Oracle® Manufacturing Operations Center

Implementation Guide

Release 12.2

Part No. E48945-06

September 2017

ORACLE

Oracle Manufacturing Operations Center Implementation Guide, Release 12.2

Part No. E48945-06

Copyright © 2017, Oracle and/or its affiliates. All rights reserved.

Primary Author: Laurel Dale

Contributing Author: Satyendra Bansal, Nageshwara Sharma Manda, Amrit Sachdeva

This software and related documentation are provided under a license agreement containing restrictions on use and disclosure and are protected by intellectual property laws. Except as expressly permitted in your license agreement or allowed by law, you may not use, copy, reproduce, translate, broadcast, modify, license, transmit, distribute, exhibit, perform, publish, or display any part, in any form, or by any means. Reverse engineering, disassembly, or decompilation of this software, unless required by law for interoperability, is prohibited.

The information contained herein is subject to change without notice and is not warranted to be error-free. If you find any errors, please report them to us in writing.

If this is software or related documentation that is delivered to the U.S. Government or anyone licensing it on behalf of the U.S. Government, then the following notice is applicable:

U.S. GOVERNMENT END USERS: Oracle programs, including any operating system, integrated software, any programs installed on the hardware, and/or documentation, delivered to U.S. Government end users are "commercial computer software" pursuant to the applicable Federal Acquisition Regulation and agency-specific supplemental regulations. As such, use, duplication, disclosure, modification, and adaptation of the programs, including any operating system, integrated software, any programs installed on the hardware, and/or documentation, shall be subject to license terms and license restrictions applicable to the programs. No other rights are granted to the U.S. Government.

This software or hardware is developed for general use in a variety of information management applications. It is not developed or intended for use in any inherently dangerous applications, including applications that may create a risk of personal injury. If you use this software or hardware in dangerous applications, then you shall be responsible to take all appropriate fail-safe, backup, redundancy, and other measures to ensure its safe use. Oracle Corporation and its affiliates disclaim any liability for any damages caused by use of this software or hardware in dangerous applications.

Oracle and Java are registered trademarks of Oracle and/or its affiliates. Other names may be trademarks of their respective owners.

Intel and Intel Xeon are trademarks or registered trademarks of Intel Corporation. All SPARC trademarks are used under license and are trademarks or registered trademarks of SPARC International, Inc. AMD, Opteron, the AMD logo, and the AMD Opteron logo are trademarks or registered trademarks of Advanced Micro Devices. UNIX is a registered trademark of The Open Group.

This software or hardware and documentation may provide access to or information about content, products, and services from third parties. Oracle Corporation and its affiliates are not responsible for and expressly disclaim all warranties of any kind with respect to third-party content, products, and services unless otherwise set forth in an applicable agreement between you and Oracle. Oracle Corporation and its affiliates will not be responsible for any loss, costs, or damages incurred due to your access to or use of third-party content, products, or services, except as set forth in an applicable agreement between you and Oracle.

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

Oracle customers that have purchased support have access to electronic support through My Oracle Support. For information, visit http://www.oracle.com/pls/topic/lookup?ctx=acc&id=info or visit http://www.oracle.com/pls/topic/lookup?ctx=acc&id=trs if you are hearing impaired.

Contents

10 Setting Up Equipment Dimensions

11 Load Data Reference and Transaction Data

12 Profile Options

13 Setting Up Tags and Contextualization

14 Setting Up Extensible Attributes

15 Setting Up the OBIEE Repository and Dashboards

Send Us Your Comments

Oracle Manufacturing Operations Center Implementation Guide, Release 12.2

Part No. E48945-06

Oracle welcomes customers' comments and suggestions on the quality and usefulness of this document. Your feedback is important, and helps us to best meet your needs as a user of our products. For example:

- Are the implementation steps correct and complete?
- Did you understand the context of the procedures?
- Did you find any errors in the information?
- Does the structure of the information help you with your tasks?
- Do you need different information or graphics? If so, where, and in what format?
- Are the examples correct? Do you need more examples?

If you find any errors or have any other suggestions for improvement, then please tell us your name, the name of the company who has licensed our products, the title and part number of the documentation and the chapter, section, and page number (if available).

Note: Before sending us your comments, you might like to check that you have the latest version of the document and if any concerns are already addressed. To do this, access the new Oracle E-Business Suite Release Online Documentation CD available on My Oracle Support and www.oracle.com. It contains the most current Documentation Library plus all documents revised or released recently.

Send your comments to us using the electronic mail address: appsdoc_us@oracle.com

Please give your name, address, electronic mail address, and telephone number (optional).

If you need assistance with Oracle software, then please contact your support representative or Oracle Support Services.

If you require training or instruction in using Oracle software, then please contact your Oracle local office and inquire about our Oracle University offerings. A list of Oracle offices is available on our Web site at www.oracle.com.

Preface

Intended Audience

Welcome to Release 12.2 of the *Oracle Manufacturing Operations Center Implementation Guide.*

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

Documentation Accessibility

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

Access to Oracle Support

Oracle customers that have purchased support have access to electronic support through My Oracle Support. For information, visit http://www.oracle.com/pls/topic/lookup?ctx=acc&id=info or visit http://www.oracle.com/pls/topic/lookup?ctx=acc&id=trs if you are hearing impaired.

Structure

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 Oracle 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 E-Business Suite User's Guide

This guide explains how to navigate, enter and query data, and run concurrent requests using the user interface (UI) of Oracle E-Business Suite. It includes information on setting preferences and customizing the UI. In addition, this guide describes accessibility features and keyboard shortcuts for Oracle E-Business Suite.

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.

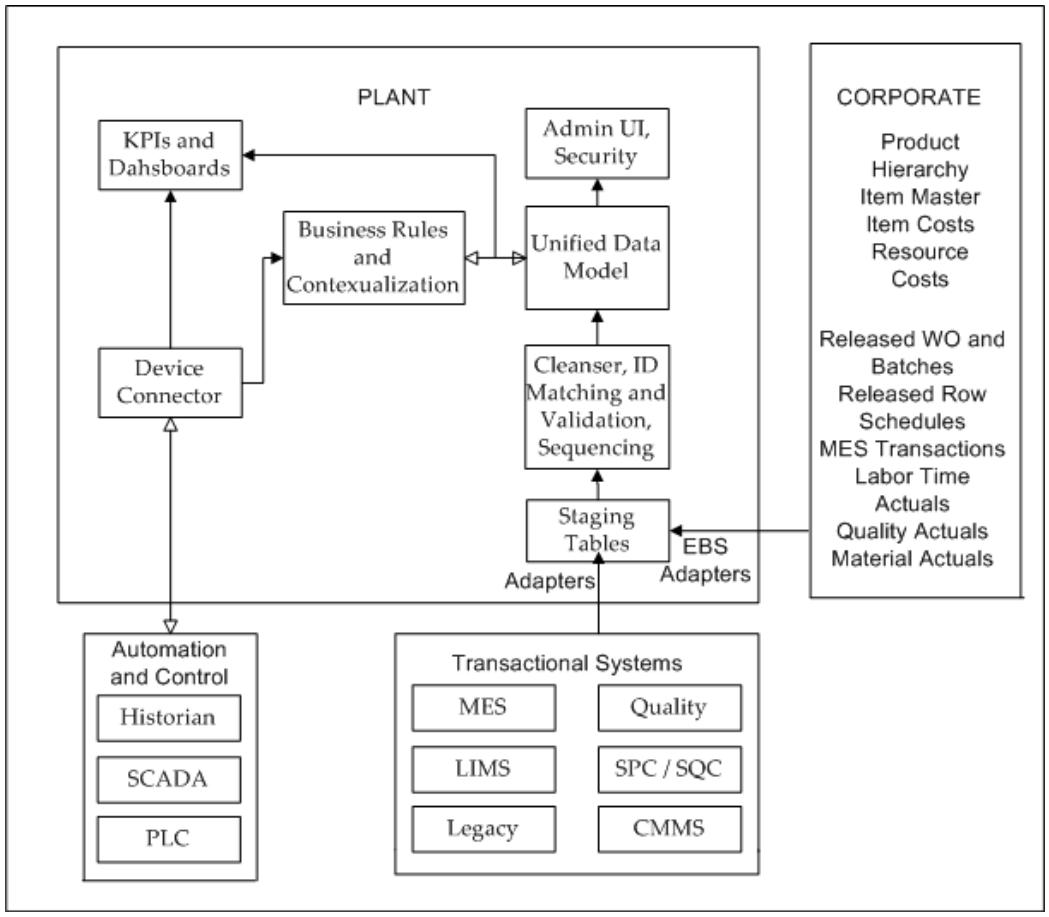
Technology Overview

Manufacturing Operations Center uses the following Oracle technologies:

- Oracle Data Integrator (ODI)
- 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

- 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 Data Integrator (ODI), the data warehousing tool to extract and process data. A concurrent program is used to process meter readings for sustainability aspect consumptions.

Prepackaging

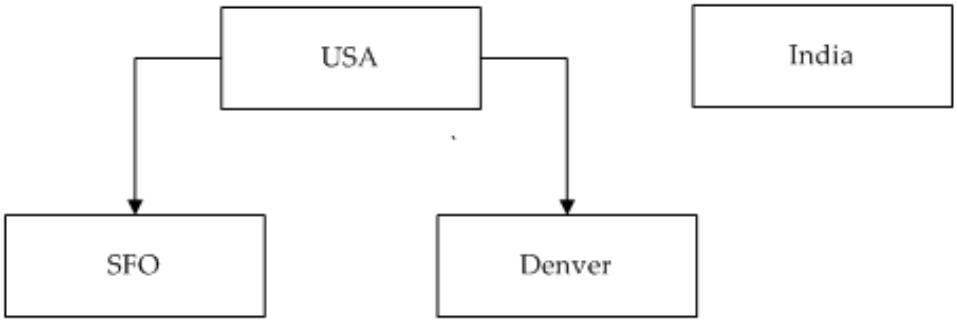
EBS Adapters: Oracle MOC is prepackaged with EBS adapters Release 11.5.10, Release 12.0.6 , Release 12.1.3, and Release 12.2.

KPIs and Dashboards: Oracle MOC is prepackaged with more than one hundred forty 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.

Unit of Measure Conversion

There is no out of the box data conversion for unit of measure.

Currency Conversion

There is no out of the box data conversion for currency.

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 • Extensible Attribute Functions

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

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

Manufacturing Operations Center Analytics	• Manufacturing Operations Center Catalog • Plant Manager Dashboard • Process Engineer Dashboard • Asset Performance Dashboard • Production Supervisor Dashboard • Facilities Manager Dashboard • Adhoc Analysis
Shift exceptions	Shift Exceptions
Data Entry	Meter Data Entry

3

Setup Overview

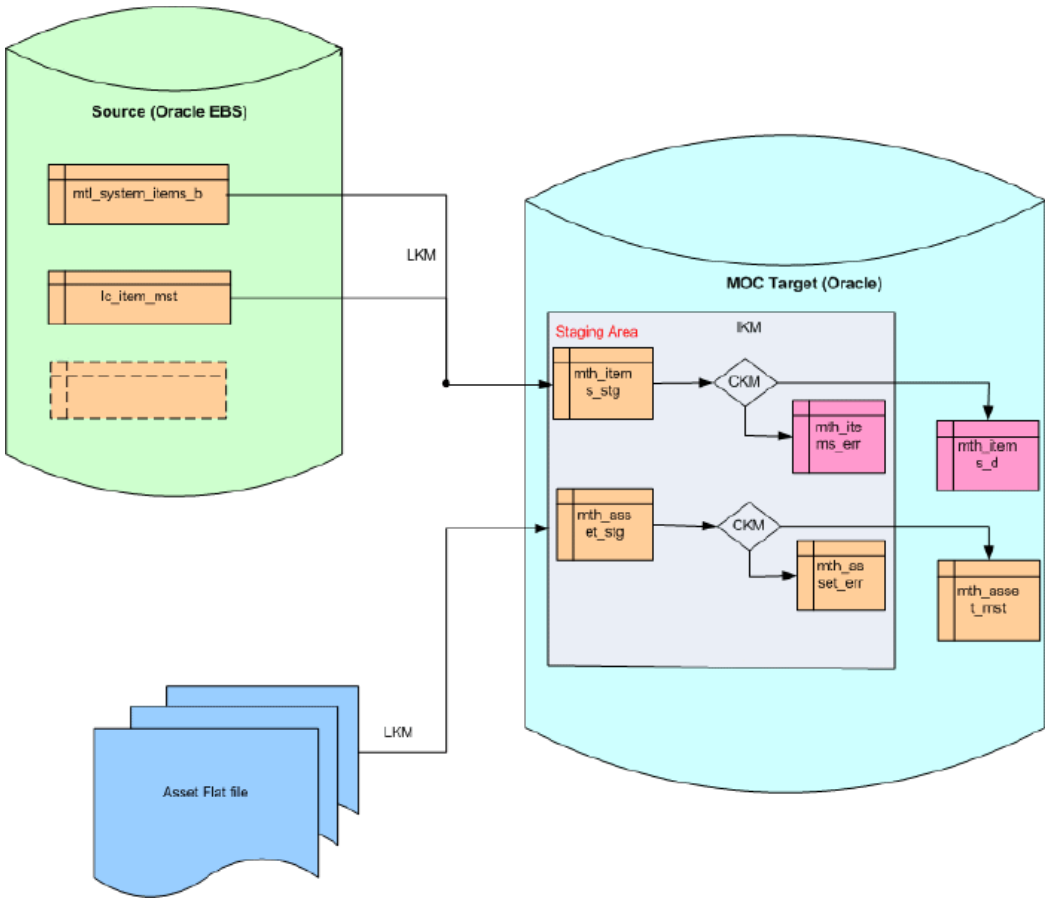
Oracle Manufacturing Operations Center Setup Overview

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

- ODI (Oracle Data Integrator)
- 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 Data Integrator Setup

This chapter covers the following topics:

- Oracle Data Integrator (ODI) Setup Steps

Oracle Data Integrator (ODI) Setup Steps

The Extract Transform Load (ETL) technology is changed from Oracle Warehouse Builder (OWB) to Oracle Data Integrator (ODI). The data processing that was done earlier using the OWB Maps is now done through concurrent programs and ODI handles the core ETL functions. The data integration with multiple source systems such as Oracle E-Business Suite, Flat files and Plant Devices through tags is more efficient and faster.

MOC has out-of-box adapters with E-Business Suite releases 12.2.1, 12.1.3, 12.0.6, and 11.5.10. The support for integration with EBS includes the following elements:

- All Manufacturing Methods - Discrete, Process, Flow, OSFM.
- Items and Item Hierarchies.
- Resource and Resource Hierarchies.
- Work Orders, Batches, and Material Produced.
- Sales Orders pegged to Work Orders/Process Batches.

You can also use flat files (or comma separated files) to collect the data in MOC. There are over 40 templates available for data creation.

The third mode of data collection is using Tags which can be used to collect real-time data from plant equipment.

Download RCU (11.1.1.6.0):

http://www.oracle.com/technetwork/middleware/data-integrator/downloads/index.

html

Setup the Repository:

1. Setup the Repository as C:\rcuhome\bin\rcu.bat. Double click on rcu.bat.
2. Create Repository.
3. Enter the Database Connection Details.
4. In the Select Component window, specify the following:
    1. Prefix value: User Defined value (Default :DEV1).
    2. Select the Oracle Data Integrator check box and Master and Work Repository check box.
    3. Ensure that the <REPOSITORY_PREFIX>_ODI_REPO Schema Owner name is the default value.
    4. Upon completion of checking the prerequisites in the Repository Creation Utility window, click OK.
    5. Set the password for Schema Owner created in the Schema Passwords window.
    6. Set up the following variables in the Custom Variables window:
        - Master Repository ID: A numeric value except 001
        - Supervisor Password.
        - Confirm Supervisor Password.
        - Work Repository type: D - Development or R - Runtime. Runtime Repository - You will not be able to make any changes to the Project or interfaces. Development Repository - You will be able to make any changes to the Project or interfaces.
        - Work Repository ID: A numeric value except 001
        - Work Repository Name: Any user-defined name. For example, WORKREP.
        - Work Repository Password.
        - Confirm Work Repository Password.
            1. In Map Tablespaces window, default the values and click Next.

2. Proceed through the steps by clicking OK in the Map Tablespaces window and click Create in the Repository Creation Utility Summary window.

3. Click Close in the Completion Summary window.

Install Oracle Data Integrator 11.1.1.6:

1. Install C:\ODI\Disk1\ set.exe

2. Define the path where java is installed. (This step is applicable only for 64 bit windows.) C:\Program Files\Java\jdk1.6.0_26 (depends on java installed on your machine). Click Enter.

3. In the Installation Type window, check the following:
   - Developer Installation.
   - Standalone Installation.

4. Click Next in the Prerequisite Checks and Specify Installation Location windows.

5. Select Skip Repository Configuration.

6. Enter user-defined name in the Agent Name and Agent Port fields in the Specify Agent Details window.

7. Specify security details, if required, in the Specify Security Updates window.

8. Click Install in the Installation Summary window.

9. Click Finish once installation is complete.

Configure ODI Repository:

1. Open ODI. Click on Connect to Repository.

2. Click on the + symbol to add repository.

3. Enter Repository Connection details.
   - Login Name: Any user-defined name. For example: TEST.
   - User: SUPERVISOR.
   - Password: Database Connection (Master Repository).

- User: <As created in the previous step>
- Password: <As created in the previous step>
- Driver List: Oracle JDBC Driver.
- Driver Name: oracle.jdbc.OracleDriver
- url:jdbc:oracle:thin:@<host>:<Port>:<Service> Work Repository.
- Select the work repository created in the previous step.

4. Click OK.

Create Db Link:

Db link is only required if collection from Oracle EBS or any other Enterprise system is required. The Db Link name will be used at a later step while creating Data Server.

Define ODI Topology:

1. Import the Topology.
    1. Connect navigator - Import > Topology
    2. In the Import Topology Window, enter the following details:
        1. Mode - Synonym Mode INSERT_UPDATE
        2. Import from a folder.
        3. Click OK.
        4. Accept the default message displayed, once the Import process ends.
        5. Click OK.
    3. Setup physical schema.
        1. CSV location. Double click on Physical schema MTH_FILE_P_CSV, fill the Directory and save it.
        2. Configure MOC instance.
        3. Configure Source Instance (Optional). This step is required if you plan to achieve integration with Oracle E-Business Suite or any other enterprise application system. Follow the procedure in the previous step.

Import Model:

1. Right click Model > Import Model
2. Provide folder path
3. Select all records and Click OK
4. Click Yes and OK in the subsequent windows.
5. Review Import Objects Report for errors.
6. Click Close.

Import Work Repository:

1. Click on Import > Work Repository
2. Select Import from a folder path.
3. Click OK.
4. Review Import Report.
5. Click Close.

Refresh Language Variable:

1. Navigate to Projects > MTH > Variables
2. Select MTH_V_LANGUAGE
3. Right click Refresh.
4. Click OK.

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 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.
3. Run the ODI Scenario MTH_PKG_SYSTEMS_SETUP_EXT to load source systems into 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_A TTR1	USER_A TTR2	USER_A TTR3	USER_A TTR4	USER_A TTR5

TESTSYS T01	EXCEL	TESTSYS T01	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

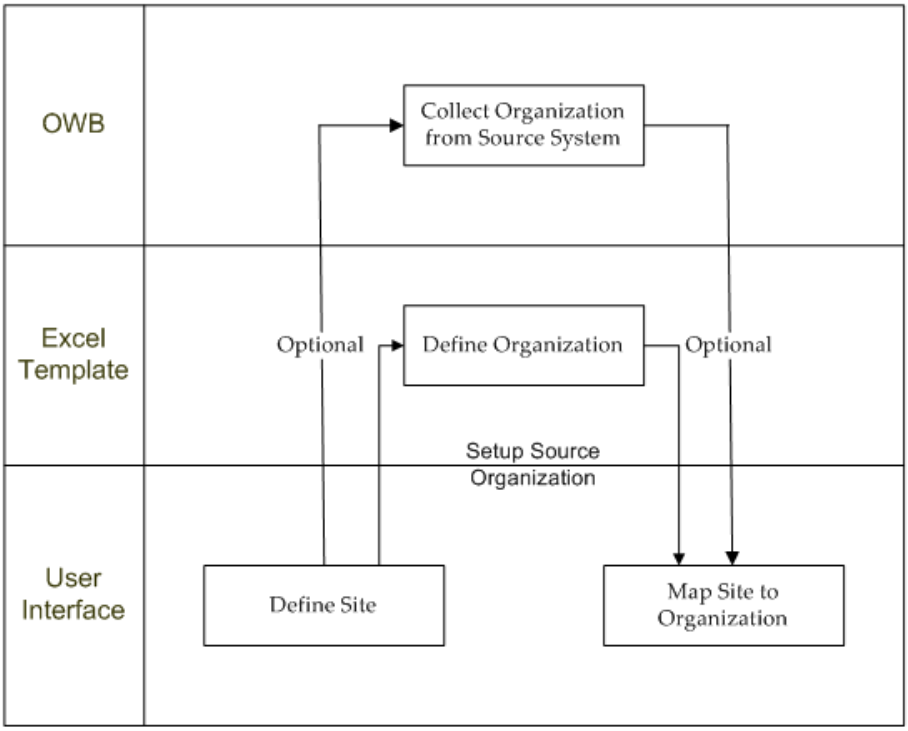
Setting Up Sites

This chapter covers the following topics:

- Overview of Sites
- Site Set Up Steps
- Plant Setup: Microsoft Excel Templates
- Site Maintenance
- 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.
   - Run the ODI scenario MTH_PKG_ORGANIZATIONS_SRC to collect source organizations.
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 the ODI scenario MTH_PKG_ORGANIZATIONS_EXT.
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 ODI scenario MTH_PKG_ORGANIZATIONS_EXT.

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.

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.

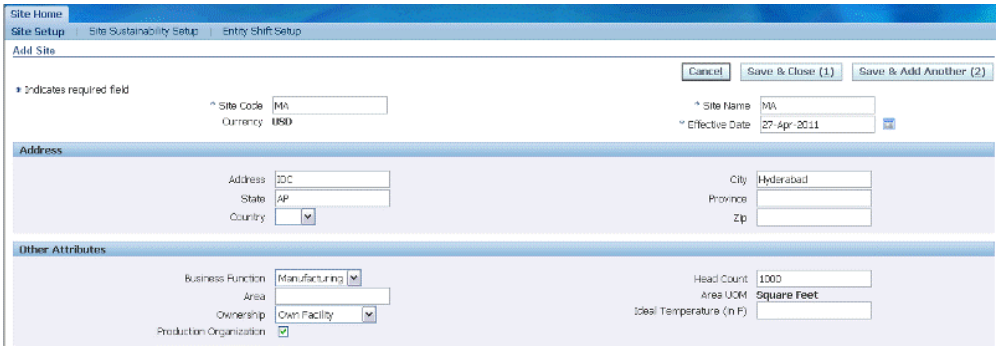
2. Click Add Site. The Add Site page appears.

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.

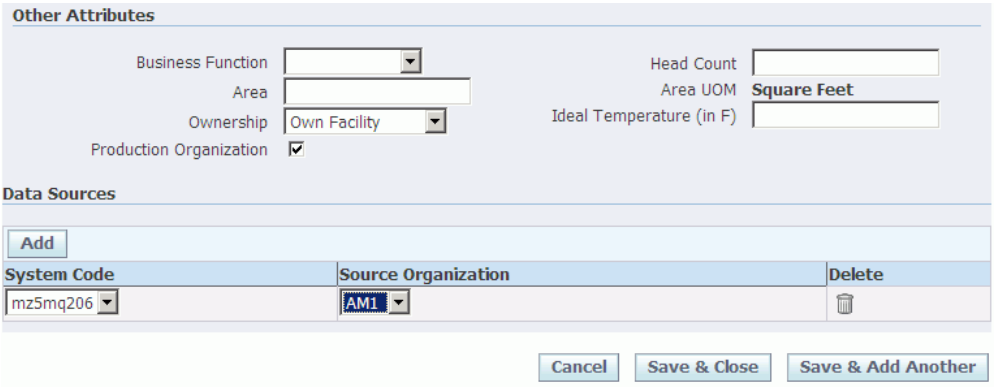


Data Sources

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:

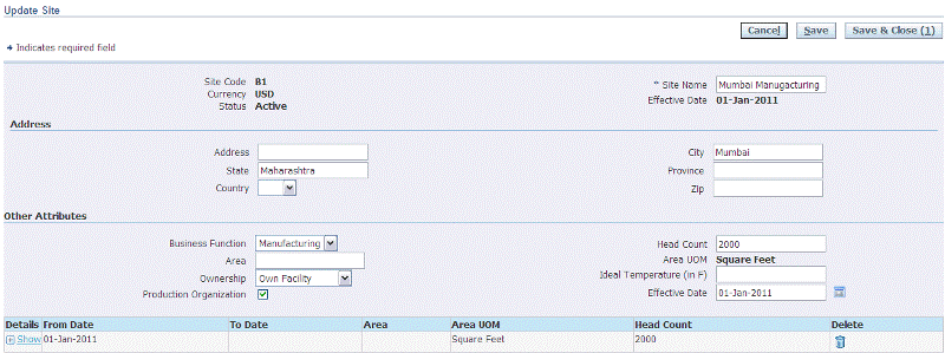
1. Navigate to the Sites Summary page. The page displays a list of sites.
2. Click on a Site Code. The View Site page displays the details of the site.

Updating Sites

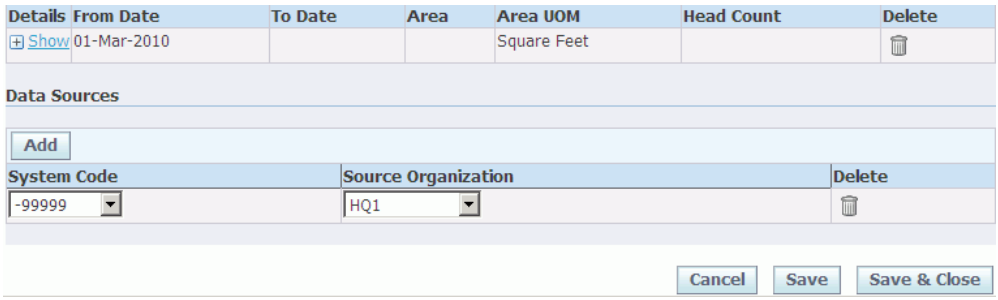
You can update site details using the Update Site page.

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.


Details
From Date
To Date
Area
Area UOM
Head Count
Delete
Show
01-Mar-2010
Square Feet
Data Sources
Add
System Code
Source Organization
Delete
-99999
HQ1
Cancel
Save
Save & Close

7

Setting Up Sustainability Aspect

Setting Up Sustainability Aspect

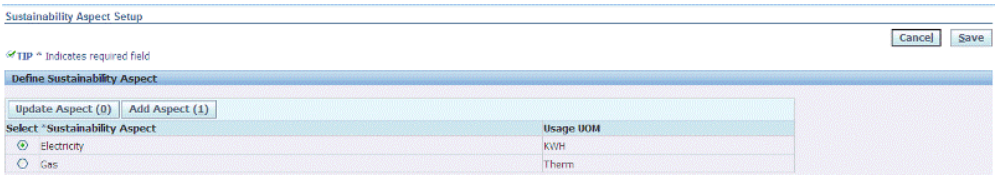
Sustainability Aspect is a generic name used for continuous inputs consumed by companies to be able to operate and create goods or services. Common examples of sustainability aspect are electricity, gas, oil, water, helium etc.

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.

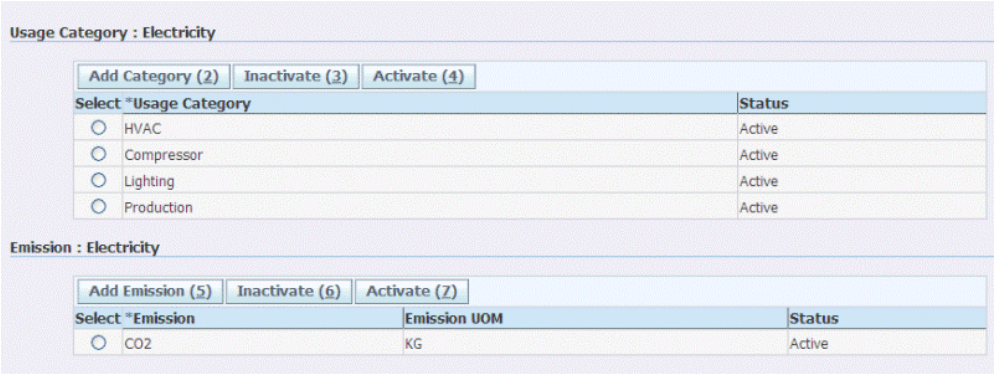


To define Usage Categories:

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.

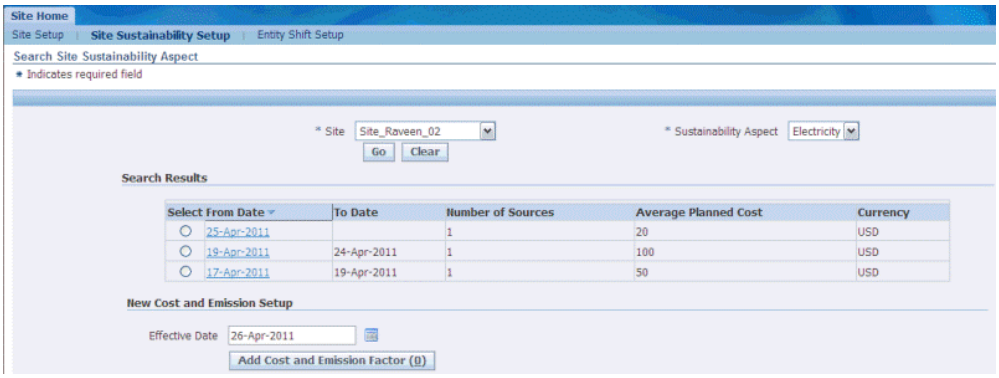


Setting Up Site Sustainability

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.

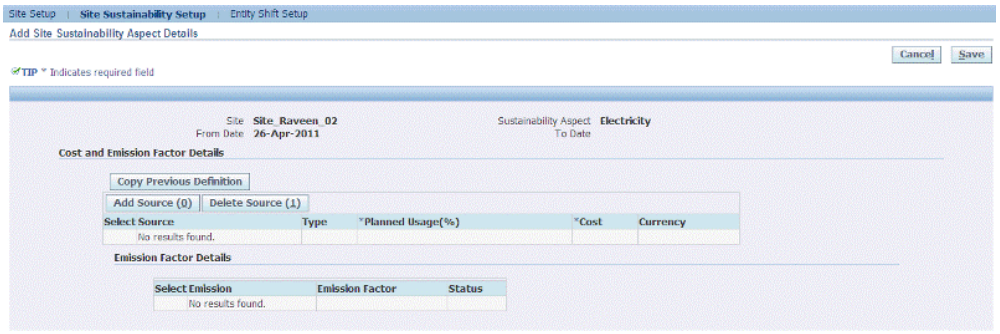


Adding Site Sustainability

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.

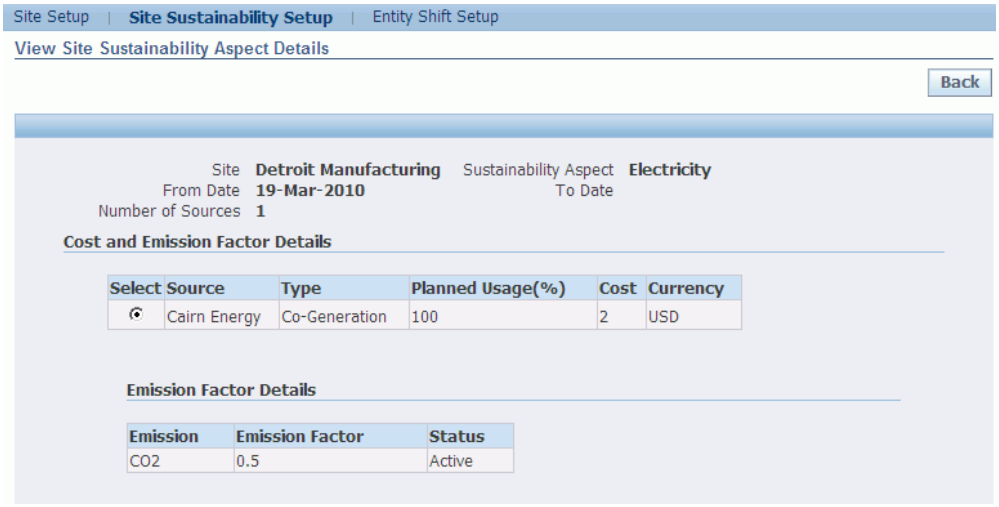
   Cost and Emission Factor Details

4. 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

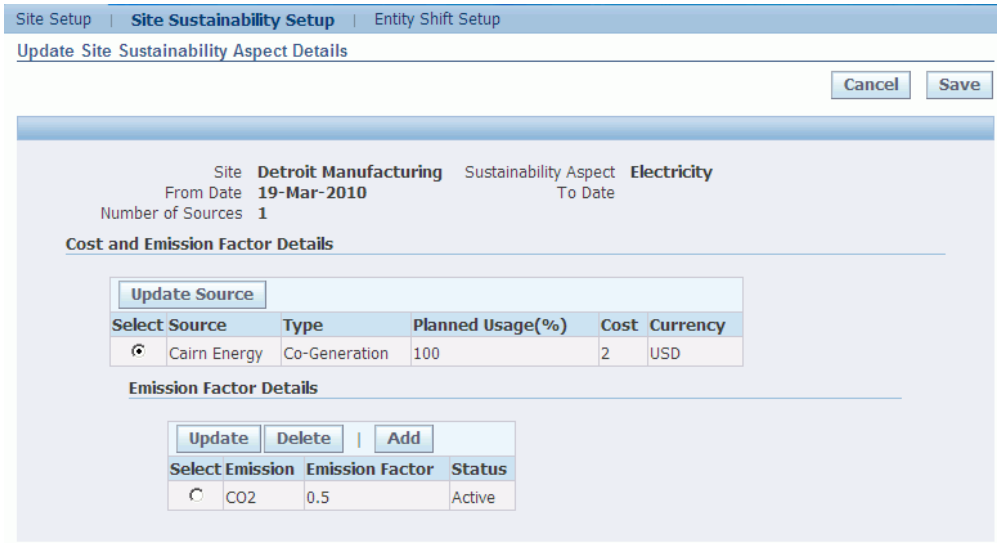
the site and sustainability.

- 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
- 445/544
- Custom Calendar

Gregorian Calendar

To generate a Gregorian calendar:

1. Run MTH: Populate MOC Gregorian Calendar
2. Specify the following parameters:
    - Start Year: Calendar Start Year.
    - Number of Years: Number of years for which calendar is required.

445/544 Calendar

To generate a 445/544 calendar:

1. Run MTH: Populate 445/544 Calendar.
2. Specify the following parameters:
    - Start Year: Calendar Start Year.
    - Number of Years: Number of years for which the calendar is required.
    - Calendar Type: 445 or 544.
    - Start Month: Calendar Start Month.
    - Start Day of Week: Week Start Date.
    - Year End Type: 1 or 2.

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 the ODI Scenario MTH_PKG_TIME_DIMENSION_EXT.

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 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. Optionally, after using this page to define the shifts for the first time, schedule the ODI scenario MTH_PKG_SHIFTS_GEN_UI to create shifts on a periodic basis.

When you create shifts using 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:

- Load the Workday Shift from EBS by running MTH_PKG_WORKDAY_SHIFTS_SRC.

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. Run the ODI scenario MTH_PKG_WORKDAY_SHIFTS_EXT.

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.

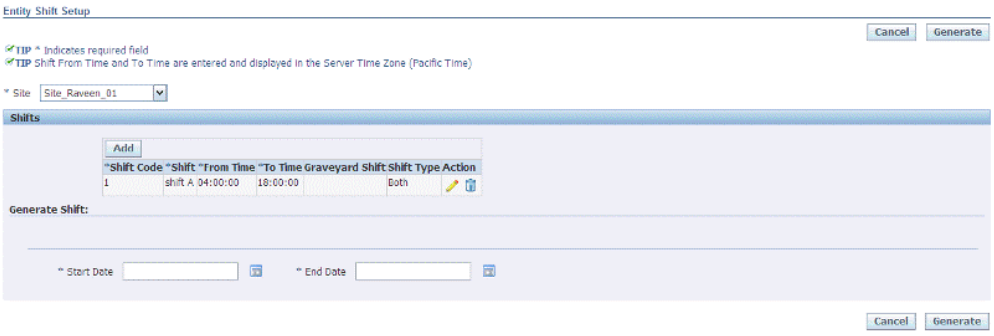
10. Click Ok.

    - 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.

    - After you initially generate shifts using the Entity Shift Setup page, you can schedule the ODI scenario MTH_PKG_SHIFTS_GEN_UI to periodically run and generate future shift dates. MTH_PKG_SHIFTS_GEN_UI uses the following parameters:

      - Site

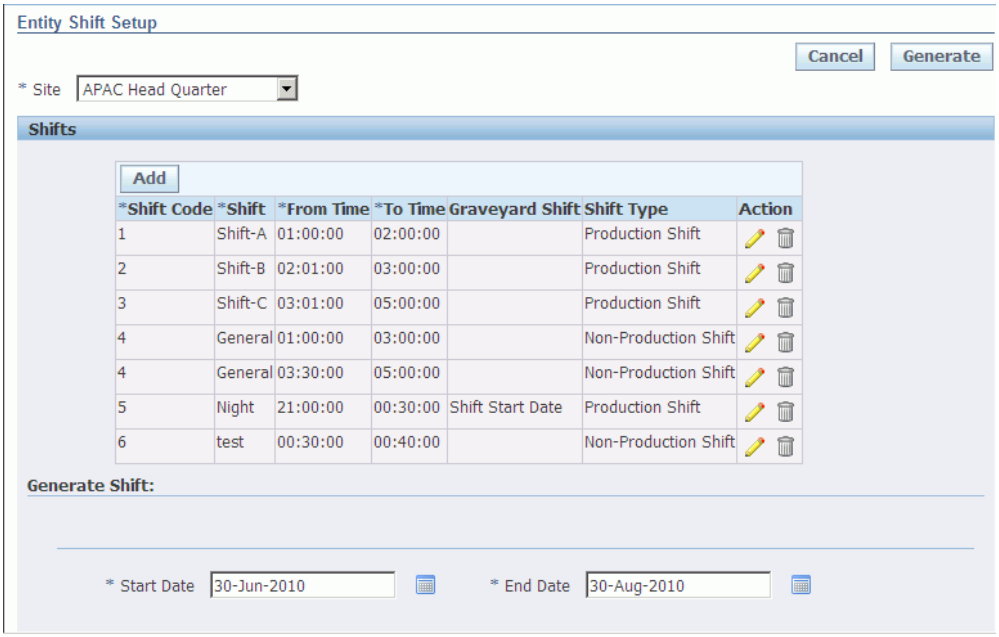
      - Start Date and End Date (the date range for the shift generation).



To view entity shifts:

1. Navigate to the Entity Shift Setup page.

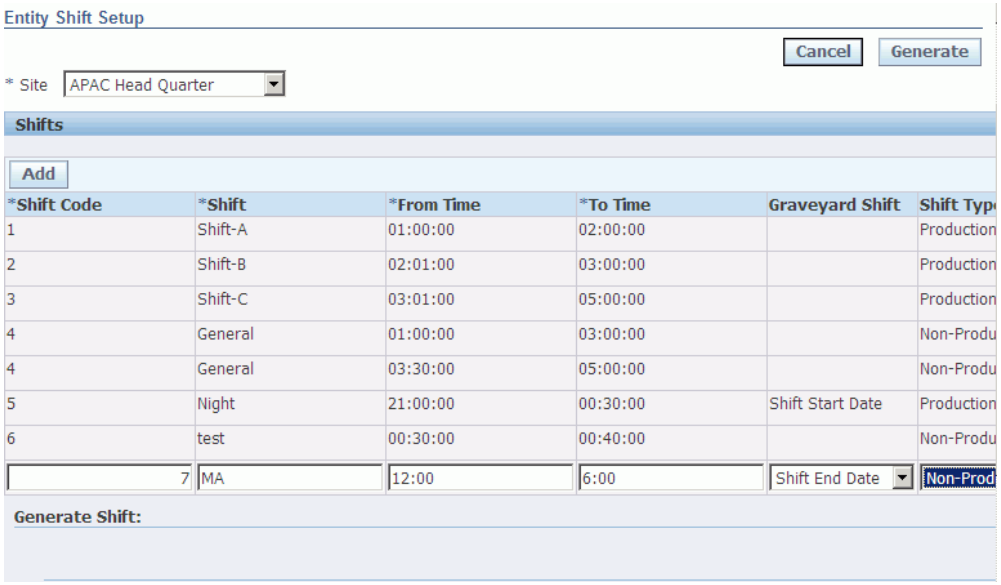
2. Select the Site for which you want to view the shifts. The Shifts region displays the shifts for the site.



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.

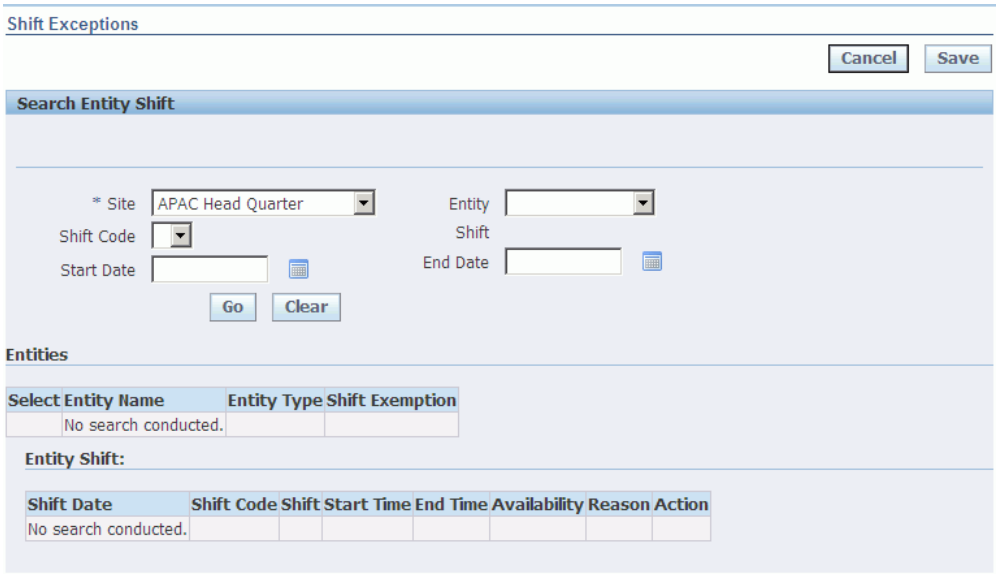
To edit shifts:

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

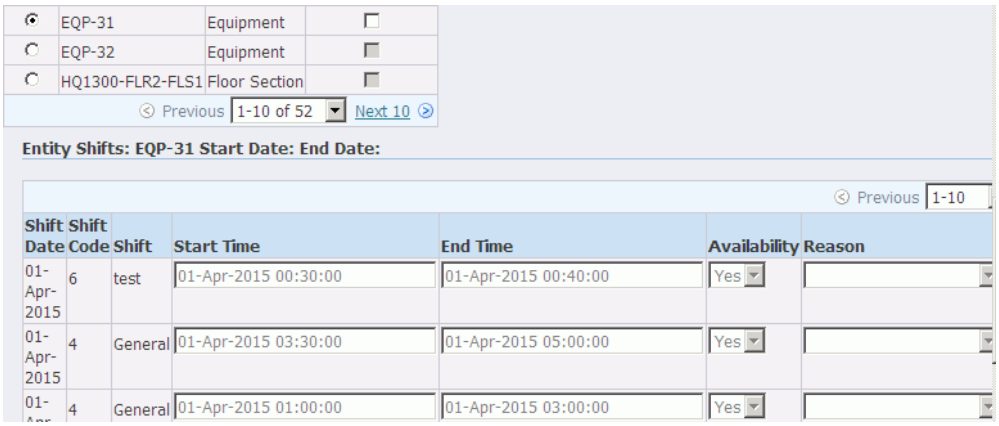
2. Enter any of the following search criteria to in the Search Entity Shift region to view entity shifts:

   - 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

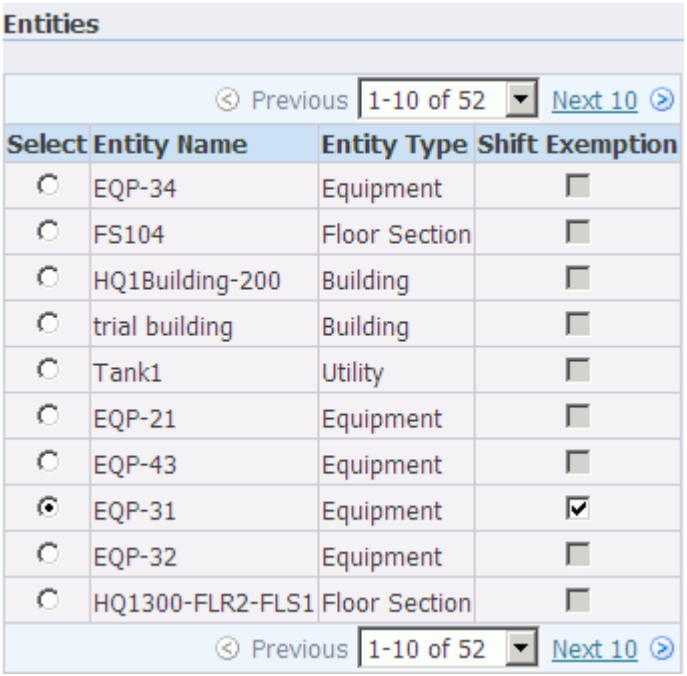


4. To view the shifts of an entity, select an entity. The Entity Shifts region displays the shifts of the selected entity and their Availability.



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:

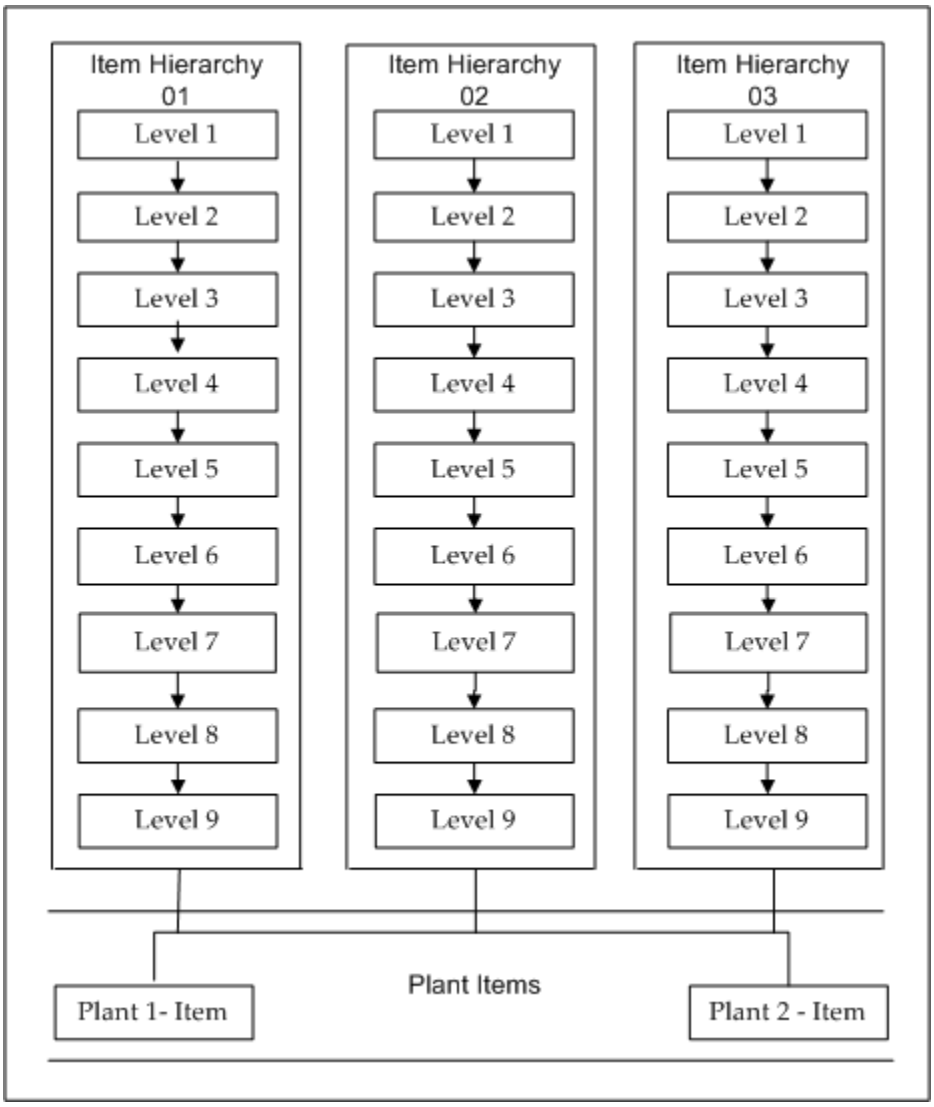
- Dimension Levels
- Item Dimension Setup Steps
- Item Master: CSV Templates
- Item Dimension Maintenance

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

Each item hierarchy can have 10 seeded levels including Item. 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. Collect items by running the ODI scenario MTH_PKG_ITEMS_SRC.
2. Build the item hierarchy by running MTH_PKG_ITEM_HIERARCHY_SRC.

To load data from Microsoft Excel:

1. In the Microsoft Excel template, update MTH_ITEMS_MASTER.csv
2. Run the ODI Scenario MTH_PKG_ITEMS_EXT.

Update the Hierarchy Master

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

Load the Item Hierarchy

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

To load item hierarchies from EBS:

- Run the ODI scenario MTH_PKG_ITEM_HIERARCHY_SRC.

To load item hierarchies from Microsoft Excel:

1. Load items by running the ODI Scenario MTH_PKG_ITEMS_EXT.

   The item records should be uploaded in MTH_ITEMS_MASTER.csv.

2. Load item costs by running the ODI scenario MTH_PKG_ITEM_COST_EXT.

   The item cost records should be uploaded in MTH_ITEM_COST.csv.

3. Load the item categories by running the ODI scenario MTH_PKG_ITEM_CATEGORIES_EXT.

   The item categories should be loaded in MTH_ITEM_CATEGORY.csv.

4. Build the item hierarchy by running the ODI Scenario MTH_PKG_ITEM_HIERARCHY_EXT.

   The item hierarchy data should be uploaded using MTH_ITEM_HIERARCHY.csv.

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 ODI Scenario MTH_PKG_EQUIPMENT_EXT.

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 the ODI Scenario MTH_PKG_EQUIPMENT_ENTITIES_SRC.

To load equipment entities from Microsoft Excel:

1. Update the MTH_ENTITY_MASTER.csv

2. Run the ODI scenario MTH_PKG_EQUIPMENT_ENTITIES_EXT.

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:

- Run ODI Scenario MTH_PKG_RESOURCES_SRC.

To load resources from Microsoft Excel:

1. Update MTH_RESOURCES.csv.
2. Run the ODI Scenario MTH_PKG_RESOURCES_EXT.

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. Before the Equipment Hierarchy is set up, Equipment Entities and Resources should be collected from EBS.

To set up the Equipment Hierarchy, run the ODI Scenario MTH_PKG_EQUIPMENT_HIERARCHY_SRC.

To load resources from Microsoft Excel:

1. Update MTH_EQUIP_HRCHY_DEF.csv.
2. Run the ODI Scenario MTH_PKG_EQUIPMENT_HIERARCHY_EXT.

> **Important:** Before you set up Equipment Hierarchy, you should create Equipment Entities, Resources, Resource Cost, and Equipment within MOC.

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

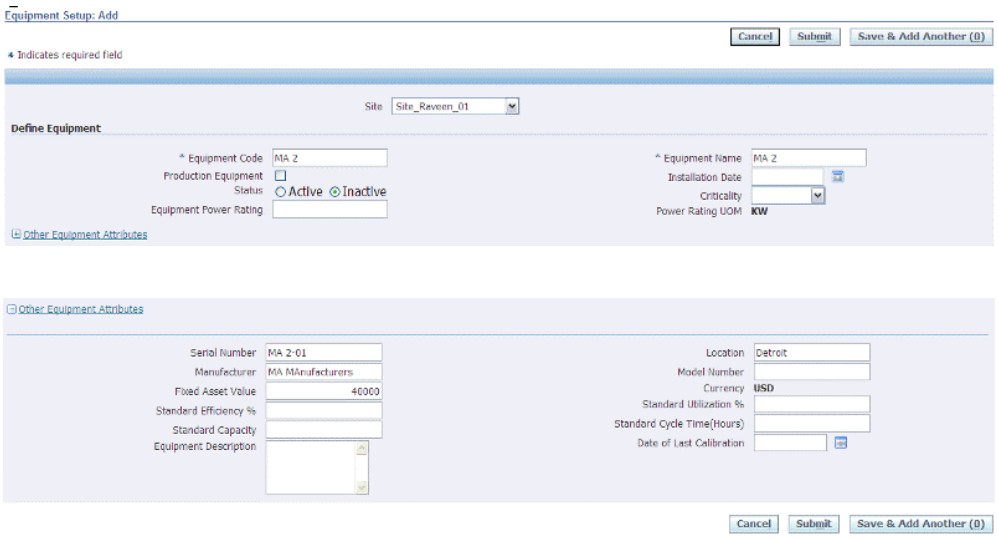
Adding Equipment

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. The default value is Active.
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.

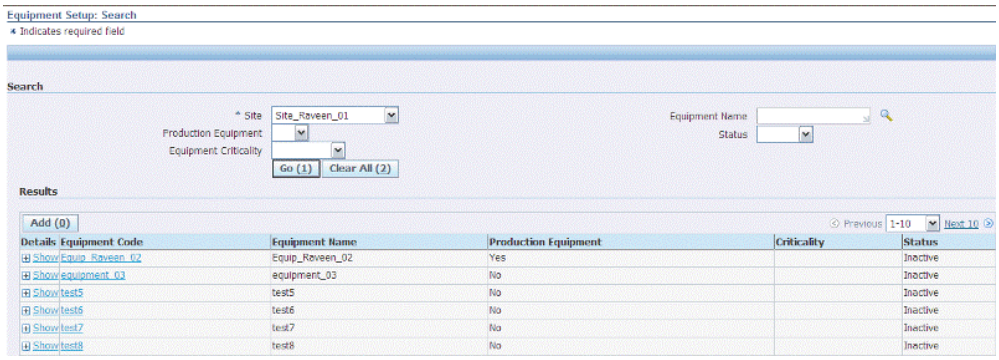


Viewing Equipment Details

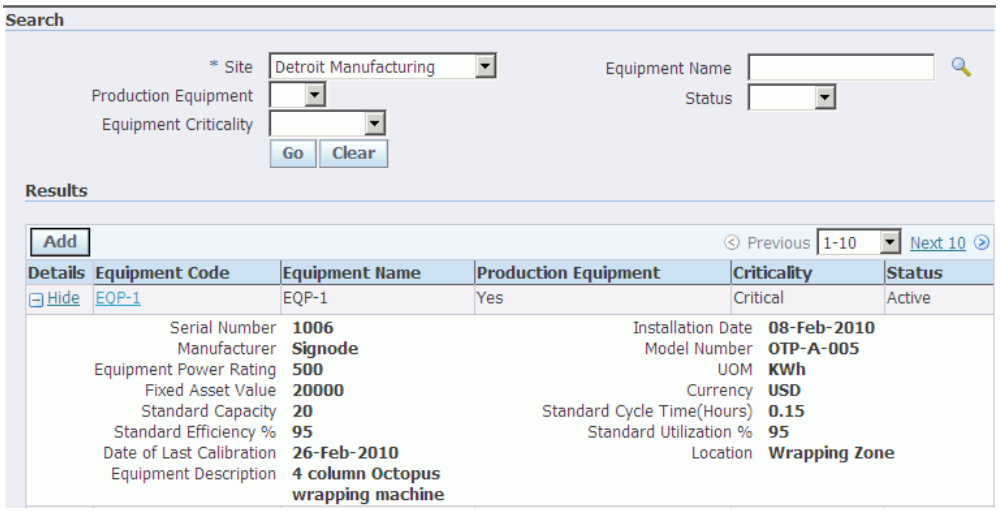
Use the Equipment Setup Search page to view equipment details.

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.

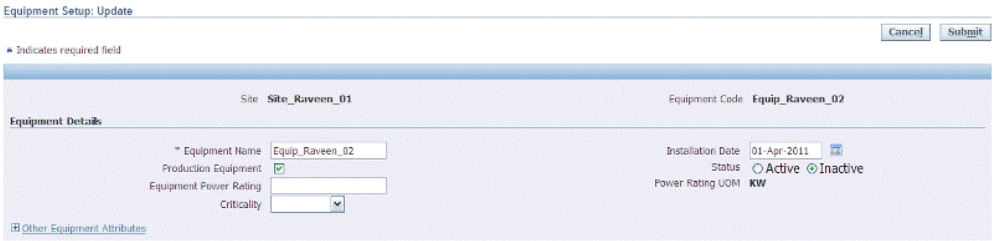


Updating Equipment

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.

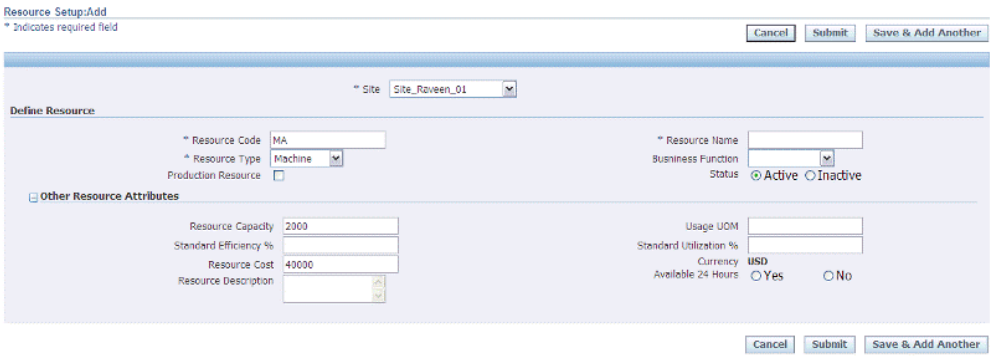


Adding a Resource

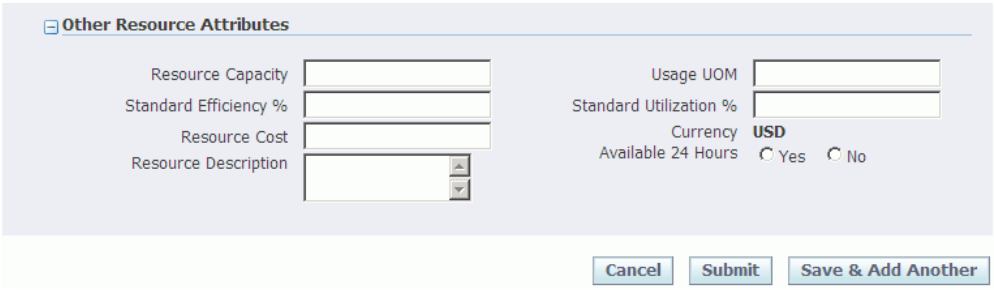
Use the Resource Setup: Add page to add a resource to a site.

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.

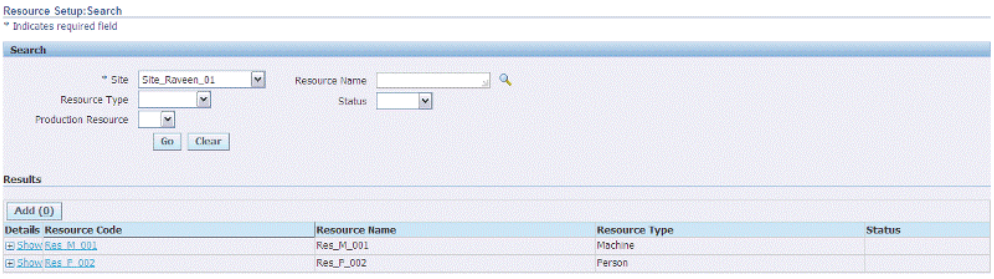


Viewing Resource Details

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

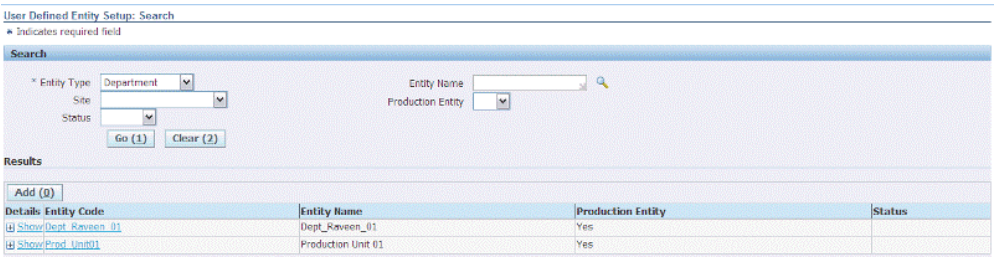
page appears.

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

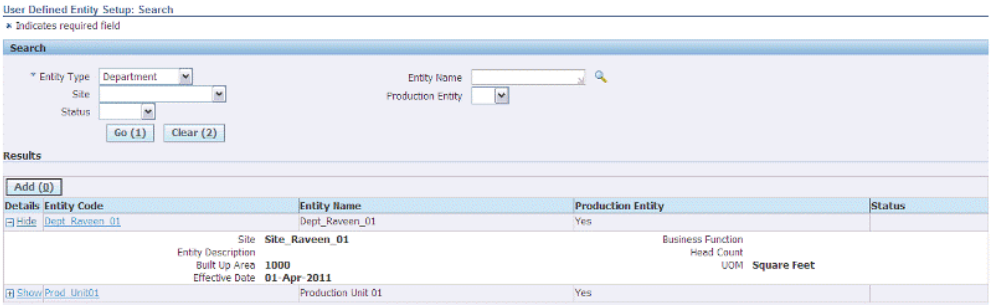
   - Entity Type to search for an entity based on entity type. Options are Building, Department, Floor, Floor Section, Production Area, Production Cell, Production Line, Production Unit, Resource Group, Utility, and Yard. Required.
   - Entity Name to search for a specific entity.
   - Site. If you search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



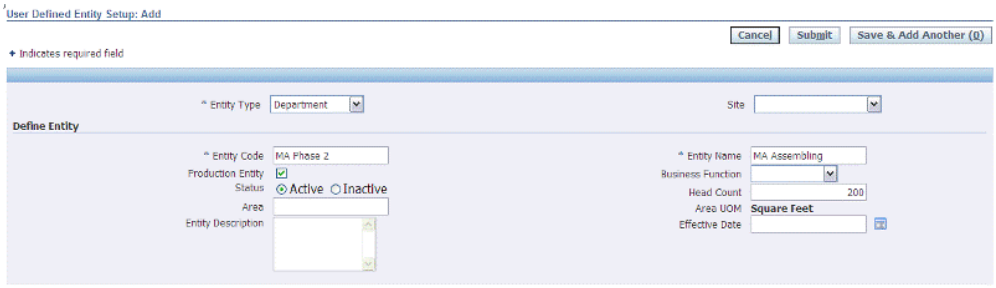
6. Click Show in the Details column to view the entity details.



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:

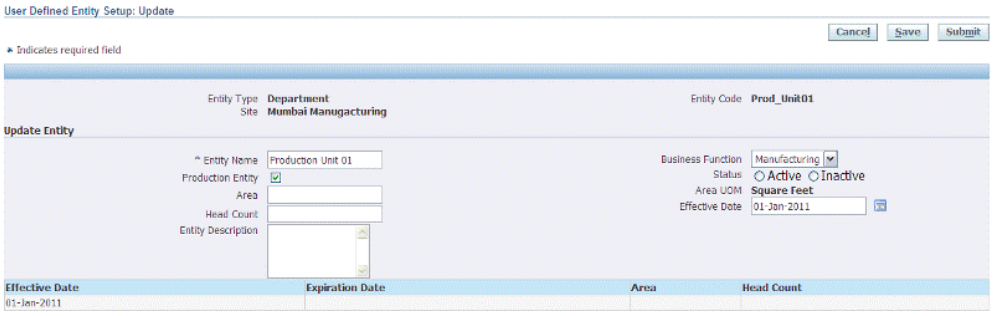
1. Navigate to the User Defined Entity Setup: Search page.
2. Enter the Entity Type that you want to update.

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

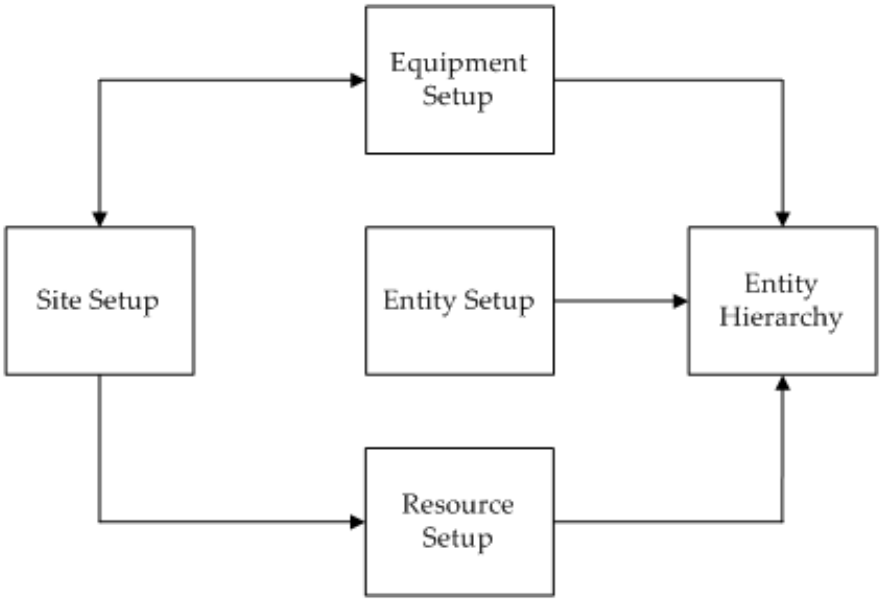
Seeded entity hierarchies like, Department Hierarchy, Facility Hierarchy, Resource Group Hierarchy, Equipment Hierarchy 01 and Equipment Hierarchy 02 are provided. You can create entity hierarchies for both production and non-production facilities. You can build a hierarchy using Active and Inactive sites, entities, resources, and

equipments, and for data contextualization, the entities must be Active.

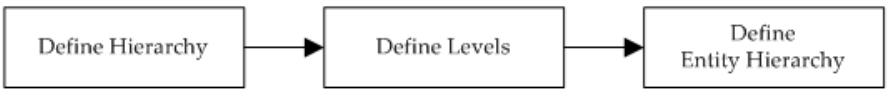
There are no separate hierarchies for production and non-production facilities. For example, a production entity can hold child entities that can be either Production or Non-Production type.

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:

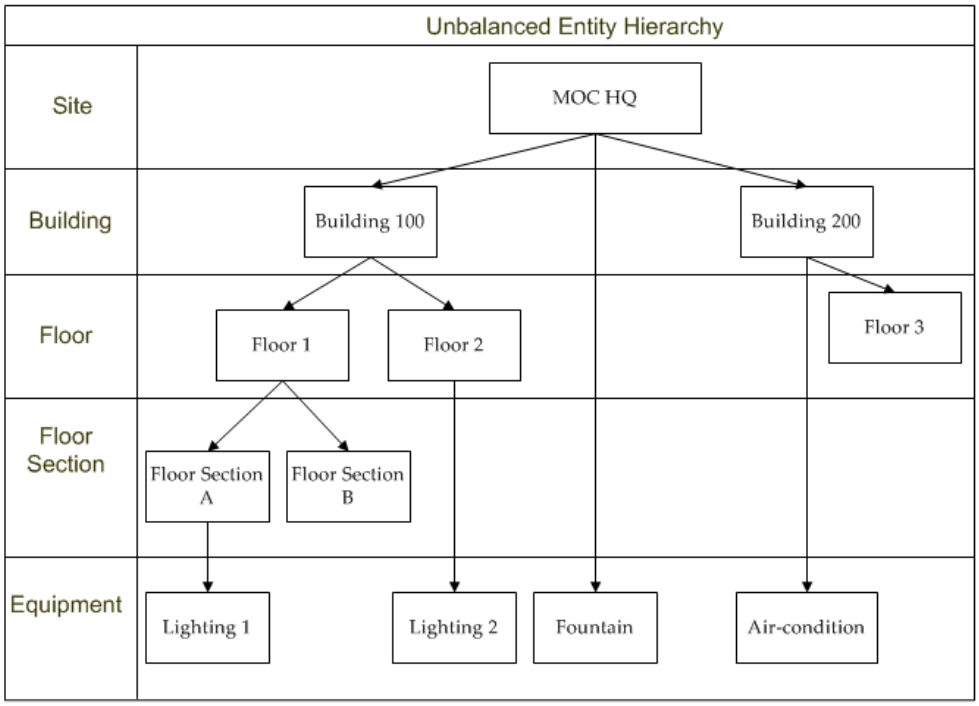


You must create a balanced entity hierarchy to be able to view in OBIEE. A balanced

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.



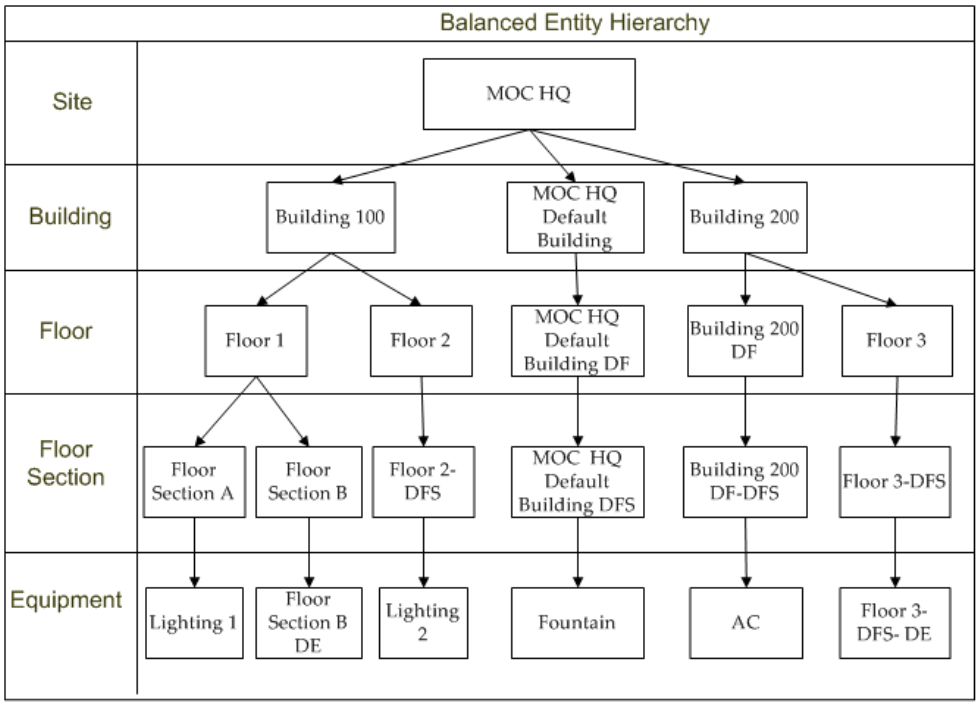
In this example, the following relationships cause imbalance in the hierarchy:

- 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

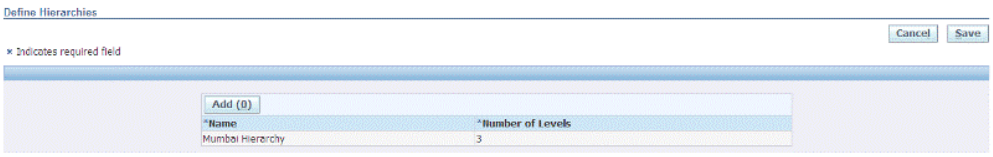
You can update only the current version of a hierarchy. You can move entities from one entity hierarchy to another.

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.



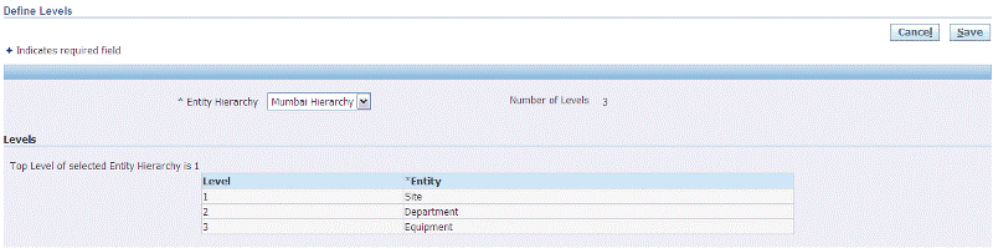
Defining Levels

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

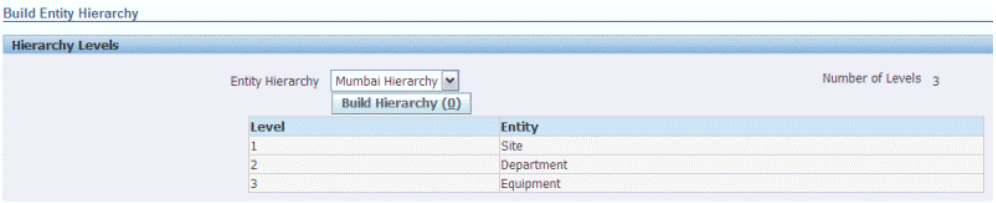
You can build hierarchies using the Build Hierarchy page.

To build a hierarchy:

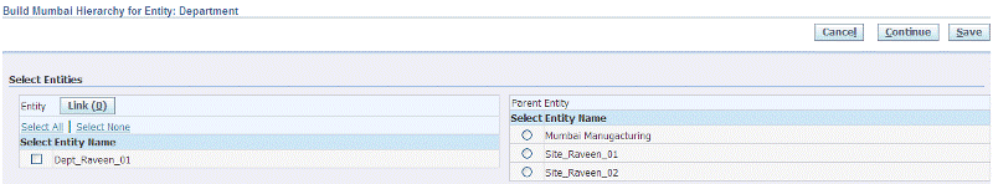
1. Using the Manufacturing Operations Center Administrator responsibility, navigate to the Entity Hierarchy home page and select the Hierarchy Setup tab.

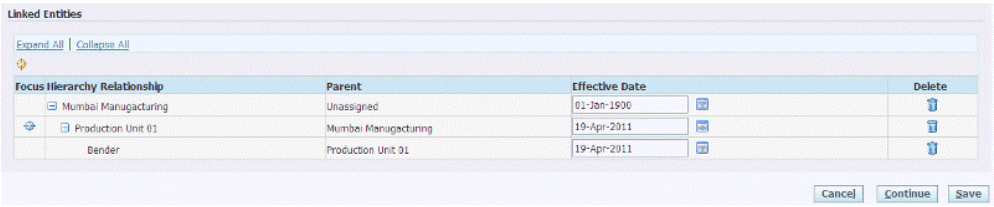
2. Select the Build Hierarchies tab. The Build Entity Hierarchy page appears.

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.





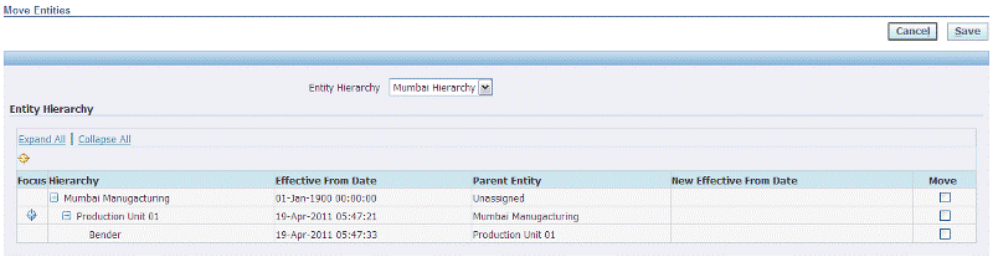
5. In the Select Entities region, select the entities to add to the Hierarchy.
6. Select the Parent Entity to which you want to add the entities.
7. Click Link.
8. Click Save to save the changes or click Next to link entities to the next levels in the hierarchy.
9. Click Submit after linking entities to the last level in the hierarchy, click Submit.
10. Run the ODI Scenario MTH_PKG_POPULATE_EQUIPMENT_DENORM.

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.


Move Entities
Cancel
Save
Entity Hierarchy
Mumbai Hierarchy
Entity Hierarchy
Expand All | Collapse All
Focus Hierarchy
Effective From Date
Parent Entity
New Effective From Date
Move
Mumbai Manugacturing
01-Jan-1900 00:00:00
Unassigned
Production Unit 01
19-Apr-2011 05:47:21
Mumbai Manugacturing
Bender
19-Apr-2011 05:47:33
Production Unit 01

11

Load Data Reference and Transaction Data

ODI based Data Integration Platform

Note: To access WEBADI, set BNE Allow No Security Rule as Yes.

After the ODI is set up and before collecting the EBS source data/populating the CSV data, run the seed data scenario to populate default seeded data in the required MOC tables.

Steps to run the ODI scenarios:

1. Connect to ODI.
2. Navigate to Load Plans and Scenarios > MTH Setup > MTH Systems.
3. Run the scenario MTH_PKG_SEED_DATA.

The following tables must have the seeded default record after execution:

- MTH_LOOKUPS_D
- MTH_SYSTEMS_SETUP
- MTH_PLANTS_D
- MTH_EQUIPMENTS_D
- MTH_ITEMS_D
- MTH_ITEM_COST
- MTH_PRODUCTION_SCHEDULES_F
- MTH_PROD_SUB_SEGMENTS_F

- MTH_PRODUCTION_SEGMENTS_F
- MTH_DIM_LEVEL_LOOKUP
- MTH_DIM_HIERARCHY
- MTH_ENTITIES
- MTH_EQUIP_ENTITIES_MST
- MTH_ITEM_CATEGORIES_D
- MTH_RESOURCES_D
- MTH_RESOURCE_COST

EBS Integration Scenarios

Entity	Sequence	ODI Scenario Name	Comment
System		MTH_PKG_SYSTEMS_SETUP_EXT	
Plant		MTH_PKG_ORGANIZATIONS_SRC	To collect source organizations
Shift		MTH_PKG_WORKDAY_SHIFTS_SRC MTH_PKG_EQUIPMENT_SHIFTS_SRC	To load shift definition at Plant Work day and Equipment Work day level
Item	1	MTH_PKG_ITEMS_SRC	To load Item, Categories, Item Segments and Item hierarchies
	2	MTH_PKG_ITEM_HIERARCHY_SRC	
Item Cost		MTH_PKG_ITEM_COST_SRC	To collect Item Cost from Discrete Organizations

Entity	Sequence	ODI Scenario Name	Comment
Equipment	1	MTH_PKG_EQUIPMENT_ENTITIES_SRC	To load Equipment Entities, Resources and Equipment hierarchies
	2	MTH_PKG_RESOURCES_SRC	
	3	MTH_PKG_EQUIPMENT_HIERARCHY_SRC	
Resource Cost		MTH_PKG_RESOURCE_COST_SRC	To collect Resource Cost from Discrete Organizations
Work Orders		MTH_PKG_PRODUCTION_SCHEDULES_SRC	To load Discrete, flow, OSFM workorders or OPM Process Batches
Sales Orders		MTH_PKG_WORKORDER_RESERVATIONS_SRC	To collect Sales Orders Reservations
Production Segments		MTH_PKG_PRODUCTION_SEGMENTS_SRC	Collect Production Schedules before running this
Production Sub-segments		MTH_PKG_PRODUCTION_SUB_SEGMENTS_SRC	Collect Production Batch segments before running this
Resource Requirements		MTH_PKG_RESOURCE_REQUIREMENTS_SRC	Collect Production Schedules, Batch segments, and Batch sub-segments before running this

Entity	Sequence	ODI Scenario Name	Comment
Material Requirements		MTH_PKG_MTL_CONSUMED_SRC	Collect Production Schedules, Batch segments, and Batch sub-segments before running this
Equipment Production Schedules		MTH_PKG_EQUIPMENT_PROD_SCHEDULE_SRC	Collect Equipment shifts, Production schedules, Batch segments, and Batch sub-segments before running this

Flat file Integration Scenarios

Entity	Sequence	CSV Template	ODI Scenario	Comment
System		MTH_SYSTEMS_SETUP.csv	MTH_PKG_SYSTEMS_SETUP_EXT	To load System Setup
Organization		MTH_ORG.csv	MTH_PKG_ORGANIZATIONS_EXT	To collect source organizations
Item	1	MTH_ITEMS_MASTER.csv	MTH_PKG_ITEMS_EXT	To load Item, Categories, Item Cost Item Segments and Item hierarchies
	2	MTH_ITEM_COST.csv	MTH_PKG_ITEM_COST_EXT	
	3	MTH_ITEM_CATEGORY.csv	MTH_PKG_ITEM_CATEGORIES_EXT	
	4	MTH_ITEM_HIERARCHY.csv	MTH_PKG_ITEM_HIERARCHY_EXT	

Entity	Sequence	CSV Template	ODI Scenario	Comment
Workday Shifts		MTH_WORKDAY_SHIFTS.csv	MTH_PKG_WORKDAY_SHIFTS_EXT	To load shift definition at Plant Work day and Equipment Work day level.
			MTH_PKG_SHIFTS_GEN_UI	Schedule this scenario to run periodically and create shifts. Parameters include Site, Start Date, and End Date.
Equipment Hierarchy	1	MTH_ENTITY_MASTER.csv	MTH_PKG_EQUIPMENT_ENTITIES_EXT	To load Departments, Resources, Resource Cost, Equipment and Equipment Hierarchy.
	2	MTH_RESOURCES.csv	MTH_PKG_RESOURCES_EXT	
	3	MTH_RESOURCE_COST.csv	MTH_PKG_RESOURCE_COST_EXT	
	4	MTH_EQUIP_MASTER.csv	MTH_PKG_EQUIPMENT_EXT	
	5	MTH_EQUIP_HRCHY_DEF.csv	MTH_PKG_EQUIPMENT_HIERARCHY_EXT	
Equipment Shifts		MTH_EQUIP_SHIFTS.csv	MTH_PKG_EQUIPMENT_SHIFTS_EXT	To load Equipment Shift
Equipment Standard Rate		MTH_EQUIP_STANDARD_RATES.csv	MTH_PKG_EQUIPMENT_STD_RATE_EXT	To load Equipment standard Rate

Entity	Sequence	CSV Template	ODI Scenario	Comment
Equipment Reasib Setup		MTH_EQUIP_REASON_SETUP.csv	MTH_PKG_EQUIPMENT_REASONS_EXT	To load Equipment Down, Idle, Scrap Reason codes
Personnel, Asset, Event Action	1	MTH_PERSONNEL.csv	MTH_PKG_PERSONNEL_EXT	To load personnel, Asset and Event Action Details for Event Management Flow
	2	MTH_ASSET_MASTER.csv	MTH_PKG_ASSETS_EXT	
	3	MTH_EVENT_ACTION_SETUP.csv	MTH_PKG_EVENT_SETUP_EXT	
Entity planned usage, Meter readings	1	MTH_ENTITY_PLANNED_USAGE.csv	MTH_PKG_ENTITY_PLANNED_USAGE_EXT	To load entity planned usage and meter readings for Sustainability Performance Analysis
	2	MTH_METER_READINGS.csv	MTH_PKG_METER_READINGS_EXT	
Reservation		MTH_WO_SALES_ORDERS.csv	MTH_PKG_WORKORDER_RESERVATION_EXT	To collect Sales Order - Work Order Reservation.

Entity	Sequence	CSV Template	ODI Scenario	Comment
Equipment status		MTH_EQUIP_STATUS.csv	MTH_PKG_PROCESS_TRANSACTIONS	The ODI package launches the Concurrent Program MTH: Process Transactions
Equipment output		MTH_EQUIP_OUTPUT.csv	MTH_PKG_PROCESS_TRANSACTIONS	The ODI package launches the Concurrent Program MTH: Process Transactions
Extensible User Function		MTH_EXT_USER_FUNCTIONS.csv	MTH_PKG_EXT_USER_FUNCTIONS_EXT	To load Attribute Summary Functions into the MTH_EXT_USER_FUNCTIONS table. Check the MTH_EXT_USER_FUNCTIONS_ERR table for error records.
Tag		MTH_TAG_MASTER_UI.csv	MTH_PKG_TAGS_EXT	To collect Tag Master data
Tag Data		MTH_TAG_READINGS_RAW.csv	MTH_PKG_TAG_READINGS_RAW	To load tag data into the MTH_TAG_READINGS_RAW table
Tag Mapping		MTH_TAG_DESTINATION_MAP.csv	MTH_PKG_TAG_DESTINATION_EXT	Tag Mapping

Flat file Integration Scenarios - Work Order

Entity	Sequence	CSV Template	ODI Scenario	Data Collected
Work Order	1	MTH_PROD_SCHEDULES.csv	MTH_PKG_PRODUCTION_SCHEDULES_EXT	Work orders
	2	MTH_PROD_SEGMENTS.csv	MTH_PKG_PRODUCTION_SEGMENTS_EXT	Work order segments
	3	MTH_PROD_SUB_SEGMENTS.csv	MTH_PKG_PRODUCTION_SUB_SEGMENTS_EXT	Work order sub-segments
	4	MTH_EQUIP_PROD_SCHEDULE.csv	MTH_PKG_EQUIPMENT_PROD_SCHEDULE_EXT	Associate equipment with work order and segment
	5	MTH_PROD_MTL_PRODUCED.csv	MTH_PKG_PRODUCTION_SCHEDULES_EXT	Material produced
	6	MTH_RES_REQ.csv	MTH_RESOURCE_REQUIREMENTS_EXT	Resource requirements
	7	MTH_RES_TXN.csv	MTH_PKG_RESOURCE_TXN_EXT	Resource transactions
	8	MTH_MTL_PRODUCED_TXN.csv	MTH_PKG_MTL_PRODUCED_EXT	Material produced transactions
	9	MTH_MTL_PRODUCED_TXN_LOT.csv	MTH_PKG_MTL_PRODUCED_TXN_EXT	Produced transaction lots

Entity	Sequence	CSV Template	ODI Scenario	Data Collected
	10	MTH_PROD_SEGMENTS_TXN.csv	MTH_PKG_PRODUCTION_SEGMENT_TXN_EXT	Production segment transactions
	11	MTH_MTL_CONSUMED.csv	MTH_PKG_MTL_CONSUMED_EXT	Material consumed
	12	MTH_MTL_CONSUMED_TXN.csv	MTH_PKG_MTL_CONSUMED_TXN_EXT	Material consumed transactions
	13	MTH_MTL_CONSUMED_TXN_LOT.csv	MTH_PKG_MTL_CONSUMED_TXN_LOT_EXT	Material consumed transaction lots

Flat file Integration Scenarios - User Dimension Hierarchy

Entity	Sequence	CSV Template	ODI Scenario Name	Comment
User Dimension Hierarchy	1	MTH_DIM_HIERARCHY.csv	MTH_PKG_DIM_HIERARCHY_EXT	To build user defined dimension hierarchy
	2	MTH_DIM_LEVEL_LOOKUP.csv	MTH_PKG_DIM_LEVEL_LOOKUP_EXT	
	3	MTH_USER_DIM_ENT.csv	MTH_PKG_USER_DIM_ENTITIES_EXT	
	4	MTH_USER_DIM_HRCHY.csv	MTH_PKG_USER_DIM_HIERARCHY_EXT	

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 E-Mail From Display Name
- MTH: Work Request Auto Approve
- MTH: Work Request Priority ID
- MTH: Maintenance User
- MTH: SOA Proxy Server
- MTH: Source DB Service Name
- MTH: Planned Energy Usage Period Type
- MTH: Shifts Setup
- MTH: Global Currency UOM
- MTH: Source Instance DBLink
- MTH: Export Details
- MTH: WIP To Intraoperation Step Type
- MTH: EBS User
- MTH: EBS Responsibility

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 EBS 12.1.3, 12.2 environments. When defining the source in ODI, 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.

> **Note:** When setting up E-mail Notification during Event Management setup, you have to select a non-secured SMTP server as MOC email

notification code will not work if you select secured SMTP server as the SMTP server.

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 E-Mail From 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: Work Request Auto Approve

Profile Values: Y/N. If it is N, then you must pass the owning department ID into asset csv.

Default Profile Value: None

Recommended Change Level: Site

This profile option is required to create eAM work request.

MOC Profile Option (MTH_WORK_REQUEST_AUTO_APPROVE)	EBS EAM Option (Check box: Auto Approve)	Value of Owning Department column in MTH_ASSET_MASTER table	EAM Parameters	Department Approvers
Y	Y	Null	No action	No action

N	N	Owning department ID from EBS	Uncheck Auto Approve	Select Department Approvers for EM1 organization. Add a record for owning department

MTH: Work Request Priority ID

Profile Value: Get the value from the select query: SELECT lookup_code,meaning FROM mfg_lookups WHERE lookup_type= 'WIP_EAM_ACTIVITY_PRIORITY' AND enabled_flag='Y' AND sysdate BETWEEN nvl(start_date_active,sysdate-1) AND nvl (end_date_active,sysdate+1)

Default Profile Value: None

Recommended Change Level: Site

This profile option must be set up to a numeric value from the lookup values available in MFG Lookups for eAM activity priority.

MTH: Maintenance User

Profile Value: The user who can create EAM work request (e.g., mfg).

Default Profile Value: None

Recommended Change Level: Site

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: 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

MTH: Source Instance DBLink

Profile Value: Input Text Field

Default Profile Value: None

This profile option is required for establishing the database link with the source Oracle EBS instance for the inbound integration. It represents source instance name. This is set up at Site level.

MTH: Export Details

Profile Values: Yes/No

Default Profile Value: No

This profile option is required to transfer move transactions, material transactions, and resource transactions associated with discrete work orders or process batches to Oracle E-Business Suite. It is set at Site level.

If the value is set as Yes, on completion of the MTH: Process Transaction it submits MTH: Export Production Workorder Details concurrent program and the data flows to EBS from MOC.

If the value is set as No, on completion of the MTH: Process Transaction it does not submit MTH: Export Production Workorder Details concurrent program and the data does not flow to EBS from MOC.

MTH: WIP To Intraoperation Step Type

Profile Values: Queue/To Move

Default Value: Queue

This profile option is required in the move transaction of materials in discrete manufacturing. It is set at the system administrator level and the MTH: Export Details profile option must be set as YES. The following values govern the behavior of this

profile option:

- MTH: WIP To Intraoperation Step Type

  Value = To Move

  The work in process material moves to the To Move intraoperation step of the current operation.

- MTH: WIP To Intraoperation Step Type

  Value = Queue

  The work in process material moves to the Queue intraoperation step of the next operation.

MTH: EBS User

Profile Value: Input Text Value. For example: process_ops

Default Value: None

This profile option is required for creating outbound transactions from MOC to EBS Process Manufacturing. Select a user such as process_ops or any other user with OPM responsibilities. This profile option is set at the system administrator level.

MTH: EBS Responsibility

Profile Value: Input Text Value. For example: Production Supervisor

Default Value: None

This profile option identifies the responsibility used for creating outbound transactions from MOC to Oracle E-Business Suite. Select a valid responsibility such as Production Supervisor or any other responsibility. This profile option is set at the system administrator level.

13

Setting Up Tags and Contextualization

This chapter covers the following topics:

- Tag Setup
- 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 ODI Package MTH_PKG_TAGS_EXT.
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 Data Integrator (ODI).

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.

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.

Context Update for Tag Entries

Oracle Manufacturing Operations Center application provides the ability to collect process parameters such as temperature and pressure readings and also equipment status, output, completed quantity, and ingredient consumption at a near real-time frequency from the machine controllers. The business contexts (workorder, item, segment details) are maintained in the ERP systems and not paired with the PLC tags.

After contextualization, due to the non-availability of workorder, segment, and item information, the context data is populated as unassigned in the tag readings table, equipment extensible attribute table, and extensible attribute summary table. The ODI scenario processes MTH_TAG_READINGS_CONTEXT.csv file and modifies tag readings table and equipment extensible attribute table for all the records related to the equipment whose reading time for an equipment is for a specific time period.

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.

Note: When inserting data in mth_tag_readings_raw, the WOSegment format of PK should be <OPERATION_CODE>-<WORKORDER_NUMBER>-<PLANT_CODE>

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:

- Load the data into tag readings tables by running the concurrent program MTH: Process Transactions.

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

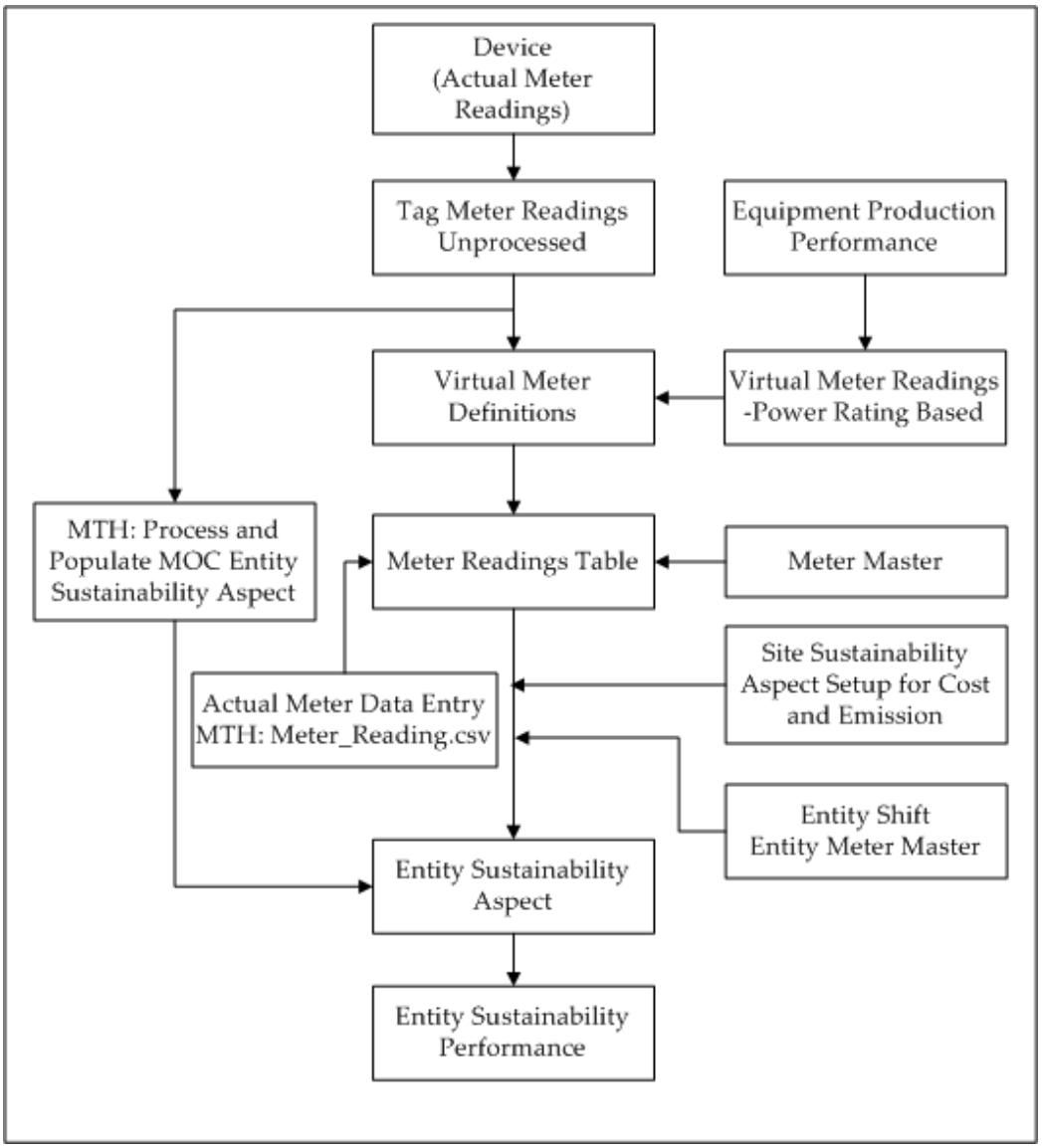
Oracle Manufacturing Operations Center provides manufacturing capability to shop floor for production companies that are sensitive to environmental issues and energy usages. Energy consumption data collected from smart meters is contextualized with production variables such as equipment status (i.e.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

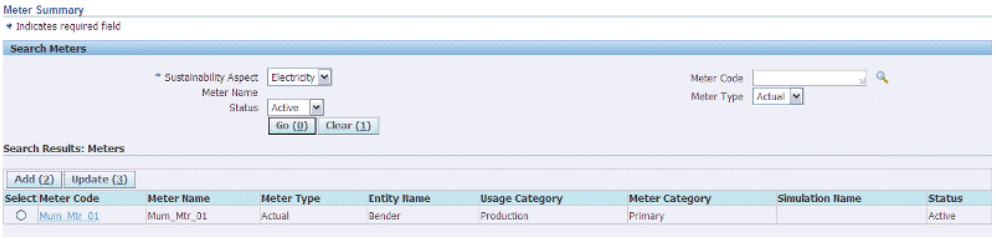
Use the Meter Summary page to view the summary of the meters for a sustainability aspect.

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.

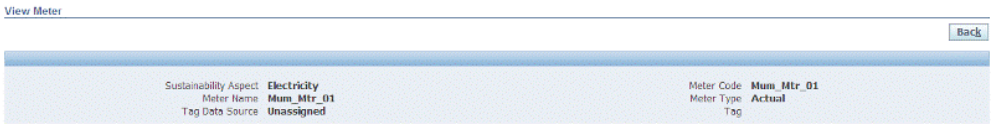


Viewing Meters

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

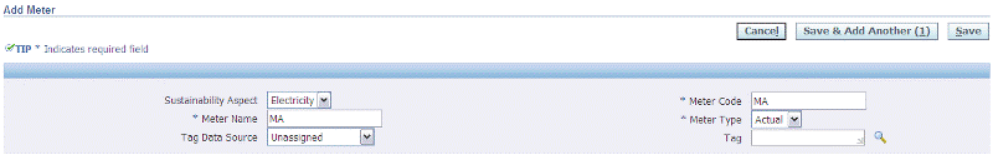
Use the Add Meter page to add a meter.

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.

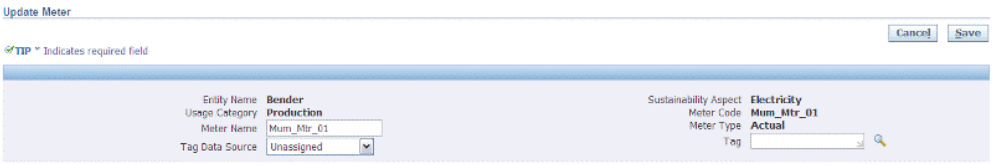


Updating Meters

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.

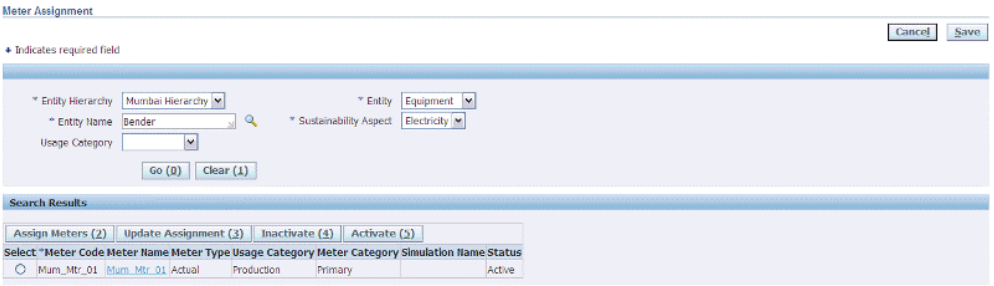


Assigning Meters

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:

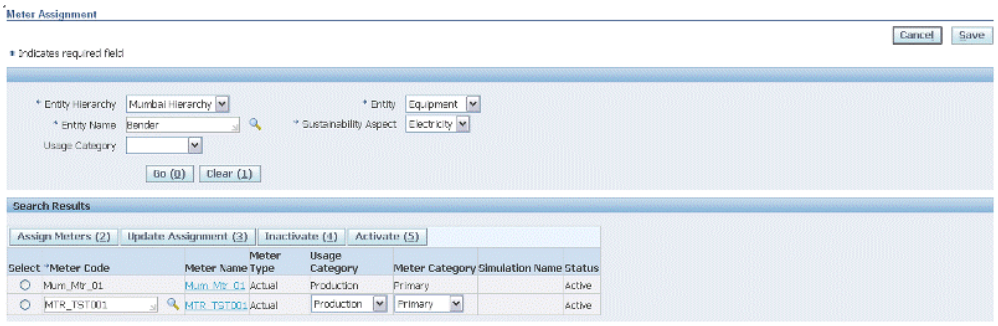
1. Using the Manufacturing Operations Center Administrator responsibility, navigate to the Meter Home page.
2. Select the Meter Assignment tab. The Meter Assignment page appears.
3. Select the Entity Hierarchy and Entity to which you want to assign meters.
4. Select the Entity Name to assign the meter 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.



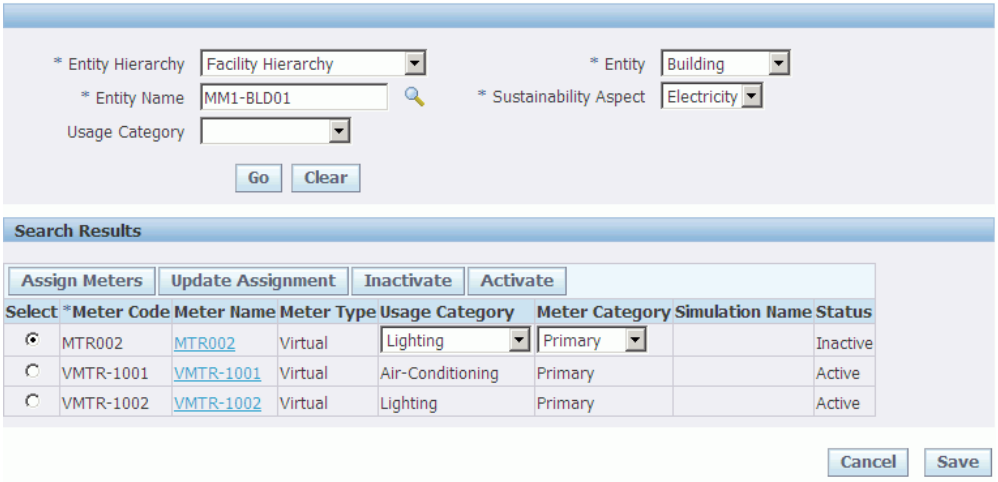
7. Click Assign Meters. Select a Meter Code to assign. The Meter Name and Meter Type display.
8. Select the Usage Category for the meter.
9. Select the Meter Category as Primary or Simulation.

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
- Summarizing Extensible Attributes
- 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.

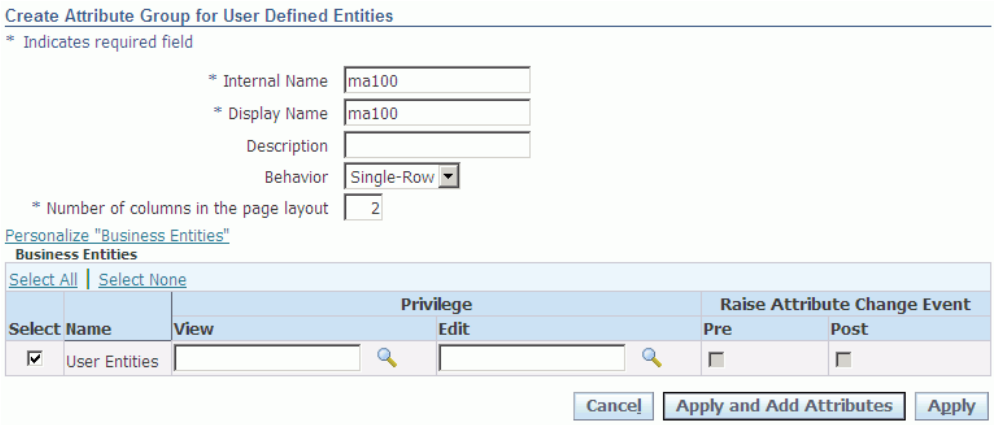
3. Click Attributes. The Entity: User Defined Entities page appears that displays all the attribute groups. You can search for attribute groups and attributes that you want to configure to a Classification or create a new attribute group and attributes.

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:

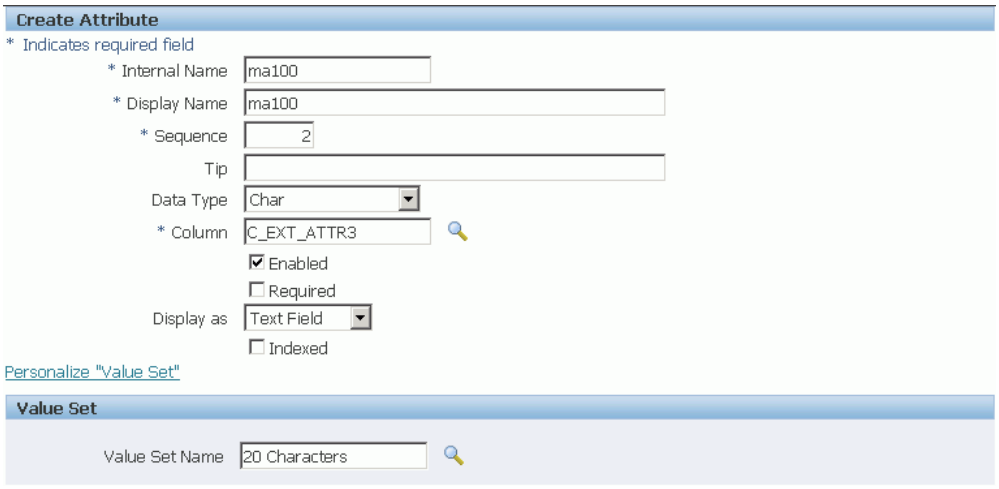
1. Using the Manufacturing Operations Center Administrator responsibility, navigate to the Extensible Attributes Workbench menu.

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 Date Time or

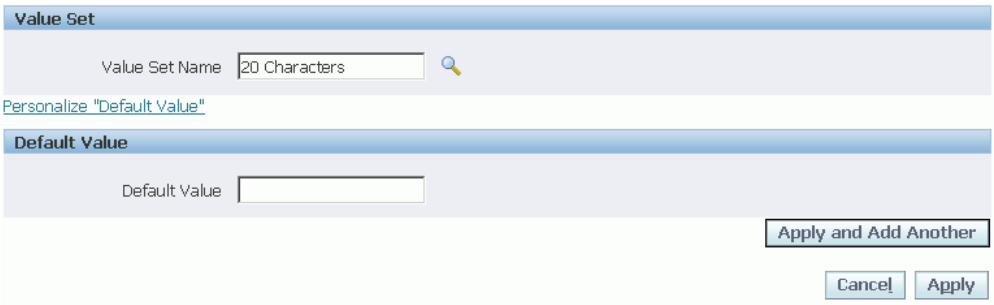
Translatable Text. When you select Number, the Unit of Measure Class field displays. Do not select a unit of measure class in this field. If you select the Unit of Measure Class in this field, then you cannot update the attribute group using the Manufacturing Operations Center User responsibility. You can instead create a new attribute with the required unit of measure.

- 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.

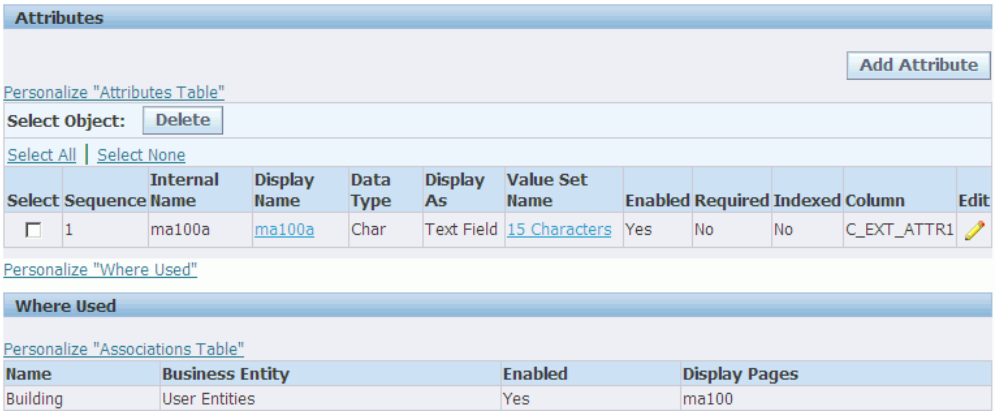
5. To update the attribute group details, click Update. The Edit Attribute Group for User Defined Entities page appears. Refer to the topic "Updating Attribute Group for User Defined Entities" for more information.

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:

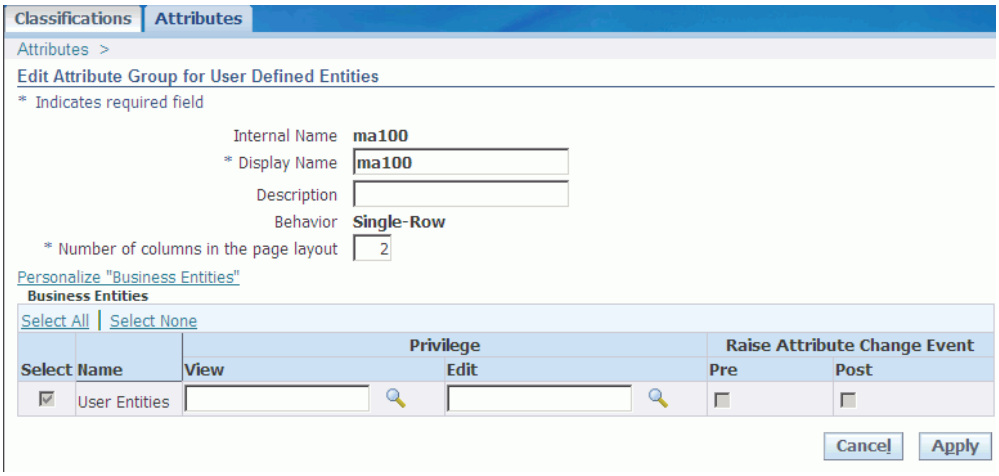
1. Using the Manufacturing Operations Center Administrator responsibility, navigate to the Extensible Attributes Workbench menu.

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

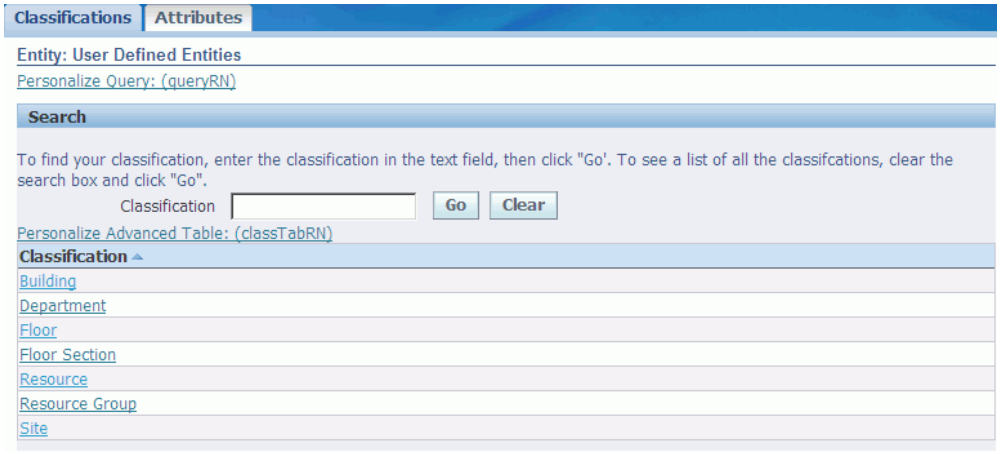
Viewing Classifications

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

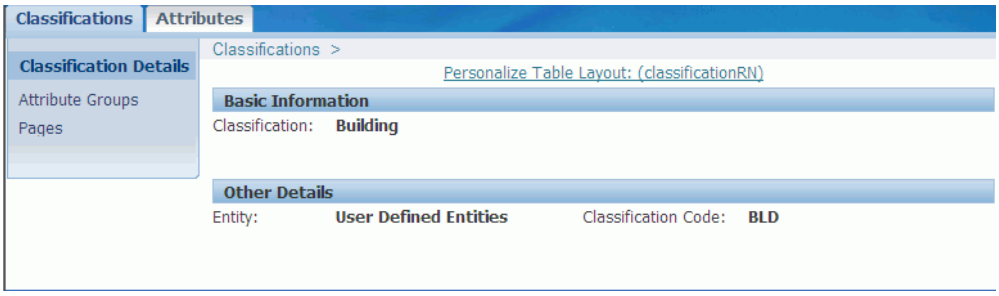
To view classifications:

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.

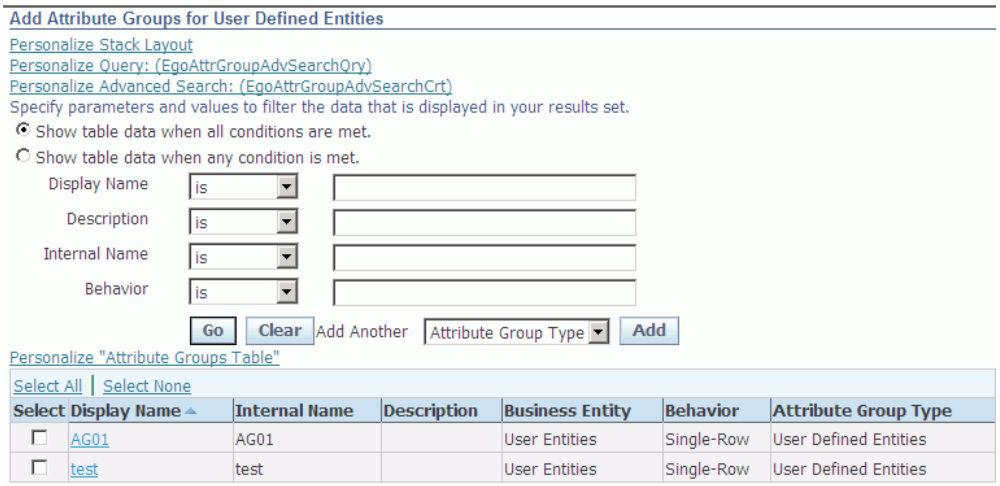


Attaching Attribute Groups to Classifications

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.

Summarizing Extensible Attributes

Oracle Manufacturing Operations Center stores summarized information of extensible attributes or the tag data captured from shop floor control systems on an hourly basis. This is in addition to the equipment status and equipment output summary details, which maintain the summary at the level of Item, Workorder, Workday Shift, and Hour. These summary tables enable you to correlate equipment status, output, and process variables.

You can set up mathematical functions for an extensible attribute using a new page. These attributes are summarized on an hourly basis by the MTH: Process Transactions concurrent program and the summarized data are maintained in the equipment extensible attribute summary table. The database table and columns are available in the OBIEE layer for reporting purpose.

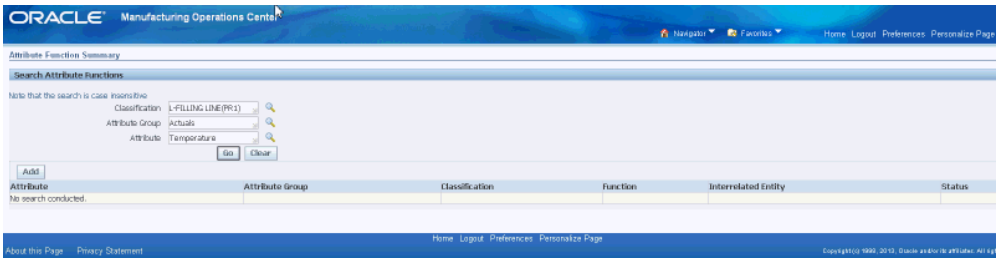
Use either one of the following methods to add attribute functions:

- Add attribute functions using the Attribute Function Summary page.
- Add attribute functions to a Microsoft Excel template and import the spreadsheet data using an ODI scenario.

To search and add attribute functions using the Attribute Function Summary page:

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

The Attribute Function Summary page opens. You can use this page to search attribute functions and view them in a table form.



3. Enter details of your search criteria.

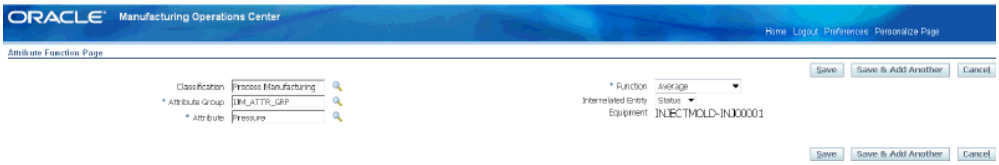
4. Click Go.

5. Click Add to associate user defined attribute group or attribute to user defined function and an interrelated entity.

   This is restricted to Status and Output only. The Attribute Function Page opens.

6. Enter the following fields:

   - Classification (optional)
   - Attribute Group (mandatory)
   - Attribute (mandatory)
   - Function (mandatory)
   - Interrelated entity (optional)



7. Click Save.

To import attribute functions:

1. Enter attribute function information into the Microsoft Excel template MTH_EXT_USER_FUNCTIONS.csv. Columns in the template include:

   - EQUIPMENT_PK - Enter the internal name for equipment that exists in the MTH_EQUIPMENTS_D table.

- ATTR_GROUP_NAME - Enter the internal name of an attribute group that exists in the EGO_ATTR_GROUPS_V table.
- ATTR_NAME - Enter the internal name of an attribute that exists in the EGO_ATTRS_V table.
- FUNCTION - Enter a function that exists in the lookup MTH_EXT_USER_FUNCTION.

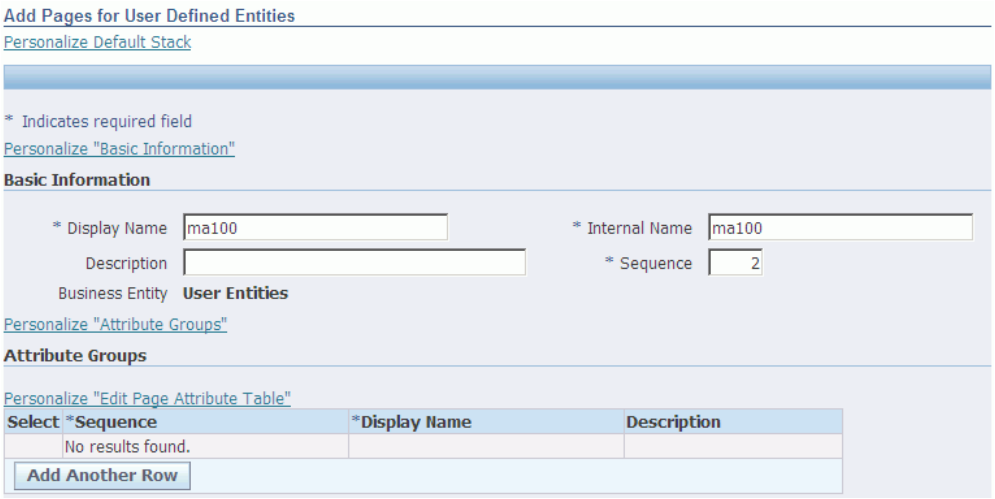
2. Run the ODI scenario MTH_PKG_EXT_USER_FUNCTIONS_EXT.

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 run the concurrent program MTH: Upload Extensible Attributes Data that transfers data from the staging table to the extensible attribute table. Run the concurrent program for one of the following entities: Batch-Operations, Equipments, Others, Items, User Defined Entities, Work Orders. 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

Run the concurrent program MTH: Upload External Attributes data to populate extensible attribute data for Equipment, Work Order, Batch Operations, Items or User Defined Entities.

Multi-Row Attributes

To populate multi-row attributes for the Equipment entity:

1. Set up the attribute tags for entity mapping.

2. Run the concurrent program MTH: Upload External Attributes data to populate extensible attribute data for Equipment, Work Order, Batch Operations, Items or User Defined Entities.

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
- Process Engineer Dashboard
- Asset Performance Dashboard
- Production Supervisor Dashboard
- Facilities Manager Dashboard
- Adhoc Analysis

Manufacturing Operations Center Catalog

The Manufacturing Operations Center Catalog provides the Plant Manager, Process Engineer, Asset Performance, Production Supervisor, 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.

Performance Areas	Description
Schedule Adherence	Used to analyze production to performance and backlog related measures by system, plant, item, time, and equipment.
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
Equipment Performance (OEE)	Overall Equipment Effectiveness by Plant
	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
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

Dashboard Pages	Reports
	Effective Production Capacity
	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

Process Engineer Dashboard

The Process Engineer Dashboard enables plant engineers to view the summarized information of process parameters and to know the average value of temperature or pressure running on a particular equipment in the last hour. It also allows correlation between equipment output, status and the influencing variables. From the Process Engineer Dashboard, based on the time and equipment dimensions, you can view the following reports:

1. Parameter Hourly Run Chart
2. Equipment Output - Process Analysis
3. Equipment Status - Process Analysis

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

Asset Performance Dashboard

Asset Performance Dashboard is a role-based dashboard that provides reporting capabilities for production and maintenance assets within an organization. The dashboard displays the reports for the shop floor events such as breakdown, excessive scrap, unstable equipment and also details of asset status, production performance, output, scrap, and operating parameters.

Dashboard Pages	Reports
	OEE By Asset
	OEE Breakup by Asset
	Asset Events
	Asset Production Performance
	Asset Output and Scrap
	Asset Status Trend
	Asset Downtime Analysis
	Asset Operation Parameter Trend
Non-Production Assets	Asset Events
	Asset Status Trend
	Asset Downtime Analysis
	Asset Operation Parameter Trend

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

Production Supervisor Dashboard

Production Supervisor Dashboard generates reports that fetch data from shop floor equipment and provide real-time information about equipment status and production performance. Using this dashboard you can generate the following reports:

- Equipment Status

- Equipment Status Analysis
- Equipment Status Trend
- Equipment Output Trend
- Equipment Downtime Analysis

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

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

Dashboard Pages	Reports
	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
	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

Dashboard Pages	Reports
	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
	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

A

Appendix

Error Handling Design Change

While loading the rows from staging to fact, no duplicate rows will be processed. Duplicate rows will be identified and moved to the error table. You can either delete the duplicate rows from the error table or modify the rows to make each row unique. These rows will be processed in the next run.

Overview of Handling Duplicates

1. Use an aggregator operator to group_by the PK columns or merge columns and calculate the row count using the count(pk) method.
2. Join the resultant rows back to the main joiner based on the pk_columns.
3. Add a splitter condition for the duplicate rows as consider rows to be in error when then duplicate_count >1.

Error Code	Description	Reference Physical Column	Error Type
DUP	Duplicate rows		Duplicate rows
EQP	Missing Equipment reference	EQUIPMENT_FK	Referential Integrity
SEG	Missing Segment reference	SEGMENT_FK	Referential Integrity
UD1	Missing User Dimension Key1	USER_DIM1_FK	Referential Integrity

Error Code	Description	Reference Physical Column	Error Type
UD2	Missing User Dimension Key2	USER_DIM2_FK	Referential Integrity
UD3	Missing User Dimension Key3	USER_DIM3_FK	Referential Integrity
UD4	Missing User Dimension Key4	USER_DIM4_FK	Referential Integrity
UD5	Missing User Dimension Key5	USER_DIM5_FK	Referential Integrity
ITM	Missing Item/Product reference	ITEM_FK, PRODUCT_FK	Referential Integrity
PLT	Missing Plant reference	PLANT_FK	Referential Integrity
WKO	Missing work order reference	WORKORDER_FK	Referential Integrity
WDS	Missing Workday Shift reference	SHIFT_WORKDAY_FK	Referential Integrity
RES	Missing Resource reference	RESOURCE_FK	Referential Integrity
ENT	Missing Equipment dimension Entity reference or user dimension entity reference	ENTITY_FK	Referential Integrity
CAT	Missing Category reference	CATEGORY_FK	Referential Integrity
MTL	Missing Material reference	MATERIAL_FK	Referential Integrity
FLC	Missing FND Lookup Code	STATUS (WO Status)	Referential Integrity

Error Code	Description	Reference Physical Column	Error Type
MLC	Missing MTH Lookup code		Referential Integrity
SSG	Missing Sub Segment reference	SUB_SEGMENT_FK_KEY	Referential Integrity
HRY	Missing Hierarchy reference	HIERARCHY_NAME	Referential Integrity
PFK	Missing Parent reference for time, item, equipment and user dimensions	PARENT_FK	Referential Integrity
LFK	Missing Level reference for time, item, equipment and user dimensions	LEVEL_FK	Referential Integrity
DIM	Missing Dimension Reference	DIMENSION_NAME	Referential Integrity
MCT	Missing Material Consumed Transaction reference	WO_MAT_TXN_PK_KEY	Referential Integrity
MPT	Missing Material Produced Transaction reference	WO_COMP_PK_KEY	Referential Integrity
ESD	Missing reference record in MTH_EQUIPMENT_SHIFTS_D table		Referential Integrity
ETC	Missing Event Type Code reference in the FND_LOOKUPS	EVENT_TYPE_CODE	Referential Integrity

Error Code	Description	Reference Physical Column	Error Type
RCS	Missing Reason code reference in the MTH_EQUIPMENT_REASON_SETUP table	REASON_CODE	Referential Integrity
ATC	Missing Action Type Code reference in the FND_LOOKUPS	ACTION_TYPE_CODE	Referential Integrity
PER	Missing Personnel reference	PERSON_FK	Referential Integrity
AHC	Missing Action Handler Code reference in the FND_LOOKUPS	ACTION_HANDLER_CODE	Referential Integrity
DOM	Missing Domain Name reference in the FND_LOOKUPS	DOMAIN_NAME	Referential Integrity
ERT	Wrong Reason Type in MTH_EQUIPMENT_REASON_SETUP table	REASON_TYPE	Wrong Data
EUT	Expected uptime for Scrap Reason in MTH_EQUIPMENT_REASON_SETUP table	EXPECTED_UP_TIME	Wrong Data
NTN	Personnel reference or Email notification or Mobile notification is missing for the NOTIFICATION event action	NOTIFICATION	Wrong Data

Error Code	Description	Reference Physical Column	Error Type
LVN	ENTITY_TYPE is not equal with LEVEL_NAME	LEVEL_NAME	Wrong Data
NOL	Number_of_level is wrong	Number_of_level	Wrong Data
DIM	DIMENSION_NAME is null	DIMENSION_NAME	Referential Integrity
HIE	HIERARCHY_NAME is null	HIERARCHY_NAME	Referential Integrity
EFD	Effective date is wrong	Effective_date	Wrong Data
SYS	system pk key is null	System_pk	Referential Integrity
BFC	BUSI_FUNC_CODE is wrong	BUSI_FUNC	Referential Integrity
MRV	MAX_RESET_VALUE is null	MAX_RESET_VALUE	Wrong Data
RED	READING_TYPE_CODE is null	READING_TYPE	Referential Integrity
SRC	tag_data_source_name is wrong	tag_data_source_name	Referential Integrity
DTE	To_date is less than from date	To_date, from_date	Wrong Data
SFT	shift_fk is wrong	shift_fk	Referential Integrity
STS	STATUS_CODE is wrong	STATUS	Referential Integrity
PDT	production type is wrong	production type	Referential Integrity

Error Code	Description	Reference Physical Column	Error Type
ENC	ENT_TYPE_CODE is null	ENT_TYPE	Referential Integrity
TAT	TAG_TYPE_CODE IS NULL	TAG_TYPE	Referential Integrity
DAT	DATA_TYPE_CODE is null	DATA_TYPE	Referential Integrity
ORT	ORDER_TYPE_COD E is null	ORDER_TYPE	Referential Integrity
GRA	GRAVEYARD_CODE is wrong	GRAVEYARD	Referential Integrity
INI	INITIAL_VALUE is wrong	INITIAL_VALUE	Wrong Data
IEN	Inactive Entities	STATUS	STATUS not in ACTIVE
POU	Period of usage not present in 445 calendar	PERIOD_OF_USAGE	Referential Integrity
EET	Entity Reference Missing	ENTITY_FK+ENTITY _TYPE	Referential Integrity
IDS	TAG_TYPE in tag data source is not correct or missing data source	TAG_TYPE	Missing data source or incorrect data
NGV	Value in TAG_VALUE or USAGE_VALUE is negative	TAG_VALUE / USAGE VALUE	Negative value
OTR	Usage value is out of range defined for a cumulative tag	TAG_VALUE	Data out of range

Error Code	Description	Reference Physical Column	Error Type
OTO	Readings are out of order	TAG_VALUE	Data out of order
MIM	There is no meter associated with the tag		Missing associated meter for the meter tag
WFQ	Wrong frequency number	FREQUENCY_IN_MINUTES	Wrong frequency number
NFQ	Frequency is not support for OPERATION tag type	FREQUENCY_IN_MINUTES	Frequency not supported
USI	Un-needed setting for incremental tags, including INITIAL_VALUE, MAX_RESET_VALUE, ORDER_TYPE_CODE, and READING_TYPE_CODE		Wrong data
WSC	Wrong setting for cumulative tags including missing or wrong INITIAL_VALUE, missing or wrong MAX_RESET_VALUE, missing ORDER_TYPE_CODE, or un-needed FREQUENCY_IN_MINUTES		Wrong data
CRI	Wrong Equipment Criticality	EQUIPMENT_CRITICALITY	Wrong Data

Error Code	Description	Reference Physical Column	Error Type
DTC	For Alphanumeric data type tags setting of READING_TYPE, ORDER_TYPE or MAX_RESET_VALUE		Wrong Data
MET	Meter Reference Missing	METER_FK	Referential Integrity
FMT	Null From date	FROM_DATE	Wrong data
TOT	Null To date	TO_DATE	Wrong data
USG	Null Usage Value	USAGE_VALUE	Wrong data
OLP	Overlap Time	TO_DATE, FROM_DATE	Wrong data
AVF	Invalid AVAILABILITY_FLAG	AVAILABILITY_FLAG	Wrong data
RSN	Provided REASON for availability of entity shift	REASON	Wrong data
RCD	Wrong REASON for unavailability of entity shift	REASON	Wrong data
SUS	SUSTAIN_ASPECT_PK_KEY is null	SUSTAIN_ASPECT_PK	Referential Integrity
DTN	DATA_TYPE IS NULL	DATA_TYPE	Missing Data Type
NRC	For Numeric data type value of reading type code		Wrong data

Error Code	Description	Reference Physical Column	Error Type
FTD	Data provided is for the future date, which is invalid		Wrong data

Error Codes and Meanings

TARGET_TABLE	ERROR_TABLE	ERR_CODE	DESCRIPTION
MTH_ASSET_MST	MTH_ASSET_ERR	ASSET_GROUP	Value was not provided for column ASSET_GROUP or the value provided for corresponding staging table column was invalid
MTH_ASSET_MST	MTH_ASSET_ERR	ASSET_GROUP_ID	Value was not provided for column ASSET_GROUP_ID or the value provided for corresponding staging table column was invalid
MTH_ASSET_MST	MTH_ASSET_ERR	ASSET_NUMBER	Value was not provided for column ASSET_NUMBER or the value provided for corresponding staging table column was invalid
MTH_ASSET_MST	MTH_ASSET_ERR	ASSET_PK	Value was not provided for column ASSET_PK or the value provided for corresponding staging table column was invalid
MTH_ASSET_MST	MTH_ASSET_ERR	DUP	Multiple records were found leading to the same value or combination of ASSET_PK in target table.
MTH_ASSET_MST	MTH_ASSET_ERR	FLC	Invalid value was provided for ASSET_CRITICALITY_CODE.
MTH_ASSET_MST	MTH_ASSET_ERR	MAINTENANCE_ORG_CODE	Value was not provided for column MAINTENANCE_ORG_CODE or the value provided for corresponding staging table column was invalid

TARGET_TABLE	ERROR_TABLE	ERR_CODE	DESCRIPTION
MTH_ASSET_MST	MTH_ASSET_ERR	PLT	Entered maintenance org code is not enabled as an EAM organization for the current system.
MTH_DAY_D	MTH_DAY_ERR	GAP	Record has a gap with respect to previous entry.
MTH_DAY_D	MTH_DAY_ERR	OVP	Record overlaps with another entry.
MTH_DAY_D	MTH_DAY_ERR	REPORT_DATE	Value was not provided for column REPORT_DATE or the value provided for corresponding staging table column was invalid
MTH_DAY_D	MTH_DAY_ERR	REPORT_DATE_JULIAN	Value was not provided for column REPORT_DATE_JULIAN or the value provided for corresponding staging table column was invalid
MTH_DIM_HIERARCHY	MTH_DIM_HIERARCHY_ERR	DIMENSION_NAME	Value was not provided for column DIMENSION_NAME or the value provided for corresponding staging table column was invalid
MTH_DIM_HIERARCHY	MTH_DIM_HIERARCHY_ERR	DUP	Multiple records were found leading to the same value or combination of DIMENSION_NAME, HIERARCHY_NAME in target table.
MTH_DIM_HIERARCHY	MTH_DIM_HIERARCHY_ERR	HIERARCHY_NAME	Value was not provided for column HIERARCHY_NAME or the value provided for corresponding staging table column was invalid
MTH_DIM_HIERARCHY	MTH_DIM_HIERARCHY_ERR	NOL	Invalid value was provided for NUMBER_OF_LEVEL. Valid values are 2 through 10.
MTH_DIM_LEVEL_LOOKUP	MTH_DIM_LEVEL_LOOKUP_ERR	DIMENSION_ID	Value was not provided for column DIMENSION_ID or the value provided for corresponding staging table column was invalid

TARGET_TABLE	ERROR_TABLE	ERR_CODE	DESCRIPTION
MTH_DIM_LEVEL_LOOKUP	MTH_DIM_LEVEL_LOOKUP_ERR	DUP	Multiple records were found leading to the same value or combination of DIMENSION_ID, HIERARCHY_ID, LEVEL_NUM in target table.
MTH_DIM_LEVEL_LOOKUP	MTH_DIM_LEVEL_LOOKUP_ERR	HIERARCHY_ID	Value was not provided for column HIERARCHY_ID or the value provided for corresponding staging table column was invalid
MTH_DIM_LEVEL_LOOKUP	MTH_DIM_LEVEL_LOOKUP_ERR	LEVEL_NUM	Value was not provided for column LEVEL_NUM or the value provided for corresponding staging table column was invalid
MTH_ENTITY_PLANNED_USAGE	MTH_ENTITY_PLANNED_USAGE_ERR	DUP	Multiple records were found leading to the same value or combination of ENTITY_FK_KEY, SUSTAIN_ASPECT_FK_KEY, PERIOD_OF_USAGE in target table.
MTH_ENTITY_PLANNED_USAGE	MTH_ENTITY_PLANNED_USAGE_ERR	ENTITY_FK_KEY	Value was not provided for column ENTITY_FK_KEY or the value provided for corresponding staging table column was invalid
MTH_ENTITY_PLANNED_USAGE	MTH_ENTITY_PLANNED_USAGE_ERR	IEN	Entity is not active.
MTH_ENTITY_PLANNED_USAGE	MTH_ENTITY_PLANNED_USAGE_ERR	PERIOD_OF_USAGE	Value was not provided for column PERIOD_OF_USAGE or the value provided for corresponding staging table column was invalid
MTH_ENTITY_PLANNED_USAGE	MTH_ENTITY_PLANNED_USAGE_ERR	PLANNED_USAGE	Value was not provided for column PLANNED_USAGE or the value provided for corresponding staging table column was invalid
MTH_ENTITY_PLANNED_USAGE	MTH_ENTITY_PLANNED_USAGE_ERR	POU	Invalid value was provided for PERIOD_OF_USAGE.

TARGET_TABLE	ERROR_TABLE	ERR_CODE	DESCRIPTION
MTH_ENTITY_PLANNED_USAGE	MTH_ENTITY_PLANNED_USAGE_ERR	SUSTAIN_ASPECT_FK_KEY	Value was not provided for column SUSTAIN_ASPECT_FK_KEY or the value provided for corresponding staging table column was invalid
MTH_ENTITY_PLANNED_USAGE	MTH_ENTITY_PLANNED_USAGE_ERR	USAGE_UOM	Value was not provided for column USAGE_UOM or the value provided for corresponding staging table column was invalid
MTH_EQUIP_ENTITIES_MST	MTH_EQUIP_ENTITIES_ERR	BFC	Invalid value was provided for BUSINESS_FUNCTION.
MTH_ENTITY_ATTRIBUTES	MTH_EQUIP_ENTITIES_ERR	DUP	Multiple records were found leading to the same value or combination of ENTITY_FK_KEY, EFFECTIVE_DATE in target table.
MTH_ENTITY_ATTRIBUTES	MTH_EQUIP_ENTITIES_ERR	DUP	Multiple records were found leading to the same value or combination of ENTITY_FK_KEY, EFFECTIVE_DATE in target table.
MTH_EQUIP_ENTITIES_MST	MTH_EQUIP_ENTITIES_ERR	DUP	Multiple records were found leading to the same value or combination of ENTITY_PK in target table.
MTH_EQUIP_ENTITIES_MST	MTH_EQUIP_ENTITIES_ERR	EFD	Invalid value was provided for EFFECTIVE_DATE.
MTH_ENTITY_ATTRIBUTES	MTH_EQUIP_ENTITIES_ERR	EFFECTIVE_DATE	Value was not provided for column EFFECTIVE_DATE or the value provided for corresponding staging table column was invalid
MTH_ENTITY_ATTRIBUTES	MTH_EQUIP_ENTITIES_ERR	EFFECTIVE_DATE	Value was not provided for column EFFECTIVE_DATE or the value provided for corresponding staging table column was invalid

TARGET_TABLE	ERROR_TABLE	ERR_CODE	DESCRIPTION
MTH_ENTITY_ATTRIBUTES	MTH_EQUIP_ENTITIES_ERR	ENTITY_FK_KEY	Value was not provided for column ENTITY_FK_KEY or the value provided for corresponding staging table column was invalid
MTH_ENTITY_ATTRIBUTES	MTH_EQUIP_ENTITIES_ERR	ENTITY_FK_KEY	Value was not provided for column ENTITY_FK_KEY or the value provided for corresponding staging table column was invalid
MTH_EQUIP_ENTITIES_MST	MTH_EQUIP_ENTITIES_ERR	ENTITY_NAME	Value was not provided for column ENTITY_NAME or the value provided for corresponding staging table column was invalid
MTH_EQUIP_ENTITIES_MST	MTH_EQUIP_ENTITIES_ERR	ENTITY_PK	Value was not provided for column ENTITY_PK or the value provided for corresponding staging table column was invalid
MTH_EQUIP_ENTITIES_MST	MTH_EQUIP_ENTITIES_ERR	ENTITY_TYPE	Value was not provided for column ENTITY_TYPE or the value provided for corresponding staging table column was invalid
MTH_EQUIP_ENTITIES_MST	MTH_EQUIP_ENTITIES_ERR	PRODUCTION_ENTITY	Value was not provided for column PRODUCTION_ENTITY or the value provided for corresponding staging table column was invalid
MTH_EQUIP_ENTITIES_MST	MTH_EQUIP_ENTITIES_ERR	STATUS	Value was not provided for column STATUS or the value provided for corresponding staging table column was invalid
MTH_EQUIP_HIERARCHY	MTH_EQUIP_HIERARCHY_ERR	DUP	Multiple records were found leading to the same value or combination of HIERARCHY_ID, LEVEL_FK_KEY, EFFECTIVE_DATE in target table.
MTH_EQUIP_HIERARCHY	MTH_EQUIP_HIERARCHY_ERR	Hry_Effective_Date	Invalid value was provided for EFFECTIVE_DATE.

TARGET_TABLE	ERROR_TABLE	ERR_CODE	DESCRIPTION
MTH_EQUIP_HIERARCHY	MTH_EQUIP_HIERARCHY_ERR	HRY_ID	Invalid value was provided for HIERARCHY_NAME.
MTH_EQUIP_HIERARCHY	MTH_EQUIP_HIERARCHY_ERR	HRY_Level_FK	Invalid value was provided for LEVEL_FK.
MTH_EQUIP_HIERARCHY	MTH_EQUIP_HIERARCHY_ERR	HRY_Parent_FK	Invalid value was provided for PARENT_FK.
MTH_EQUIP_HIERARCHY	MTH_EQUIP_HIERARCHY_ERR	Level02	Hierarchy information for the parent is not fully available.
MTH_EQUIP_HIERARCHY	MTH_EQUIP_HIERARCHY_ERR	Level03	Hierarchy information for the parent is not fully available.
MTH_EQUIP_HIERARCHY	MTH_EQUIP_HIERARCHY_ERR	Level04	Hierarchy information for the parent is not fully available.
MTH_EQUIP_HIERARCHY	MTH_EQUIP_HIERARCHY_ERR	Level05	Hierarchy information for the parent is not fully available.
MTH_EQUIP_HIERARCHY	MTH_EQUIP_HIERARCHY_ERR	Level06	Hierarchy information for the parent is not fully available.
MTH_EQUIP_HIERARCHY	MTH_EQUIP_HIERARCHY_ERR	Level07	Hierarchy information for the parent is not fully available.
MTH_EQUIP_HIERARCHY	MTH_EQUIP_HIERARCHY_ERR	Level08	Hierarchy information for the parent is not fully available.
MTH_EQUIP_HIERARCHY	MTH_EQUIP_HIERARCHY_ERR	Level09	Hierarchy information for the parent is not fully available.
MTH_EQUIP_HIERARCHY	MTH_EQUIP_HIERARCHY_ERR	Level10	Hierarchy information for the parent is not fully available.
MTH_EQUIP_OUTPUT	MTH_EQUIP_OUTPUT_ERR	DOP	Output information for the provided READING_TIME already exists for the provided equipment.

TARGET_TABLE	ERROR_TABLE	ERR_CODE	DESCRIPTION
MTH_EQUIP_OUTPUT	MTH_EQUIP_OUTPUT_ERR	DUP	Multiple records were found for the same combination of EQUIPMENT_FK, SHIFT_WORKDAY_FK, READING_TIME, ITEM_FK, WORKORDER_FK, SEGMENT_FK.
MTH_EQUIP_OUTPUT	MTH_EQUIP_OUTPUT_ERR	EQP	Value was not provided for column EQUIPMENT_PK_KEY or the value provided for corresponding staging table column was invalid
MTH_EQUIP_OUTPUT	MTH_EQUIP_OUTPUT_ERR	FTD	READING_TIME is in future.
MTH_EQUIP_OUTPUT	MTH_EQUIP_OUTPUT_ERR	IEQ	Equipment is not active.
MTH_EQUIP_OUTPUT	MTH_EQUIP_OUTPUT_ERR	ITM	Invalid value was provided for ITEM_FK
MTH_EQUIP_OUTPUT	MTH_EQUIP_OUTPUT_ERR	ITR	READING_TIME does not fall in a shift for the provided equipment.
MTH_EQUIP_OUTPUT	MTH_EQUIP_OUTPUT_ERR	NWDS	Value was not provided for SHIFT_WORKDAY_FK
MTH_EQUIP_OUTPUT	MTH_EQUIP_OUTPUT_ERR	SEG	Invalid value was provided for SEGMENT_FK
MTH_EQUIP_OUTPUT	MTH_EQUIP_OUTPUT_ERR	SPR	SCRAP_REASON_CODE was provided when not expected or the value provided is invalid.
MTH_EQUIP_OUTPUT	MTH_EQUIP_OUTPUT_ERR	UD1	Invalid value was provided for USER_DIM1_FK.
MTH_EQUIP_OUTPUT	MTH_EQUIP_OUTPUT_ERR	UD2	Invalid value was provided for USER_DIM2_FK.
MTH_EQUIP_OUTPUT	MTH_EQUIP_OUTPUT_ERR	UD3	Invalid value was provided for USER_DIM3_FK.

TARGET_TABLE	ERROR_TABLE	ERR_CODE	DESCRIPTION
MTH_EQUIP_OUTPUT	MTH_EQUIP_OUTPUT_ERR	UD4	Invalid value was provided for USER_DIM4_FK.
MTH_EQUIP_OUTPUT	MTH_EQUIP_OUTPUT_ERR	UD5	Invalid value was provided for USER_DIM5_FK.
MTH_EQUIP_OUTPUT	MTH_EQUIP_OUTPUT_ERR	WDS	Invalid value was provided for SHIFT_WORKDAY_FK
MTH_EQUIP_OUTPUT	MTH_EQUIP_OUTPUT_ERR	WKO	Invalid value was provided for WORKORDER_FK.
MTH_EQUIP_PROD_SCHEDULE_F	MTH_EQUIP_PROD_SCHEDULE_ERR	DTE	SCHEDULE_TO_DATE is less than or equal to SCHEDULE_FROM_DATE.
MTH_EQUIP_PROD_SCHEDULE_F	MTH_EQUIP_PROD_SCHEDULE_ERR	DUP	Multiple records were found leading to the same value or combination of EQUIP_SCHEDULE_PK in target table.
MTH_EQUIP_PROD_SCHEDULE_F	MTH_EQUIP_PROD_SCHEDULE_ERR	EQUIP_SCHEDULE_PK	Value was not provided for column EQUIP_SCHEDULE_PK or the value provided for corresponding staging table column was invalid
MTH_EQUIP_PROD_SCHEDULE_F	MTH_EQUIP_PROD_SCHEDULE_ERR	EQUIPMENT_FK_KEY	Value was not provided for column EQUIPMENT_FK_KEY or the value provided for corresponding staging table column was invalid
MTH_EQUIP_PROD_SCHEDULE_F	MTH_EQUIP_PROD_SCHEDULE_ERR	ITM	Invalid value was provided for ITEM_FK
MTH_EQUIP_PROD_SCHEDULE_F	MTH_EQUIP_PROD_SCHEDULE_ERR	OCSV	Schedule is overlapping with another record in staging.
MTH_EQUIP_PROD_SCHEDULE_F	MTH_EQUIP_PROD_SCHEDULE_ERR	OEPS	Schedule is overlapping with an existing schedule.

TARGET_TABLE	ERROR_TABLE	ERR_CODE	DESCRIPTION
MTH_EQUIP_PROD_SCHEDULE_F	MTH_EQUIP_PROD_SCHEDULE_ERR	OSB	From and To dates provided are outside shift boundaries.
MTH_EQUIP_PROD_SCHEDULE_F	MTH_EQUIP_PROD_SCHEDULE_ERR	SCHEDULE_FROM_DATE	Value was not provided for column SCHEDULE_FROM_DATE or the value provided for corresponding staging table column was invalid
MTH_EQUIP_PROD_SCHEDULE_F	MTH_EQUIP_PROD_SCHEDULE_ERR	SCHEDULE_TO_DATE	Value was not provided for column SCHEDULE_TO_DATE or the value provided for corresponding staging table column was invalid
MTH_EQUIP_PROD_SCHEDULE_F	MTH_EQUIP_PROD_SCHEDULE_ERR	UD1	Invalid value was provided for USER_DIM1_FK.
MTH_EQUIP_PROD_SCHEDULE_F	MTH_EQUIP_PROD_SCHEDULE_ERR	UD2	Invalid value was provided for USER_DIM2_FK.
MTH_EQUIP_PROD_SCHEDULE_F	MTH_EQUIP_PROD_SCHEDULE_ERR	UD3	Invalid value was provided for USER_DIM3_FK.
MTH_EQUIP_PROD_SCHEDULE_F	MTH_EQUIP_PROD_SCHEDULE_ERR	UD4	Invalid value was provided for USER_DIM4_FK.
MTH_EQUIP_PROD_SCHEDULE_F	MTH_EQUIP_PROD_SCHEDULE_ERR	UD5	Invalid value was provided for USER_DIM5_FK.
MTH_EQUIP_PROD_SCHEDULE_F	MTH_EQUIP_PROD_SCHEDULE_ERR	WDS	Invalid value was provided for SHIFT_WORKDAY_FK.
MTH_EQUIP_PROD_SCHEDULE_F	MTH_EQUIP_PROD_SCHEDULE_ERR	WKO	Invalid value was provided for WORKORDER_FK.

TARGET_TABLE	ERROR_TABLE	ERR_CODE	DESCRIPTION
MTH_EQUIP_STANDARD_RATES_F	MTH_EQUIP_STANDARD_RATES_ERR	DUP	Multiple records were found leading to the same value or combination of EQUIPMENT_FK_KEY, SHIFT_WORKDAY_FK_KEY, ITEM_FK_KEY in target table.
MTH_EQUIP_STANDARD_RATES_F	MTH_EQUIP_STANDARD_RATES_ERR	EQUIPMENT_FK_KEY	Value was not provided for column EQUIPMENT_FK_KEY or the value provided for corresponding staging table column was invalid
MTH_EQUIP_STANDARD_RATES_F	MTH_EQUIP_STANDARD_RATES_ERR	ITM	Invalid value was provided for ITEM_FK
MTH_EQUIP_STANDARD_RATES_F	MTH_EQUIP_STANDARD_RATES_ERR	PLANT_FK_KEY	Value was not provided for column PLANT_FK_KEY or the value provided for corresponding staging table column was invalid
MTH_EQUIP_STANDARD_RATES_F	MTH_EQUIP_STANDARD_RATES_ERR	UD1	Invalid value was provided for USER_DIM1_FK.
MTH_EQUIP_STANDARD_RATES_F	MTH_EQUIP_STANDARD_RATES_ERR	UD2	Invalid value was provided for USER_DIM2_FK.
MTH_EQUIP_STANDARD_RATES_F	MTH_EQUIP_STANDARD_RATES_ERR	UD3	Invalid value was provided for USER_DIM3_FK.
MTH_EQUIP_STANDARD_RATES_F	MTH_EQUIP_STANDARD_RATES_ERR	UD4	Invalid value was provided for USER_DIM4_FK.
MTH_EQUIP_STANDARD_RATES_F	MTH_EQUIP_STANDARD_RATES_ERR	UD5	Invalid value was provided for USER_DIM5_FK.

TARGET_TABLE	ERROR_TABLE	ERR_CODE	DESCRIPTION
MTH_EQUIP_STANDARD_RATES_F	MTH_EQUIP_STANDARD_RATES_ERR	WDS	Invalid value was provided for SHIFT_WORKDAY_FK.
MTH_EQUIP_STATUSES	MTH_EQUIP_STATUSES_ERR	DTR	DOWNTIME_REASON_CODE was provided when not expected or the value provided is not a valid downtime reason.
MTH_EQUIP_STATUSES	MTH_EQUIP_STATUSES_ERR	DUP	Multiple records were found for the same combination of EQUIPMENT_FK, SHIFT_WORKDAY_FK, FROM_DATE, TO_DATE.
MTH_EQUIP_STATUSES	MTH_EQUIP_STATUSES_ERR	EQP	Value was not provided for column EQUIPMENT_PK_KEY or the value provided for corresponding staging table column was invalid
MTH_EQUIP_STATUSES	MTH_EQUIP_STATUSES_ERR	ESD	Shift information specific to equipment is unavailable.
MTH_EQUIP_STATUSES	MTH_EQUIP_STATUSES_ERR	FTD	FROM_DATE are TO_DATE are in future.
MTH_EQUIP_STATUSES	MTH_EQUIP_STATUSES_ERR	GAP	Current status entry or an earlier status entry has a gap with respect to its previous status entry.
MTH_EQUIP_STATUSES	MTH_EQUIP_STATUSES_ERR	IDR	Invalid idle reason was provided in DOWNTIME_REASON_CODE.
MTH_EQUIP_STATUSES	MTH_EQUIP_STATUSES_ERR	IEQ	Equipment is not active.
MTH_EQUIP_STATUSES	MTH_EQUIP_STATUSES_ERR	ITR	FROM_DATE and TO_DATE do not fall in a shift for the provided equipment.
MTH_EQUIP_STATUSES	MTH_EQUIP_STATUSES_ERR	MSF	Status entry spans across multiple shifts.

TARGET_TABLE	ERROR_TABLE	ERR_CODE	DESCRIPTION
MTH_EQUIP_STATUSES	MTH_EQUIP_STATUSES_ERR	OCSV	Status entry overlaps with another entry in staging table.
MTH_EQUIP_STATUSES	MTH_EQUIP_STATUSES_ERR	OSTS	Status entry overlaps with an existing status entry.
MTH_EQUIP_STATUSES	MTH_EQUIP_STATUSES_ERR	STS	Invalid value was provided for STATUS. Valid values are 1, 2, 3 and 4.
MTH_EQUIP_STATUSES	MTH_EQUIP_STATUSES_ERR	UD1	Invalid value was provided for USER_DIM1_FK.
MTH_EQUIP_STATUSES	MTH_EQUIP_STATUSES_ERR	UD2	Invalid value was provided for USER_DIM2_FK.
MTH_EQUIP_STATUSES	MTH_EQUIP_STATUSES_ERR	UD3	Invalid value was provided for USER_DIM3_FK.
MTH_EQUIP_STATUSES	MTH_EQUIP_STATUSES_ERR	UD4	Invalid value was provided for USER_DIM4_FK.
MTH_EQUIP_STATUSES	MTH_EQUIP_STATUSES_ERR	UD5	Invalid value was provided for USER_DIM5_FK.
MTH_EQUIP_STATUSES	MTH_EQUIP_STATUSES_ERR	WDS	Invalid value was provided for SHIFT_WORKDAY_FK
MTH_EQUIP_STATUSES	MTH_EQUIP_STATUSES_ERR	WRC	Invalid value was provided for DOWNTIME_REASON_CODE.
MTH_EQUIPMENT_REASON_SETUP	MTH_EQUIPMENT_REASON_SETUP_ERR	DUP	Multiple records were found leading to the same value or combination of EQUIPMENT_FK_KEY, REASON_CODE, REASON_TYPE in target table.
MTH_EQUIPMENT_REASON_SETUP	MTH_EQUIPMENT_REASON_SETUP_ERR	EQUIPMENT_FK_KEY	Value was not provided for column EQUIPMENT_FK_KEY or the value provided for corresponding staging table column was invalid

TARGET_TABLE	ERROR_TABLE	ERR_CODE	DESCRIPTION
MTH_EQUIPMENT_REASON_SETUP	MTH_EQUIPMENT_REASON_SETUP_ERR	ERT	Invalid value was provided for REASON_TYPE.
MTH_EQUIPMENT_REASON_SETUP	MTH_EQUIPMENT_REASON_SETUP_ERR	EUT	EXPECTED_UP_TIME was provided for REASON_TYPE other than 2.
MTH_EQUIPMENT_REASON_SETUP	MTH_EQUIPMENT_REASON_SETUP_ERR	REASON_CODE	Value was not provided for column REASON_CODE or the value provided for corresponding staging table column was invalid
MTH_EQUIPMENT_REASON_SETUP	MTH_EQUIPMENT_REASON_SETUP_ERR	REASON_TYPE	Value was not provided for column REASON_TYPE or the value provided for corresponding staging table column was invalid
MTH_EQUIPMENT_SHIFTS_D	MTH_EQUIPMENT_SHIFTS_ERR	AVAILABILITY_DATE	Value was not provided for column AVAILABILITY_DATE or the value provided for corresponding staging table column was invalid
MTH_EQUIPMENT_SHIFTS_D	MTH_EQUIPMENT_SHIFTS_ERR	AVAILABILITY_FLAG	Value was not provided for column AVAILABILITY_FLAG or the value provided for corresponding staging table column was invalid
MTH_EQUIPMENT_SHIFTS_D	MTH_EQUIPMENT_SHIFTS_ERR	DTE	TO_DATE is less than or equal to FROM_DATE.
MTH_EQUIPMENT_SHIFTS_D	MTH_EQUIPMENT_SHIFTS_ERR	DUP	Multiple records were found leading to the same value or combination of EQUIPMENT_FK_KEY, SHIFT_WORKDAY_FK_KEY, LINE_NUM, ENTITY_TYPE in target table.
MTH_EQUIPMENT_SHIFTS_D	MTH_EQUIPMENT_SHIFTS_ERR	ENTITY_TYPE	Value was not provided for column ENTITY_TYPE or the value provided for corresponding staging table column was invalid

TARGET_TABLE	ERROR_TABLE	ERR_CODE	DESCRIPTION
MTH_EQUIPMENT_SHIFTS_D	MTH_EQUIPMENT_SHIFTS_ERR	EQUIPMENT_FK_KEY	Value was not provided for column EQUIPMENT_FK_KEY or the value provided for corresponding staging table column was invalid
MTH_EQUIPMENT_SHIFTS_D	MTH_EQUIPMENT_SHIFTS_ERR	FROM_DATE	Value was not provided for column FROM_DATE or the value provided for corresponding staging table column was invalid
MTH_EQUIPMENT_SHIFTS_D	MTH_EQUIPMENT_SHIFTS_ERR	LINE_NUM	Value was not provided for column LINE_NUM or the value provided for corresponding staging table column was invalid
MTH_EQUIPMENT_SHIFTS_D	MTH_EQUIPMENT_SHIFTS_ERR	OCSV	Shift is overlapping with another record in staging.
MTH_EQUIPMENT_SHIFTS_D	MTH_EQUIPMENT_SHIFTS_ERR	OESD	Shift is overlapping with an existing schedule.
MTH_EQUIPMENT_SHIFTS_D	MTH_EQUIPMENT_SHIFTS_ERR	PRF	Profile MTH: Shifts Setup has been set as MOC.
MTH_EQUIPMENT_SHIFTS_D	MTH_EQUIPMENT_SHIFTS_ERR	RCD	Invalid value was provided for REASON.
MTH_EQUIPMENT_SHIFTS_D	MTH_EQUIPMENT_SHIFTS_ERR	RSN	REASON was provided for a shift marked as available.
MTH_EQUIPMENT_SHIFTS_D	MTH_EQUIPMENT_SHIFTS_ERR	SAE	Transactions already exist for a duration equal to or later than the one for which shifts are getting loaded.
MTH_EQUIPMENT_SHIFTS_D	MTH_EQUIPMENT_SHIFTS_ERR	SDT	FROM_DATE and TO_DATE are same.
MTH_EQUIPMENT_SHIFTS_D	MTH_EQUIPMENT_SHIFTS_ERR	SHIFT_WORKDAY_FK_KEY	Value was not provided for column SHIFT_WORKDAY_FK_KEY or the value provided for corresponding staging table column was invalid

TARGET_TABLE	ERROR_TABLE	ERR_CODE	DESCRIPTION
MTH_EQUIPMENT_SHIFTS_D	MTH_EQUIPMENT_SHIFTS_ERR	TO_DATE	Value was not provided for column TO_DATE or the value provided for corresponding staging table column was invalid
MTH_EQUIPMENTS_D	MTH_EQUIPMENTS_ERR	CRI	Invalid value was provided for EQUIPMENT_CRITICALITY.
MTH_EQUIPMENTS_D	MTH_EQUIPMENTS_ERR	DUP	Multiple records were found leading to the same value or combination of EQUIPMENT_PK in target table.
MTH_EQUIPMENTS_D	MTH_EQUIPMENTS_ERR	EQUIPMENT_NAME	Value was not provided for column EQUIPMENT_NAME or the value provided for corresponding staging table column was invalid
MTH_EQUIPMENTS_D	MTH_EQUIPMENTS_ERR	EQUIPMENT_PK	Value was not provided for column EQUIPMENT_PK or the value provided for corresponding staging table column was invalid
MTH_EQUIPMENTS_D	MTH_EQUIPMENTS_ERR	PLANT_FK_KEY	Value was not provided for column PLANT_FK_KEY or the value provided for corresponding staging table column was invalid
MTH_EQUIPMENTS_D	MTH_EQUIPMENTS_ERR	PRODUCTION_EQUIPMENT	Value was not provided for column PRODUCTION_EQUIPMENT or the value provided for corresponding staging table column was invalid
MTH_EQUIPMENTS_D	MTH_EQUIPMENTS_ERR	SNF	SERIAL_NUMBER provided is already used for another equipment.
MTH_EQUIPMENTS_D	MTH_EQUIPMENTS_ERR	SNS	Multiple records were found leading to the same value or combination of SERIAL_NUMBER in target table.

TARGET_TABLE	ERROR_TABLE	ERR_CODE	DESCRIPTION
MTH_EQUIPMENTS_D	MTH_EQUIPMENTS_ERR	STATUS	Value was not provided for column STATUS or the value provided for corresponding staging table column was invalid
MTH_EVENT_ACTION_SETUP	MTH_EVENT_ACTION_SETUP_ERR	ACTION_TYPE_CODE	Value was not provided for column ACTION_TYPE_CODE or the value provided for corresponding staging table column was invalid
MTH_EVENT_ACTION_SETUP	MTH_EVENT_ACTION_SETUP_ERR	AHC	ACTION_HANDLER_CODE was not provided. For ACTION_TYPE_CODE as PLSQL_API and BPEL it is mandatory.
MTH_EVENT_ACTION_SETUP	MTH_EVENT_ACTION_SETUP_ERR	DOM	MOBILE_NOTIFICATION was Y but the value provided for DOMAIN_NAME is invalid.
MTH_EVENT_ACTION_SETUP	MTH_EVENT_ACTION_SETUP_ERR	DUP	Multiple records were found leading to the same value or combination of EVENT_SETUP_ID, ACTION_TYPE_CODE, PERSONNEL_FK_KEY in target table.
MTH_EVENT_ACTION_SETUP	MTH_EVENT_ACTION_SETUP_ERR	EQP	Invalid value was provided for EQUIPMENT_FK.
MTH_EVENT_ACTION_SETUP	MTH_EVENT_ACTION_SETUP_ERR	EQUIPMENT_FK_KEY	Value was not provided for column EQUIPMENT_FK_KEY or the value provided for corresponding staging table column was invalid
MTH_EVENT_ACTION_SETUP	MTH_EVENT_ACTION_SETUP_ERR	EVENT_SETUP_ID	Value was not provided for column EVENT_SETUP_ID or the value provided for corresponding staging table column was invalid
MTH_EVENT_ACTION_SETUP	MTH_EVENT_ACTION_SETUP_ERR	EVENT_TYPE_CODE	Value was not provided for column EVENT_TYPE_CODE or the value provided for corresponding staging table column was invalid

TARGET_TABLE	ERROR_TABLE	ERR_CODE	DESCRIPTION
MTH_EVENT_ACTION_SETUP	MTH_EVENT_ACTION_SETUP_ERR	NTN	NOTIFICATION was Y but valid notification details are not provided.
MTH_EVENT_ACTION_SETUP	MTH_EVENT_ACTION_SETUP_ERR	PER	Invalid value was provided for PERSONNEL_FK.
MTH_EVENT_SETUP_TMP	MTH_EVENT_ACTION_SETUP_ERR	RCS	Invalid value was provided for REASON_CODE.
MTH_ITEM_CATEGORIES_D	MTH_ITEM_CATEGORIES_ERR	CATEGORY_NAME	Value was not provided for column CATEGORY_NAME or the value provided for corresponding staging table column was invalid
MTH_ITEM_CATEGORIES_D	MTH_ITEM_CATEGORIES_ERR	CATEGORY_PK	Value was not provided for column CATEGORY_PK or the value provided for corresponding staging table column was invalid
MTH_ITEM_CATEGORIES_D	MTH_ITEM_CATEGORIES_ERR	DUP	Multiple records were found leading to the same value or combination of CATEGORY_PK in target table.
MTH_ITEM_COST	MTH_ITEM_COST_ERR	COST	Value was not provided for column COST or the value provided for corresponding staging table column was invalid
MTH_ITEM_COST	MTH_ITEM_COST_ERR	DUP	Multiple records were found leading to the same value or combination of COST_ELEMENT, ITEM_FK_KEY in target table.
MTH_ITEM_COST	MTH_ITEM_COST_ERR	FROM_DATE	Value was not provided for column FROM_DATE or the value provided for corresponding staging table column was invalid

TARGET_TABLE	ERROR_TABLE	ERR_CODE	DESCRIPTION
MTH_ITEM_COST	MTH_ITEM_COST_ERR	ISCURRENT	Value was not provided for column ISCURRENT or the value provided for corresponding staging table column was invalid
MTH_ITEM_COST	MTH_ITEM_COST_ERR	ITEM_FK_KEY	Value was not provided for column ITEM_FK_KEY or the value provided for corresponding staging table column was invalid
MTH_ITEM_HIERARCHY	MTH_ITEM_HIERARCHY_ERR	DUP	Multiple records were found leading to the same value or combination of LEVEL_FK_KEY, HIERARCHY_ID in target table.
MTH_ITEM_HIERARCHY	MTH_ITEM_HIERARCHY_ERR	HIERARCHY_ID	Value was not provided for column HIERARCHY_ID or the value provided for corresponding staging table column was invalid
MTH_ITEM_HIERARCHY	MTH_ITEM_HIERARCHY_ERR	LEVEL_FK_KEY	Value was not provided for column LEVEL_FK_KEY or the value provided for corresponding staging table column was invalid
MTH_ITEM_HIERARCHY	MTH_ITEM_HIERARCHY_ERR	PARENT_FK_KEY	Value was not provided for column PARENT_FK_KEY or the value provided for corresponding staging table column was invalid
MTH_ITEMS_D	MTH_ITEMS_ERR	DUP	Multiple records were found leading to the same value or combination of ITEM_PK in target table.
MTH_ITEMS_D	MTH_ITEMS_ERR	ITEM_NAME	Value was not provided for column ITEM_NAME or the value provided for corresponding staging table column was invalid
MTH_ITEMS_D	MTH_ITEMS_ERR	ITEM_PK	Value was not provided for column ITEM_PK or the value provided for corresponding staging table column was invalid

TARGET_TABLE	ERROR_TABLE	ERR_CODE	DESCRIPTION
MTH_ITEMS_D	MTH_ITEMS_ERR	PLANT_FK_KEY	Value was not provided for column PLANT_FK_KEY or the value provided for corresponding staging table column was invalid
MTH_ITEMS_D	MTH_ITEMS_ERR	PRIMARY_UOM	Value was not provided for column PRIMARY_UOM or the value provided for corresponding staging table column was invalid
MTH_METER_READINGS	MTH_METER_READINGS_ERR	DTE	TO_TIME is less than or equal to FROM_TIME.
MTH_METER_READINGS	MTH_METER_READINGS_ERR	DUP	Multiple records were found leading to the same value or combination of METER_FK_KEY, FROM_TIME, TO_TIME in target table.
MTH_METER_READINGS	MTH_METER_READINGS_ERR	FROM_TIME	Value was not provided for column FROM_TIME or the value provided for corresponding staging table column was invalid
MTH_METER_READINGS	MTH_METER_READINGS_ERR	FTD	FROM_TIME or TO_TIME are in future.
MTH_METER_READINGS	MTH_METER_READINGS_ERR	METER_FK_KEY	Value was not provided for column METER_FK_KEY or the value provided for corresponding staging table column was invalid
MTH_METER_READINGS	MTH_METER_READINGS_ERR	NGV	USAGE_VALUE is negative.
MTH_METER_READINGS	MTH_METER_READINGS_ERR	OLP	Meter readings are overlapping.
MTH_METER_READINGS	MTH_METER_READINGS_ERR	TO_TIME	Value was not provided for column TO_TIME or the value provided for corresponding staging table column was invalid

TARGET_TABLE	ERROR_TABLE	ERR_CODE	DESCRIPTION
MTH_METER_READINGS	MTH_METER_READINGS_ERR	USAGE_VALUE	Value was not provided for column USAGE_VALUE or the value provided for corresponding staging table column was invalid
MTH_MTL_CONSUMED_TXN_LOT_F	MTH_MTL_CONSUMED_TXN_LOT_ERR	DUP	Multiple records were found leading to the same value or combination of PRODUCT_LOT, PRODUCT_SERIAL_NO, PRODUCT_SUBLOT, MATERIAL_LOT, MATERIAL_SUBLOT, MATERIAL_SERIAL_NO, WO_MAT_TXN_FK_KEY in target table.
MTH_MTL_CONSUMED_TXN_LOT_F	MTH_MTL_CONSUMED_TXN_LOT_ERR	UD1	Invalid value was provided for USER_DIM1_FK.
MTH_MTL_CONSUMED_TXN_LOT_F	MTH_MTL_CONSUMED_TXN_LOT_ERR	UD2	Invalid value was provided for USER_DIM2_FK.
MTH_MTL_CONSUMED_TXN_LOT_F	MTH_MTL_CONSUMED_TXN_LOT_ERR	UD3	Invalid value was provided for USER_DIM3_FK.
MTH_MTL_CONSUMED_TXN_LOT_F	MTH_MTL_CONSUMED_TXN_LOT_ERR	UD4	Invalid value was provided for USER_DIM4_FK.
MTH_MTL_CONSUMED_TXN_LOT_F	MTH_MTL_CONSUMED_TXN_LOT_ERR	UD5	Invalid value was provided for USER_DIM5_FK.
MTH_MTL_CONSUMED_TXN_LOT_F	MTH_MTL_CONSUMED_TXN_LOT_ERR	WO_MAT_TXN_FK_KEY	Value was not provided for column WO_MAT_TXN_FK_KEY or the value provided for corresponding staging table column was invalid

TARGET_TABLE	ERROR_TABLE	ERR_CODE	DESCRIPTION
MTH_MTL_PRODUCED_TXN_LOT_F	MTH_MTL_PRODUCED_TXN_LOT_ERR	DUP	Multiple records were found leading to the same value or combination of WO_COMP_FK_KEY, PRODUCT_LOT, PRODUCT_SERIAL_NO, PRODUCT_SUBLOT in target table.
MTH_MTL_PRODUCED_TXN_LOT_F	MTH_MTL_PRODUCED_TXN_LOT_ERR	UD1	Invalid value was provided for USER_DIM1_FK.
MTH_MTL_PRODUCED_TXN_LOT_F	MTH_MTL_PRODUCED_TXN_LOT_ERR	UD2	Invalid value was provided for USER_DIM2_FK.
MTH_MTL_PRODUCED_TXN_LOT_F	MTH_MTL_PRODUCED_TXN_LOT_ERR	UD3	Invalid value was provided for USER_DIM3_FK.
MTH_MTL_PRODUCED_TXN_LOT_F	MTH_MTL_PRODUCED_TXN_LOT_ERR	UD4	Invalid value was provided for USER_DIM4_FK.
MTH_MTL_PRODUCED_TXN_LOT_F	MTH_MTL_PRODUCED_TXN_LOT_ERR	UD5	Invalid value was provided for USER_DIM5_FK.
MTH_MTL_PRODUCED_TXN_LOT_F	MTH_MTL_PRODUCED_TXN_LOT_ERR	WO_COMP_FK_KEY	Value was not provided for column WO_COMP_FK_KEY or the value provided for corresponding staging table column was invalid
MTH_PERIOD_D	MTH_PERIOD_ERR	GAP	Record has a gap with respect to previous entry.
MTH_PERIOD_D	MTH_PERIOD_ERR	HIERARCHY_ID	Value was not provided for column HIERARCHY_ID or the value provided for corresponding staging table column was invalid

TARGET_TABLE	ERROR_TABLE	ERR_CODE	DESCRIPTION
MTH_PERIOD_D	MTH_PERIOD_ERR	NAME	Value was not provided for column NAME or the value provided for corresponding staging table column was invalid
MTH_PERIOD_D	MTH_PERIOD_ERR	OVP	Record overlaps with another entry.
MTH_PERSONNEL_D	MTH_PERSONNEL_ERR	DUP	Multiple records were found leading to the same value or combination of PERSONNEL_PK in target table.
MTH_PERSONNEL_D	MTH_PERSONNEL_ERR	FIRST_NAME	Value was not provided for column FIRST_NAME or the value provided for corresponding staging table column was invalid
MTH_PERSONNEL_D	MTH_PERSONNEL_ERR	LAST_NAME	Value was not provided for column LAST_NAME or the value provided for corresponding staging table column was invalid
MTH_PERSONNEL_D	MTH_PERSONNEL_ERR	PERSONNEL_PK	Value was not provided for column PERSONNEL_PK or the value provided for corresponding staging table column was invalid
MTH_PERSONNEL_D	MTH_PERSONNEL_ERR	PLANT_FK_KEY	Value was not provided for column PLANT_FK_KEY or the value provided for corresponding staging table column was invalid
MTH_PERSONNEL_D	MTH_PERSONNEL_ERR	RES	Invalid value was provided for RESOURCE_FK.
MTH_PROD_MTL_CONSUMED_F	MTH_PROD_MTL_CONSUMED_ERR	DUP	Multiple records were found leading to the same value or combination of WO_MAT_REQ_PK in target table.
MTH_PROD_MTL_CONSUMED_F	MTH_PROD_MTL_CONSUMED_ERR	ITM	Invalid value was provided for PRODUCT_FK.

TARGET_TABLE	ERROR_TABLE	ERR_CODE	DESCRIPTION
MTH_PROD_MTL_CONSUMED_F	MTH_PROD_MTL_CONSUMED_ERR	MATERIAL_FK_KEY	Value was not provided for column MATERIAL_FK_KEY or the value provided for corresponding staging table column was invalid
MTH_PROD_MTL_CONSUMED_F	MTH_PROD_MTL_CONSUMED_ERR	PLANT_FK_KEY	Value was not provided for column PLANT_FK_KEY or the value provided for corresponding staging table column was invalid
MTH_PROD_MTL_CONSUMED_F	MTH_PROD_MTL_CONSUMED_ERR	UD1	Invalid value was provided for USER_DIM1_FK.
MTH_PROD_MTL_CONSUMED_F	MTH_PROD_MTL_CONSUMED_ERR	UD2	Invalid value was provided for USER_DIM2_FK.
MTH_PROD_MTL_CONSUMED_F	MTH_PROD_MTL_CONSUMED_ERR	UD3	Invalid value was provided for USER_DIM3_FK.
MTH_PROD_MTL_CONSUMED_F	MTH_PROD_MTL_CONSUMED_ERR	UD4	Invalid value was provided for USER_DIM4_FK.
MTH_PROD_MTL_CONSUMED_F	MTH_PROD_MTL_CONSUMED_ERR	UD5	Invalid value was provided for USER_DIM5_FK.
MTH_PROD_MTL_CONSUMED_F	MTH_PROD_MTL_CONSUMED_ERR	WO_MAT_REQ_PK	Value was not provided for column WO_MAT_REQ_PK or the value provided for corresponding staging table column was invalid
MTH_PROD_MTL_CONSUMED_F	MTH_PROD_MTL_CONSUMED_ERR	WORKORDER_FK_KEY	Value was not provided for column WORKORDER_FK_KEY or the value provided for corresponding staging table column was invalid

TARGET_TABLE	ERROR_TABLE	ERR_CODE	DESCRIPTION
MTH_PROD_MTL_CONSUMED_TXN_F	MTH_PROD_MTL_CONSUMED_TXN_ERR	DUP	Multiple records were found leading to the same value or combination of WO_MAT_TXN_PK in target table.
MTH_PROD_MTL_CONSUMED_TXN_F	MTH_PROD_MTL_CONSUMED_TXN_ERR	ITM	Invalid value was provided for PRODUCT_FK.
MTH_PROD_MTL_CONSUMED_TXN_F	MTH_PROD_MTL_CONSUMED_TXN_ERR	MATERIAL_FK_KEY	Value was not provided for column MATERIAL_FK_KEY or the value provided for corresponding staging table column was invalid
MTH_PROD_MTL_CONSUMED_TXN_F	MTH_PROD_MTL_CONSUMED_TXN_ERR	PLANT_FK_KEY	Value was not provided for column PLANT_FK_KEY or the value provided for corresponding staging table column was invalid
MTH_PROD_MTL_CONSUMED_TXN_F	MTH_PROD_MTL_CONSUMED_TXN_ERR	SHIFT_WORKDAY_FK_KEY	Value was not provided for column SHIFT_WORKDAY_FK_KEY or the value provided for corresponding staging table column was invalid
MTH_PROD_MTL_CONSUMED_TXN_F	MTH_PROD_MTL_CONSUMED_TXN_ERR	TRANSACTION_DATE	Value was not provided for column TRANSACTION_DATE or the value provided for corresponding staging table column was invalid
MTH_PROD_MTL_CONSUMED_TXN_F	MTH_PROD_MTL_CONSUMED_TXN_ERR	UD1	Invalid value was provided for USER_DIM1_FK.
MTH_PROD_MTL_CONSUMED_TXN_F	MTH_PROD_MTL_CONSUMED_TXN_ERR	UD2	Invalid value was provided for USER_DIM2_FK.
MTH_PROD_MTL_CONSUMED_TXN_F	MTH_PROD_MTL_CONSUMED_TXN_ERR	UD3	Invalid value was provided for USER_DIM3_FK.

TARGET_TABLE	ERROR_TABLE	ERR_CODE	DESCRIPTION
MTH_PROD_MTL_CONSUMED_TXN_F	MTH_PROD_MTL_CONSUMED_TXN_ERR	UD4	Invalid value was provided for USER_DIM4_FK.
MTH_PROD_MTL_CONSUMED_TXN_F	MTH_PROD_MTL_CONSUMED_TXN_ERR	UD5	Invalid value was provided for USER_DIM5_FK.
MTH_PROD_MTL_CONSUMED_TXN_F	MTH_PROD_MTL_CONSUMED_TXN_ERR	WO_MAT_TXN_PK	Value was not provided for column WO_MAT_TXN_PK or the value provided for corresponding staging table column was invalid
MTH_PROD_MTL_CONSUMED_TXN_F	MTH_PROD_MTL_CONSUMED_TXN_ERR	WORKORDER_FK_KEY	Value was not provided for column WORKORDER_FK_KEY or the value provided for corresponding staging table column was invalid
MTH_PROD_MTL_PRODUCED_F	MTH_PROD_MTL_PRODUCED_ERR	DUP	Multiple records were found leading to the same value or combination of WORKORDER_FK_KEY, ITEM_FK_KEY in target table.
MTH_PROD_MTL_PRODUCED_F	MTH_PROD_MTL_PRODUCED_ERR	FLC	Invalid value was provided for ITEM_TYPE_CODE
MTH_PROD_MTL_PRODUCED_F	MTH_PROD_MTL_PRODUCED_ERR	ITEM_FK_KEY	Value was not provided for column ITEM_FK_KEY or the value provided for corresponding staging table column was invalid
MTH_PROD_MTL_PRODUCED_F	MTH_PROD_MTL_PRODUCED_ERR	ITM	Invalid value was provided for ITEM_FK
MTH_PROD_MTL_PRODUCED_F	MTH_PROD_MTL_PRODUCED_ERR	UD1	Invalid value was provided for USER_DIM1_FK.

TARGET_TABLE	ERROR_TABLE	ERR_CODE	DESCRIPTION
MTH_PROD_MTL_PRODUCED_F	MTH_PROD_MTL_PRODUCED_ERR	UD2	Invalid value was provided for USER_DIM2_FK.
MTH_PROD_MTL_PRODUCED_F	MTH_PROD_MTL_PRODUCED_ERR	UD3	Invalid value was provided for USER_DIM3_FK.
MTH_PROD_MTL_PRODUCED_F	MTH_PROD_MTL_PRODUCED_ERR	UD4	Invalid value was provided for USER_DIM4_FK.
MTH_PROD_MTL_PRODUCED_F	MTH_PROD_MTL_PRODUCED_ERR	UD5	Invalid value was provided for USER_DIM5_FK.
MTH_PROD_MTL_PRODUCED_F	MTH_PROD_MTL_PRODUCED_ERR	WKO	Invalid value was provided for WORKORDER_FK.
MTH_PROD_MTL_PRODUCED_F	MTH_PROD_MTL_PRODUCED_ERR	WORKORDER_FK_KEY	Value was not provided for column WORKORDER_FK_KEY or the value provided for corresponding staging table column was invalid
MTH_PROD_MTL_PRODUCED_TXN_F	MTH_PROD_MTL_PRODUCED_TXN_ERR	DUP	Multiple records were found leading to the same value or combination of WO_COMP_PK in target table.
MTH_PROD_MTL_PRODUCED_TXN_F	MTH_PROD_MTL_PRODUCED_TXN_ERR	ITEM_FK_KEY	Value was not provided for column ITEM_FK_KEY or the value provided for corresponding staging table column was invalid
MTH_PROD_MTL_PRODUCED_TXN_F	MTH_PROD_MTL_PRODUCED_TXN_ERR	PLANT_FK_KEY	Value was not provided for column PLANT_FK_KEY or the value provided for corresponding staging table column was invalid

TARGET_TABLE	ERROR_TABLE	ERR_CODE	DESCRIPTION
MTH_PROD_MTL_PRODUCED_TXN_F	MTH_PROD_MTL_PRODUCED_TXN_ERR	SHIFT_WORKDAY_FK_KEY	Value was not provided for column SHIFT_WORKDAY_FK_KEY or the value provided for corresponding staging table column was invalid
MTH_PROD_MTL_PRODUCED_TXN_F	MTH_PROD_MTL_PRODUCED_TXN_ERR	TRANSACTION_DATE	Value was not provided for column TRANSACTION_DATE or the value provided for corresponding staging table column was invalid
MTH_PROD_MTL_PRODUCED_TXN_F	MTH_PROD_MTL_PRODUCED_TXN_ERR	TRANSACTION_TYPE	Value was not provided for column TRANSACTION_TYPE or the value provided for corresponding staging table column was invalid
MTH_PROD_MTL_PRODUCED_TXN_F	MTH_PROD_MTL_PRODUCED_TXN_ERR	UD1	Invalid value was provided for USER_DIM1_FK.
MTH_PROD_MTL_PRODUCED_TXN_F	MTH_PROD_MTL_PRODUCED_TXN_ERR	UD2	Invalid value was provided for USER_DIM2_FK.
MTH_PROD_MTL_PRODUCED_TXN_F	MTH_PROD_MTL_PRODUCED_TXN_ERR	UD3	Invalid value was provided for USER_DIM3_FK.
MTH_PROD_MTL_PRODUCED_TXN_F	MTH_PROD_MTL_PRODUCED_TXN_ERR	UD4	Invalid value was provided for USER_DIM4_FK.
MTH_PROD_MTL_PRODUCED_TXN_F	MTH_PROD_MTL_PRODUCED_TXN_ERR	UD5	Invalid value was provided for USER_DIM5_FK.
MTH_PROD_MTL_PRODUCED_TXN_F	MTH_PROD_MTL_PRODUCED_TXN_ERR	WO_COMP_PK	Value was not provided for column WO_COMP_PK or the value provided for corresponding staging table column was invalid

TARGET_TABLE	ERROR_TABLE	ERR_CODE	DESCRIPTION
MTH_PROD_MTL_PRODUCED_TXN_F	MTH_PROD_MTL_PRODUCED_TXN_ERR	WORKORDER_FK_KEY	Value was not provided for column WORKORDER_FK_KEY or the value provided for corresponding staging table column was invalid
MTH_PROD_SEGMENTS_TXN_F	MTH_PROD_SEGMENTS_TXN_ERR	DUP	Multiple records were found leading to the same value or combination of WORKORDER_FK_KEY, FROM_STEP_TYPE, ITEM_FK_KEY, SUB_SEGMENT_FK_KEY, TO_STEP_TYPE, TRANSACTION_DATE, TO_SEGMENT_FK_KEY, FROM_SEGMENT_FK_KEY in target table.
MTH_PROD_SEGMENTS_TXN_F	MTH_PROD_SEGMENTS_TXN_ERR	FROM_SEGMENT_FK_KEY	Value was not provided for column FROM_SEGMENT_FK_KEY or the value provided for corresponding staging table column was invalid
MTH_PROD_SEGMENTS_TXN_F	MTH_PROD_SEGMENTS_TXN_ERR	ITEM_FK_KEY	Value was not provided for column ITEM_FK_KEY or the value provided for corresponding staging table column was invalid
MTH_PROD_SEGMENTS_TXN_F	MTH_PROD_SEGMENTS_TXN_ERR	SHIFT_WORKDAY_FK_KEY	Value was not provided for column SHIFT_WORKDAY_FK_KEY or the value provided for corresponding staging table column was invalid
MTH_PROD_SEGMENTS_TXN_F	MTH_PROD_SEGMENTS_TXN_ERR	SSG	Invalid value was provided for SUB_SEGMENT_FK.
MTH_PROD_SEGMENTS_TXN_F	MTH_PROD_SEGMENTS_TXN_ERR	TO_SEGMENT_FK_KEY	Value was not provided for column TO_SEGMENT_FK_KEY or the value provided for corresponding staging table column was invalid

TARGET_TABLE	ERROR_TABLE	ERR_CODE	DESCRIPTION
MTH_PROD_SEGMENTS_TXN_F	MTH_PROD_SEGMENTS_TXN_ERR	TRANSACTION_DATE	Value was not provided for column TRANSACTION_DATE or the value provided for corresponding staging table column was invalid
MTH_PROD_SEGMENTS_TXN_F	MTH_PROD_SEGMENTS_TXN_ERR	UD1	Invalid value was provided for USER_DIM1_FK.
MTH_PROD_SEGMENTS_TXN_F	MTH_PROD_SEGMENTS_TXN_ERR	UD2	Invalid value was provided for USER_DIM2_FK.
MTH_PROD_SEGMENTS_TXN_F	MTH_PROD_SEGMENTS_TXN_ERR	UD3	Invalid value was provided for USER_DIM3_FK.
MTH_PROD_SEGMENTS_TXN_F	MTH_PROD_SEGMENTS_TXN_ERR	UD4	Invalid value was provided for USER_DIM4_FK.
MTH_PROD_SEGMENTS_TXN_F	MTH_PROD_SEGMENTS_TXN_ERR	UD5	Invalid value was provided for USER_DIM5_FK.
MTH_PROD_SEGMENTS_TXN_F	MTH_PROD_SEGMENTS_TXN_ERR	WORKORDER_FK_KEY	Value was not provided for column WORKORDER_FK_KEY or the value provided for corresponding staging table column was invalid
MTH_PROD_SUB_SEGMENTS_F	MTH_PROD_SUB_SEGMENTS_ERR	DUP	Multiple records were found leading to the same value or combination of SUB_SEGMENT_PK in target table.
MTH_PROD_SUB_SEGMENTS_F	MTH_PROD_SUB_SEGMENTS_ERR	SEGMENT_FK_KEY	Value was not provided for column SEGMENT_FK_KEY or the value provided for corresponding staging table column was invalid

TARGET_TABLE	ERROR_TABLE	ERR_CODE	DESCRIPTION
MTH_PROD_SUB_SEGMENTS_F	MTH_PROD_SUB_SEGMENTS_ERR	SUB_SEGMENT_PK	Value was not provided for column SUB_SEGMENT_PK or the value provided for corresponding staging table column was invalid
MTH_PRODUCTION_SCHEDULES_F	MTH_PRODUCTION_SCHEDULES_ERR	DUP	Multiple records were found leading to the same value or combination of WORKORDER_PK in target table.
MTH_PRODUCTION_SCHEDULES_F	MTH_PRODUCTION_SCHEDULES_ERR	PLANT_FK_KEY	Value was not provided for column PLANT_FK_KEY or the value provided for corresponding staging table column was invalid
MTH_PRODUCTION_SCHEDULES_F	MTH_PRODUCTION_SCHEDULES_ERR	STATUS_CODE	Value was not provided for column STATUS_CODE or the value provided for corresponding staging table column was invalid
MTH_PRODUCTION_SCHEDULES_F	MTH_PRODUCTION_SCHEDULES_ERR	UD1	Invalid value was provided for USER_DIM1_FK.
MTH_PRODUCTION_SCHEDULES_F	MTH_PRODUCTION_SCHEDULES_ERR	UD2	Invalid value was provided for USER_DIM2_FK.
MTH_PRODUCTION_SCHEDULES_F	MTH_PRODUCTION_SCHEDULES_ERR	UD3	Invalid value was provided for USER_DIM3_FK.
MTH_PRODUCTION_SCHEDULES_F	MTH_PRODUCTION_SCHEDULES_ERR	UD4	Invalid value was provided for USER_DIM4_FK.
MTH_PRODUCTION_SCHEDULES_F	MTH_PRODUCTION_SCHEDULES_ERR	UD5	Invalid value was provided for USER_DIM5_FK.

TARGET_TABLE	ERROR_TABLE	ERR_CODE	DESCRIPTION
MTH_PRODUCTION_SCHEDULES_F	MTH_PRODUCTION_SCHEDULES_ERR	WORKORDER_PK	Value was not provided for column WORKORDER_PK or the value provided for corresponding staging table column was invalid
MTH_PRODUCTION_SCHEDULES_F	MTH_PRODUCTION_SCHEDULES_ERR	WORKORDER_TYPE	Value was not provided for column WORKORDER_TYPE or the value provided for corresponding staging table column was invalid
MTH_PRODUCTION_SEGMENTS_F	MTH_PRODUCTION_SEGMENTS_ERR	DUP	Multiple records were found leading to the same value or combination of SEGMENT_PK in target table.
MTH_PRODUCTION_SEGMENTS_F	MTH_PRODUCTION_SEGMENTS_ERR	ITM	Invalid value was provided for ITEM_FK
MTH_PRODUCTION_SEGMENTS_F	MTH_PRODUCTION_SEGMENTS_ERR	SEGMENT_PK	Value was not provided for column SEGMENT_PK or the value provided for corresponding staging table column was invalid
MTH_PRODUCTION_SEGMENTS_F	MTH_PRODUCTION_SEGMENTS_ERR	UD1	Invalid value was provided for USER_DIM1_FK.
MTH_PRODUCTION_SEGMENTS_F	MTH_PRODUCTION_SEGMENTS_ERR	UD2	Invalid value was provided for USER_DIM2_FK.
MTH_PRODUCTION_SEGMENTS_F	MTH_PRODUCTION_SEGMENTS_ERR	UD3	Invalid value was provided for USER_DIM3_FK.
MTH_PRODUCTION_SEGMENTS_F	MTH_PRODUCTION_SEGMENTS_ERR	UD4	Invalid value was provided for USER_DIM4_FK.
MTH_PRODUCTION_SEGMENTS_F	MTH_PRODUCTION_SEGMENTS_ERR	UD5	Invalid value was provided for USER_DIM5_FK.

TARGET_TABLE	ERROR_TABLE	ERR_CODE	DESCRIPTION
MTH_PRODUCTION_SEGMENTS_F	MTH_PRODUCTION_SEGMENTS_ERR	WORKORDER_FK_KEY	Value was not provided for column WORKORDER_FK_KEY or the value provided for corresponding staging table column was invalid
MTH_QUARTER_D	MTH_QUARTER_ERR	GAP	Record has a gap with respect to previous entry.
MTH_QUARTER_D	MTH_QUARTER_ERR	HIERARCHY_ID	Value was not provided for column HIERARCHY_ID or the value provided for corresponding staging table column was invalid
MTH_QUARTER_D	MTH_QUARTER_ERR	NAME	Value was not provided for column NAME or the value provided for corresponding staging table column was invalid
MTH_QUARTER_D	MTH_QUARTER_ERR	OVP	Record overlaps with another entry.
MTH_RESOURCE_COST	MTH_RESOURCE_COST_ERR	COST	Value was not provided for column COST or the value provided for corresponding staging table column was invalid
MTH_RESOURCE_COST	MTH_RESOURCE_COST_ERR	DUP	Multiple records were found leading to the same value or combination of RESOURCE_FK_KEY, COST_ELEMENT in target table.
MTH_RESOURCE_COST	MTH_RESOURCE_COST_ERR	ISCURRENT	Value was not provided for column ISCURRENT or the value provided for corresponding staging table column was invalid
MTH_RESOURCE_COST	MTH_RESOURCE_COST_ERR	RESOURCE_FK_KEY	Value was not provided for column RESOURCE_FK_KEY or the value provided for corresponding staging table column was invalid

TARGET_TABLE	ERROR_TABLE	ERR_CODE	DESCRIPTION
MTH_RESOURCE_REQUIREMENTS_F	MTH_RESOURCE_REQUIREMENTS_ERR	DUP	Multiple records were found leading to the same value or combination of PLANT_FK_KEY, PRODUCT_FK_KEY, RESOURCE_FK_KEY, SEGMENT_FK_KEY, WORKORDER_FK_KEY in target table.
MTH_RESOURCE_REQUIREMENTS_F	MTH_RESOURCE_REQUIREMENTS_ERR	ITM	Invalid value was provided for PRODUCT_FK.
MTH_RESOURCE_REQUIREMENTS_F	MTH_RESOURCE_REQUIREMENTS_ERR	PLANT_FK_KEY	Value was not provided for column PLANT_FK_KEY or the value provided for corresponding staging table column was invalid
MTH_RESOURCE_REQUIREMENTS_F	MTH_RESOURCE_REQUIREMENTS_ERR	RESOURCE_FK_KEY	Value was not provided for column RESOURCE_FK_KEY or the value provided for corresponding staging table column was invalid
MTH_RESOURCE_REQUIREMENTS_F	MTH_RESOURCE_REQUIREMENTS_ERR	SEGMENT_FK_KEY	Value was not provided for column SEGMENT_FK_KEY or the value provided for corresponding staging table column was invalid
MTH_RESOURCE_REQUIREMENTS_F	MTH_RESOURCE_REQUIREMENTS_ERR	SSG	Invalid value was provided for SUB_SEGMENT_FK.
MTH_RESOURCE_REQUIREMENTS_F	MTH_RESOURCE_REQUIREMENTS_ERR	UD1	Invalid value was provided for USER_DIM1_FK.
MTH_RESOURCE_REQUIREMENTS_F	MTH_RESOURCE_REQUIREMENTS_ERR	UD2	Invalid value was provided for USER_DIM2_FK.
MTH_RESOURCE_REQUIREMENTS_F	MTH_RESOURCE_REQUIREMENTS_ERR	UD3	Invalid value was provided for USER_DIM3_FK.

TARGET_TABLE	ERROR_TABLE	ERR_CODE	DESCRIPTION
MTH_RESOURCE_REQUIREMENTS_F	MTH_RESOURCE_REQUIREMENTS_ERR	UD4	Invalid value was provided for USER_DIM4_FK.
MTH_RESOURCE_REQUIREMENTS_F	MTH_RESOURCE_REQUIREMENTS_ERR	UD5	Invalid value was provided for USER_DIM5_FK.
MTH_RESOURCE_REQUIREMENTS_F	MTH_RESOURCE_REQUIREMENTS_ERR	WORKORDER_FK_KEY	Value was not provided for column WORKORDER_FK_KEY or the value provided for corresponding staging table column was invalid
MTH_RESOURCE_TXN_F	MTH_RESOURCE_TXN_ERR	DUP	Multiple records were found leading to the same value or combination of PLANT_FK_KEY, PRODUCT_FK_KEY, RESOURCE_FK_KEY, SEGMENT_FK_KEY, SHIFT_WORKDAY_FK_KEY, TRANSACTION_DATE, WORKORDER_FK_KEY in target table.
MTH_RESOURCE_TXN_F	MTH_RESOURCE_TXN_ERR	ITM	Invalid value was provided for PRODUCT_FK.
MTH_RESOURCE_TXN_F	MTH_RESOURCE_TXN_ERR	PLANT_FK_KEY	Value was not provided for column PLANT_FK_KEY or the value provided for corresponding staging table column was invalid
MTH_RESOURCE_TXN_F	MTH_RESOURCE_TXN_ERR	RESOURCE_FK_KEY	Value was not provided for column RESOURCE_FK_KEY or the value provided for corresponding staging table column was invalid
MTH_RESOURCE_TXN_F	MTH_RESOURCE_TXN_ERR	SHIFT_WORKDAY_FK_KEY	Value was not provided for column SHIFT_WORKDAY_FK_KEY or the value provided for corresponding staging table column was invalid
MTH_RESOURCE_TXN_F	MTH_RESOURCE_TXN_ERR	SSG	Invalid value was provided for SUB_SEGMENT_FK.

TARGET_TABLE	ERROR_TABLE	ERR_CODE	DESCRIPTION
MTH_RESOURCE_TXN_F	MTH_RESOURCE_TXN_ERR	TRANSACTION_DATE	Value was not provided for column TRANSACTION_DATE or the value provided for corresponding staging table column was invalid
MTH_RESOURCE_TXN_F	MTH_RESOURCE_TXN_ERR	UD1	Invalid value was provided for USER_DIM1_FK.
MTH_RESOURCE_TXN_F	MTH_RESOURCE_TXN_ERR	UD2	Invalid value was provided for USER_DIM2_FK.
MTH_RESOURCE_TXN_F	MTH_RESOURCE_TXN_ERR	UD3	Invalid value was provided for USER_DIM3_FK.
MTH_RESOURCE_TXN_F	MTH_RESOURCE_TXN_ERR	UD4	Invalid value was provided for USER_DIM4_FK.
MTH_RESOURCE_TXN_F	MTH_RESOURCE_TXN_ERR	UD5	Invalid value was provided for USER_DIM5_FK.
MTH_RESOURCE_TXN_F	MTH_RESOURCE_TXN_ERR	WORKORDER_FK_KEY	Value was not provided for column WORKORDER_FK_KEY or the value provided for corresponding staging table column was invalid
MTH_RESOURCES_D	MTH_RESOURCES_ERR	BFC	Invalid value was provided for BUSINESS_FUNCTION.
MTH_RESOURCES_D	MTH_RESOURCES_ERR	DUP	Multiple records were found leading to the same value or combination of RESOURCE_PK in target table.
MTH_RESOURCES_D	MTH_RESOURCES_ERR	PLANT_FK_KEY	Value was not provided for column PLANT_FK_KEY or the value provided for corresponding staging table column was invalid
MTH_RESOURCES_D	MTH_RESOURCES_ERR	PRODUCTION_RESOURCE	Value was not provided for column PRODUCTION_RESOURCE or the value provided for corresponding staging table column was invalid

TARGET_TABLE	ERROR_TABLE	ERR_CODE	DESCRIPTION
MTH_RESOURCES_D	MTH_RESOURCES_ERR	RESOURCE_NAME	Value was not provided for column RESOURCE_NAME or the value provided for corresponding staging table column was invalid
MTH_RESOURCES_D	MTH_RESOURCES_ERR	RESOURCE_PK	Value was not provided for column RESOURCE_PK or the value provided for corresponding staging table column was invalid
MTH_RESOURCES_D	MTH_RESOURCES_ERR	RESOURCE_TYPE	Value was not provided for column RESOURCE_TYPE or the value provided for corresponding staging table column was invalid
MTH_RESOURCES_D	MTH_RESOURCES_ERR	STATUS	Value was not provided for column STATUS or the value provided for corresponding staging table column was invalid
MTH_TAG_MASTER	MTH_TAG_MASTER_ERR	DAT	Invalid value was provided for DATA_TYPE.
MTH_TAG_MASTER	MTH_TAG_MASTER_ERR	DATA_TYPE	Value was not provided for column DATA_TYPE or the value provided for corresponding staging table column was invalid
MTH_TAG_MASTER	MTH_TAG_MASTER_ERR	DTC	Relevant details for alphanumeric data type were not provided.
MTH_TAG_MASTER	MTH_TAG_MASTER_ERR	DUP	Multiple records were found leading to the same value or combination of TAG_CODE in target table.
MTH_TAG_MASTER	MTH_TAG_MASTER_ERR	NFQ	FREQUENCY_IN_MINUTES has been provided for TAG_TYPE as OPERATION.
MTH_TAG_MASTER	MTH_TAG_MASTER_ERR	NRC	READING_TYPE has been not provided for numeric data type.

TARGET_TABLE	ERROR_TABLE	ERR_CODE	DESCRIPTION
MTH_TAG_MASTER	MTH_TAG_MASTER_ERR	ORT	Invalid value was provided for ORDER_TYPE.
MTH_TAG_MASTER	MTH_TAG_MASTER_ERR	RED	Invalid value was provided for READING_TYPE.
MTH_TAG_MASTER	MTH_TAG_MASTER_ERR	STS	Invalid value was provided for STATUS.
MTH_TAG_MASTER	MTH_TAG_MASTER_ERR	TAG_CODE	Value was not provided for column TAG_CODE or the value provided for corresponding staging table column was invalid
MTH_TAG_MASTER	MTH_TAG_MASTER_ERR	TAG_DATA_SOURCE_FK_KEY	Value was not provided for column TAG_DATA_SOURCE_FK_KEY or the value provided for corresponding staging table column was invalid
MTH_TAG_MASTER	MTH_TAG_MASTER_ERR	USI	Relevant details for incremental reading type were not provided.
MTH_TAG_MASTER	MTH_TAG_MASTER_ERR	WFQ	FREQUENCY_IN_MINUTES is negative.
MTH_TAG_MASTER	MTH_TAG_MASTER_ERR	WSC	Relevant details for cumulative reading type were not provided.
MTH_TIME_HIERARCHY	MTH_TIME_HIERARCHY_ERR	DUP	Multiple records were found leading to the same value or combination of HIERARCHY_ID, LEVEL_FK_KEY in target table.
MTH_TIME_HIERARCHY	MTH_TIME_HIERARCHY_ERR	HIERARCHY_ID	Value was not provided for column HIERARCHY_ID or the value provided for corresponding staging table column was invalid
MTH_TIME_HIERARCHY	MTH_TIME_HIERARCHY_ERR	HIERARCHY_ID	Value was not provided for column HIERARCHY_ID or the value provided for corresponding staging table column was invalid

TARGET_TABLE	ERROR_TABLE	ERR_CODE	DESCRIPTION
MTH_TIME_HIERARCHY	MTH_TIME_HIERARCHY_ERR	LEVEL_FK_KEY	Value was not provided for column LEVEL_FK_KEY or the value provided for corresponding staging table column was invalid
MTH_TIME_HIERARCHY	MTH_TIME_HIERARCHY_ERR	LEVEL_FK_KEY	Value was not provided for column LEVEL_FK_KEY or the value provided for corresponding staging table column was invalid
MTH_TIME_HIERARCHY	MTH_TIME_HIERARCHY_ERR	LEVEL_NUM	Value was not provided for column LEVEL_NUM or the value provided for corresponding staging table column was invalid
MTH_TIME_HIERARCHY	MTH_TIME_HIERARCHY_ERR	LEVEL_NUM	Value was not provided for column LEVEL_NUM or the value provided for corresponding staging table column was invalid
MTH_TIME_HIERARCHY	MTH_TIME_HIERARCHY_ERR	PARENT_FK_KEY	Value was not provided for column PARENT_FK_KEY or the value provided for corresponding staging table column was invalid
MTH_TIME_HIERARCHY	MTH_TIME_HIERARCHY_ERR	PARENT_FK_KEY	Value was not provided for column PARENT_FK_KEY or the value provided for corresponding staging table column was invalid
MTH_USER_DIM_ENTITIES_MST	MTH_USER_DIM_ENTITIES_ERR	DIMENSION_ID	Value was not provided for column DIMENSION_ID or the value provided for corresponding staging table column was invalid
MTH_USER_DIM_ENTITIES_MST	MTH_USER_DIM_ENTITIES_ERR	DUP	Multiple records were found leading to the same value or combination of ENTITY_PK in target table.
MTH_USER_DIM_ENTITIES_MST	MTH_USER_DIM_ENTITIES_ERR	ENTITY_NAME	Value was not provided for column ENTITY_NAME or the value provided for corresponding staging table column was invalid

TARGET_TABLE	ERROR_TABLE	ERR_CODE	DESCRIPTION
MTH_USER_DIM_ENTITIES_MST	MTH_USER_DIM_ENTITIES_ERR	ENTITY_PK	Value was not provided for column ENTITY_PK or the value provided for corresponding staging table column was invalid
MTH_USER_DIM_ENTITIES_MST	MTH_USER_DIM_ENTITIES_ERR	ENTITY_TYPE	Value was not provided for column ENTITY_TYPE or the value provided for corresponding staging table column was invalid
MTH_USER_DIM_HIERARCHY	MTH_USER_DIM_HIERARCHY_ERR	DIMENSION_ID	Value was not provided for column DIMENSION_ID or the value provided for corresponding staging table column was invalid
MTH_USER_DIM_HIERARCHY	MTH_USER_DIM_HIERARCHY_ERR	DUP	Multiple records were found leading to the same value or combination of LEVEL_FK_KEY, HIERARCHY_ID in target table.
MTH_USER_DIM_HIERARCHY	MTH_USER_DIM_HIERARCHY_ERR	HIERARCHY_ID	Value was not provided for column HIERARCHY_ID or the value provided for corresponding staging table column was invalid
MTH_USER_DIM_HIERARCHY	MTH_USER_DIM_HIERARCHY_ERR	LEVEL_FK_KEY	Value was not provided for column LEVEL_FK_KEY or the value provided for corresponding staging table column was invalid
MTH_USER_DIM_HIERARCHY	MTH_USER_DIM_HIERARCHY_ERR	LEVEL_NUM	Value was not provided for column LEVEL_NUM or the value provided for corresponding staging table column was invalid
MTH_USER_DIM_HIERARCHY	MTH_USER_DIM_HIERARCHY_ERR	PARENT_FK_KEY	Value was not provided for column PARENT_FK_KEY or the value provided for corresponding staging table column was invalid
MTH_WEEK_D	MTH_WEEK_ERR	GAP	Record has a gap with respect to previous entry.

TARGET_TABLE	ERROR_TABLE	ERR_CODE	DESCRIPTION
MTH_WEEK_D	MTH_WEEK_ERR	HIERARCHY_ID	Value was not provided for column HIERARCHY_ID or the value provided for corresponding staging table column was invalid
MTH_WEEK_D	MTH_WEEK_ERR	NAME	Value was not provided for column NAME or the value provided for corresponding staging table column was invalid
MTH_WEEK_D	MTH_WEEK_ERR	OVP	Record overlaps with another entry.
MTH_WO_SALES_ORDERS_F	MTH_WO_SALES_ORDERS_ERR	DUP	Multiple records were found leading to the same value or combination of RESERVATION_PK in target table.
MTH_WO_SALES_ORDERS_F	MTH_WO_SALES_ORDERS_ERR	ITM	Invalid value was provided for PRODUCT_FK.
MTH_WO_SALES_ORDERS_F	MTH_WO_SALES_ORDERS_ERR	RESERVATION_PK	Value was not provided for column RESERVATION_PK or the value provided for corresponding staging table column was invalid
MTH_WO_SALES_ORDERS_F	MTH_WO_SALES_ORDERS_ERR	SALESORDER_LNUMBER	Value was not provided for column SALESORDER_LNUMBER or the value provided for corresponding staging table column was invalid
MTH_WO_SALES_ORDERS_F	MTH_WO_SALES_ORDERS_ERR	SALESORDER_NUMBER	Value was not provided for column SALESORDER_NUMBER or the value provided for corresponding staging table column was invalid
MTH_WO_SALES_ORDERS_F	MTH_WO_SALES_ORDERS_ERR	UD1	Invalid value was provided for USER_DIM1_FK.
MTH_WO_SALES_ORDERS_F	MTH_WO_SALES_ORDERS_ERR	UD2	Invalid value was provided for USER_DIM2_FK.

TARGET_TABLE	ERROR_TABLE	ERR_CODE	DESCRIPTION
MTH_WO_SALES_ORDERS_F	MTH_WO_SALES_ORDERS_ERR	UD3	Invalid value was provided for USER_DIM3_FK.
MTH_WO_SALES_ORDERS_F	MTH_WO_SALES_ORDERS_ERR	UD4	Invalid value was provided for USER_DIM4_FK.
MTH_WO_SALES_ORDERS_F	MTH_WO_SALES_ORDERS_ERR	UD5	Invalid value was provided for USER_DIM5_FK.
MTH_WO_SALES_ORDERS_F	MTH_WO_SALES_ORDERS_ERR	WORKORDER_FK_KEY	Value was not provided for column WORKORDER_FK_KEY or the value provided for corresponding staging table column was invalid
MTH_WORKDAY_SHIFTS_D	MTH_WORKDAY_SHIFTS_ERR	DTE	TO_DATE is less than or equal to FROM_DATE.
MTH_WORKDAY_SHIFTS_D	MTH_WORKDAY_SHIFTS_ERR	DUP	Multiple records were found leading to the same value or combination of SHIFT_WORKDAY_PK in target table.
MTH_WORKDAY_SHIFTS_D	MTH_WORKDAY_SHIFTS_ERR	GRA	Invalid value was provided for GRAVEYARD_SHIFT.
MTH_WORKDAY_SHIFTS_D	MTH_WORKDAY_SHIFTS_ERR	NFD	Value was not provided for column FROM_DATE or the value provided for corresponding staging table column was invalid
MTH_WORKDAY_SHIFTS_D	MTH_WORKDAY_SHIFTS_ERR	NTD	Value was not provided for column TO_DATE or the value provided for corresponding staging table column was invalid
MTH_WORKDAY_SHIFTS_D	MTH_WORKDAY_SHIFTS_ERR	OVP	Shift is overlapping with another shift.
MTH_WORKDAY_SHIFTS_D	MTH_WORKDAY_SHIFTS_ERR	PLT	Value was not provided for column PLANT_FK_KEY or the value provided for corresponding staging table column was invalid

TARGET_TABLE	ERROR_TABLE	ERR_CODE	DESCRIPTION
MTH_WORKDAY_SHIFTS_D	MTH_WORKDAY_SHIFTS_ERR	PRF	Profile MTH: Shifts Setup has been set as MOC.
MTH_WORKDAY_SHIFTS_D	MTH_WORKDAY_SHIFTS_ERR	SAE	Transactions already exist for a duration equal to or later than the one for which shifts are getting loaded.
MTH_WORKDAY_SHIFTS_D	MTH_WORKDAY_SHIFTS_ERR	SDT	FROM_DATE and TO_DATE are same.
MTH_WORKDAY_SHIFTS_D	MTH_WORKDAY_SHIFTS_ERR	SFT	Invalid value was provided for SHIFT_TYPE.
MTH_YEAR_D	MTH_YEAR_ERR	GAP	Record has a gap with respect to previous entry.
MTH_YEAR_D	MTH_YEAR_ERR	HIERARCHY_ID	Value was not provided for column HIERARCHY_ID or the value provided for corresponding staging table column was invalid
MTH_YEAR_D	MTH_YEAR_ERR	NAME	Value was not provided for column NAME or the value provided for corresponding staging table column was invalid
MTH_YEAR_D	MTH_YEAR_ERR	OVP	Record overlaps with another entry.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
ODI Scenarios																									
MTH_PKG_WORKDAY_SHIFTS_EXT																									1
MTH_PKG_WORKDAY_SHIFTS_SRC																									1

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
MTH_PKG_EQUIPMENT_PROD_SCHEDULE_EXT								1	2																
MTH_PKG_EQUIPMENT_HIERARCHY_EXT						3	7	4	8	1	5	2	6												
MTH_PKG_EQUIPMENT_HIERARCHY_SRC						3	7	4	8	1	5	2	6												
MTH_PKG_POPULATE_EQUIPMENT_DENORM						3	7	4	8	1	5	2	6												
MTH_PKG_ITEM_HIERARCHY_EXT						1	3	2	4					5	9	6	10	7	11	8	12				
MTH_PKG_EQUIPMENT_SHIFTS_EXT										1	2														
MTH_PKG_EQUIPMENT_SHIFTS_SRC										1	2														
MTH_PKG_MTL_PRODUCED_EXT																1	2								
MTH_PKG_MTL_PRODUCED_SRC																1	2								
MTH_PKG_MTL_CONSUMED_EXT														1	2										
MTH_PKG_RESOURCE_REQUIREMENTS_EXT																		1	2						
MTH_PKG_RESOURCE_TXN_EXT																					1	2			
MTH_PKG_ITEM_COST_SRC																									

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
MTH_PKG_ITEM_COST_EXT																									
MTH_PKG_RESOURCE_COST_SRC																									
MTH_PKG_RESOURCE_COST_EXT																									
MTH_PKG_EQUIPMENT_ENTITIES_EXT	1																								
MTH_PKG_EQUIPMENT_ENTITIES_SRC	1																								
MTH_PKG_RESOURCES_SRC	1																								
MTH_PKG_RESOURCES_EXT	1																								
MTH_PKG_EQUIPMENT_EXT	1																								
MTH_PKG_ENTITY_PLANNED_USAGE_EXT		1	2	3																					
Concurrent Programs																									
MTH: Populate MOC Gregorian Calendar														2	6	3	7	4	8	5	9		1		
MTH: Process Transactions						2	4				1	3													
MTH: Reprocess Transactions						2	4				1	3													
MTH: Populate 445/544 Calendar	1																								

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
User Steps																									
Shift Exceptions										1	2														
Define Plant, Equipment Entities, Resources, Equipments	1																								
Site Sustainabilities			1		1																				
Generate Shifts										2	3														1

Key to the Column Headers

1. MTH_445_PERIOD_CAL_HOUR_MV
2. MTH_ALL_ENTITIES_MV
3. MTH_ENTITY_PLANNED_USAGE_HR_MV
4. MTH_ENTITY_PLANNED_USAGE_MV
5. MTH_ENTITY_PLANNED_USAGE_SM_MV
6. MTH_EQUIP_OP_SUM_DD_MV
7. MTH_EQUIP_OP_SUM_PM_MV
8. MTH_EQUIP_PROD_SCH_DD_MV
9. MTH_EQUIP_PROD_SCH_PM_MV
10. MTH_EQUIP_SHFT_DD_MV
11. MTH_EQUIP_SHFT_PM_MV
12. MTH_EQUIP_ST_SUM_DD_MV
13. MTH_EQUIP_ST_SUM_PM_MV
14. MTH_ITEM_COST_MV
15. MTH_MTL_CONS_IT_MV

16. MTH_MTL_CONS_LT_MV
17. MTH_MTL_PROD_IT_MV
18. MTH_MTL_PROD_LT_MV
19. MTH_RES_REQ_IT_MV
20. MTH_RES_REQ_LT_MV
21. MTH_RES_TXN_IT_MV
22. MTH_RES_TXN_LT_MV
23. MTH_RESOURCE_COST_MV
24. MTH_SHIFT_GREGORIAN_DENORM_MV
25. MTH_SHIFT_REFERENCE_MV

Tag Mapping ETL

Tag mapping associates a tag with an MTH entity (status, output) or an extensible attribute. The Tag Mapping ETL collects the mapping between the tags and MTH entities from file data source to staging, and to fact table.

Error Code	Description	Reference Physical Column	Error Condition	Description
DUP	Duplicate rows		Duplicate rows	Multiple records were found leading to the same value or combination of PLANT_CODE, EQUIPMENT_PK, TAG_CODE, DATA_ELEMENT, ATTRIBUTE_GROUP, ATTRIBUTE in the target table.
EQP	Missing Equipment Reference	EQUIPMENT_PK	Referential Integrity	Value was not provided for column EQUIPMENT_PK or the value provided for corresponding staging table column did not match with Equipment PK from MTH_EQUIPMENTS_D table.

Error Code	Description	Reference Physical Column	Error Condition	Description
TAG_CODE	Missing Tag Reference	TAG_CODE	Referential Integrity	Value was not provided for column TAG_CODE or the value provided for the corresponding staging table column was invalid.
TMT	Tag Mapping Type			The tag was mapped to the internal data elements as well as extensible attribute. It can only be done to either of these.
DUPT	Duplicate Tag Code		Referential Integrity	The tag was already mapped to an equipment.
WREQ	Required workorder context		Workorder context not provided (if mandatory)	
SREQ	Required segment context		Segment context not provided (if mandatory)	
IREQ	Required item context		Item context not provided (if mandatory)	
STDR	Missing Standard Rate	STANDARD_RATE1	Referential Integrity	Value was not provided for column STANDARD_RATE1
TXN	Transactions exist			Equipment status or output transactions exist for the workday shifts provided in the standard rate date ranges

Index

Symbols

A

C

D

E

G

I

M

O

P

R

S

T

U

V

W