing, Sales and Stores.
   - Area is the area of the site in the specified Area UOM.
   - Ownership. Valid values are Outsource Facility, Own Facility, and Rental Facility.
   - Headcount
   - Select the Production Organization Check Box if the site is a production facility.

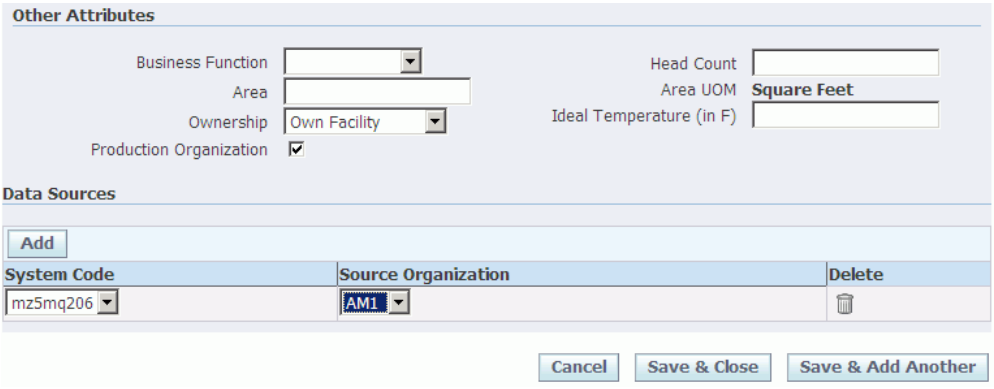


Data Sources

6. Click Add to add a System Code and Source Organization to the site.

7. Click Save and Cancel to add the site.

8. Click Save and Add Another to add another site.



Viewing Sites Summary

You can view the summary of sites available in the Oracle Manufacturing Operations Center application using the Sites Summary page.

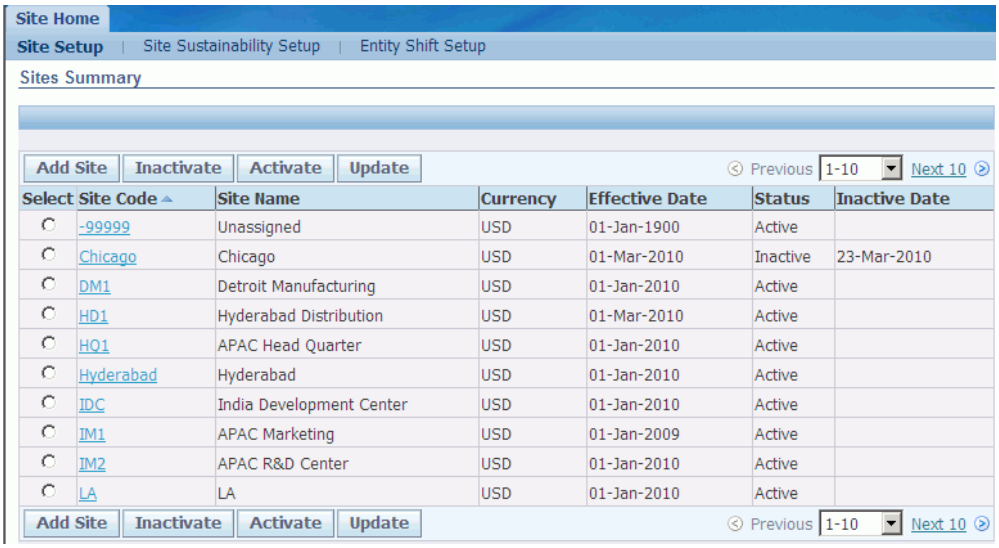
To view the sites summary:

1. Using the Manufacturing Operations Center responsibility, click Site Home. The Sites Summary page appears.

2. All sites are Active by default. Click Inactivate to inactivate a site.

3. Click Update to update a site.

4. Click Add to add a site.

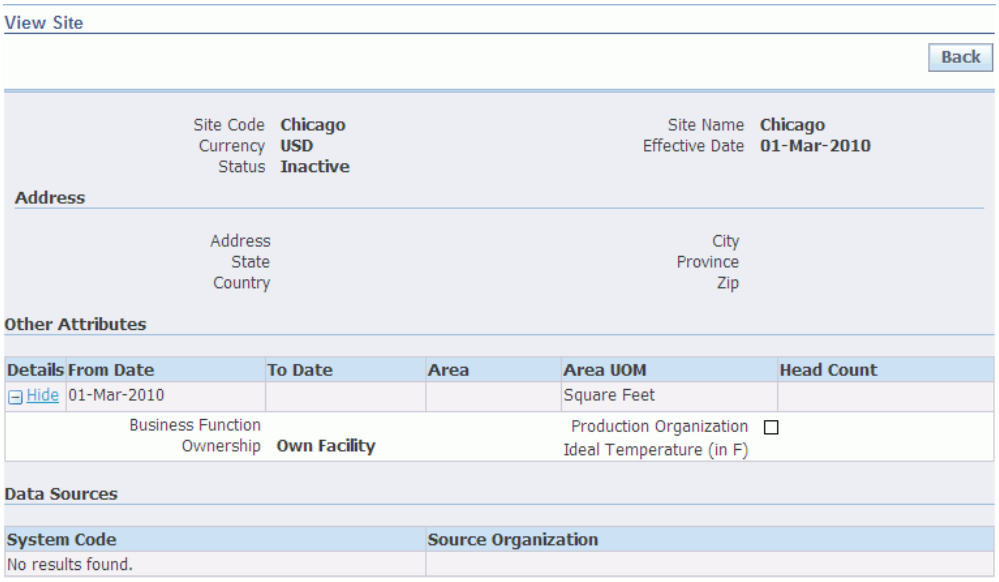


Viewing Sites

You can view the site details using the View Site page.

To view a site:

1. Navigate to the Sites Summary page. The page displays a list of sites.
2. Click on a Site Code. The View Site page displays the details of the site.

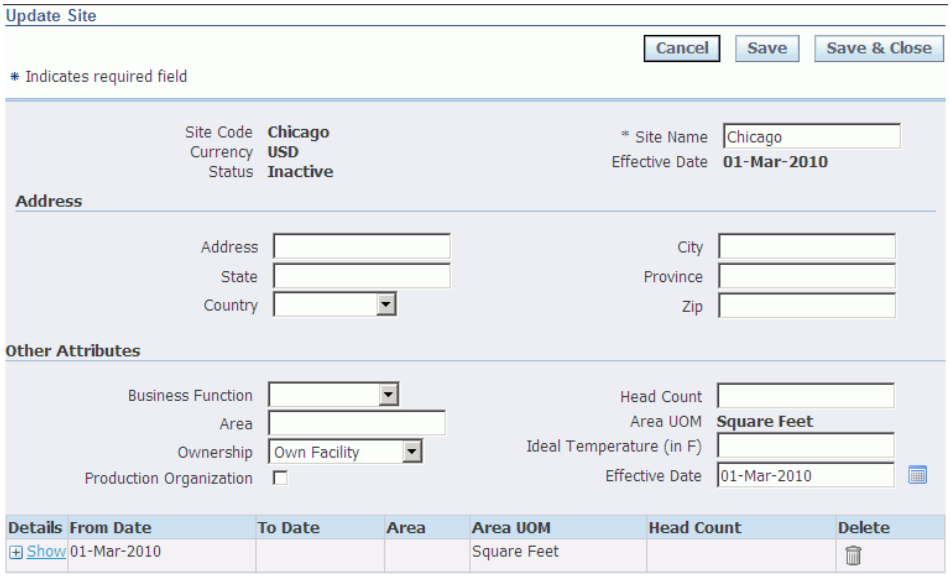


Updating Sites

You can update site details using the Update Site page.

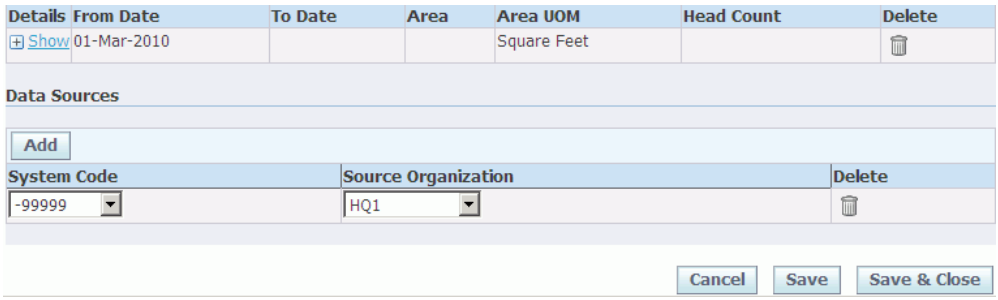
To update a site:

1. Navigate to the Sites Summary page. The page displays a list of sites.
2. Select the Site for which you want to update information.
3. Click Update. The Update Site Page appears.
4. You can edit the following:
   - Address
   - All the fields in the Other Attributes region.
   - Data Sources



5. Click Save to save the new values and remain on the same page.

6. Click Save and Close to navigate to the Site Summary page.



7

Setting Up Sustainability Aspect

Setting Up Sustainability Aspect

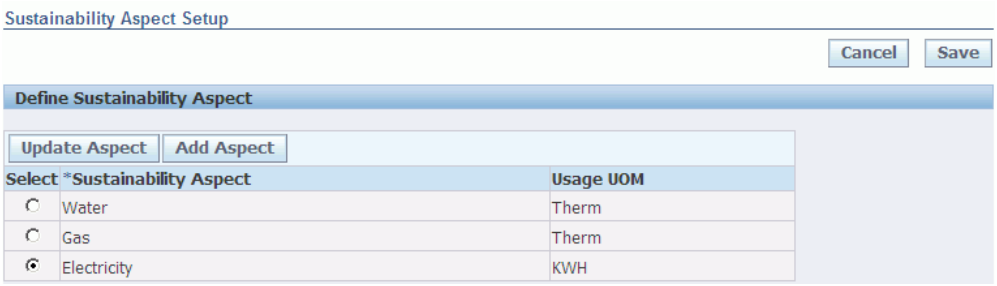
Sustainability Aspect is a generic name used for continuous inputs consumed by companies to be able to operate and create goods or services. Common examples of sustainability aspect are electricity, gas, oil, water, helium etc.

Setting up sustainability aspect refers to defining the sustainability aspect used in an enterprise for production and non-production purposes, usage categories, and emissions resulting in the usage of the sustainability aspect. Use the Sustainability Aspect page to define the following:

- Sustainability Aspect
- Usage Categories
- Emission

To setup sustainability aspect:

1. Navigate to the Sustainability Aspect Setup page.
2. In the Define Sustainability Aspect region, click Add Aspect and select the name of the Sustainability Aspect. Electricity and Gas Aspects are seeded in the application.
3. Select the Usage UOM.
4. Click Save.
5. Select Update Aspect to update the information for a sustainability aspect. You can update Usage UOM only.

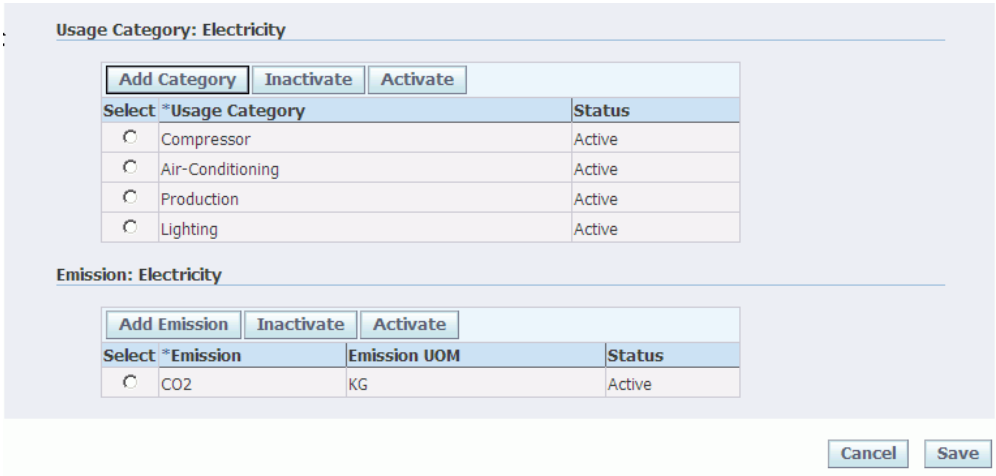


To define Usage Categories:

1. Navigate to the Sustainability Aspect Setup page.
2. Select the Sustainability Aspect for which you want to define usage categories.
3. In the Usage Category region, click Add Category.
4. Select a Usage Category as Air-conditioning, Lighting, Compressor, or Production. The Status displays as Active by default.
5. Click Save. If you want to inactivate a usage category, then select the Usage Category and click Inactivate.

To define Emissions:

1. Navigate to the Sustainability Aspect Setup page.
2. Select the Sustainability Aspect for which you want to define emissions.
3. In the Emission region, click Add Emission.
4. Select an Emission and the Emission UOM from a list of seeded values.
5. Click Save. The Status displays as Active by Default. If you want to inactivate an emission, then select the Emission and click Inactivate.



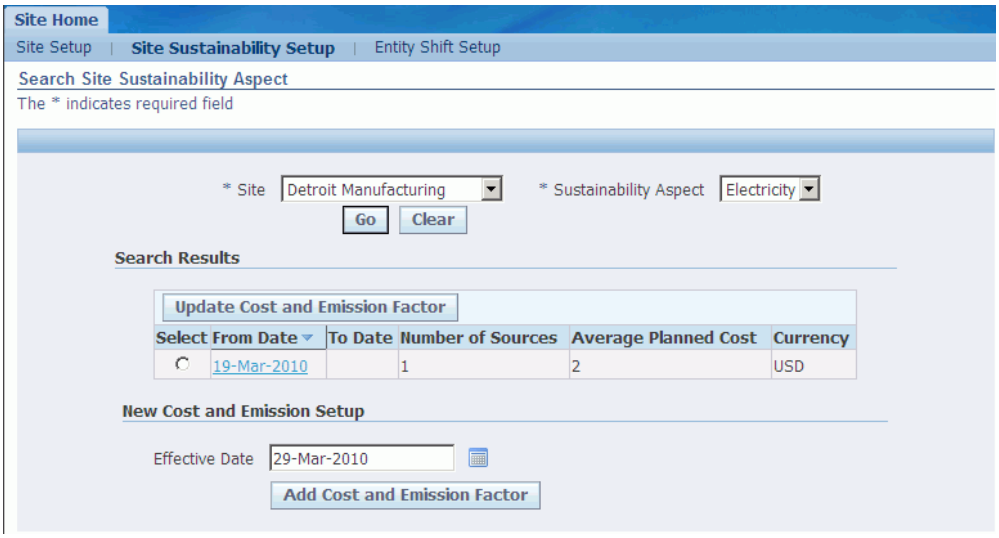
Setting Up Site Sustainability

Use the Site Sustainability Setup page to define the energy source, planned usage, average cost, and emissions for a sustainability aspect and site.

To set up site sustainability aspect:

1. Navigate to the Site Home page.
2. Click Site Sustainability Setup. The Search Site Sustainability Aspect page appears.
3. Select the Site and Sustainability Aspect for which you want to view information.
4. Click Go. The following fields display:
   - From Date and To Date is the date range for source usage.
   - Number of Sources is the number of energy sources at the site for a sustainability aspect.
   - Average Planned Cost is the cost planned to incur for the sources.
   - Currency is the currency in which the planned cost is expressed.
5. Click the From Date field to view energy source, planned usage cost, emission, and emission factor for the sustainability aspect and site in a specific date range.
6. Click Update Cost and Emission Factor update energy source, usage cost, emission, and emission factor for the sustainability aspect and site in a specific time period.
7. Click Add Cost and Emission factor to define planned energy source, cost,

emission, and emission factor for a specific time period.



Adding Site Sustainability

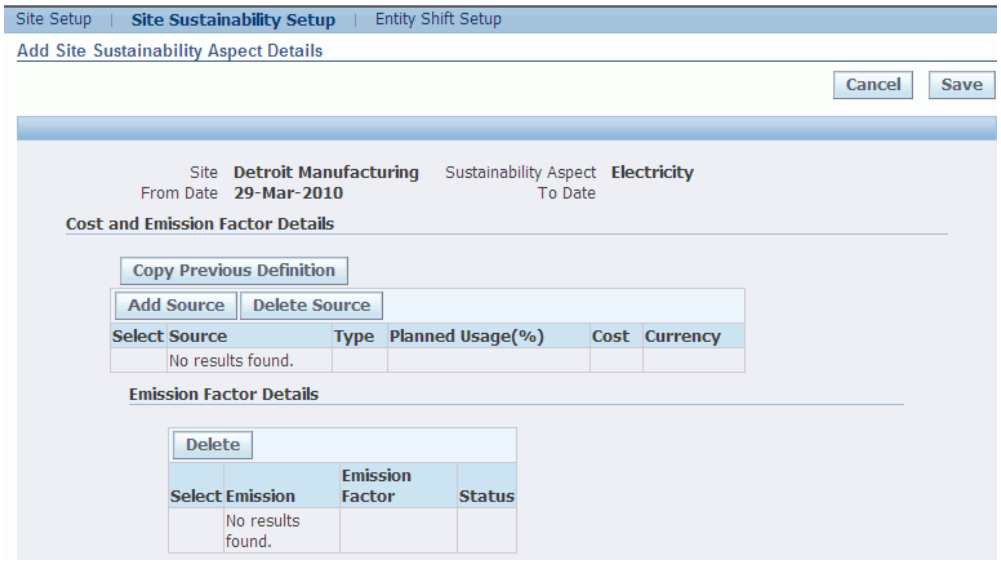
Use the Add Site Sustainability Aspect Details page to add new site sustainability information.

To add site sustainability aspect details:

1. Navigate to the Search Site Sustainability Aspect page.
2. Search for the Site and the Sustainability Aspect for which you want to add new details.
3. In the New Cost and Emission Setup region, click Add Cost and Emission Factor. The Add Site Sustainability Aspect Details page appears. The header region of the page displays the Site, Sustainability Aspect, From and To Date and the Number of Sources.
4. In the Cost and Emission Factor Details region:
   - Click Add Source.
   - Select the Source and Type.
   - Enter the Planned Usage% and Cost.
5. To delete a source, select the Source and click Delete Source.
6. To copy details in the Cost and Emission Factor details tables from the last record,

click Copy Previous Definition.

7. Click Save.



Viewing Site Sustainability

Use the View Site Sustainability Aspect Details page to view the site sustainability information.

To view site sustainability aspect details:

1. Navigate to the Search Site Sustainability Aspect page.

2. Search for the Site and the Sustainability Aspect for which you want to view the details.

3. In the Search Results, click the From Date field to view the sustainability aspect details in a specific date range. The View Sustainability Aspect Details page appears. The header region displays the From Date and To Date and the Number of Sources for the Sustainability Aspect.

   Cost and Emission Factor Details

4. 4. The following fields display:

   - Source is the source of energy.

   - Type is the source type. Type displays as either Cogeneration or Utility.

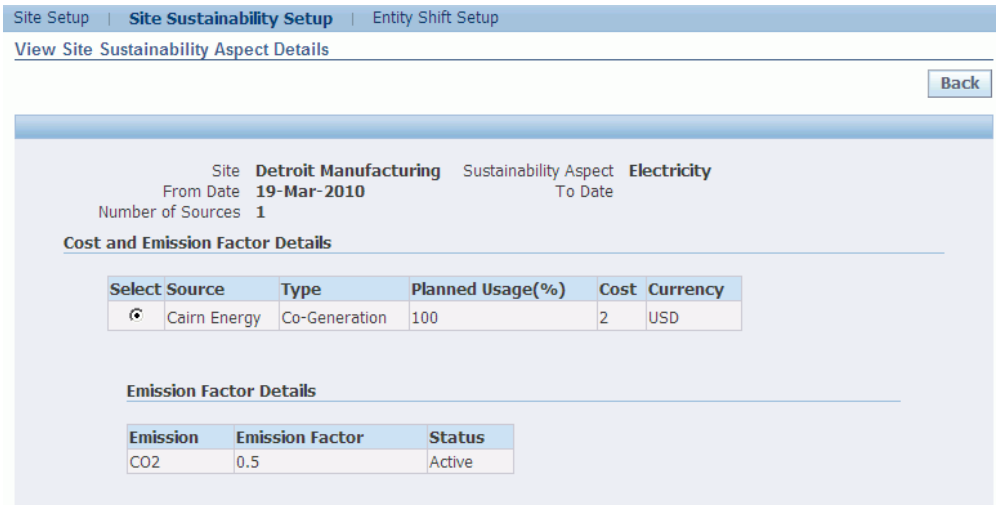
   - Planned Usage % is the percentage of planned usage of the energy source for

the site and sustainability.

- Cost is the cost of using the energy as per the Planned Usage %. The sum of all planned usage % for all sources defined is equal to 100%.
- Currency is the currency in which Cost is expressed.

Emission Factor Details

- Emission is the emission resulting from the usage of energy.
- Emission Factor
- Status displays as Active by default.



Updating Site Sustainability Aspect Details

Use the Update Site Sustainability Aspect Details page to update the site sustainability information.

To update site sustainability aspect details:

1. Navigate to the Search Site Sustainability Aspect page
2. Search for the Site and the Sustainability Aspect for which you want to view the details.
3. In the Search Results, click Select to update a specific record.
4. Click Update Cost and Emission Factor. The Update Site Sustainability Aspect page appears. The header region of the page displays the Site, Sustainability Aspect,

From and To Date and the number of sources.

5. The following fields display:

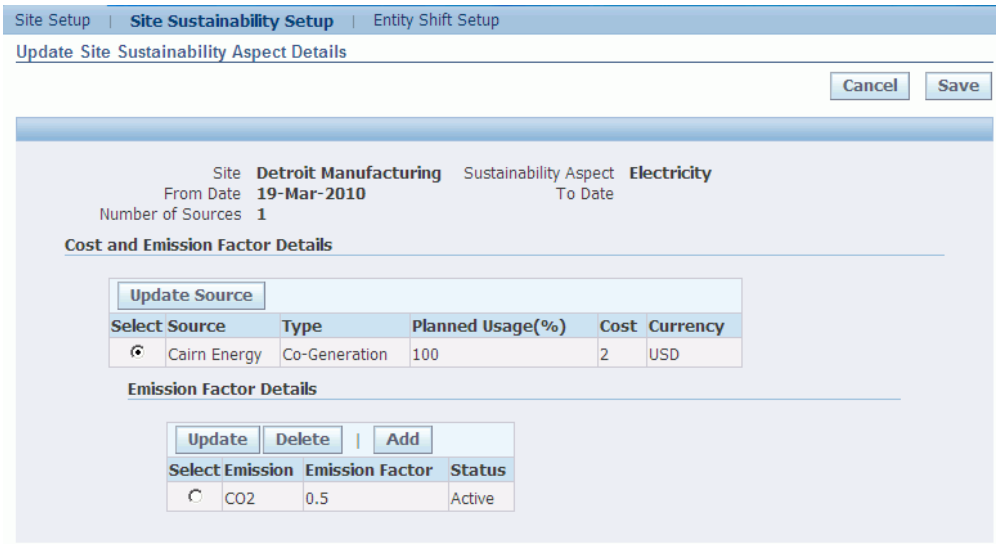
   Cost and Emission Factor Details

   - Source is the source of energy.
   - Type is the source type.
   - Planned Usage % is the percentage of planned usage of the energy source for the site and sustainability.
   - Cost is the cost of using the energy as per the Planned Usage %.
   - Currency is the currency in which Cost is expressed.

   Emission Factor Details

   - Emission is the emission resulting from the usage of energy.
   - Emission Factor
   - Status displays as Active by default.

6. Click Select to update a specific record.
7. Click Update Source. You can update Source, Type, Planned Usage% and Cost fields. Update the fields as required.
8. Click Save.



To update, delete, or add emission factor details:

1. In the Emission Factor Details region, select the emission for which you want to update the emission factor.

2. Click Update. Edit the value in the Emission Factor field. You cannot update the Emission and Status fields.

3. Click Delete to delete an emission.

4. Click Add to add an emission. A new row appears in which you can select an Emission and enter an Emission Factor. The Status displays as Active by default.

5. Click Save.

8

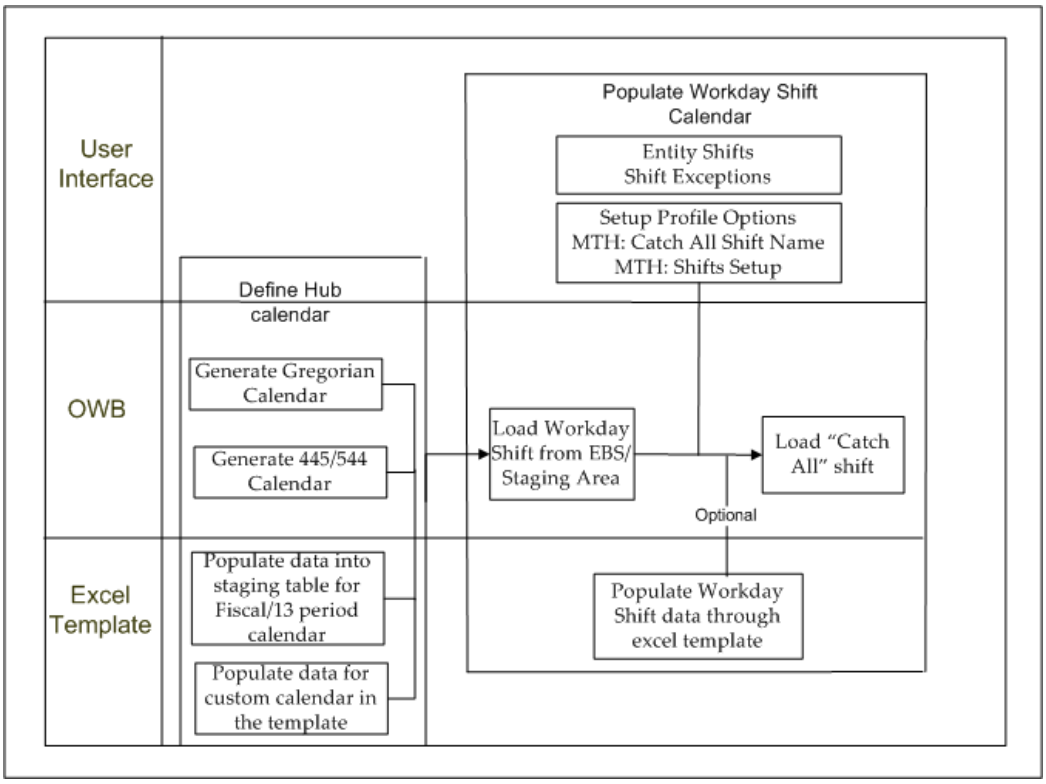
Setting Up Time Dimension Hierarchies

This chapter covers the following topics:

- Time Dimension Hierarchies Overview
- Defining the Manufacturing Operations Center Calendar
- Graveyard Shift Option
- Populating the Workday Shift Calendar
- Performing Entity Shift Setup
- Editing Shifts for Exceptions
- Changing the Shift Boundary
- Changing a Shift Name
- Adding a New Shift
- Catch All Shift
- Time Dimension Hierarchy Maintenance

Time Dimension Hierarchies Overview

Manufacturing Operations Center can analyze data by five different hierarchies for time dimension roll-up out of the box. Any number of hierarchies can be built and analyzed. The following diagram illustrates the process flow for the time dimension hierarchy setup:



Complete the following tasks to set up the Manufacturing Operations Center time hierarchy:

1. Define the MOC Calendar roll-up from Day to Year, irrespective of site.
2. Populate the Workday Shift Calendar with shift information for the site and roll-up.

Defining the Manufacturing Operations Center Calendar

You can define any or all of the following calendars:

- Gregorian (OWB generated)
- 445/544 (OWB generated)
- Fiscal (custom generated)
- 13 Period (custom generated)
- Custom Calendar (custom levels)

Gregorian Calendar

To generate a Gregorian calendar:

1. Run MTH_GREGORIAN_CALENDAR_MAP in the MTH project of the OWB Mappings.
2. Specify the following parameters:
   - Number Years; the number of years in the calendar.
   - Year Start Date

445/544 Calendar

To generate a 445/544 calendar:

1. Run MTH_445_PERIOD_CALENDAR_MAP in the OWB Mappings.
2. Specify the following parameters:
   - Day of Fiscal Week. This value can be any number between 1 and 7.
   - Fiscal_Year_Start_Date
   - Fiscal_type. This value can be 445 or 544.
   - Number_Years; the number of years for the calendar.

Fiscal and 13 Period Calendars

To generate a fiscal and 13 period calendar:

1. In the Microsoft Excel template, update the MTH_TIME_DIMENSION.csv with the Fiscal and 13 Period calendar hierarchy.
2. Update the Hierarchy relationship for all Day, Week, Period, Quarter, and Year relationships.
3. Load the calendar into MOC by running MTH_TIME_DIMENSION_XS_MAP in OWB Mappings in the MTH Utilities project.

Custom Calendar

To generate a custom calendar:

1. In the Microsoft Excel template, update the MTH_TIME_DIMENSION.csv with the

custom calendar hierarchy.

2. Update the Hierarchy relationship for all Day, Week, Period, Quarter, and Year relationships.

3. Load the calendar into MOC by running MTH_TIME_DIMENSION_XS_MAP in OWB Mappings in the MTH Utilities project.

Graveyard Shift Option

You must set the Graveyard Shift option for shifts that span different dates. You can set this option to:

- 0: Shift Start Date
- 1: Shift End Date

For example, Shift C spans 8 PM 08/06/2008 to 6 AM 08/07/2008. You can stamp Shift C as 08/06/2008 or 08/07/2008. If you want to stamp Shift C on 08/06/2008, then you must select the Shift Start Date option. If you want to stamp Shift C on 08/07/2008, then you must select the Shift End Date option.

Populating the Workday Shift Calendar

You can use either of the following methods to populate the Workday Shift calendar:

- From EBS (if the organization selected for the plant already has a Bill of Materials calendar attached)
- From Microsoft Excel
- From the Entity Shift Setup page. This page is enabled only when the profile option MTH: Shifts Setup value is set to MOC. Refer to the Profile Options chapter for more information on the MTH: Shifts Setup profile option.

When you create shifts using any one of the above options, ensure that you create shifts that do not overlap and are separated by a minimum time duration of one second.

To populate the Workday Shift calendar from EBS:

1. Load the Workday Shift from EBS by running one of the following process flows:
   - MTH_WORKDAY_SHIFTS_EBS_INIT_PF in the MTH Utilities project under the MTHEBIIP module, for an initial data collection
   - MTH_WORKDAY_SHIFTS_EBS_INCR_PF in the MTH Utilities project under the MTHEBICP module, for an incremental data collection

In the prompt for incremental data collection, enter the Run_Start_Date parameter. This is the date from which the workday shift changes are applied. The default value is Sys date.

2. Correct errors using SQL Developer or Oracle APEX. All errors in MTH_WORKDAY_SHIFTS_ERR must be fixed and the reprocess ready flag set to Y.

   Rows that are ready for reprocessing will be picked up in the next incremental run.

To populate the Workday Shift calendar from Microsoft Excel:

1. In the Microsoft Excel Template, update MTH_WORKDAY_SHIFTS.csv with the custom calendar hierarchy.

2. Load the Workday Shift calendar into the MOC staging table by running the MTH_WORKDAY_SHIFTS_XS_ALL_MAP OWB Mapping in the MTH Utilities project.

3. Load the Workday Shift calendar into the MOC fact table by running one of the following processes:

   - MTH_WORKDAY_SHIFTS_EXT_INIT_PF in the MTH Utilities project under the MTHEXIIP module, for an initial data collection

   - MTH_WORKDAY_SHIFTS_EXT_INCR_PF in the MTH Utilities project under the MTHEXICP module, for an incremental data collection

4. In the prompt for incremental data collection, enter the Run_Start_Date parameter. This is the date from which the workday shift changes are applied. The default value is Sys date.

5. Correct errors using SQL Developer or Oracle APEX. All errors in MTH_WORKDAY_SHIFTS_ERR must be fixed and the reprocess ready flag set to Y.

   Rows that are ready for reprocessing will be picked up in the next incremental run.

Workday Shift: Microsoft Excel Template

This table displays the structure of the Microsoft Excel template used for the workday shift setup:

Shift Workday PK	Shift Date	Source_org_code	System Code	From Date	To Date	Shift Num	Shift Name

1-1/1/2007-p1	01/01/2007	p1	s1	1/1/07 0:00	1/1/07 9:00	1	morning shift

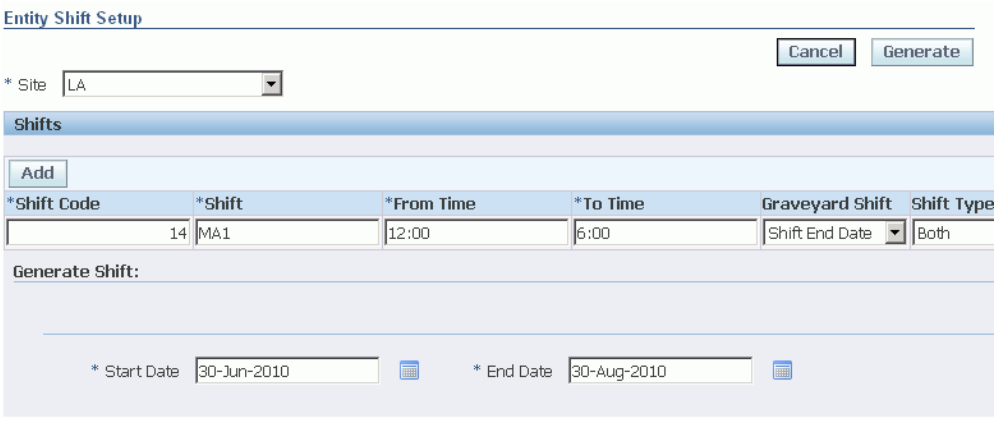
Performing Entity Shift Setup

You can set up entity shifts using the Entity Shift Setup page.

To perform entity shift setup using the Entity Shift Setup page:

1. Using the Manufacturing Operations Center Administrator responsibility, click Site Home.
2. Select the Entity Shift Setup tab.
3. Select the site for which you want to perform shift setup.
4. In the Shifts region, enter the Shift Code and Shift.
5. Enter the From Time and To Time for the shift.
6. Select the Graveyard Shift as Shift Start Date or Shift End Date.
7. Select the Shift Type as:
   - Production to inherit the shift to all production entities and organizations attached to the site
   - Non- Production to inherit the shift to all non-production entities and organizations attached to the site
   - Both to inherit the shift to all production and non-production entities and organizations attached to the site
8. In the Generate Shift region, enter the Start Date and End Date for the shift.
9. Click Generate. A message displays that the shift is created.
10. Click Ok.

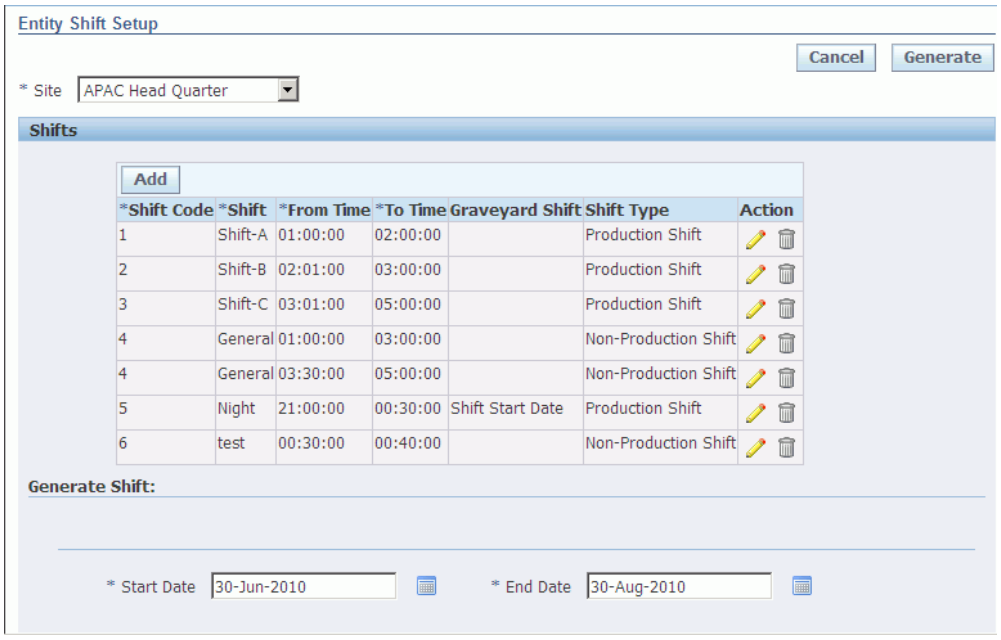
> **Note:** When you click the Generate button, the shift is generated in initial mode and shifts are overwritten for the period between Shift Start Date and Shift End Date.



To view entity shifts:

1. Navigate to the Entity Shift Setup page.

2. Select the Site for which you want to view the shifts. The Shifts region displays the shifts for the site.



To add a shift:

1. In the Generate Shift region, enter the Start Date and End Date for the new shift.

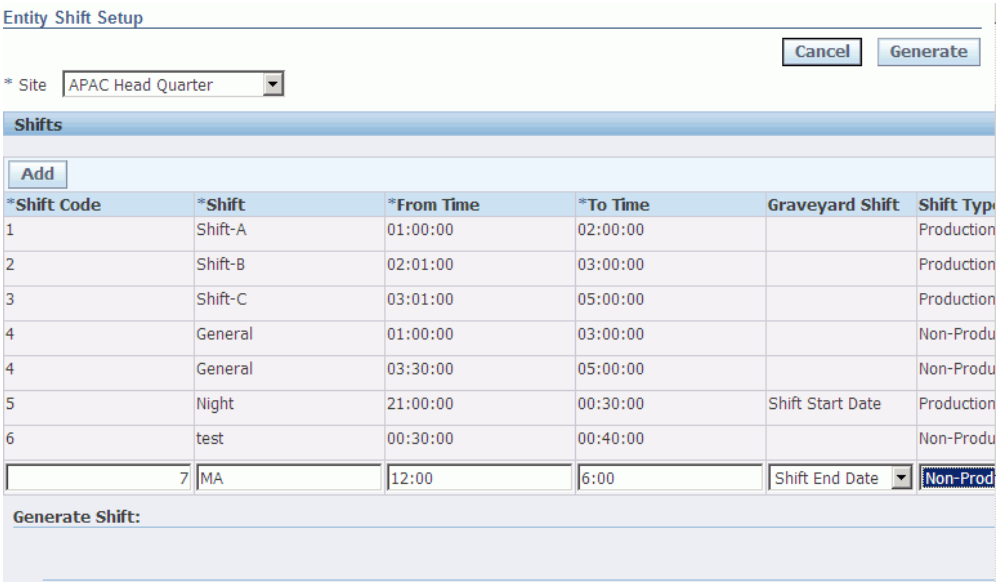
2. Click Add. A row in the Shifts region is enabled.

3. Enter the details for the shift.

4. Click Generate. A message displays that the shift is created.

5. Click Ok.

> **Note:** When you click the Generate button, the shift is generated in initial mode and shifts are overwritten for the period between Shift Start Date and Shift End Date.



Editing Shifts for Exceptions

You can edit shifts for exceptions by using the Shift Exceptions page.

To edit shifts:

1. Using the Manufacturing Operations Center User responsibility, navigate to the Shift Exceptions page.

2. Enter any of the following search criteria to in the Search Entity Shift region to view entity shifts:

   - Site. Required.

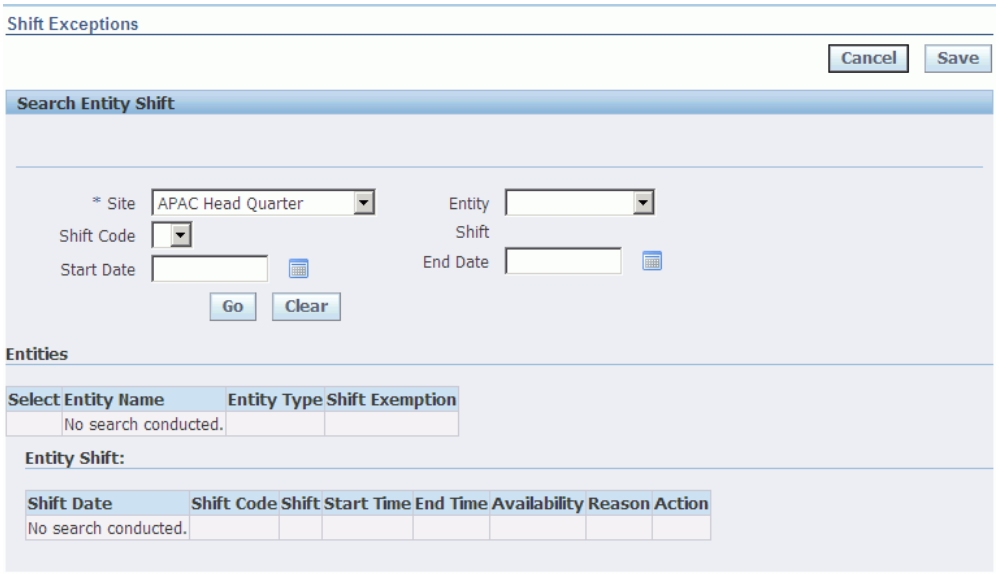
   - Entity

   - Shift Code. If you select Shift Code, then the value in the Shift field displays by

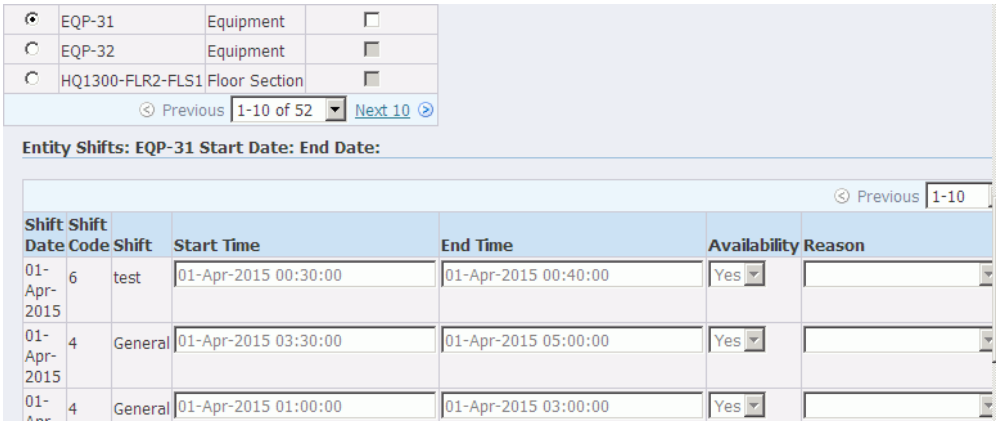
default.

- Start Date
- End Date

3. Click Go. If you search by Site, the Entities region displays all the entities of the site

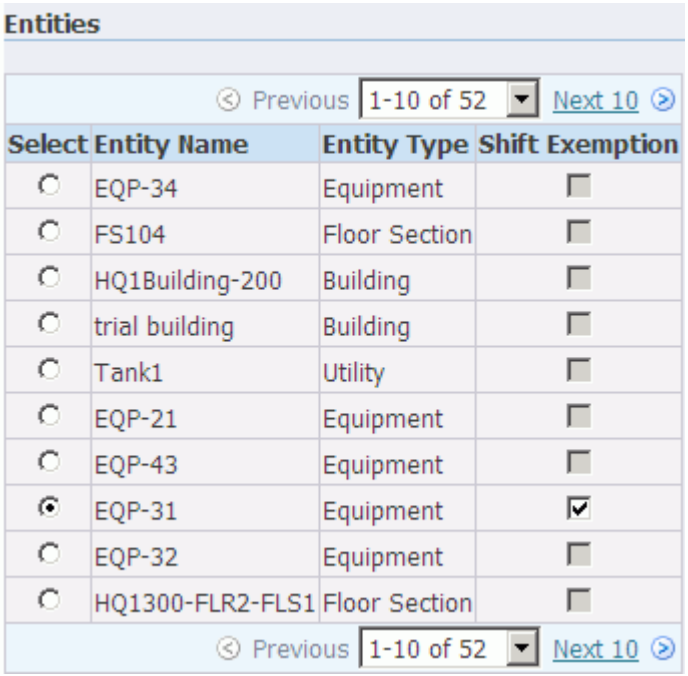


4. To view the shifts of an entity, select an entity. The Entity Shifts region displays the shifts of the selected entity and their Availability.



5. To exempt a shift, select an Entity Name in the Entities region.

6. Select the Shift Exemption check box to delete the shifts for the entity for the selected date range.



7. Click Save.

Changing the Shift Boundary

The following example shows a changed shift boundary:

Shift	Shift Name	From Time	To Time
Initial Shift Definition	Shift A	8:00 AM	1:00 PM
Initial Shift Definition	Shift A	2:00 PM	5:00 PM
Redefined Shift Definition	Shift A	9:00 AM	5:00 PM

When the EBS Bill of Materials Workday Calendar to Interface mapping is run after a shift is redefined, you can specify a Change Effective Date parameter.

- If the selected Change Effective Date is in the past, the shift definitions for the past data are changed.
- If the Change Effective Date is in the future, dates specified in the initial shift definition apply.

Data Classification

These items apply to data classification:

- Data on or after the change effective date will be bucketed based on the Redefined Shift definition.
- Data before the change effective date will be bucketed on the Initial Shift definition
- The value Shift in the OBIEE list of values
- Only one set of Shift A appears with back-end definition for the span calculated based on the Change Effective Date.

Changing a Shift Name

The following example shows a changed shift name:

Shift	Shift Name	From Time	To Time
Initial Shift Definition	Shift A	8:00 AM	1:00 PM
Initial Shift	Shift A	2:00 PM	5:00 PM
Redefined Shift Definition	Morning Shift	8:00 AM	1:00 PM
Redefined Shift	Morning Shift	2:00 PM	5:00 PM

When the EBS Bill of Materials Workday Calendar to Interface mapping is run after the shift is redefined, you can specify a parameter to change the effective date. Based on the date provided, the changed definition will be applied from that date to the future.

OBIEE List of Values - Shift

Both the old and new definition appears in the list of values for the plant once the mappings EBS Bill of Materials Workday Calendar to Interface is run, irrespective of the Change Effective Date.

Adding a New Shift

The following example shows the addition of a new shift:

Shift	Shift Name	From Time	To Time
Initial Shift Definition	Shift A	7:00 AM	3:00 PM
Initial Shift	Shift B	3:00 PM	11:00 PM
Redefined Shift Definition	Shift A	7:00 AM	3:00 PM
Redefined Shift	Shift B	3:00 PM	11:00 PM
Redefined Shift	Shift C	11:00 PM	7:00 AM

When the EBS Bill of Materials Workday Calendar to Interface mapping is run after a shift is redefined, you can specify a parameter for change effective date. The changed definition is applied from that date to the future, based on the date provided.

OBIEE List of Values - Shift

The newly added shift will appear in the list of values for the plant once the mapping EBS Bill of Materials Workday Calendar to Interface is run, irrespective of the Change Effective Date.

Catch All Shift

In the workday calendar, a Catch All Shift can be used for a shift that spans a length of time that is not covered by the shift in a workday. In the following example, the Catch All Shift spans from 12:00 AM to 7:00 AM and from 11:00 PM to 12:00 AM for the current workday:

Shift	Shift Name	From Time	To Time
Initial Shift Definition	Shift A	7:00 AM	3:00 PM
Initial Shift	Shift B	3:00 PM	11:00 PM

Time Dimension Hierarchy Maintenance

The Hub Workday Shift calendar can be loaded incrementally.

Reprocessing of Error Rows for Workday Shifts

Rows are moved to the error table because of dangling key issues for the following reasons:

- Shift Date was not provided.
- System reference was not provided.

9

Setting Up Item Dimensions

This chapter covers the following topics:

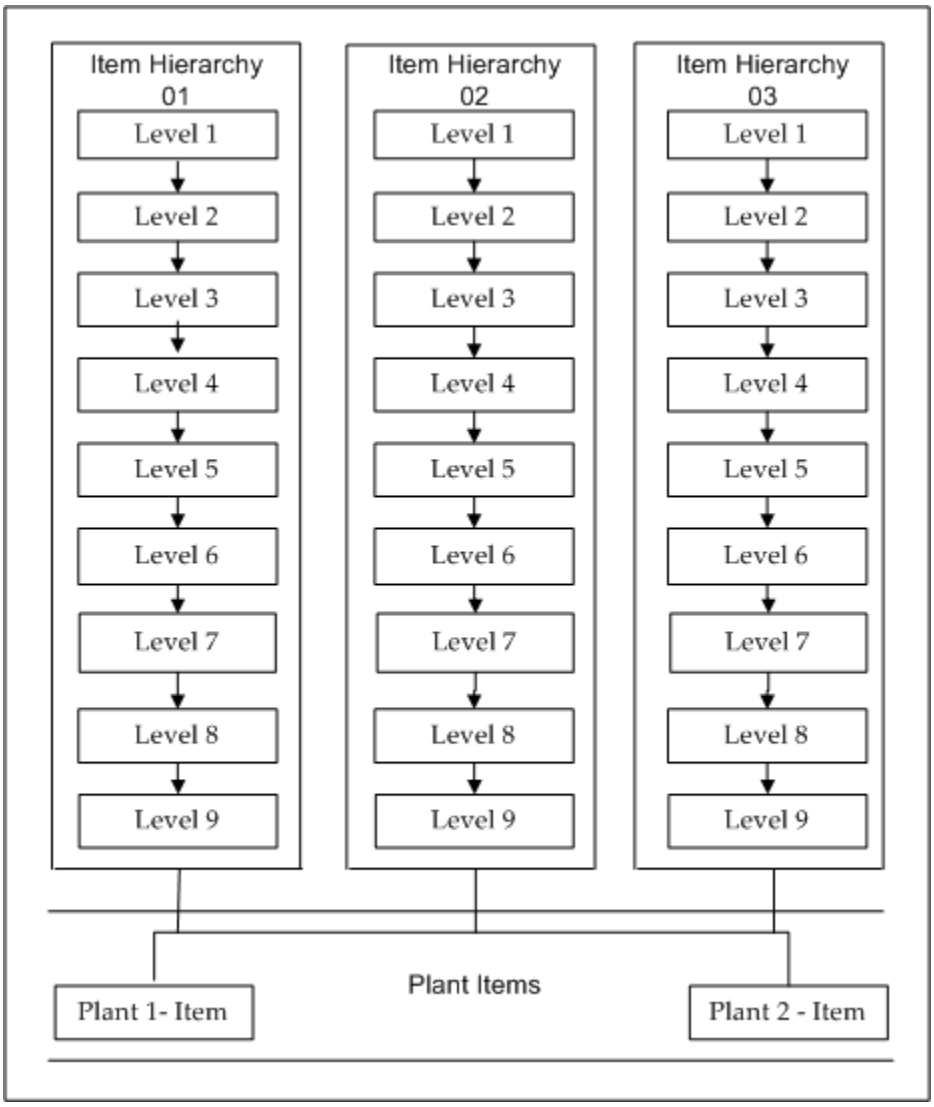
- Dimension Levels
- Item Dimension Setup Steps
- Item Master: CSV Templates
- Item Dimension Maintenance

Dimension Levels

Manufacturing Operations Center enables items to be analyzed by different hierarchies. Any number of hierarchies can be built and analyzed. However, for out-of the box reporting, only three hierarchies are exposed in the OBIEE presentation layer:

- Item Hierarchy 01
- Item Hierarchy 02
- Item Hierarchy 03

The following diagram shows the structure of item hierarchies:



Item Dimension Setup Steps

The item dimension setup steps are as follows:

1. Load items.
2. Update the hierarchy master.
3. Load the item hierarchy.

Load Items

Data items are collected as follows for each Manufacturing Operations Center plant in

the source systems:

- From EBS, based on the master data logic definitions.
- From csv templates.

To load items from EBS:

1. Run one of the following process flows:
   - MTH_ITEMS_DIM_EBS_INIT_PF in the MTH Utilities project, under the MTHEBIIP module, for an initial data collection. This must be run for the first time since it truncates data in the MTH_ITEMS_D table.
   - MTH_ITEMS_DIM_EBS_INCR_PF in the MTH Utilities project, under the MTHEBICP module, for an incremental data collection
2. Correct errors using SQL Developer or Oracle APEX. All errors in MTH_ITEMS_ERR must be fixed and the reprocess ready flag set to Y.

   Rows that are ready for reprocessing will be picked up in the next incremental run.

To load data from Microsoft Excel:

1. In the Microsoft Excel template, update MTH_ITEMS_MASTER.csv
2. In MTH Utilities, load the items into the MOC staging table by running MTH_ITEM_MASTER_XS_ALL_MAP in the OWB Mappings in the MTH Utilities project.
3. Load the items into the MOC Fact table by running one of the following processes:
   - MTH_ITEMS_DIM_EXT_INIT_PF, in the MTH Utilities project, under the MTHEXIIP module, for an incremental data collection
   - MTH_ITEMS_DIM_EXT_INCR_PF, in the MTH Utilities project, under the MTHEXICP module, for an incremental data collection
4. Correct errors using SQL Developer or Oracle APEX. All errors in MTH_ITEMS_ERR must be fixed and the reprocess ready flag set to Y.

   Rows that are ready for reprocessing will be picked up in the next incremental run.

Update the Hierarchy Master

To load EBS Category Set for the seeded hierarchy, change the Hierarchy name to the EBS Category Set name.

Load the Item Hierarchy

You can build item hierarchies in Manufacturing Operations Center or import them from EBS.

To load item hierarchies from EBS:

1. Load the item hierarchy from EBS by running one of the following processes:
   - MTH_ITEM_HRCHY_EBS_INIT_PF for an initial data collection
   - MTH_ITEM_HRCHY_EBS_INCR_PF for an incremental data collection
2. Correct errors using SQL Developer or Oracle APEX. All errors in MTH_ITEM_HIERARCHY_ERR must be fixed and the reprocess ready flag set to Y.

   Rows that are ready for reprocessing will be picked up in the next incremental run.
3. For OBIEE reporting, run the MTH_ITEM_DENORM_EBS_INIT_PF denorm process flow in the MTH project under the MTHEBIIP module for initial load and MTH_ITEM_DENORM_EBS_INCR_PF denorm process flow in the MTH project under the MTHEBICP module for incremental load.

To load item hierarchies from Microsoft Excel:

1. Update MTH_ITEM_DIMENSION_DENORM.csv in the Microsoft Excel template.
2. In the MTH Utilities, load the item hierarchy into the MOC staging table by running the MTH_ITEM_DIM_DENORM_XS_MAP in OWB Mappings.
3. To load item hierarchy from staging table into MTH_ITEM_HIERARCHY table, run MTH_ITEM_HRCHY_EXT_INIT_PF for the initial load and run MTH_ITEM_HRCHY_EXT_INCR_PF for the incremental load.
4. Correct errors using SQL Developer or Oracle APEX. All errors in MTH_ITEM_HIERARCHY_ERR must be fixed and the reprocess ready flag set to Y.

   Rows that are ready for reprocessing will be picked up in the next incremental run.
5. For OBIEE reporting, run the MTH_ITEM_DENORM_EXT_INIT_PF denorm process flow for the initial load and run the MTH_ITEM_DENORM_EXT_INCR_PF for the incremental load.

Item Master: CSV Templates

The csv template contains all columns from the item.

Hierarchy Master

The Hierarchy Master table is as follows:

Dimension Name	Hierarchy Name
ITEM	Inv.Items

Item Category

The Item Category table is as follows:

category_pk	system_fk	category_name	Description	ebs_category_id
cat1	dbi73d	cat1	new	-1
cat2		cat2		

Item Hierarchy Denorm

The Item Hierarchy Denorm table is as follows:

Hierarchy Name	Item	Level 9	Level 8	Level 7	Level 6	Level 5	Level 4	Level 3	Level 2	Level 1
Product Category	Item1	C9	C8	C7	C6	C5	C4	C3	C2	C1

Item Dimension Maintenance

Reprocessing of Error Items

Items are moved to the error table because of dangling key issues for the following reasons:

- The system reference is not available in the system table.

- The plant reference not available in the plant table.
- The primary unit of measure is not specified.

This data is fixed, and the reprocess flag switches from N to Y. During the next incremental item load, data from the error table is moved to the staging table for reprocessing.

Reprocessing of Error Item Hierarchy

Item hierarchy relationships are moved to the error table because of dangling key issues for the following reasons:

- The hierarchy ID is not available.
- The category for the level or parent level is not available in the category table.

This data is fixed, and the reprocess flag switches from N to Y. During the next incremental item load, data from the error table is moved to the staging table for reprocessing.

10

Setting Up Equipment Dimensions

This chapter covers the following topics:

- Overview of Equipment Dimension
- Equipment Hierarchy Setup Process
- Equipment Hierarchy: Microsoft Excel Templates
- Adding Equipment
- Viewing Equipment Details
- Updating Equipment
- Adding a Resource
- Viewing Resource Details
- Updating a Resource
- Viewing Entities
- Adding a User Defined Entity
- Updating a User Defined Entity
- Overview of Entity Hierarchy
- Defining a Hierarchy
- Defining Levels
- Building Hierarchies
- Moving Entities

Overview of Equipment Dimension

You can build multiple hierarchies for equipment, and these can be rolled up using different hierarchies for reporting. Manufacturing Operations Center provides four hierarchies, as described in this table:

Equipment Dimension Component	Design Component	Scope
Equipment Hierarchy	Resource Group Hierarchy	Hierarchy Relationship: Seeded Back-end Data: EBS or Microsoft Excel template provided.
Equipment Hierarchy	Department Hierarchy	Hierarchy Relationship: Seeded Back-end Data: EBS or Microsoft Excel template provided.
Equipment Hierarchy	Equipment Hierarchy 01 & 02	Hierarchy Relationship: Seeded Back-end Data: Microsoft Excel template provided.

Equipment Hierarchy dimension supports 10 levels. Four hierarchies are pre-seeded. Equipment hierarchy is divided into two parts:

- Defining equipment
- Building hierarchy on top of equipment (and resource)
  - Resource (for Resource Group and Department hierarchy)
  - Equipment (for Equipment hierarchy)

    Note: You must collect equipment from the source system in which it is defined.

Equipment Hierarchy Setup Process

Complete the following steps for the equipment hierarchy setup process:

1. Define hierarchy master and level lookups
2. Load equipment
3. Load equipment entities

4. Load resources

5. Load equipment hierarchy

Hierarchy Master and Level Lookup Definition

You can load seed data for the metadata.

Load Equipment

Equipment is loaded into Manufacturing Operations Center through a Microsoft Excel template.

1. Update MTH_EQUIP_MASTER.csv

2. Load the equipment by running the MTH_EQUIP_XS_ALL_MAP mappings in the MTH Utilities project.

Microsoft Excel Template: Equipment Master

The Equipment Master table is as follows:

Equipment Code	Source Org Code	Entity Name	Entity Type	System Code	Fixed Asset Value	Entity Description
MIXER1	MTH	MIXER1	EQUIPMENT	SCMC2MQ0		Equipment
BLOWER1	MTH	BLOWER1	EQUIPMENT	SCMC2MQ0		Equipment

All date columns are in the format of MM/DD/YYYY.

Load Equipment Entities

Equipment hierarchy entities such as Resource Group, Department, Organization, Line, Cell, and any entity other than Resources are loaded into MOC. Equipment entities can be loaded from EBS or Microsoft Excel.

To load equipment entities from EBS, run one of the following process flows:

- MTH_EQUIP_ENT_EBS_INIT_PF for an initial data collection

- MTH_EQUIP_ENT_EBS_INCR_PF

To load equipment entities from Microsoft Excel:

1. Update the MTH_ENTITY_MASTER.csv
2. Run the MTH_EQUIP_ENT_XS_ALL_MAP process flow.
3. Load the equipment entities into MOC staging tables by running one of the following process flows:
   - MTH_EQUIP_ENT_EXT_INIT_PF for an initial data collection
   - MTH_EQUIP_ENT_EXT_INCR_PF for an incremental data collection

Microsoft Excel Template: Entity Master

The Entity Master table is as follows:

Entity pk	Entity Name	Entity Type	System Code
LINE1	LINE1	LINE	-1
LINE2	LINE2	LINE	-1
LINE3	LINE3	LINE	-1
AREA1	AREA1	AREA	-1
AREA2	AREA2	AREA	-1
AREA3	AREA3	AREA	-1
SITE1	SITE1	SITE	-1
SITE2	SITE2	SITE	-1
SITE3	SITE3	SITE	-1

Load Resources

Load resources either from the Microsoft Excel utility or from EBS. To load resources from EBS:

1. Run one of the following processes:

- MTH_RES_HRCHY_EBS_INIT_PF for an initial data collection
- MTH_RES_HRCHY_EBS_INCR_PF for an incremental data collection

2. Correct errors using SQL Developer or Oracle APEX. All errors in MTH_RESOURCES_ERR must be fixed and the reprocess ready flag set to Y.

   Rows that are ready for reprocessing will be picked up in the next incremental run.

To load resources from Microsoft Excel:

1. Update MTH_RESOURCES.csv.
2. Run the MTH_RESOURCE_XS_ALL_MAP mappings.
3. Run one of the following processes:
   - MTH_RES_DIM_EXT_INIT_PF for an initial data collection
   - MTH_RES_DIM_EXT_INCR_PF for an incremental data collection
4. Correct errors using SQL Developer or Oracle APEX. All errors in MTH_RESOURCES_ERR must be fixed and the reprocess ready flag set to Y.

   Rows that are ready for reprocessing will be picked up in the next incremental run.

Microsoft Excel Template: Resource Master

The Resource Master table is as follows:

Resource Code	Resource Type	UOM	Capacity Units	Available 24 Hour Flag	Plant Code	System Code	Disable Date	Resource Name
500-1-M1	1	Ea	10		PLANT1	SCMC2MQ0	21/09/2006	Machine1
5269-2772-M1	1	Ea	11		PLANT1	SCMC2MQ0		Machine2
500-1-M2	1	Ea	12		PLANT1	SCMC2MQ0		Machine3
5269-2772-M2	1	Ea	13		PLANT1	SCMC2MQ0		Machine4

Load Equipment Hierarchy

Equipment hierarchies can be loaded from the Microsoft Excel utility or from EBS. To load resources from EBS:

1. Run one of the following processes:
   - MTH_EQUIP_HRCHY_EBS_INIT_PF for an initial data collection
   - MTH_EQUIP_HRCHY_EBS_INCR_PF for an incremental data collection
2. Correct errors using SQL Developer or Oracle APEX. All errors in MTH_EQUIP_ERR must be fixed and the reprocess ready flag set to Y.

   Rows that are ready for reprocessing will be picked up in the next incremental run.
3. For OBIEE reporting, run one of the following denorm process flows:
   - MTH_EQUIP_FD_EBS_INIT_PF for an initial data collection
   - MTH_EQUIP_FD_EBS_INCR_PF for an incremental data collection

To load resources from Microsoft Excel:

1. Update MTH_EQUIP_HRCHY_DEF.csv.
2. Run the MTH_EQUIP_HRCHY_XS_ALL_MAP mappings.
3. Run one of the following processes:
   - MTH_EQUIP_HRCHY_EXT_INIT_PF for an initial data collection
   - MTH_EQUIP_HRCHY_EXT_INCR_PF for an incremental data collection
4. Correct errors using SQL Developer or Oracle APEX. All errors in MTH_EQUIP_HIERARCHY_ERR must be fixed and the reprocess ready flag set to Y.

   Rows that are ready for reprocessing will be picked up in the next incremental run.
5. For OBIEE reporting, run one of the following denorm process flows:
   - MTH_EQUIP_FD_EXT_INIT_PF for an initial data collection
   - MTH_EQUIP_FD_EXT_INCR_PF for an incremental data collection

   Important: In the initial denorm setup, you must first run the MTH_EQUIP_FD_EXT_INIT_PF process flow.

Equipment Hierarchy: Microsoft Excel Templates

Equipment Hierarchy

The Equipment Hierarchy table is as follows:

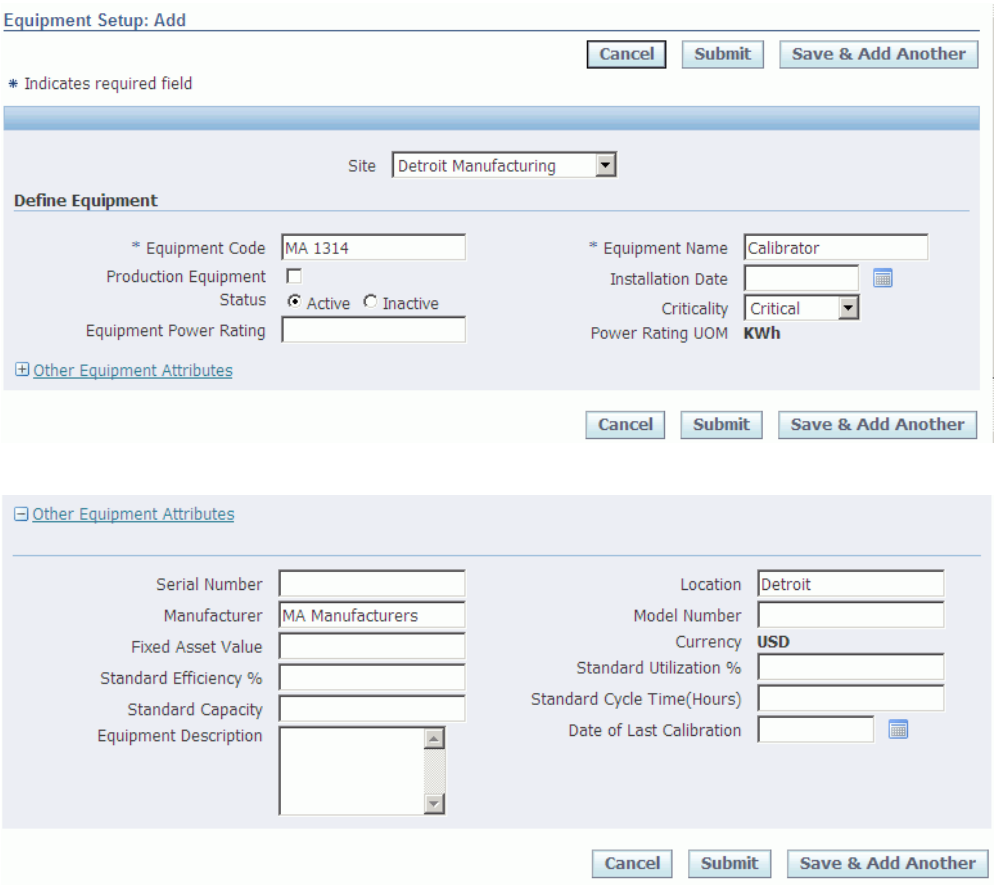
User Defined Hierarchy Name	Level Entity	Parent Entity	Level Num	Effective Date	System Code
Resource Group Hierarchy	MIXER1	7266-2772-MTHHUB1	10	01/01/2008	SCMC2MQ0
Resource Group Hierarchy	BLOWER1	7266-2772-MTHHUB1	10	01/01/2008	SCMC2MQ0
Department Hierarchy	MIXER1	7266-2772-MTHHUB1	10	01/01/2008	SCMC2MQ0
Department Hierarchy	BLOWER1	7266-2772-MTHHUB1	10	01/01/2008	SCMC2MQ0
Equipment Hierarchy 01	SITE1	SITE1	7	01/01/2008	SCMC2MQ0
Equipment Hierarchy 01	LINE1	SITE11	8	01/01/2008	SCMC2MQ0
Equipment Hierarchy 01	CELL1	LINE1	9	01/01/2008	SCMC2MQ0
Equipment Hierarchy 01	CELL1	LINE1	9	01/01/2008	SCMC2MQ0
Equipment Hierarchy 01	MIXER1	CELL1	10	01/01/2008	SCMC2MQ0
Equipment Hierarchy 01	BLOWER1	CELL2	10	01/01/2008	SCMC2MQ0

Adding Equipment

Use the Equipment Setup: Add page to add equipment to a site.

To add equipment to a site:

1. Using the Manufacturing Operations Center Administrator responsibility, navigate to the Entity Hierarchy home page.
2. Select the Equipment Details tab. The Equipment Setup: Search page appears.
3. Enter the Site for which you want to add equipment.
4. Click Go. The Results section displays all the equipments for the site.
5. Click Add. The Equipment Setup: Add page appears.
6. Enter the Equipment Code and Equipment Name. Required.
7. Select the Production Equipment check box if the equipment is used in a production process.
8. Enter the Installation Date to specify the equipment installation date.
9. Select equipment Status as Active or Inactive.
10. Select the Criticality of the equipment as Critical or Non-Critical.
11. Enter the Equipment Power Rating. Power Rating UOM is the unit of measure in which the Equipment Power Rating is expressed.
12. Optionally enter detailed equipment information in the Other Equipment Attributes region.
13. Click Save or Click Save & Add Another to add another equipment.



Viewing Equipment Details

Use the Equipment Setup Search page to view equipment details.

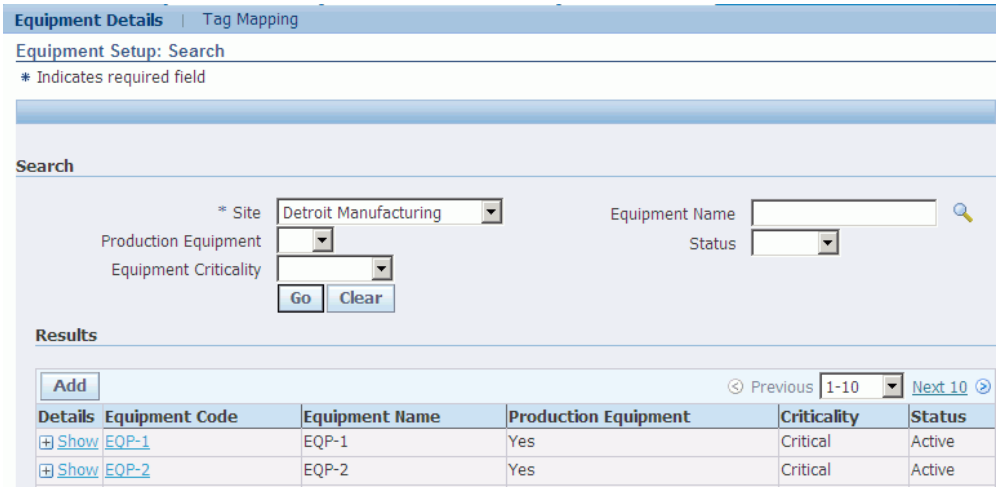
To view equipment details:

1. Navigate to the Equipment Setup Search page.
2. Enter all or any one of the following fields to refine your search for equipment:
   - Site. Required. If you search by site, then all the equipments for the site display.
   - Select Production Equipment as Yes, to search for production equipment.
   - Select Equipment Criticality as Critical or non-critical.
   - Enter Equipment Name to view the details of specific equipment.
   - Select the Status as Active or Non-Active to search for an equipment based on

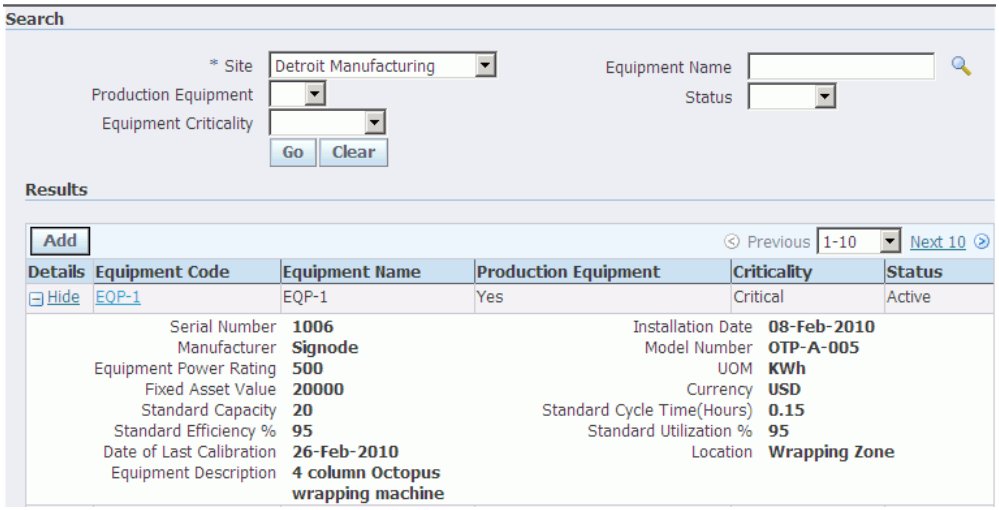
Status

3. Click Go.

4. View the search results in the Results region.



5. Click Show in the Details column to view the equipment details.



Updating Equipment

Use the Equipment Setup Update page to update equipment information.

To update equipment:

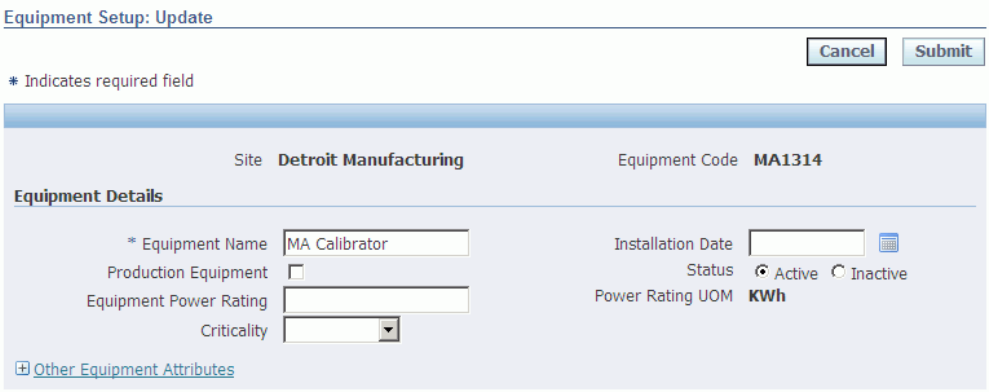
1. Navigate to the Equipment Setup: Search page.

2. Enter the Site for which you want to update equipment.

3. Click Go. The Results section displays all the equipments for the site.

4. Click the Equipment Code for the equipment that you want to update. The Equipment Setup Update page appears.

5. Update the information in the Equipment Details and Other Equipment Attributes.



Adding a Resource

Use the Resource Setup: Add page to add a resource to a site.

To add a resource:

1. Using the Manufacturing Operations Center Administrator responsibility, navigate to the Entity Hierarchy home page.

2. Select the Resource Setup tab. The Resource Setup: Search page appears.

3. Enter the Site for which you want to add resources.

4. Click Add. The Resource Setup: Add page appears.

5. Enter the Resource Code and Resource Name. Required.

6. Select the Resource Type.

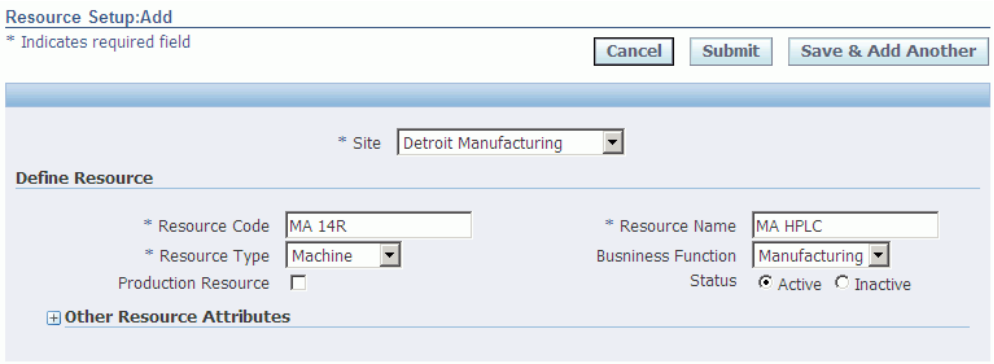
7. Select the Business Function of the resource. Options are Administration, Maintenance, Manufacturing, Planning, Purchasing, Sales, and Stores.

8. Select the Criticality of the resource as Critical or Non-Critical.

9. Select the Production Resource check box if the resource is used in a production

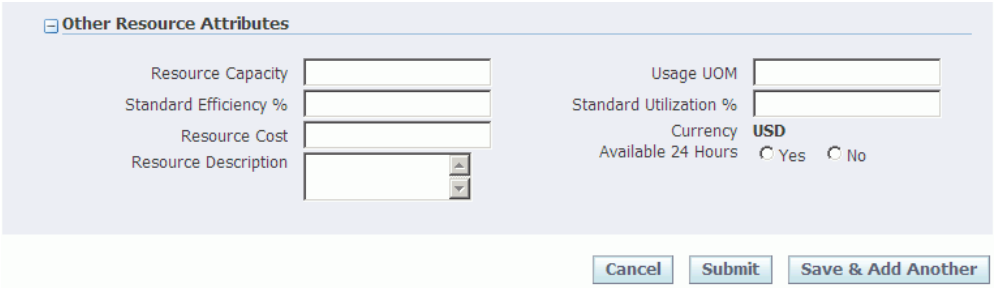
process.

10. Select resource Status as Active or Inactive.



11. Optionally, enter detailed resource information in the Other Resource Attributes region.

12. Click Submit or Click Save & Add Another to add another resource.



Viewing Resource Details

Use the Resource Setup: Search page to view resource details.

To view resource details:

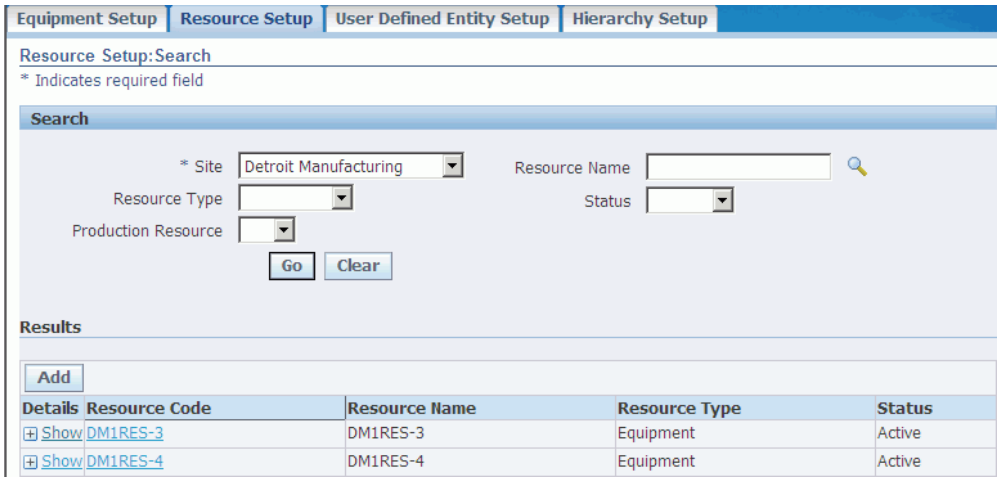
1. Navigate to the Resource Setup: Search page.

2. Enter all or any one of the following fields to refine your search for a resource:

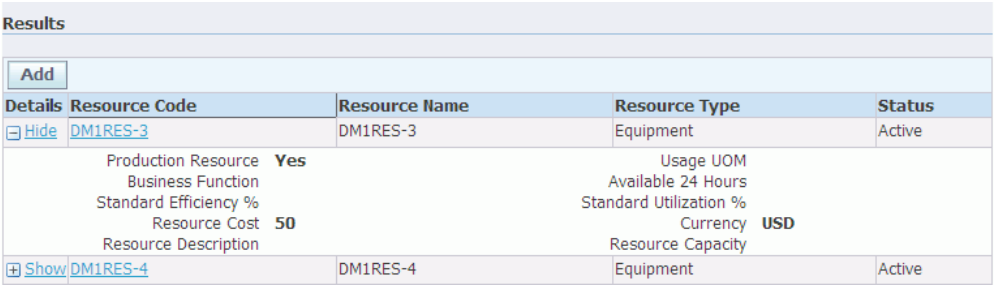
   - Site. Required. If you search by site, then all the resources for the site display.
   - Enter Resource Name to view the details of a specific resource.
   - Select Resource Type as Equipment, Machine, Person, or Unassigned.

- Select the Status as Active or Non-Active to search for a resource based on Status.
- Select Production Resource as Yes or No to indicate if the resource is used in production processes.

3. Click Go.
4. View the search results in the Results region.



5. Click Show in the Details column to view the resource details.



Updating a Resource

Use the Resource Setup Update page to update resource information.

To update a resource:

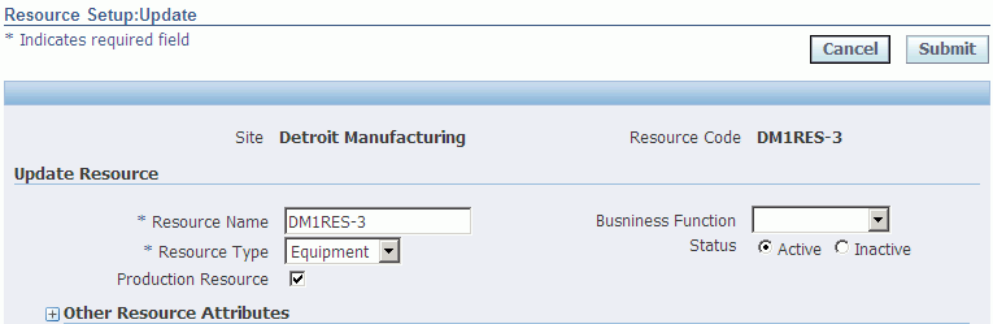
1. Navigate to the Resource Setup: Search page.
2. Enter the Site for which you want to update resources.

3. Click Go. The Results section displays all the resources for the site.

4. Click the Resource Code of the resource that you want to update. The Resource Setup Update page appears.

5. Update the information in the Update Resource and Other Resource Attributes regions.

6. Click Submit.



Viewing Entities

You can view the entities of a specific type or belonging to a specific site using the User Defined Entity Setup: Search page.

To view entities:

1. Using the Manufacturing Operations Center Administrator responsibility, navigate to the Entity Hierarchy home page.

2. Select the User Defined Entity Setup tab. The User Defined Entity Setup: Search page appears.

3. Enter all or any one of the following fields to refine your search for a user-defined entity resource:

   - Entity Type to search for an entity based on entity type. Options are Building, Department, Floor, Floor Section, Production Area, Production Cell, Production Line, Production Unit, Resource Group, Utility, and Yard. Required.

   - Entity Name to search for a specific entity.

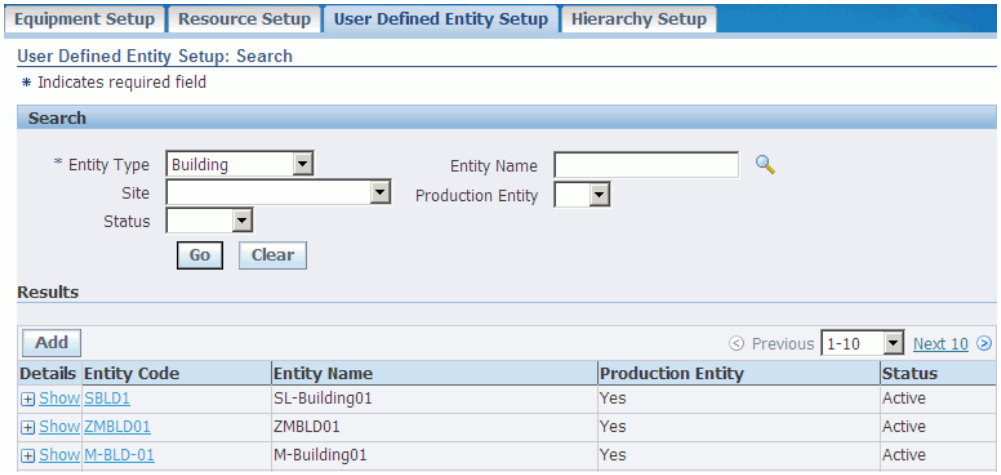
   - Site. If you search by site, then all the entities of a specific type in a site display.

   - Select Production Entity as Yes or No to indicate if the entity is used for production processes.

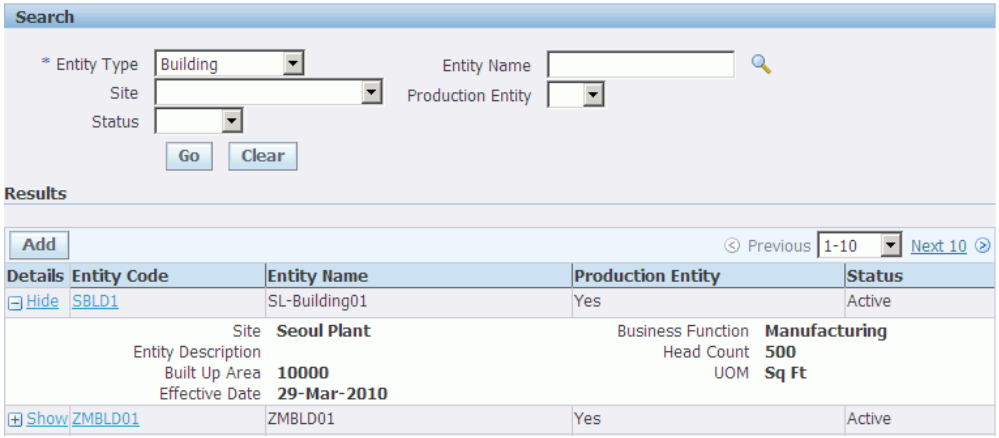
- Select the Status as Active or Non-Active to search for entities based on Status.

4. Click Go.

5. View the search results in the Results region.



6. Click Show in the Details column to view the entity details.



Adding a User Defined Entity

Use the User Defined Entity Setup: Add page to add an entity.

1. Navigate to the User Defined Entity Setup page.

2. Select the Entity Type that you want to add.

3. Click Go. Results section displays all the entities of the selected entity type.

4. Click Add. The User Defined Entity Setup: Add page appears

5. Enter the Entity Code and Entity Name for the entity that you want to add. Required.

6. Select the Production Entity check box if the entity is used in a production processes.

7. Select the Business Function of the entity. Options are: Administration, Maintenance, Manufacturing, Planning, Purchasing, Sales, and Stores.

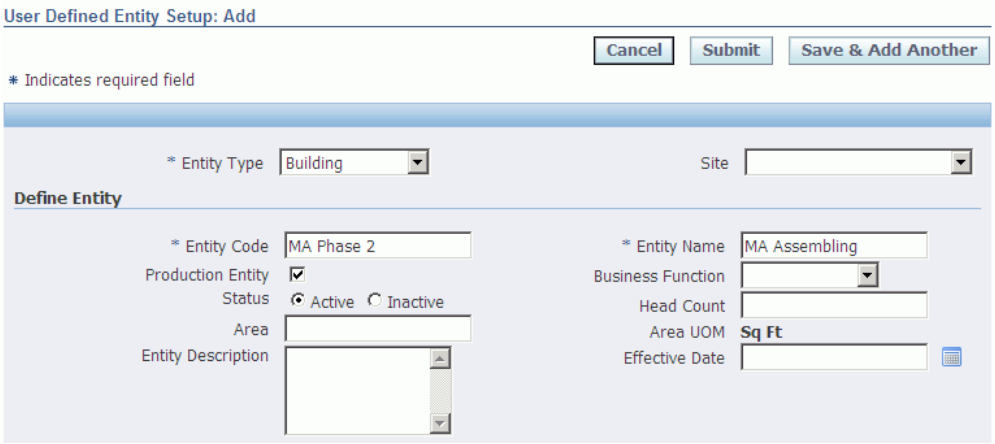
8. Select Entity Status as Active or Inactive. Active displays by default.

9. Enter the Headcount and Area of the entity.

10. Enter a brief description of the entity in the Entity Description field.

11. Enter the entity Effective Date.

12. Click Submit or Click Save & Add Another to add another entity.



Updating a User Defined Entity

Use the User Defined Entity Setup: Update page to update entity information.

To update a user defined entity:

1. Navigate to the User Defined Entity Setup: Search page.

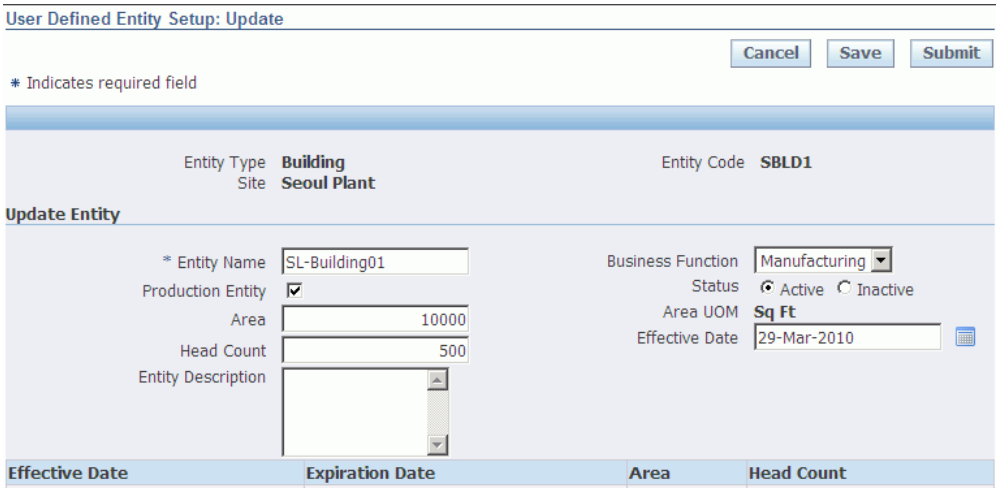
2. Enter the Entity Type that you want to update.

3. Click Go. The Results section displays all the entities of the selected type.

4. Click the Entity Code to update. The User Defined Entity Setup: Update page appears.

5. Update the information in the Update Entity region.

6. Click Save and then Submit.



Overview of Entity Hierarchy

Oracle Manufacturing Operations Center enables you to define equipment, entities, and also build the entity hierarchies. Site is an entity and it can have many child entities as follows:

- Building
- Floor
- Floor Section
- Production Area
- Production Unit
- Production Cell
- Production Line
- Department
- Resource Group

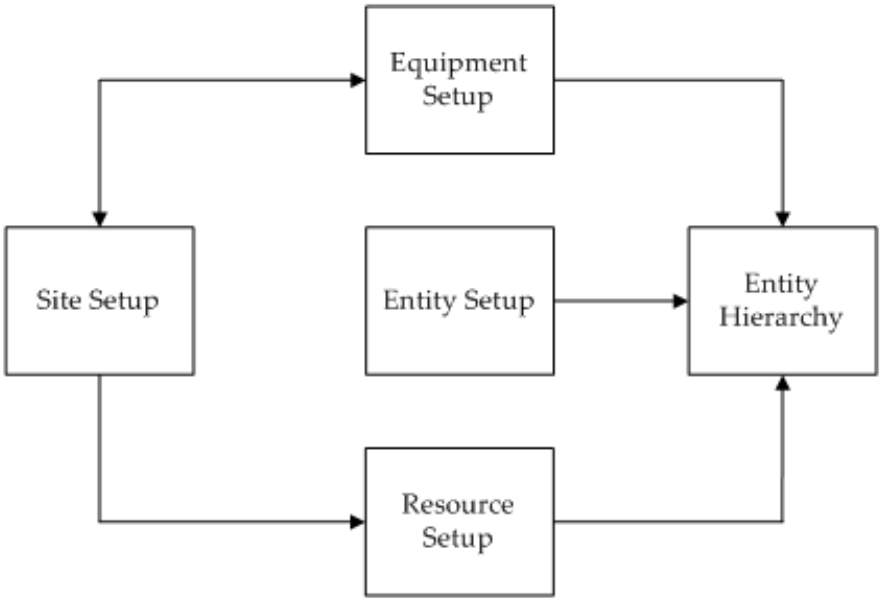
Seeded entity hierarchies like, Department Hierarchy, Facility Hierarchy, Resource

Group Hierarchy, Equipment Hierarchy 01 and Equipment Hierarchy 02 are provided. You can create entity hierarchies for both production and non-production facilities. You can build a hierarchy using Active and Inactive sites, entities, resources, and equipments, and for data contextualization, the entities must be Active.

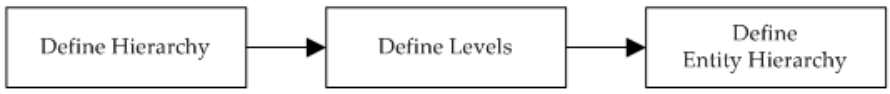
There are no separate hierarchies for production and non-production facilities. For example, a production entity can hold child entities that can be either Production or Non-Production type.

Each Hierarchy supports a maximum of 10 levels. A Child entity can be linked to only one Parent entity. By default, an unassigned entity rolls up to the unassigned parent entity.

The following diagram depicts the process flow for setting up entity hierarchies and describes that before you can set up an Entity Hierarchy, you must set up Sites, Equipments, Resources, and Entities:



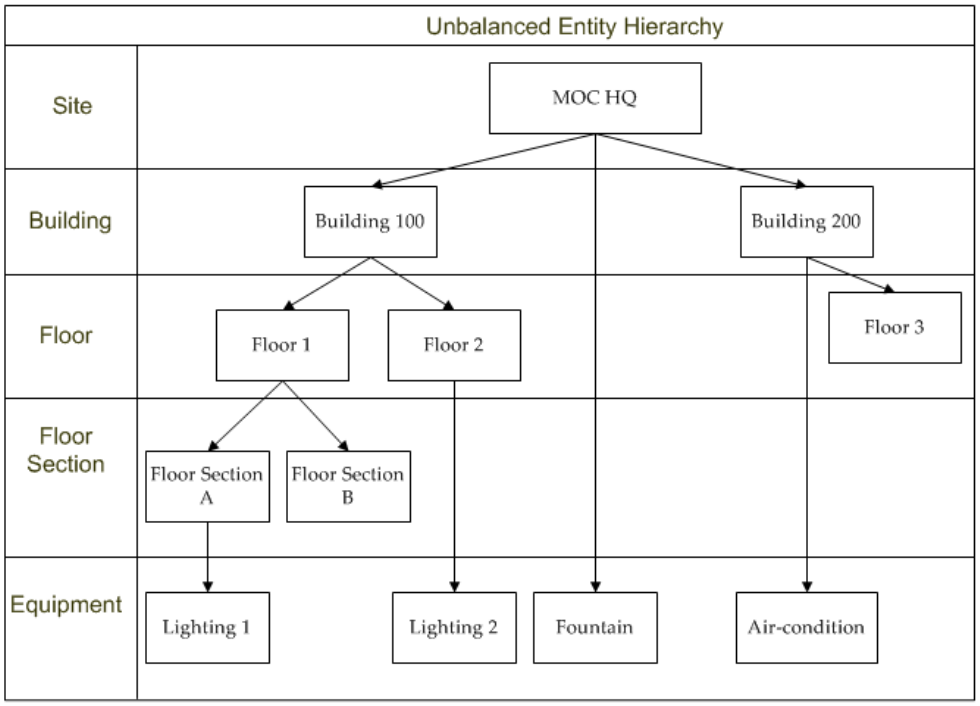
Using the Entity Hierarchy pages you can set up entity hierarchies in the following sequence:



You must create a balanced entity hierarchy to be able to view in OBIEE. A balanced hierarchy implies that each level within the hierarchy includes logical relationships between each entity. An unbalanced hierarchy lacks relationship entities for each level within the hierarchy, or the relationships are illogical.

The following example and diagrams describe how you can balance an unbalanced hierarchy using the Oracle Manufacturing Operations Center application:

Consider a site named MOC HQ with two buildings 100 and 200. Building 100 has two floors 1 and 2 and Building 200 has one floor, Floor 3. Floor 1 has floor section A with a lighting equipment 1, and floor section B. Floor 2 has no floor sections but has lighting equipment 2. Building 200 has air- conditioning equipment as the lowest hierarchy level. The equipment Fountain is linked to MOC HQ. The diagram Unbalanced Entity Hierarchy is a graphical representation of MOC HQ hierarchy and shows how the present hierarchy is Unbalanced.



In this example, the following relationships cause imbalance in the hierarchy:

- Fountain equipment is directly attached to the MOC HQ Site.
- Air-conditioning equipment is directly attached to Building 200.
- Lighting 2 equipment is attached to Floor 2.
- Building 200 has only Floor 3 and no Floor Section and Equipment.
- Floor Section B has no Equipment.

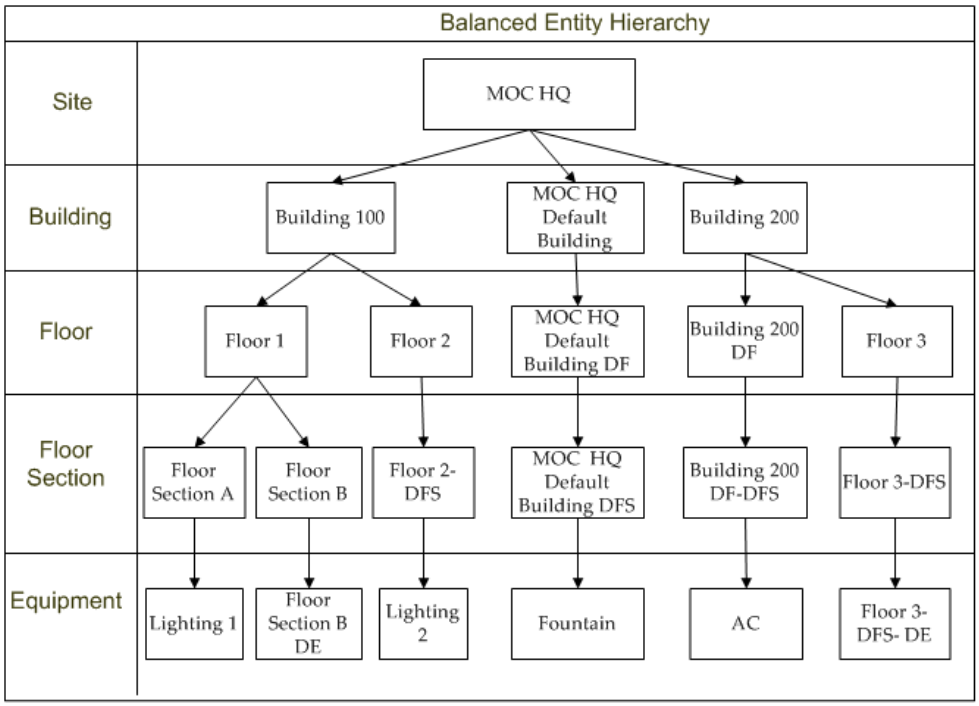
Using the Entity Hierarchy pages of the Oracle Manufacturing Operations Center application you can balance the MOC HQ hierarchy by adding default entities at the relevant levels in the hierarchy:

- Fountain equipment is directly attached to the MOC HQ Site: Add Default Building, Floor and Floor Section
- Air-conditioning equipment is directly attached to Building 200: Add Default Floor and Floor Section
- Lighting 2 equipment is attached to Floor 2: Add Default Floor Section
- Building 200 has only Floor 3 and no Floor Section and Equipment: Add Default

Floor Section and Default Equipment

- Floor Section B has no Equipment: Add Default Equipment.

The Balanced Entity Hierarchy diagram depicts the new MOC HQ hierarchy after balancing:



After you build a hierarchy you cannot:

- Change the number of levels
- Add entities to levels
- Modify existing entities within each level

You can update only the current version of a hierarchy. You can move entities from one entity hierarchy to another.

Defining a Hierarchy

You can define a hierarchy using the Define Hierarchies page.

To define a Hierarchy:

1. Using the Manufacturing Operations Center Administrator responsibility, navigate

to the Entity Hierarchy home page.

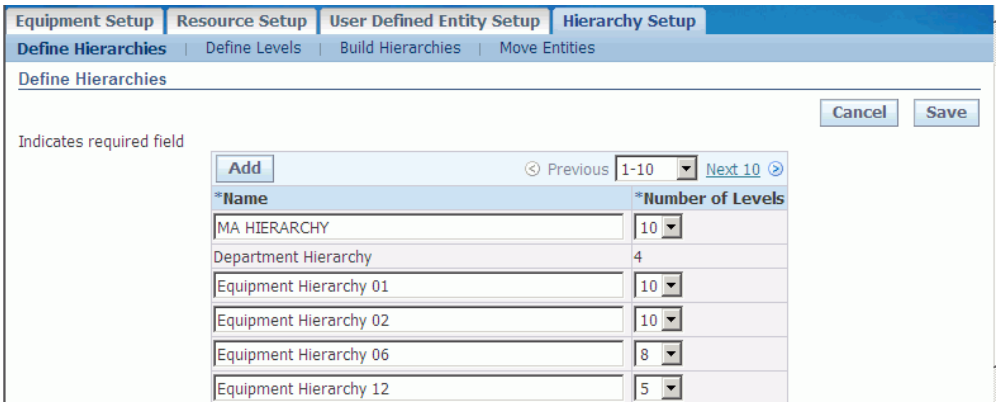
2. Select the Hierarchy Setup tab. Define Hierarchy page appears that displays a list of seeded hierarchies.

3. Click Add. A row in Name column is enabled.

4. Enter the name of the hierarchy that you want to define.

5. Select the Number of Levels for the hierarchy.

6. Click Save.



Defining Levels

You can define levels in a hierarchy using the Define Levels page.

To define levels:

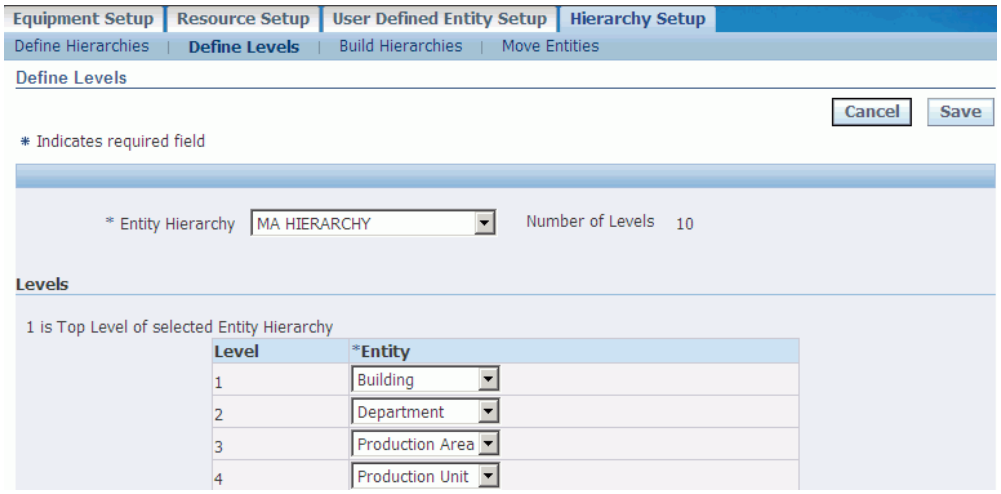
1. Using the Manufacturing Operations Center Administrator responsibility, navigate to the Entity Hierarchy home page and select the Hierarchy Setup tab.

2. Select the Define Levels tab. The Define Levels page appears.

3. Select the Entity Hierarchy for which you want to define levels.

4. In the Levels region select the Entity for each level. If there are no levels defined for an Entity Hierarchy, then the Levels region is not enabled.

5. Click Submit.



Building Hierarchies

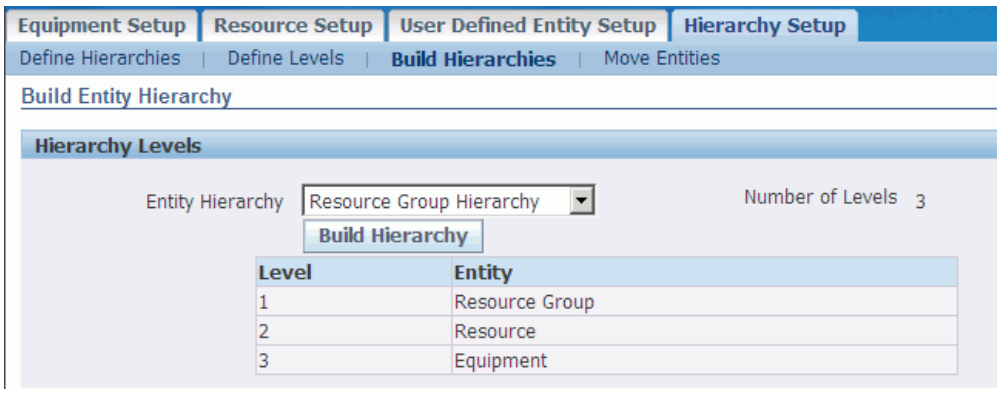
You can build hierarchies using the Build Hierarchy page.

To build a hierarchy:

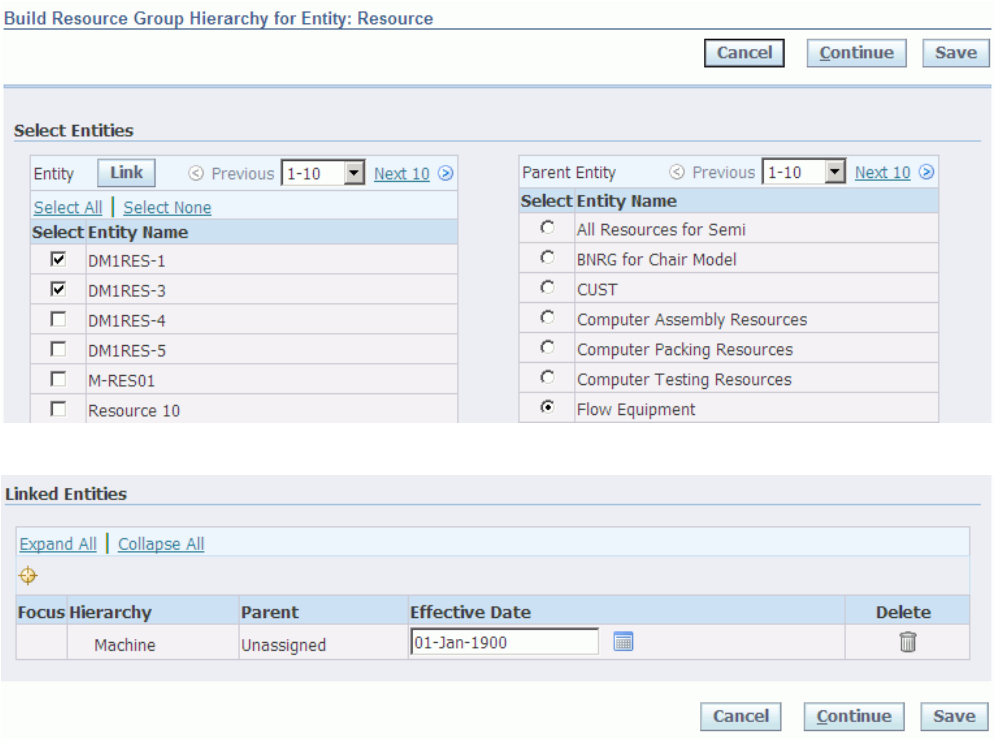
1. Using the Manufacturing Operations Center Administrator responsibility, navigate to the Entity Hierarchy home page and select the Hierarchy Setup tab.

2. Select the Build Hierarchies tab. The Build Entity Hierarchy page appears.

3. Select the Entity Hierarchy for which you want to build a hierarchy. The levels and entities available to the selected entity hierarchy display.



4. Click Build Hierarchy. The Select Entities region displays a list of entities and parent entities. Linked Entities region displays the entities that are already linked in the hierarchy.



5. In the Select Entities region, select the entities to add to the Hierarchy.
6. Select the Parent Entity to which you want to add the entities.
7. Click Link.
8. Click Save to save the changes or click Next to link entities to the next levels in the hierarchy.
9. Click Submit after linking entities to the last level in the hierarchy, click Submit.
10. Run the MTH_EQUIP_HRCHY_EXT_INCR_PF process flow in OWB.
11. Run the MTH_EQUIP_FD_EXT_INIT_PF process flow to populate the MTH_EQUIP_DENORM_D table. This is required when you are populating the MTH_EQUIP_DENORM_D table for the first time.
12. Run the MTH_EQUIP_FD_EXT_INCR_PF process flow.

Moving Entities

Use the Move Entities page to move entities from one parent entity to another.

To move entities:

1. Using the Manufacturing Operations Center Administrator responsibility, navigate to the Entity Hierarchy home page and select the Hierarchy Setup tab.

2. Select the Move Entities tab. The Move Entities page appears.

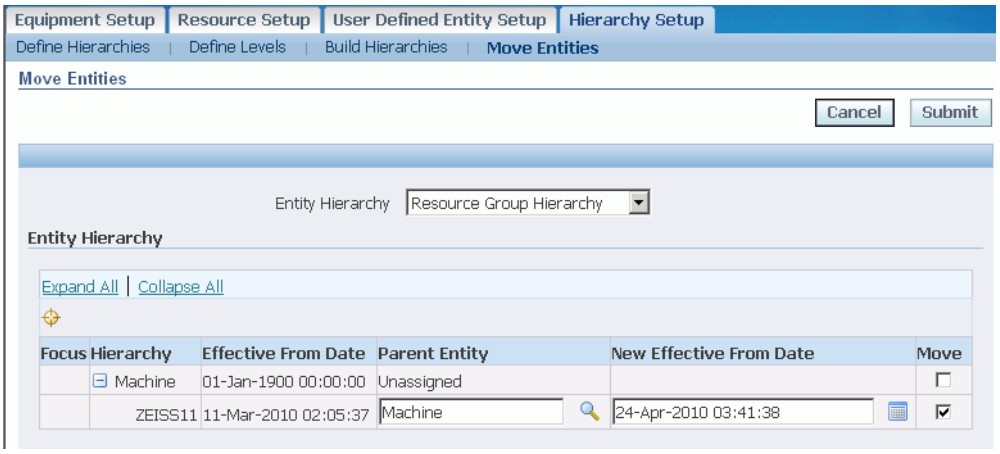
3. Select the Entity Hierarchy for which you want to move entities. The Entity Hierarchy region displays the Hierarchy, Effective Date, and Parent Entity.

4. Select the Move check box to select the hierarchy to move. The Parent Entity field is enabled.

5. Select a new Parent Entity.

6. Enter a new Effective Date.

7. Click Submit.



11

Load Data Reference and Transaction Data

EBS Data Collection

For data collected by EBS:

Entity	Initial Process Flow	Incremental Process Flow	Error Table
Organization	MTH_PLANTS_DIM_EBS_INIT_PF	MTH_PLANTS_DIM_EBS_INCR_PF	N/A
Production Schedule	MTH_WO_EBS_INIT_PF	MTH_WO_EBS_INCR_PF	MTH_PRODUCTION_SCHEDULES_ERR
Material Produced	MTH_WO_EBS_INIT_PF	MTH_WO_EBS_INCR_PF	MTH_PROD_MTL_PRODUCED_ERR
Equipment Shifts	MTH_EQUIP_SHIFTS_EBS_INIT_PF	MTH_EQUIP_SHIFTS_EBS_INCR_PF	MTH_EQUIPMENT_SHIFTS_ERR
Equipment Entities	MTH_EQUIP_ENT_EBS_INIT_PF	MTH_EQUIP_ENT_EBS_INCR_PF	MTH_EQUIP_ENTITIES_ERR
Item	MTH_ITEMS_DIM_EBS_INIT_PF	MTH_ITEMS_DIM_EBS_INCR_PF	MTH_ITEMS_ERR
Item Cost	MTH_ITEM_COST_EBS_INIT_PF	MTH_ITEM_COST_EBS_INCR_PF	MTH_ITEM_COST_ERR

Entity	Initial Process Flow	Incremental Process Flow	Error Table
Item Category	MTH_ITEM_HRCHY_EBS_INIT_PF	MTH_ITEM_HRCHY_EBS_INCR_PF	N/A
Resource	MTH_RES_DIM_EBS_INIT_PF	MTH_RES_DIM_EBS_INCR_PF	MTH_RESOURCES_ERR
Resource Cost	MTH_RES_COST_EBS_INIT_PF	MTH_RES_COST_EBS_INCR_PF	MTH_RESURCE_COST_ERR
Workday Shifts	MTH_WORKDAY_SHIFTS_EBS_INIT_PF	MTH_WORKDAY_SHIFTS_EBS_INCR_PF	MTH_WORKDAY_SHIFTS_ERR
Sales Orders	MTH_WO_SALES_ORDERS_EBS_INIT_PF	MTH_WO_SALES_ORDERS_EBS_INCR_PF	MTH_WO_SALES_ORDERS_ERR

CSV (Comma Separated Values) Template Data Collection

For data collected by .CSV templates:

Entity	CSV File	XS Mapping	Initial PF	Incremental PF	Error Table
System	MTH_SYSTEMS_SETUP.csv	MTH_SYSTEMS_SETUP_XS_ALL_MAP	N/A	N/A	N/A
Organization	MTH_ORG.csv	MTH_ORG_XS_ALL_MAP&MTH_PLANTS_ORG_ALL_MAP	N/A	N/A	N/A
Workday Shifts	MTH_WORKDAY_SHIFTS.csv	MTH_WORKDAY_SHIFTS_XS_ALL_MAP	MTH_WORKDAY_SHIFTS_EXT_INIT_PF	MTH_WORKDAY_SHIFTS_EXT_INCR_PF	MTH_WORKDAY_SHIFTS_ERR

Item Master	MTH_ITEMS_MASTER.csv	MTH_ITEM_MASTER_XS_ALL_MAP	MTH_ITEMS_DIM_EXT_INIT_PF	MTH_ITEMS_DIM_EXT_INCR_PF	MTH_ITEMS_ERR
Item Categories	MTH_ITEM_CATEGORY.csv	MTH_ITEM_CATEGORIES_XS_MAP	MTH_CAT_DIM_EXT_INIT_PF	MTH_CAT_DIM_EXT_INCR_PF	N/A
Item Hierarchy	MTH_ITEM_HIERARCHY.csv	MTH_ITEM_HIERARCHY_XS_MAP	MTH_ITEM_HRCHY_EXT_INIT_PF	MTH_ITEM_HRCHY_EXT_INCR_PF	MTH_ITEM_HIERARCHY_ERR
Item Cost	MTH_ITEM_COST.csv	MTH_ITEM_COST_XS_MAP	MTH_ITEM_COST_EXT_INIT_PF	MTH_ITEM_COST_EXT_INCR_PF	MTH_ITEM_COST_ERR
Equipment Entities	MTH_ENTITY_MASTER.csv	MTH_EQUIP_ENT_XS_ALL_MAP	MTH_EQUIP_ENT_EXT_INIT_PF	MTH_EQUIP_ENT_EXT_INCR_PF	MTH_EQUIP_ENTITIES_ERR
Equipment Master	MTH_EQUIP_MASTER.csv	MTH_EQUIP_XS_ALL_MAP	MTH_EQUIP_DIM_EXT_INIT_PF	MTH_EQUIP_DIM_EXT_INCR_PF	MTH_EQUIPMENTS_ERR
Equipment Hierarchy	MTH_EQUIP_HRCHY_DEF.csv	MTH_EQUIP_HRCHY_XS_ALL_MAP	MTH_EQUIP_HRCHY_EXT_INIT_PF	MTH_EQUIP_HRCHY_EXT_INCR_PF	MTH_EQUIP_HIERARCHY_ERR
Equipment Standard Rates	MTH_EQUIP_STANDARD_RATES.csv	MTH_EQUIP_STD_RATES_XS_ALL_MAP	MTH_EQUIP_STD_RATE_EXT_INIT_PF	MTH_EQUIP_STD_RATE_EXT_INCR_PF	MTH_EQUIP_STANDARD_RATES_ERR
Equipment Production Schedule	MTH_EQUIP_PROD_SCHEDULE.csv	MTH_EQUIP_PROD_SCHD_XS_ALL_MAP	MTH_EQUIP_PRD_SCHD_EXT_INIT_PF	MTH_EQUIP_PRD_SCHD_EXT_INCR_PF	MTH_EQUIP_PROD_SCHEDULE_ERR
Planned Usage	MTH_ENTITY_PLANNED_USAGE.csv	MTH_ENT_PLANNED_USG_XS_MAP	MTH_PLANNED_USG_EXT_INIT_PF	MTH_PLANNED_USG_EXT_INCR_PF	MTH_ENTITY_PLANNED_USAGE_ERR

Asset	MTH_ASSET_MASTER.csv	MTH_ASSET_XS_MAP	MTH_ASSET_EXT_INIT_PF	MTH_ASSET_EXT_INCR_PF	MTH_ASSET_ERR
Resource	MTH_RESOURCES.csv	MTH_RESOURCE_XS_ALL_MAP	MTH_RES_DIM_EXT_INIT_PF	MTH_RES_DIM_EXT_INCR_PF	MTH_RESOURCES_ERR
Resource Cost	MTH_RESOURCE_COST.csv	MTH_RESOURCE_COST_XS_ALL_MAP	MTH_RES_COST_EXT_INIT_PF	MTH_RES_COST_EXT_INCR_PF	MTH_RESOURCE_COST_ERR
Production Schedule	MTH_PROD_SCHEDULES.csv	MTH_WO_XS_ALL_MAP	MTH_WO_EXT_INIT_PF	MTH_WO_EXT_INCR_PF	MTH_PRODUCTION_SCHEDULES_ERR
Material Produced	MTH_PROD_MTL_PRODUCED.csv	MTH_WO_ITEMS_XS_ALL_MAP	MTH_WO_ITEMS_EXT_INIT_PF	MTH_WO_ITEMS_EXT_INCR_PF	MTH_PROD_MTL_PRODUCED_ERR
Material Produced Transactions	MTH_MTL_PRODUCED_TXN.csv	MTH_MTL_PRD_TXN_XS_ALL_MAP	MTH_MTL_PRD_TXN_EXT_INIT_PF	MTH_MTL_PRD_TXN_EXT_INCR_PF	MTH_PROD_MTL_PRODUCED_TXN_ERR
Produced Transaction Lots	MTH_MTL_PRODUCED_TXN_LOT.csv	MTH_MTL_PRD_TXN_LOT_XS_ALL_MAP	MTH_MTL_PRD_TX_LOT_EXT_INIT_PF	MTH_MTL_PRD_TX_LOT_EXT_INCR_PF	MTH_MTL_PRODUCED_TXN_LOT_ERR
Production Segments	MTH_PROD_SEGMENTS.csv	MTH_PROD_SEGMENTS_XS_ALL_MAP	MTH_PROD_SEG_EXT_INIT_PF	MTH_PROD_SEG_EXT_INCR_PF	MTH_PRODUCTION_SEGMENTS_ERR
Production Sub Segments	MTH_PROD_SUB_SEGMENTS.csv	MTH_PROD_SUB_SEG_XS_OPM_MAP	MTH_PROD_SUB_SEG_EXT_INIT_PF	MTH_PROD_SUB_SEG_EXT_INCR_PF	MTH_PROD_SUB_SEGMENTS_ERR
Production Segment Transactions	MTH_PROD_SEGMENTS_TXN.csv	MTH_PROD_SEG_TXN_XS_ALL_MAP	MTH_WO_SEG_EXT_INIT_PF	MTH_WO_SEG_EXT_INCR_PF	MTH_PROD_SEGMENTS_TXN_ERR

Material Consumed	MTH_MTL_CONSUMED.csv	MTH_MTL_CNS_XS_ALL_MAP	MTH_MTL_CMD_EXT_INIT_PF	MTH_MTL_CMD_EXT_INCR_PF	MTH_PROD_MTL_CONSUMED_ERR
Consumed Transactions	MTH_MTL_CONSUMED_TXN.csv	MTH_MTL_CNS_TXN_XS_ALL_MAP	MTH_MTL_CMD_TXN_EXT_INIT_PF	MTH_MTL_CMD_TXN_EXT_INCR_PF	MTH_PROD_MTL_CONSUMED_TXN_ERR
Consumed Transaction Lots	MTH_MTL_CONSUMED_TXN_LOT.csv	MTH_MTL_CNS_TXN_LOT_XS_ALL_MAP	MTH_MTL_CMD_TX_LOT_EXT_INIT_PF	MTH_MTL_CMD_TX_LOT_EXT_INCR_PF	MTH_MTL_CONSUMED_TXN_LOT_ERR
Tag Data Source	MTH_TAG_DATA_SOURCES.csv	MTH_TAG_DATA_SRCS_XS_ALL_MAP	MTH_TAG_DATA_SRCS_EXT_INIT_PF	MTH_TAG_DATA_SRCS_EXT_INCR_PF	MTH_TAG_DATA_SOURCES_ERR
Tag Master	MTH_TAG_MASTER_UI.csv	MTH_TAG_MASTER_XS_MAP	MTH_TAG_MASTER_EXT_INIT_PF	MTH_TAG_MASTER_EXT_INCR_PF	MTH_TAG_MASTER_ERR
Resource Requirement	MTH_RES_REQ.csv	MTH_RES_REQ_XS_ALL_MAP	MTH_RES_REQ_EXT_INIT_PF	MTH_RES_REQ_EXT_INCR_PF	MTH_RESOURCE_REQUIREMENTS_ERR
Resource Transactions	MTH_RES_TXN.csv	MTH_RES_TXN_XS_ALL_MAP	MTH_RES_TXN_EXT_INIT_PF	MTH_RES_TXN_EXT_INCR_PF	MTH_RESOURCE_TXN_ERR
Sales Orders	MTH_WO_SALES_ORDERS.csv	MTH_WO_SALES_ORDERS_XS_ALL_MAP	MTH_WO_SALES_ORDER_EXT_INIT_PF	MTH_WO_SALES_ORDER_EXT_INCR_PF	MTH_WO_SALES_ORDERS_ERR
Equipment Shifts	MTH_EQUIP_SHIFTS.csv	MTH_EQUIP_SHIFTS_XS_MAP	MTH_EQUIP_SHIFTS_EXT_INIT_PF	MTH_EQUIP_SHIFTS_EXT_INCR_PF	MTH_EQUIPMENT_SHIFTS_ERR
Meter Reading	MTH_METER_READINGS.csv	MTH_METER_READINGS_XS_ALL_MAP	MTH_METER_READINGS_EXT_INIT_PF	MTH_METER_READINGS_EXT_INCR_PF	MTH_METER_READINGS_ERR

Equipment Output	MTH_EQUIP_OUTPUT.csv	MTH_EQUIP_OUTPUT_XS_ALL_MAP	MTH_EQUIP_OUTPUT_EXT_INIT_PF	MTH_EQUIP_OUTPUT_EXT_INCR_PF	MTH_EQUIP_OUTPUT_ERR
Equipment Status	MTH_EQUIP_STATUS.csv	MTH_EQUIP_STATUS_XS_ALL_MAP	MTH_EQUIP_STATUS_EXT_INIT_PF	MTH_EQUIP_STATUS_EXT_INCR_PF	MTH_EQUIP_STATUSES_ERR

If you load the status readings through CSV template, then you must provide equipment status readings for all the 24 hours. When you provide From Date and To Date in the CSV template, the application subtracts one second from the To Date while loading the Status information. If the reading time for the equipment status is outside a valid shift, then the reading should be provided using a catchall shift reference. If continuous readings are not provided, then the MOC application errors out the readings.

If you are loading the energy meter readings or equipment output for the following entities using CSV, you must pass the reading time as one second less than the actual reading time as the MOC application considers the end of the hour as XX:59:59 for separating the hourly boundaries by one second:

- Scrap Quantity
- Output Quantity
- Rework Quantity
- Rejected Quantity
- Completed Quantity

12

Profile Options

This chapter covers the following topics:

- MTH: Item Classification for Extensible Attributes
- MTH: Equipment Classification for Extensible Attributes
- MTH: Catch All Shift Name
- MTH: System Global Name
- MTH: Mail Server Name
- MTH: Mail Server Port
- MTH: Notification Display Name
- MTH: SOA Proxy Server
- MTH: OWB Source Location
- MTH: Source DB Service Name
- MTH: Planned Energy Usage Period Type
- MTH: Shifts Setup
- MTH: Global Currency UOM

MTH: Item Classification for Extensible Attributes

Profile Values: Item hierarchy names

Default Profile Value: None

This profile option is used to define item classification for extensible attributes. The item classification gets the leaf node values from the selected item hierarchy.

- This profile option is required at the Manufacturing Operations Center site level.
- If you modify the hierarchy name or level name, the updated hierarchy name or

level name appears in the profile option values.

- If you change the profile value, the classification takes the latest value. The attribute groups defined for the new category appear in the User Defined Attributes (UDA) user interface.

MTH: Equipment Classification for Extensible Attributes

Profile Values: Equipment Hierarchy Name.Level Name

Default Profile Value: Department Hierarchy.Resource

This profile option is used to define extensible attributes for equipment. The values for the profile option are a combination of the equipment hierarchy and the level. Manufacturing Operations Center supports four equipment hierarchies.

Seeded Profile Values: None. The profile value displays the hierarchy name and the level name as defined in the equipment hierarchy. For example, if the equipment hierarchy name and the level lookup values are customized as Functional Hierarchy and Line, then the profile value appears as Functional Hierarchy.Line.

For example, suppose that Equipment Hierarchy 01 is defined as follows:

Equipment	Line	Area	Site	Plant
EQ001	L1	A1	S1	P1
EQ002	L1	A1	S1	P1
EQ003	L1	A1	S1	P1
EQ004	L2	A1	S1	P1
EQ005	L2	A1	S1	P1
EQ006	L2	A1	S1	P1
EQ007	L3	A2	S2	P1
EQ008	L3	A2	S2	P1

Profile Values from the previous hierarchy are as follows:

- Equipment Hierarchy 01.Equipment
- Equipment Hierarchy 01.Line

- Equipment Hierarchy 01.Area
- Equipment Hierarchy 01.Site
- Equipment Hierarchy 01.Plant

If the Profile Value is selected as Equipment Hierarchy 01.Line, then the Equipment is classified by the Entities that belong to Line. Three classifications are used to define attribute groups, as shown here:

Classification	AG1	AG2	AG3	AG4
L1	Yes	Yes	No	No
L2	No	Yes	Yes	No
L3	No	No	Yes	Yes

AG1, AG2, AG3, and AG4 are the Attribute groups defined in UDA.

- This profile option is required at the Manufacturing Operations Center site level.
- The profile values display values of all the seeded equipment hierarchies and the level combinations.
- If you modify the hierarchy name or level name, the updated hierarchy name or level name appears in the profile option values.

If you change the profile value, the classification takes the latest value, and the Attribute groups defined for the new entity type appear in the UDA user interface. For example, suppose that the following three classifications are defined attribute groups:

If you change the Profile Value to Equipment Hierarchy 01 Site, then the Equipment is classified by the entities belonging to Site. Classifications used to define attribute groups are as follows:

Classification	AG1	AG2	AG3	AG4
L1	Yes	Yes	No	No
L2	No	Yes	Yes	No
L3	No	No	Yes	Yes

MTH: Catch All Shift Name

Profile Values: Input Text Field

Default Profile Value: Catch All

This profile option is used to define the name for a Catch All Shift that is used in OBIEE. It can be any user-defined name. The Catch All shift is populated for:

- Every Day in the Hub calendar that does not have a Workday Shift in the Workday Shift Calendar
- One row per Workday for Workday Shifts that do not cover 24 hours in a day

MTH: System Global Name

Profile Values: Input Text Field

Default Profile Value: None

This profile option is set in an EBS 11.5.10 environment. When defining the source organization location in OWB, use the name provided in the profile as Service Name.

MTH: Mail Server Name

Profile Values: Input Text Field

Default Profile Value: None

This Profile Option is required in the MOC Target System for processing notifications. This profile option contains no default values and is set at the Site level.

MTH: Mail Server Port

Profile Values: Input Text Field

Default Profile Value: None

This Profile Option is required in the MOC Target System for processing notifications. This profile option contains no default values and is set at the Site level.

MTH: Notification Display Name

Profile Values: Input Text Field

Default Profile Value: None

This Profile Option is required in the MOC Target System for processing notifications. This profile option contains no default values and is set at the Site level.

MTH: SOA Proxy Server

Profile Values: Input Text Field

Default Profile Value: None

This Profile Option is required in the MOC Target System for processing notifications. This profile option contains no default values and is set at the Site level.

MTH: OWB Source Location

Profile Values: Input Text Field

Default Profile Value: None

This Profile Option is required for eAM Integration and creating work requests. This profile option contains no default values and is set at the Site level.

MTH: Source DB Service Name

Profile Values: Input Text Field

Default Profile Value: None

This Profile Option is required for eAM Integration and creating work requests. This profile option contains no default values and is set at the Site level.

MTH: Planned Energy Usage Period Type

This profile option enables you to set the period type for storing planned energy usage information

Profile Values:

- Year
- Quarter
- Period
- Week
- Day

Default Value: None

Recommended Change Level: Site

Note: Once you set the profile option, do not change it.

MTH: Shifts Setup

This profile option lets you indicate if the shifts are generated using the Manufacturing Operations Center application or are obtained from an external source. It is mandatory to set up this profile option.

Profile Values:

- MOC: Set the profile option to MOC to generate shifts using the Entity Shift Setup page.
- External Source: Set the profile option to External Source to obtain shifts from an external source.

Default Value: MOC

Recommended Change Level: Site

Note: Once you set the MTH: Shifts Setup profile option and generate shifts, you cannot change the profile option value from MOC to External Source or vice versa.

MTH: Global Currency UOM

This profile option enables you to define the global currency UOM for entities that span across all sites in your organization.

Profile Values:

All currency UOMs obtained from the FND-MTH_CURRENCY_CODE table.

Default Value: None

Recommended Change Level: Site.

13

Setting Up Tags and Contextualization

This chapter covers the following topics:

- Tag Setup
- Customizing Business Rules in OWB
- Contextualization Entities
- Contextualization Methods
- Tag-Based Contextualization
- Contextualization by Schedule
- Manual Contextualization
- Non-contextualized Rows
- Reason Code Setup
- Loading Tag Data into Summary Tables
- Menus and Responsibility for Contextualization
- Understanding Actual and Virtual Meters
- Understanding the Meter Readings Process Flow
- Viewing Meter Summary
- Viewing Meters
- Adding Meters
- Updating Meters
- Assigning Meters

Tag Setup

To set up a tag, you must load the Tag Master and associate the tag with entities. You can optionally set up a business rule.

To set up a tag:

1. In the Microsoft Excel template, update the tags in MTH_TAG_MASTER_UI.csv
2. Load the Tag Master by running the MTH_TAG_MASTER_XS_MAP in OWB Mappings.
3. Set up the tags using the Tag Setup user interface. Refer to the "Setting Up Tags" topic in the *Oracle Manufacturing Operations Center User's Guide* for more information.
4. Optionally, you can set up business rules in Oracle Warehouse Builder (OWB).

Hard-coded tag values are as follows:

Tag Value	Meaning	Comment
1	Run	Equipment is in use.
2	Idle	Equipment is not in use and is available.
3	Down	Equipment not in use and is not available.

Customizing Business Rules in OWB

To customize business rules in OWB:

1. Filter condition setup
2. Join condition setup
3. Business rule setup
4. Business rule synchronization

Example

Consider the following example:

- Equipment Mixer1, belonging to Plant1, is fitted with two devices which read its temperature and pressure.
- Unless the line pressure and mixer temperature reaches a certain level, the

equipment is not considered to be available.

- The conditions for the equipment to be available are:
  - Temperature must be > 100 F
  - Pressure must be > 50 psi
- Input tags configured:
  - TAG_PRS_MIXER1
  - TAG_TEMP_MIXER1
- Output tags configured:
  - TAG_STATUS_MIXER1

Filter Condition Setup

1. Open MTH_TMPL_2_TO_1_BIZ_RULE_PMAP in the editor in MTH project pluggable map.
2. Click on the Tag Filter header.
3. Click on the Edit button against the Filter Condition in the left panel
4. In the Expression Builder, enter the tag details which will be the components of the Business Rule.
5. In this example, the tags are:
   - TAG_PRS_MIXER1
   - TAG_TEMP_MIXER1
6. Validate the expression before closing the Expression Builder.

Join Condition Setup

1. For the status tag value, temperature and pressure tags are only joined when:
   - Group ID is the same
   - Equipment is the same
2. Select the Joiner.

3. Click the Edit button.

4. Enter the condition in the Join Condition window.

Business Rule Setup

To specify the business rule:

1. Define the output tag and its value.

2. Click the Expression Editor button for the Tag Code's Outgroup of Business Rule.

3. Enter the Status Tag.

4. For Tag Data, click the Expression Editor button for the Tag Data's Outgroup of Business Rule, and enter the condition.

5. Save the Pluggable Mapping.

Business Rule Synchronization

1. Open the MTH_DD_BUSINESS_RULES_MAP mapping in the editor.

2. Select the MTH_DD_BUSINESS_RULES_MAP in the Selected Object List.

3. Right-click on the Object and select Synchronize.

4. Select the Pluggable Map.

5. Set the synchronization to Inbound, from pluggable mapping.

6. Set the Matching Strategy to Match by Object Name.

7. Set the Synchronize Strategy to Replace.

8. Click the OK button.

9. Save the Map.

10. Redeploy the Business Rule Map.

Contextualization Entities

Manufacturing Operations Center contextualizes tag data for the following entities:

1. **Equipment:** Equipment context is available from the setup between the tag and

equipment. No additional logic is available to get the equipment context if the association is not specified during tag setup.

2. **Workorder:** Work order context comes from the tag or the equipment production schedule.

3. **Operation:** The operation context comes from a tag or equipment production schedule.

4. **Item:** The item context can come from a tag or the equipment production schedule.

5. **Shift:** The shift context is available from the equipment shift schedule.

6. **Hour:** The Hour context is available from the Hours table based on the reading time for the tag.

Contextualization Methods

You must specify one of the following contextualization methods at the equipment level during contextualization setup:

- **Tag based Contextualization:** Business context is given through equipment tags.
- **Schedule based Contextualization:** Business context is determined by referring to schedules.
- **Manual Contextualization:** Business context is entered manually and is not available as a tag and should not be determined by referring to schedules.

You must construct the primary key for Work Order, Segment, Shift, Equipment, Item in the required format in the transaction tables. The formats for primary keys are:

- Work Order: '<Work order id>-<MOC Plant code>"
- Segment: "<Segment number>-<Work order id>-<Plant code>"
- Item: "<Equipment_item_id>-<Organization_code>"

If the primary key is not in the required format, contextualization errors can occur.

Tag-Based Contextualization

The logic for tag-based contextualization is as follows:

Tag	Description

Equipment	Equipment context is obtained from the tag-equipment mapping.
Scrap Quantity	Equipment scrapped quantity
Output Quantity	Equipment output quantity including good and bad quantities
Rework Quantity	Equipment reworked quantity
Rejected Quantity	Rejected quantity which includes rework and scrap
Completed Quantity	Completed quantity without reject or scrap
Shift	Shift ID is obtained by comparing the reading time and the equipment shift from time and to time
Workorder	The ID from the source system; ip_entity_id/batch_id/repetitive_schedule_id
Item	The Inventory Item ID from the source system
Segment	The Operation number

If tags are not available for Equipment and Shift, the context can be determined by using the schedules method.

> **Warning:** You must construct the primary key for Work Order, Segment, and Item in the required format in the transaction tables. If the primary key is not properly constructed in the required format, contextualization errors and complications can occur.

Contextualization by Schedule

The logic for contextualization by schedule is as follows:

Tag	Description

Equipment	The equipment context is acquired by referring to the tag setup.
Shift	The shift of the equipment is located in the read time in the Equipments Shifts Table.
Workorder	The work order is located in the read time in the scheduled from and to date of a work order in mth_equip_production_schedules_f.
Operation	The operation is located in the Equipment Production Schedules by using the shift and the equipment.
Item	Using work order, find the item from the Equipment Production Schedules table.

Manual Contextualization

If the manual contextualization method is selected, Manufacturing Operations Center does not apply any logic to get the context, and the context is entered manually in the manual contextualization user interface. Manufacturing Operations Center only gets the equipment context from the tag setup.

Non-contextualized Rows

If context is missing after applying the contextualization logic, Manufacturing Operations Center moves the rows to either the mth_tag_readings or the errors table.

1. If a missing context is set up as mandatory, it is moved to the errors table.
2. If a missing context is set up as optional, it is moved to the readings table.

Reason Code Setup

Use Tags to display reasons for downtime status or scrap quantity. As a one-time setup, you can define a list of all possible reason codes and reason meanings in the plant. In the business meaning setup for the reason tag, map the value of the tag to a reason code.

Reason Code can be setup utilizing FND Lookup. Three lookup types seeded by MOC include:

- MTH_SCRAP_REASON (for setting up scrap reasons)
- MTH_EQUIP_DOWNTIME_REASON (for setting up downtime reason)

Reason Code setup is accessed from the Development Manager responsibility in the Lookups Menu.

Loading Tag Data into Summary Tables

You must pass the equipment status readings continuously to the MOC application. For a period that does not have a status reading, the MOC application uses the status from the previous reading to fill the gap. If you are loading the energy meter readings or equipment output for the following entities, you must pass the reading time as one second less than the actual reading time as the MOC application considers the end of the hour as XX:59:59 for separating the hourly boundaries by one second:

- Scrap Quantity
- Output Quantity
- Rework Quantity
- Rejected Quantity
- Completed Quantity

To load tag data into summary tables:

1. Load the device data to the tag_readings raw table by running one of the process flows:
   - MTH_RAW_TO_OUTPUT_STS_INIT_PF in the MTH Utilities project under the MTHDDIIP module for an initial data collection
   - MTH_RAW_TO_OUTPUT_STS_INCR_PF in the MTH Utilities project under the MTHDDICP module for an incremental data collection
2. Load the data into tag readings tables by running one of the following process flows:
   - MTH_DEV_DATA_INIT_PF in the MTH Utilities project under the MTHDDIIP module for an initial data collection
   - MTH_DEV_DATA_INCR_PF in the MTH Utilities project under the MTHDDICP module for an incremental data collection

   MOC enables you to process the data on tag readings in any valid time zone of your choice. If the tag data coming from the PLCs are from a time zone different from

that of the MOC server, MOC ETLs for processing the tag readings allow the tag readings to be converted to the MOC server timezone during processing. Refer to the "Source Data Time Zone " topic in the Manufacturing Operations Center Introduction chapter for more information on time zones. If you want to convert the raw tag data coming from the PLCs into the server time zone, that is different from the time zone in which the PLCs are operating, then you must specify valid values for from_tz (timezone in which PLC data is collected)and to_tz parameters (MOC timezone) when you run the process flows.

3. Load the data into summary tables by running one of the following process flows:
   - MTH_EQUIP_SUMMARY_INIT_PF in the MTH Utilities project under the MTHDDIIP module for an initial data collection
   - MTH_EQUIP_SUMMARY_INCR_PF in the MTH Utilities project under the MTHDDICP module for an incremental data collection

4. Load data into equipment production performance and sustainability aspect summary tables by running one of the following process flows:
   - MTH_EPP_INIT_PF in the MTH project under the MTHDDIIP module for an initial data collection.
   - MTH_EPP_INCR_PF in the MTH project under the MTHDDICP module for an incremental data collection.

5. If reasons are imported through tags, load Reasons Reading by running one of the following process flows:
   - MTH_TAG_REASONS_INIT_PF in the MTH Utilities project under the MTHDDIIP module for an initial data collection
   - MTH_ TAG_REASONS _INCR_PF in the MTH Utilities project under the MTHDDICP module for an incremental data collection

Menus and Responsibility for Contextualization

Contextualization Setup

Responsibility: Manufacturing Operations Center Administrator

Menu: Manufacturing Operations Center Administrator Menu

Manual Contextualization

Responsibility: Manufacturing Operations Center User

Menu: Manufacturing Operations Center User Menu

Understanding Actual and Virtual Meters

In most organizations, equipments are the primary source of Green House Gas Emissions (GHGE). The equipments include not only production equipment, but also non-production equipment, such as refrigeration, air conditioning, and water and wastewater management systems.

Oracle MOC enables you to track electricity usage and GHGE at the source, either through sensors, meters, and virtual meters and provides a very effective GHGE abatement or Carbon reduction strategy.

Actual meters are physical instruments that are used to record electricity usage in association with smart meters (i.e. building, floor, lighting equipment, manufacturing equipment etc.) You can associate Actual Meters with Tags for data collection, load readings using .csv files, or enter the readings manually in the Actual Meters Data Entry page. Refer to the "Microsoft Excel Template Data Collection" topic for information on the .csv files for loading data. Refer to topics "Adding an Actual Meter" in this guide for information on adding meters and "Performing Actual Meters Data Entry" in the *Oracle Manufacturing Operations Center User's Guide* for more information on entering data manually.

Virtual meters are expressions that are derived to calculate the electricity consumption for certain usages that cannot be measured by actual meters. A virtual meter can be modeled and associated with any entity without having a physical meter, where estimation of energy consumption is required. Virtual meters can be Meter-based or Power Rating- based. A virtual meter that is modeled to estimate consumption based on allocation/aggregation of other actual or virtual meter measurements is called Meter-based virtual meter. A virtual meter that calculates the electricity consumption by directly using power-rating and operational data of equipment is called a Power Rating-based virtual meter. A meter can also be associated with a usage category to realize consumption monitoring by different usage groups such as lights, computer systems, etc.

Energy consumption data collected from smart meters is contextualized with production variables such as equipment status (i.e. idle, run, alarm), time period, work-order, and item. Resulting from contextualization capability, advanced process improvements can be driven by segregating energy consumption as Value added and Non-value added energy in manufacturing processes.

Understanding the Meter Readings Process Flow

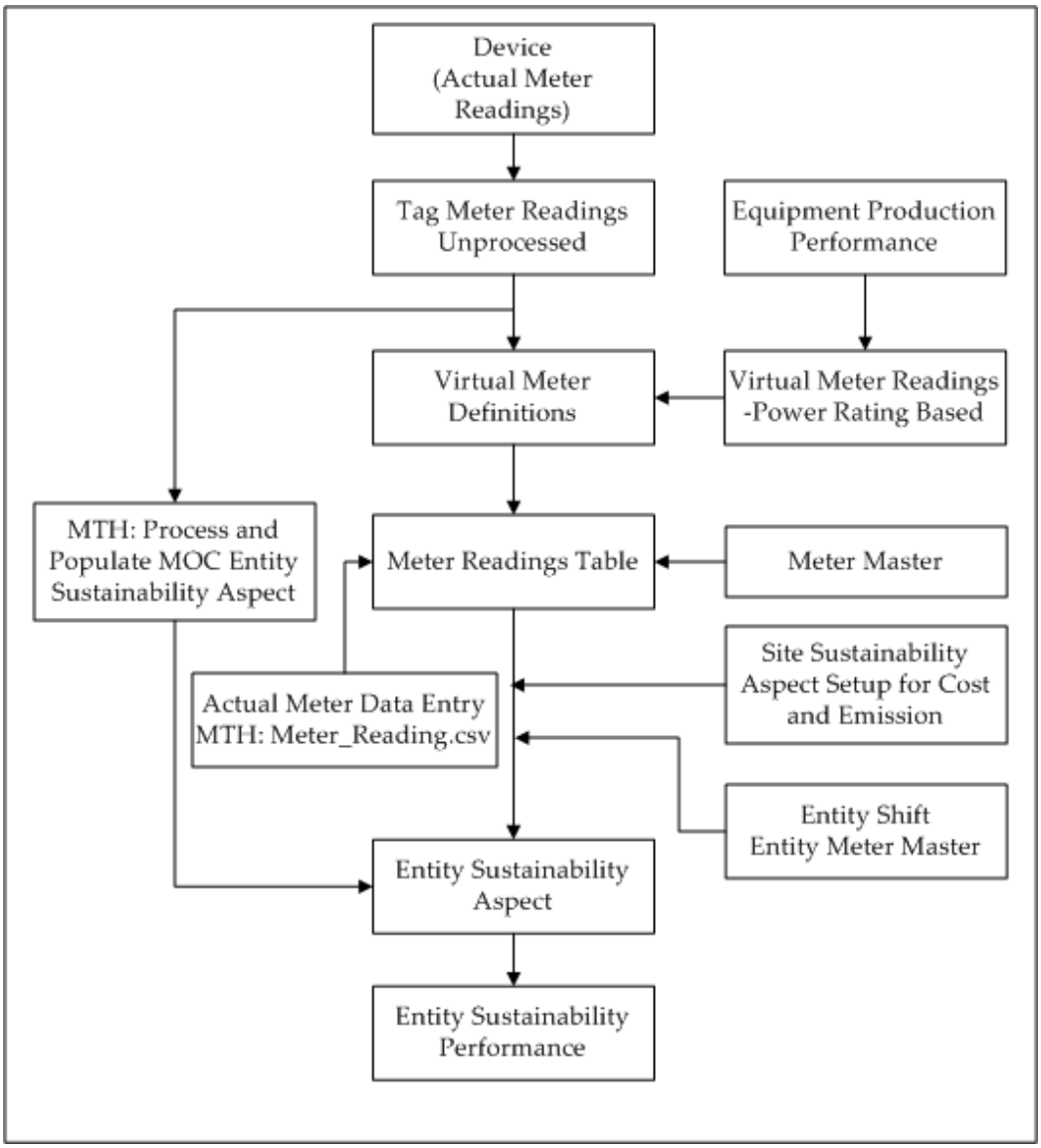
Oracle Manufacturing Operations Center provides manufacturing capability to shop floor for production companies that are sensitive to environmental issues and energy usages. Energy consumption data collected from smart meters is contextualized with production variables such as equipment status (i.e. idle, run, down), time period,

work-order, and item. You can obtain valuable data resulting from contextualization capability, and design advanced process improvements driven by segregating energy consumption as Value added and Non-value added energy in manufacturing processes.

The carbon emission and energy usages (sustainability aspect) for an entity are calculated by processing the meter readings that are obtained from both the Actual and Virtual Meters assigned to the entity. Each meter is associated with a tag and tag data source. For evaluation, a meter must be associated with an Active tag. If a tag becomes inactive, then the meter also becomes inactive. Refer to the topic "Tag Setup" in this chapter and "Setting Up Tags" in the *Oracle Manufacturing Operations Center User's Guide* for more information on how to set up tags. The unprocessed tag meter readings are stored in the Actual Meter Readings table. If the tag meter readings are Cumulative, then they are converted to Incremental readings before being stored in the Meter Readings table. You can also enter meter readings directly that are also stored in the Meter Readings table, using the Actual Meter Data Entry page and the MTH : Meter_Readings.csv template.

The data in the Power Rating Based Virtual Meter Readings table is obtained from the Equipment Production Performance, Entity Shift, and Shift Availability tables.

The readings in the Meter Readings table are processed by validating with the Entity Meter Master and Entity Shift. When you run the MTH : Process and Populate MOC Entity Sustainability Aspect concurrent program, data from the Meter Readings table is utilized in calculating the carbon emission and electricity usage costs, that are stored in the Entity Sustainability Aspect table. These calculations are based on the site sustainability aspect setup for emission and cost respectively. Refer to the "Running the MTH : Process and Populate MOC Entity Sustainability Aspect Concurrent Program" topic of the *Oracle Manufacturing Operations Center User's Guide* for more information. The following figure is a graphical representation of the process flow:



Viewing Meter Summary

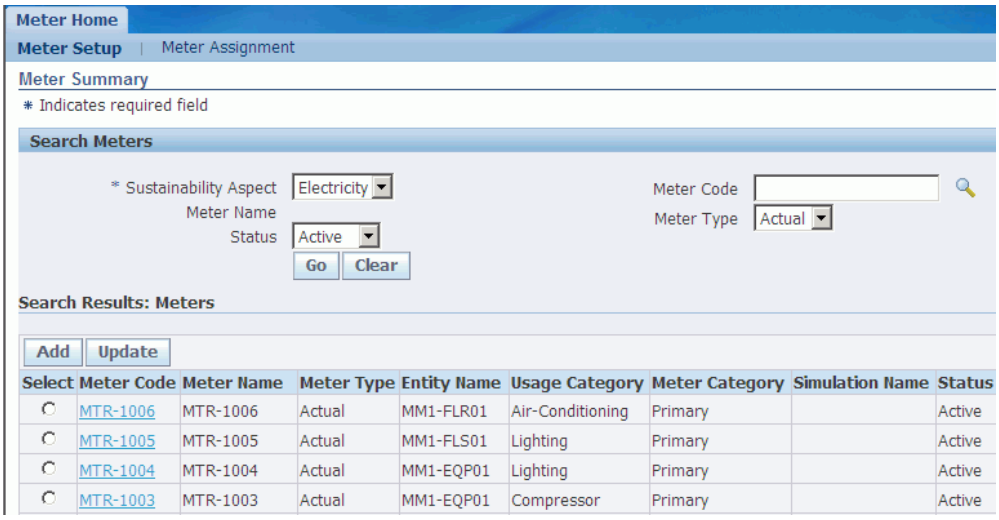
Use the Meter Summary page to view the summary of the meters for a sustainability aspect.

To view meter summary:

1. Using the Manufacturing Operations Center Administrator responsibility, navigate to the Meter Home page. The Meter Summary page appears.

2. Select the Sustainability Aspect to search for all meters for a specific sustainability aspect. Options are Electricity and Gas. Required.

3. Enter any of the following criteria to narrow the search:
    - Meter Name to find a meter using its name
    - Status as:
        - Active to find all active meters.
        - Inactive to find all inactive meters.
    - Meter Code to find a meter using its code
    - Meter Type as:
        - Actual to find all actual meters
        - Virtual to find all virtual meters
4. Click Go. The Search Results: Meters region displays the results of the search.
5. The following fields display:
    - Meter Code is the code for the meter.
    - Meter Name is the name of the meter.
    - Meter Type displays as Actual or Virtual.
    - Entity Name is the name of the entity with which the meter is associated.
    - Usage Category is the usage category for the meter.
    - Meter Category displays as Primary or Simulation.
    - Simulation Name displays if the meter category is Simulation.
    - Status displays as Active or Inactive.
6. Click a Meter Code to view the details of a meter.
7. Click Add to add a meter.
8. Click Update to update a meter.

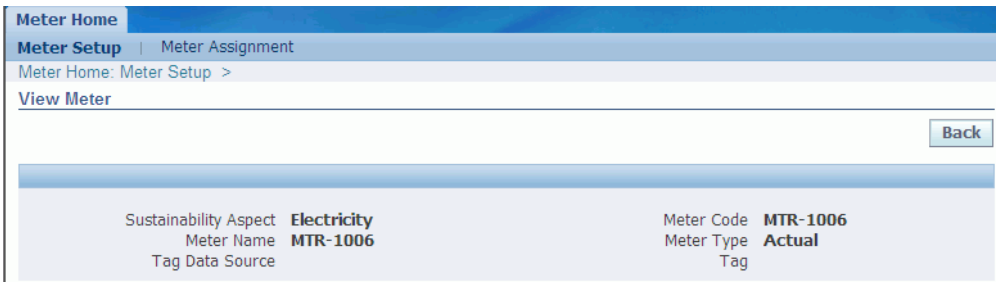


Viewing Meters

Use the View Meter page to view the details of a meter.

To view a meter:

1. Navigate to the Meter Summary page.
2. Search for meters as described in the "Viewing Meter Summary" topic.
3. Click the Meter Code of the meter for which you want to view the details in the search results.
4. The View Meter page displays the meter details.

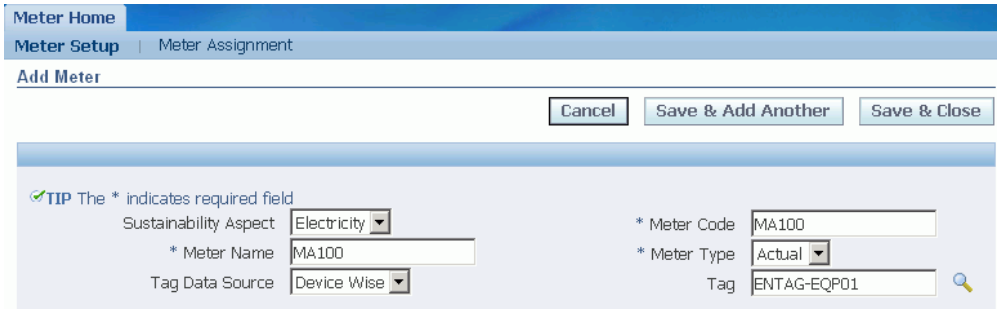


Adding Meters

Use the Add Meter page to add a meter.

To add a meter:

1. Navigate to the Meter Summary page.
2. Select the Sustainability Aspect for which you want to add a meter.
3. Click Add. The Add Meter page appears.
4. Enter the Meter Code and Meter Name.
5. Select the Meter Type as Actual or Virtual.
6. Select the Tag Data Source from the list of values (LOV). All the tags available in the Tag Master display in the LOV.
7. Select a Tag to which you want to associate the meter.
8. Click Save and Add Another to save the meter and add another meter.
9. Click Save and Close to add the meter and close the page.



Updating Meters

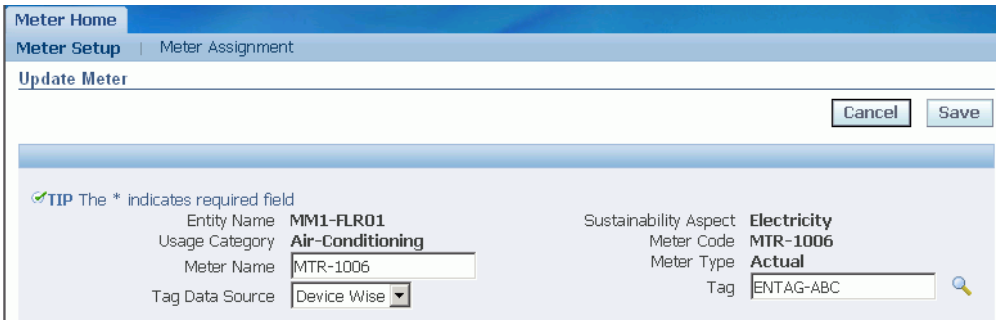
Use the Update Meter page to update a meter.

To update a meter:

1. Navigate to the Meter Summary page.
2. Search for the meter to update.
3. Click Update. The Update Meter page appears.
4. Update the following fields:
   - Meter Name

- Meter Type
- Tag Data Source
- Tag: If the meter type is Actual, then this field is enabled. Only Active tags display in the LOV.
- Virtual Meter Type: If the meter type is Virtual, then this field is enabled. Options are: Power Rating Based and Meter Based.

5. Click Save.

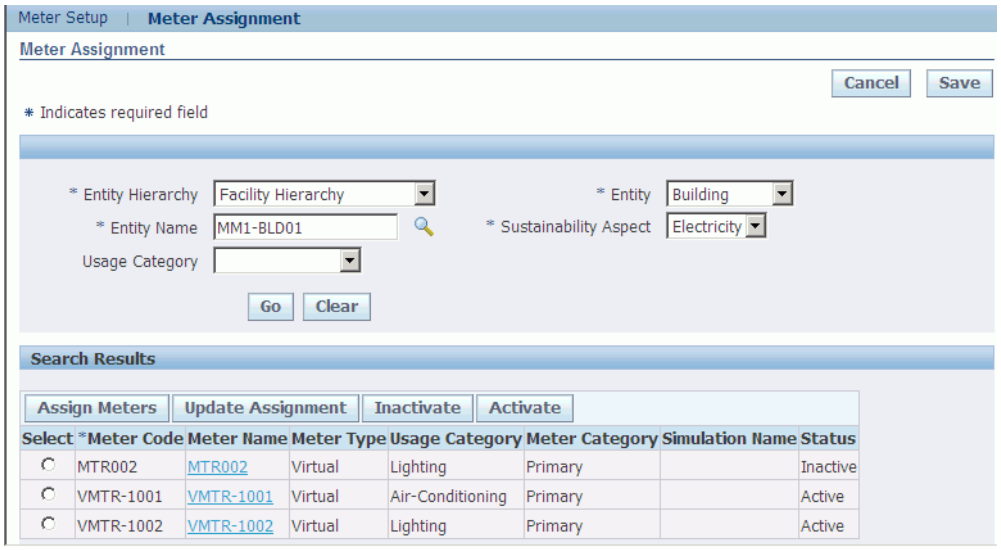


Assigning Meters

Use the Assign Meters page to assign meters to an entity. An actual meter can be assigned to any number of combinations of entity name, usage category, meter category, and simulation name. But a virtual meter can be assigned to only one such combination.

To assign a meter:

1. Using the Manufacturing Operations Center Administrator responsibility, navigate to the Meter Home page.
2. Select the Meter Assignment tab. The Meter Assignment page appears.
3. Select the Entity Hierarchy and Entity to which you want to assign meters.
4. Select the Entity Name to assign the meter and the Sustainability Aspect for the meter.
5. Optionally, select the Usage Category for the meter.
6. Click Go. All the meters assigned for the selected criteria display.



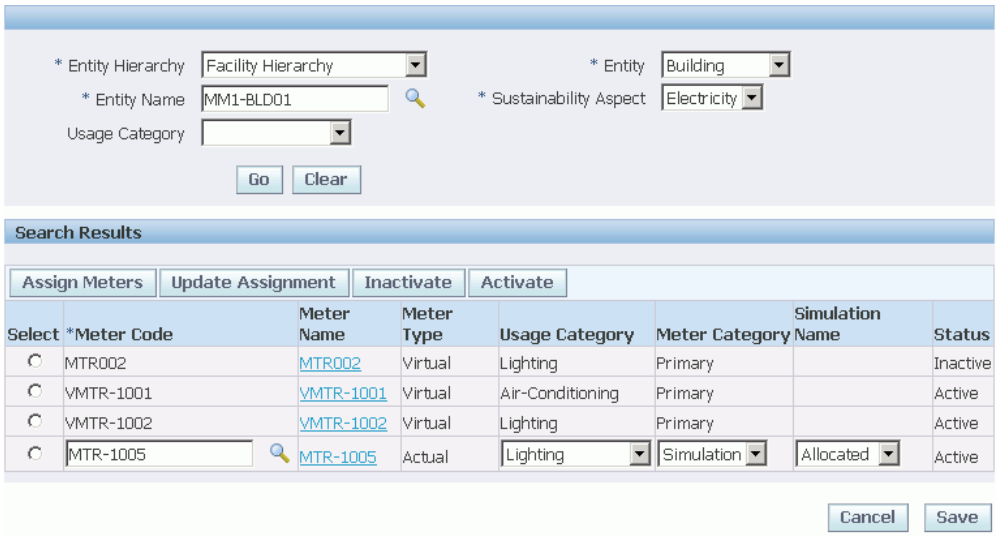
7. Click Assign Meters. Select a Meter Code to assign. The Meter Name and Meter Type display.

8. Select the Usage Category for the meter.

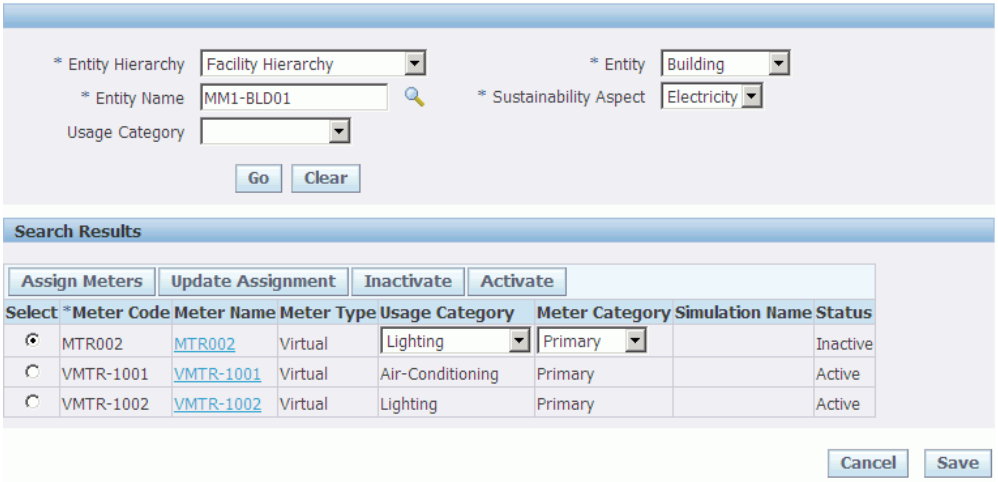
9. Select the Meter Category as Primary or Simulation.

10. Select the Simulation Name as Estimated or Allocated. If you select the Meter Category as Simulation, then this field is enabled. Status displays as Active by default.

11. Click Save.



12. To update an assignment, select the meter assignment that you want to update and click Update Assignment. You can update Usage Category and Meter Category of an assignment.



13. Click Inactivate to inactivate a meter assignment.

14. Click Activate to activate an inactive meter assignment.

14

Setting Up Extensible Attributes

This chapter covers the following topics:

- Setting Up Extensible Attributes
- Setting Up Profile Options
- Creating Attribute Groups
- Creating Attributes
- Viewing Attribute Group Details
- Updating Attribute Group Details
- Defining Classifications
- Viewing Classifications
- Attaching Attribute Groups to Classifications
- Creating Pages
- Populating Data

Setting Up Extensible Attributes

Oracle Manufacturing Operations Center (MOC) enables you to define and analyze data for custom attributes in addition to analyzing data for the predefined attributes to support their functional scenarios. Oracle MOC enables you to set up extensible attributes that help you capture additional parameters with respect to entities such as Product, Batch Operation, User Defined Entities, Equipment, and Others.

You can create user-defined attribute groups and attributes to capture detailed information such as, humidity, light, room temperature etc. for entities, to support the needs of your organization and add them to a classification. All entities present in the Entity Master table display as Classifications. Seeded attributes are provided for the Equipment and Batch Operation classifications. Extensible attribute setup consists of the following steps:

- Setup profile options (For the Equipment and Item entities only).
- Create attribute groups. Seeded attribute groups and attributes are provided for the Equipment and Batch only.
- Create attributes.
- Define classifications (For the Others entity only).
- Associate attribute groups to classifications.
- Create Pages
- Populate attributes for single rows and multi-rows.

Setting Up Profile Options

Set up the following profile options:

- MTH: Equipment Classification for Extensible Attributes to define extensible attributes for Equipment.
- MTH: Item Classification for Extensible Attributes to define extensible attributes for Items.

  Refer to the "Profile Options" chapter for more information.

Creating Attribute Groups

You can create single-row or multi-row attribute groups. For multi-row attribute groups, you can have data stored in multiple rows. In single-row attribute groups, existing data is overwritten when new data is entered. Oracle MOC provides seeded attribute groups for Equipment and Item entities.

Seeded Attribute Groups

The following attribute groups are seeded in Oracle MOC:

- **Specifications** (Multi-row attributes) : The Specifications attribute group holds upper and lower control specifications for equipment parameters. The following table lists the attributes of this attribute group:

Attribute Name	Data Type	Description	Mandatory
Parameter	Varchar	The parameter for which the control limits are collected	Yes
Upper Control Limit	Numeric	Upper control limit	Optional
Lower Control Limit	Numeric	Lower control limit	Optional
UOM	Varchar	Unit of Measure	Optional
Work Order	Varchar	Work Order for which control limits to be set	Optional
Operation	Varchar	Operation of Work Order for which control limits to be set	Optional
Item	Varchar	Item for which control limits to be set	Optional

- **Actuals** (Multi-Row Attribute) : The Actuals attribute group holds Pressure, Temperature, Revolution Per Minute (RPM), Length, Width, Thickness, and Weight attribute readings from tags. These are time bound attributes and can be collected at various intervals.

Attribute Name	Data Type	Description	Mandatory
Pressure	Numeric	Pressure readings	Optional
Temperature	Numeric	Temperature readings	Optional
RPM	Numeric	RPM readings	Optional
Length	Numeric	Length readings	Optional

Attribute Name	Data Type	Description	Mandatory
Width	Numeric	Width readings	Optional
Thickness	Numeric	Thickness readings	Optional
Weight	Numeric	Weight readings	Optional

To create attribute groups:

1. Using the Manufacturing Operations Center Administrator responsibility, navigate to the Extensible Attributes Workbench menu.

2. Click User Defined Entities. The Entity: User Defined Entities page appears. The Classifications region displays all the entities available in the Entity Master table as Classifications.

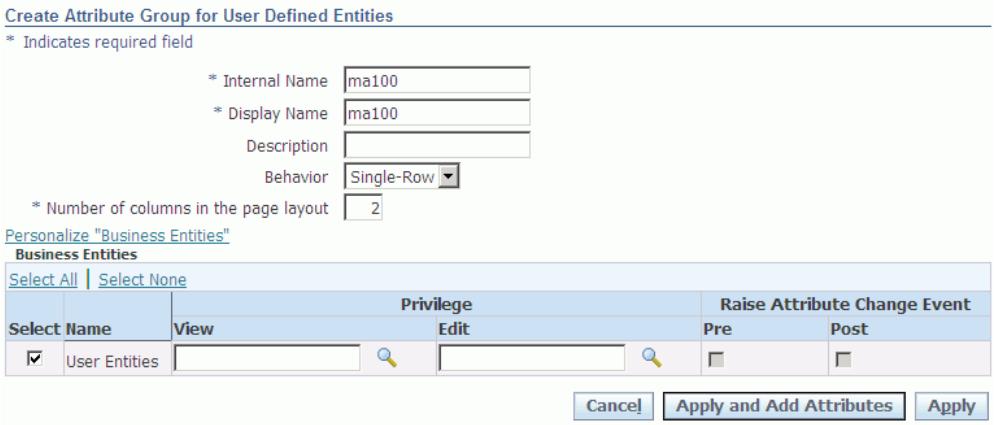
3. Click Attributes. The Entity: User Defined Entities page appears that displays all the attribute groups. You can search for attribute groups and attributes that you want to configure to a Classification or create a new attribute group and attributes.

4. To find an attribute group, use the Search region to enter the following criteria:

   - Attribute Group Display Name
   - Internal Name
   - Attribute Group Description
   - Business Entity

   You cannot edit or delete seeded attribute groups.

5. To create a new attribute group, click Create. The Create Attribute Group for User Defined Entities page appears.



6. Enter the following information for the new attribute group:
   - Internal Name
   - Display Name
   - Description
   - Behavior as Single-row or Multi-row
   - Number of columns in the page layout

7. From the list of business entities that display in the Name column, select the business entity to which you want to associate the attribute group to.

8. Enter the Privileges for viewing and editing in the View and Edit fields respectively.

9. Select the Raise Attribute Change Event as:
   - Pre to raise an event before changing the attribute group.
   - Post to raise an event after changing the attribute group.

10. Click Apply and Add Attribute to create the attribute group and add attributes to it using the Create Attribute page. Refer to the topic "Creating Attributes" for more information.

11. Click Apply to create the attribute group and navigate to the Attribute Group Details page to view the group details.

Creating Attributes

You can add attributes to an attribute group using the Create Attribute page.

To add attributes:

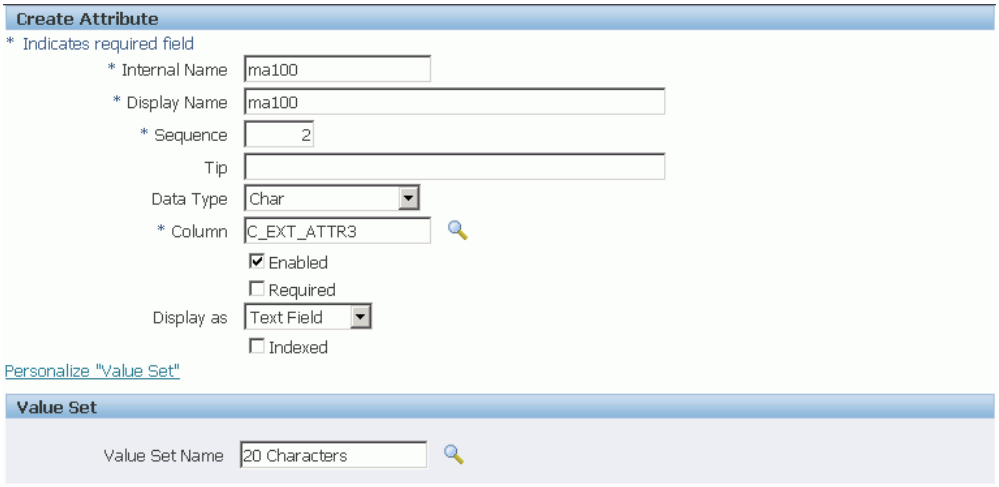
1. Using the Manufacturing Operations Center Administrator responsibility, navigate to the Extensible Attributes Workbench menu.

2. Click User Defined Entities. The Entity: User Defined Entities page appears.

3. Click Attributes. The Entity: User Defined Entities page appears that displays all the attribute groups.

4. Select the attribute group for which you want to add attributes. The Attribute Group Details page appears.

5. In the Attributes region, click Add Attribute. The Create Attribute page appears.



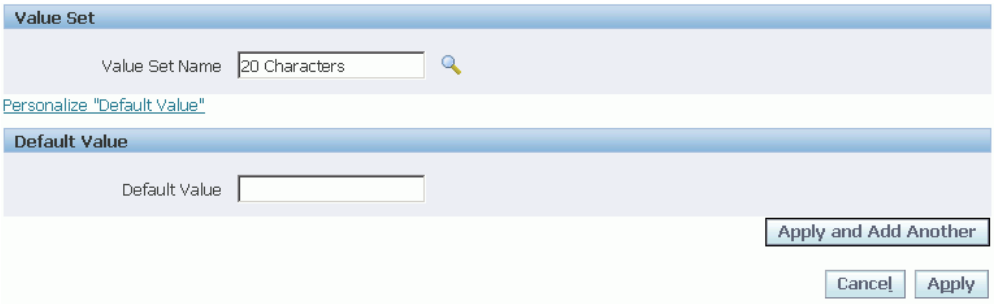
6. Enter the following fields:

   - Internal Name
   - Display Name
   - Sequence as the display sequence number of the attribute in the context of the attribute group.
   - Tip
   - Data Type as Character, Number, Standard Date, Standard DateTime or

Translatable Text.

- Column as the attribute column in the table where the data is stored.

7. Select Enable to enable the attribute. It is enabled by default.
8. Select Required if the data for the attribute is required.
9. Select the display format for the attribute in the Display As field. Options are: Checkbox, Dynamic URL, Hidden, Radio Group, Static URL, Text Area, and Text Field.



10. Enter a Value Set Name for the attribute. Default is Null.
11. Enter a Default Value for the attribute. Default is Null.
12. Click Apply to add the attribute and navigate to the Attribute Group Details page.
13. Click Apply and Add Another to add the attribute to the group and add another attribute.

Viewing Attribute Group Details

You can view the attribute group details using the Attribute Group Details page.

To view attribute group details:

1. Using the Manufacturing Operations Center Administrator responsibility, navigate to the Extensible Attributes Workbench menu.
2. Click User Defined Entities. The Entity: User Defined Entities page appears.
3. Click Attributes. The Entity: User Defined Entities page appears that displays all the attribute groups.
4. Click the attribute group for which you want to view the details. The Attribute

Group Details page appears.

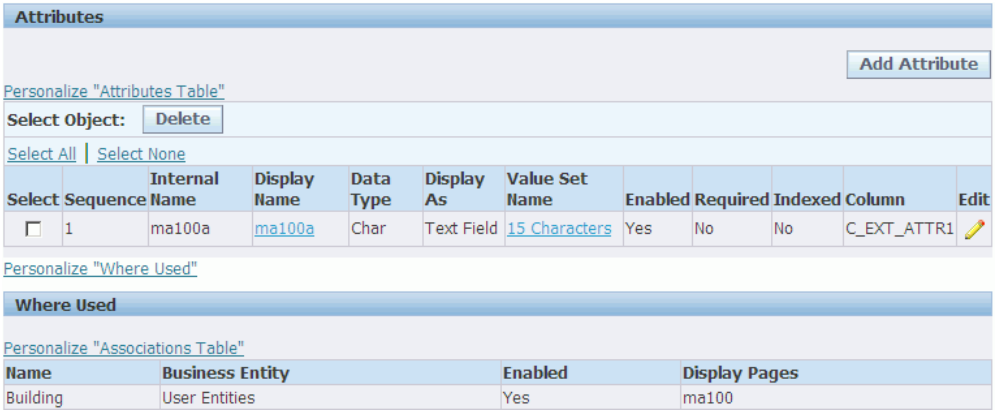
5. To update the attribute group details, click Update. The Edit Attribute Group for User Defined Entities page appears. Refer to the topic "Updating Attribute Group for User Defined Entities" for more information.

6. The following information displays for the attribute group:

   - Business Entities region displays the business entities.

   - Attributes region displays the attributes in the attribute group. You can click Add Attribute to navigate to the Create Attributes page and add attributes to the attribute group or click Delete to delete the attribute from the group. Refer to the "Creating Attributes" topic for more information.

   - Where Used region displays the classifications to which the attribute group is associated.



Updating Attribute Group Details

You can use the Edit Attribute Group for User Defined Entities page to update the

attribute group details.

To update attribute group details:

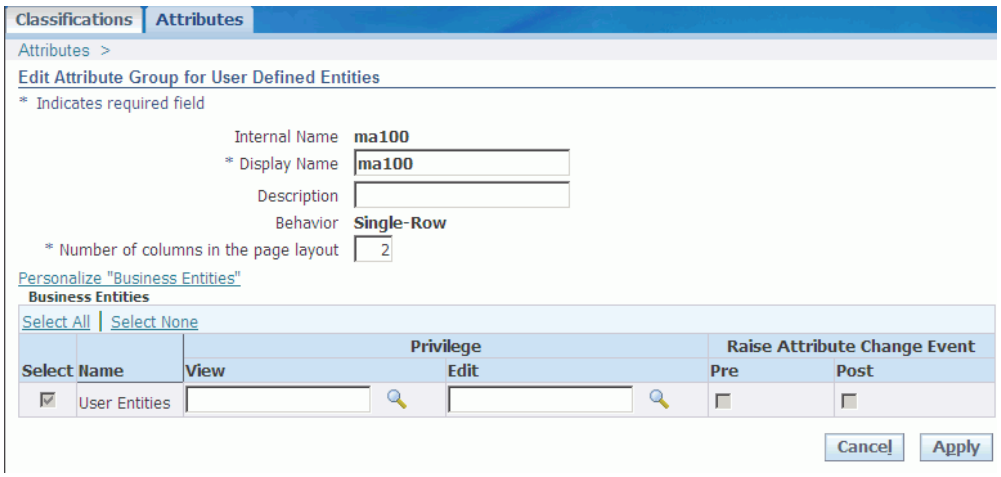
1. Using the Manufacturing Operations Center Administrator responsibility, navigate to the Extensible Attributes Workbench menu.

2. Click User Defined Entities. The Entity: User Defined Entities page appears.

3. Click Attributes. The Entity: User Defined Entities page appears that displays all the attribute groups.

4. Click the attribute group for which you want to view the details. The Attribute Group Details page appears.

5. Click Update. The Edit Attribute Group for User Defined Entities page appears.



6. You can edit the following fields:
   - Display Name
   - Description
   - Number of columns in the page layout
   - View and Edit Privileges

7. Click Apply.

Defining Classifications

Define classifications for the entity Others. For all other entities, classifications are

provided.

Entity	Classification
Equipment	Classified by the MTH: Equipment Classification for Extensible Attributes profile option.
Item	Classified by the MTH: Item Classification for Extensible Attributes profile option.
Work Order	Work Order
Batch Operation	Work Order
Others	User-defined classifications
User Defined Entities	User defined entities including Site and Resource

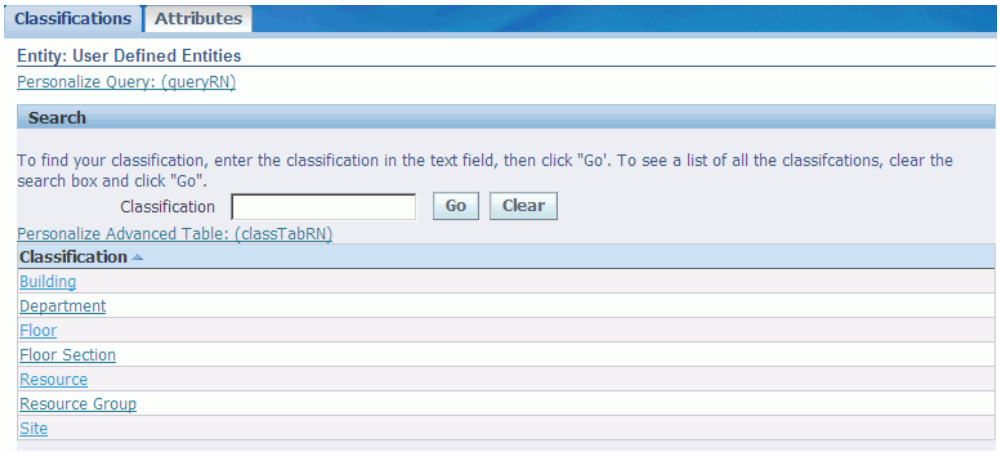
Viewing Classifications

Use the Entity: User Defined Entities page to view classifications.

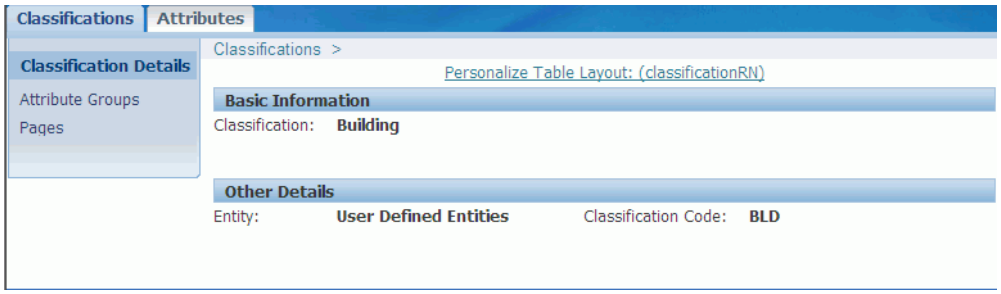
To view classifications:

1. Using the Manufacturing Operations Center Administrator responsibility, navigate to the Extensible Attributes Workbench menu.

2. Click User Defined Entities. The Entity: User Defined Entities page appears. The Classification region displays all the classifications available. You can use the Search region to search for a specific classification.



3. Click in the Classification field. The Classifications page displays the details of the classification.



Attaching Attribute Groups to Classifications

You can attach attribute groups to classifications using the Attribute Groups for User Defined Entities page.

To attach attribute groups:

1. Using the Manufacturing Operations Center Administrator responsibility, navigate to the Extensible Attributes Workbench menu.

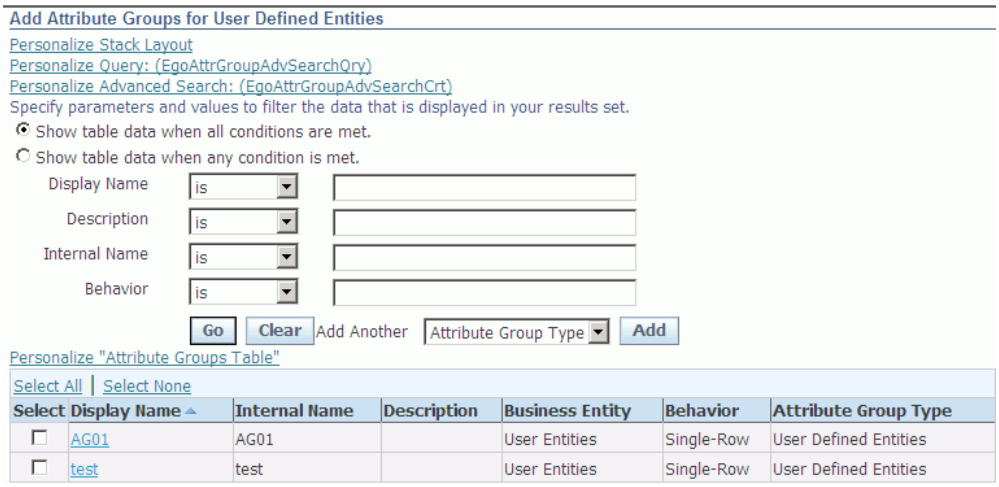
2. Click User Defined Entities. The Entity: User Defined Entities page appears.

3. In the Classification region, select a classification to which you want to add attribute groups. The Classifications page appears.

4. Select Attribute Groups. The Attribute Groups for User Defined Entities page appears.

5. Click Add Attribute Groups. The Add Attribute Groups for User Defined Entities

page appears. The page displays a list of attribute groups. You can also search for an attribute group using the Search fields.



6. Select an attribute group and click Apply. The Attribute Groups for User Defined Entities page displays the added attribute group.

Creating Pages

Use the Add Pages for User Defined Entities to add pages to a classification. Pages enable you to add values to the attributes that you create.

To add pages to a classification:

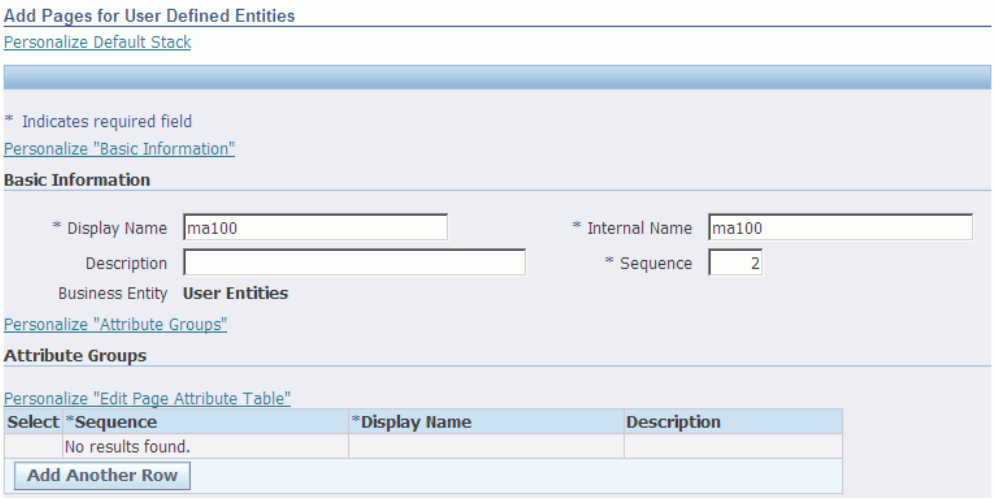
1. Using the Manufacturing Operations Center Administrator responsibility, navigate to the Extensible Attributes Workbench menu.

2. Click User Defined Entities. The Entity: User Defined Entities page appears.

3. In the Classification region, select a classification to which you want to add pages. The Classifications page appears.

4. Select Pages. The User Defined Entities Pages page appears.

5. Click Create. The Add Pages for User Defined Entities page appears.



6. Enter the following fields:
   - Display Name
   - Internal Name
   - Description
   - Sequence as the display sequence number of the page in the context of the Classification.
7. To add an attribute group to the page, click Add Another Row in the Attributes region.
8. Enter the Sequence and select an attribute group in the Display Name field.
9. Click Apply. The User Defined Entities Pages display the added page.

Populating Data

The Oracle MOC application provides a common staging table where you can upload extensible attributes data. You can then run process flows in the MTHUDANP module that transfer data from the staging table to the extensible attribute table. The attribute group names must be unique for a given entity type. For example, attribute group names cannot repeat in the context of items. For single row attribute groups, you must ensure that there is only one record for equipment. If there are multiple records, the value of the second row will overwrite the value of the first row.

You can add attribute values using the Entity user interface from the Extensible Attributes Data menu of the MOC User responsibility. Refer to the topic "Viewing and Creating Attribute Group Data for Entities" in the Administrator Role chapter of the

Oracle Manufacturing Operations Center User's Guide for more information.

Single Row Attributes

For Extensible Attributes, data can be populated from OWB into interface tables, or pages if it is a single row of data. For data populated from OWB into interface tables, run the following process flows in the MTHUDANP module in MOC after loading the data.

Entity	Process Flow
Equipment	MTH_EXT_ATTR_EQ_PF
Item	MTH_EXT_ATTR_IT_PF
Work Order	MTH_EXT_ATTR_PS_PF
Others	MTH_EXT_ATTR_OT_PF
Batch Operations (Work Order Segment)	MTH_EXT_ATTR_PSG_PF
User Defined Entities	MTH_EXT_ATTR_UE_PF

Multi-Row Attributes

To populate multi-row attributes for the Equipment entity:

1. Set up the attribute tags for entity mapping.
2. Run OWB process flows to load data sequentially.
3. Run the MTH_DEV_DATA_INCR_PF process flow in the MTHDDICP module in MOC to load the data into the staging table.
4. Run the MTH_EXT_ATTR_TB_PF process flow in the MTHUDADP module in MOC to transfer the data from the staging table to the external attributes table.

15

Setting Up the OBIEE Repository and Dashboards

OBIEE Repository Setup

Follow the steps and the OBIEE version compatibility in the APS Family Pack Readme.

Dashboards

Oracle Manufacturing Operations Center includes:

- Manufacturing Operations Center catalog
- Plant Manager Dashboard
- Facilities Manager Dashboard
- Adhoc Analysis

Manufacturing Operations Center Catalog

The Manufacturing Operations Center Catalog provides the Plant Manager, Facilities Manager, and Ad hoc Dashboards with performance areas related to manufacturing operations. It uses the ISA-95 (Instrumentation, Systems and Automation Society) structure to integrate Enterprise Resource Planning (ERP) and shop floor manufacturing equipment and systems transactions. This combination enables the catalog to provide operational analytics visibility. The catalog uses data from multiple sources and builds a logical data model providing industry-rich operational metrics to be analyzed by multiple dimensions and hierarchies.

See: *Oracle Manufacturing Operations Center User's Guide* for details.

The manufacturing performance areas include the following:

Performance Areas	Description
Agility Responsiveness	Used to analyze flexibility related measures by system, plant, item, time and equipment.
Batch Analyzer	Used to analyze usage and production variance and other work order related measures by system, item, plant and time.
Equipment Attributes Data	Attributes associated to equipment entities.
Equipment Down Time Analysis	Used to analyze the downtime duration of equipment.
Equipment Event Action	Used to add and update event types and actions for equipment items. Using the Event Management Framework, MOC routes events and takes appropriate actions.
Equipment Scrap Analysis	Used to analyze the scrap quantity reported for the equipment at different points of time.
Manufacturing Asset Performance	Used to analyze overall equipment effectiveness and production loss analysis by system, plant, item, time, and equipment.
Plant Maintenance	Used to analyze maintenance related downtime measures by system, time, and equipment.
Production Performance	Used to analyze operation cycle time and its components of run, down, and idle time contributing to cycle time.
Quality	Used to analyze first pass yield, scrap, reject, and rework measures by system, plant, time, and equipment.
Schedule Adherence	Used to analyze production to performance and backlog related measures by system, plant, item, time, and equipment.

Performance Areas	Description
Service Level	Used to analyze manufacturing performance relative to pegged sales orders shipped using request and promise dates by system, plant, item and time.
Sustainability Performance	Used to analyze the consumption of sustainability aspect, the cost of sustainability aspect consumed, and emissions resulting from the usage of the sustainability aspect for an entity.
Production Sustainability Performance	Used to analyze the production output based on the sustainability aspect consumption.
Equipment Sustainability Analysis	Used to analyze the sustainability aspect consumption by equipment.

Plant Manager Dashboard

Overall Equipment Effectiveness (OEE) is a key metric that every plant manager monitors. The Plant Manager Dashboard provides a complete view of the equipment and helps the plant manager to assess where the source for production losses occur. The Plant Manager Dashboard and integrated reports provide the plant manager views of the production data for the plant in terms of overall equipment effectiveness, batch performance, schedule adherence, and production loss analysis for the departments and equipment on the shop floor.

Oracle Manufacturing Operations Center collects data from disparate sources into this single role-based dashboard that allows Plant Managers and staff to view manufacturing operations efficiently and effectively. The open and flexible BI technology from Oracle Fusion Middleware makes it easy to build and modify KPI's and dashboards.

See: *Oracle Manufacturing Operations Center User's Guide*

The following table identifies the dashboard pages and the reports made available to the Plant Manager role:

Dashboard Pages	Reports
Asset Performance (OEE)	Overall Equipment Effectiveness by Plant

Dashboard Pages	Reports
	Overall Equipment Effectiveness By Department (Bottom Performers)
	Overall Equipment Effectiveness Details By Plant
	Overall Equipment Effectiveness Details By Department
	Overall Equipment Effectiveness Trend by Plant
	Overall Equipment Effectiveness Trend by Department
Asset Performance (OEE) by Equipment	Overall Equipment Effectiveness by Department
	Overall Equipment Effectiveness by Equipment (Bottom Performers)
	Overall Equipment Effectiveness Details by Department
	Overall Equipment Effectiveness Details by Equipment
	Overall Equipment Effectiveness Trend by Department
	Overall Equipment Effectiveness Trend by Equipment
Equipment Downtime Analysis	Equipment Downtime Analysis
	Machine Availability Ratio Trend
Equipment Downtime Reasons	Downtime Reasons
Production Slippage Trend	Production Slippage Trend
Production Loss Analysis	Production Loss Distribution
	Effective Production Capacity

Dashboard Pages	Reports
	Production Loss Analysis
Production Loss Detail	Production Loss Detail
Equipment Efficiency Analysis	Equipment Efficiency Analysis
	Equipment Performance Ratio Trend
Equipment Efficiency Detail	Equipment Efficiency Detail
Equipment Scrap Analysis	Equipment Scrap Analysis
	First Pass Yield Trend
Equipment Scrap Reasons	Equipment Scrap Reasons
Batch Performance	Production Variance by Product Category
	Production Variance by Product
	PPM Trend (Month to Date)
	Batch Cycle Time Trend (Month to Date)
	Service Level Performance by Product Category
	Service Level Performance by Product
Batch Performance Detail	Batch Performance Detail
Production Performance	Performance to Schedule Measures by Plant
	Performance to Schedule Measures by Department
	Performance to Schedule Measures by Equipment (Bottom Performers)
	Production Slippage (Equipment)

Dashboard Pages	Reports
	Current Month Production Slippage Trend by Department
	Current Month Production Slippage Trend by Equipment
Sustainability Performance	Electricity Consumption
	Electricity Cost
	CO2 Emission
	Production Value Analysis by Product
	Trend by Period by All Departments
	Trend by Period by Department
	Ranking and Distribution - Department Ranking
	Ranking and Distribution by Department
	Ranking and Distribution by Usage Category

Facilities Manager

The Facilities Manager Dashboard provides information and analysis of electricity consumption, electricity cost, and CO2 emission and helps the facility manager monitor the electricity costs and CO2 emissions. Facilities Manager Dashboard is based on seeded 5 levels Facility Hierarchy as follows:

- Site
- Building
- Floor
- Floor Section
- Equipment

See: *Oracle Manufacturing Operations Center User's Guide*

The following table identifies the dashboard pages and the reports made available to the Facilities Manager role:

Dashboard Pages	Reports
Summary	Electricity Consumption
	Electricity Cost
	CO2 Emission
	Trend by Period- All sites
	Trend by Period - By Site
	Ranking and Distribution- Site Ranking
	Ranking and Distribution - Distribution by Site
	Ranking and Distribution - Distribution by Usage Category
Site	Electricity Consumption
	Electricity Cost
	CO2 Emission
	Trend by Period- All Buildings
	Trend by Period- By Building
	Ranking and Distribution - Building Ranking
	Ranking and Distribution - Distribution by Building
	Ranking and Distribution - Distribution by Usage Category
Building	Electricity Consumption
	Electricity Cost
	CO2 Emission

Dashboard Pages	Reports
	Trend by Period - All Floors
	Trend by Period - By Floor
	Ranking and Distribution - Floor Ranking
	Ranking and Distribution - Distribution by Floor
	Ranking and Distribution - Distribution by Usage Category
Floor	Electricity Consumption
	Electricity Cost
	CO2 Emission
	Trend by Period - All Floor Sections
	Trend by Period - By Floor Section
	Ranking and Distribution - Floor Section Ranking
	Ranking and Distribution - Distribution by Floor Section
	Ranking and Distribution - Distribution by Usage Category
Floor Section	Equipment Summary
	Trend by Period - All Equipment
	Trend by Period - By Equipment
	Ranking and Distribution - Equipment Ranking
	Ranking and Distribution - Distribution by Equipment
	Ranking and Distribution - Distribution by Usage Category

Dashboard Pages	Reports
	Electricity Consumption Trend
	Parameter Monitoring
	Equipment Status Trend
	Equipment Summary
	Equipment Hourly Summary
	Equipment Hourly Detail

Ad hoc Analysis

Ad hoc Analysis reports enable you to compare electricity consumption with any parameter like temperature or pressure for single or multiple time periods and single or multiple entities.

The following table identifies the reports made available for ad hoc analysis:

Ad hoc Pages	Reports
Single Entity	Electricity Consumption and Parameter Monitoring
Multiple Entities	Electricity Consumption and Parameter Monitoring
Compare Periods	Electricity Consumption and Parameter Monitoring

Materialized Views

You must run the following process flows to refresh all of the Materialized Views (MV's) in the Oracle Manufacturing Operations Center (MOC) Plant Manager Dashboard.

- MTH_REFRESH_ALL_MVS_INIT_PF

- MTH_REFRESH_ALL_MVS_INCR_PF

Use these process flows to refresh all of the MV's in MOC using the complete refresh and fast refresh methods respectively. When running MTH_REFRESH_ALL_MVS_INIT_PF for a complete refresh, the process flow will first truncate all materialized views and materialized view logs used by those materialized views in MOC.

You can run the following process flows to refresh a particular materialized view.

- MTH_REFRESH_ONE_MV_INIT_PF

- MTH_REFRESH_ONE_MV_INCR_PF

Use these process flows to refresh one materialized view using the complete or fast refresh methods respectively. To specify the materialized view you want to refresh using those two process flows, you must overwrite the value of the variable V_MV_NAME with the name of the materialized view that you want to refresh.

16

Maintenance of Manufacturing Operations Center

Scheduling Process Flows

To avoid manually running process flows for incremental data collections, OWB allows them to be scheduled on the frequency required and set by users. To implement scheduling functionality for process flows:

1. Create the Schedule module.
2. Enter the name and description for Schedule Module Associate With a Location.

   This location should be a target location.
3. Create a schedule.
4. Specify the start time, end time, setup, and frequency.
5. Right-click on process flow and click the Configure button.
6. Select the created schedule in the Referred Calendar Field.
7. In the control center, deploy the schedule.

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