Oracle Fusion Cloud SCM

Using Maintenance

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Get Help

In addition to the resources available in Oracle Help Center, you can explore training, connect with the Oracle community, and share your feedback.

Get Training

Increase your knowledge of Oracle Cloud by taking courses at *Oracle University*.

Join Our Community

Use *Cloud Customer Connect* to get information from industry experts at Oracle and in the partner community. You can join forums to connect with other customers, post questions, suggest *ideas* for product enhancements, and watch events.

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We welcome your feedback about Oracle Applications user assistance. If you need clarification, find an error, or just want to tell us what you found helpful, we'd like to hear from you.

You can email your feedback to *oracle_fusion_applications_help_ww_grp@oracle.com*.

Thanks for helping us improve our user assistance!

1 Overview

Oracle Maintenance

Oracle Maintenance provides a wide range of features that enables you to maintain and repair the assets in a balanced and cost effective manner. Every organization wants to operate their assets with more efficiency, up time, and effectiveness. So, it becomes fundamental to ensure that the scheduled maintenance activities for the assets happen on time and the on-demand repairs for the assets are addressed with utmost urgency. These maintenance and repair processes must be consistent, repeatable, and cost effective. Maintenance helps you overcome the challenges and establish the maintenance processes that satisfy the key requirements.

Using Maintenance, you can create and manage the asset definition, set up the organization to support the maintenance activities, define consistent and reusable maintenance processes, define and manage the maintenance activity, perform execution transactions, and print various reports. These key capabilities of the Maintenance are briefly discussed as follows:

Create and Manage Assets

The Maintenance application provides a comprehensive ability to define and maintain assets across the organization using maintenance processes that are consistent and repeatable. You can also define utilization meters for your asset as a way to track your asset utilization and drive a preventative maintenance forecast.

Set Up the Organization for Performing Maintenance Activity

You can set up organizations specifically as a maintenance organization. To define various functionality of the organization, you can set up the plant parameters. You can set up multiple work areas and work centers for performing the maintenance work. You can set up the required resources for the maintenance work and assign them to the applicable work centers.

Define Consistent and Reusable Maintenance Processes

In Maintenance, operations are used to define the sequence of steps to be performed in maintaining an asset using a maintenance work order. You can create and manage a library of operation templates called maintenance standard operations. You can then reuse the maintenance standard operations when you define maintenance work definitions and maintenance work orders.

The maintenance work definition is used to define the maintenance process of an asset including the operations, steps, materials, and resources. You can create and manage the maintenance work definitions to help you design and manage the maintenance processes. You can easily create a maintenance work order by referring to a maintenance work definition. In such event, the operations, materials, and resources defined in the maintenance work definition are automatically carried over to the maintenance work order.

Define and Manage Maintenance Activity

The maintenance work orders are used to initiate the maintenance process. In a maintenance work order, you specify the asset information, operations, material, and resource requirements. You can create and manage the maintenance work orders. Various mass actions are supported to update the priorities and statuses of multiple work orders at the same time. You can mass close the maintenance work orders and review the incurred cost for any closed maintenance work order.

Perform Execution Transactions

You can perform various maintenance executions to report the maintenance work. You can report the completion of operations, consumption of materials and resources, return of materials and resources. Maintenance provides you a maintenance dispatch list with the work order operations that need attention. You can review the maintenance dispatch list and initiate an operation transaction, material transaction, or resource transaction as needed. The transaction history is preserved and can be reviewed at any point of time. Maintenance also enables you to run a scheduled process for transferring the maintenance execution transactions to the costing for accurate costing of the maintenance work orders.

Print Reports

Maintenance enables you to generate and print the following reports:

- Maintenance Work Definition report: This report displays the list of selected work definitions and their details to perform a specific maintenance activity.
- Material List report: This report displays the material list for the maintenance work orders.
- Work Order Details report: This report displays the maintenance work order details. It includes details such as maintenance work order information, maintenance work definition details, operations, materials, resources, and attachments.

For more information on these reports, refer to the Reports and Analytics section of this guide.

Manage Maintenance Exceptions

There can be incidents of problems, such as such as material or resource unavailability, that can impact the maintenance activities. Maintenance enables you to create and manage maintenance exceptions for the work order operations that are impacted because of these problems. You can create an exception and then add the impacted work order operations to the exception. When an exception is reported, all relevant users are notified. You can close the exception for the work order operations after resolving the issue.

Use Import Feature

Maintenance enables you to import assets and maintenance work orders using spreadsheet. Using the import feature, you can easily create and update in bulk. There are separate spreadsheets available for assets, work definitions, and maintenance work orders.

For more details, see the File-Based Data Import for Oracle Supply Chain Management Cloud guide.

Project-Driven Supply Chain

Project-Driven Supply Chain is an end-to-end, integrated solution across Oracle Fusion Cloud Supply Chain & Manufacturing and Oracle Fusion Cloud Project Management applications to support business processes of both manufacturing and asset-intensive companies. If your organization is project-tracked, you can perform project-specific maintenance by creating a work order, issue components from common or project-specific inventory, and complete the maintenance of the asset. You can also purchase outside processing services on project-specific work orders and import material and resource costs to the project.

For more details on setting up Maintenance, see the Implementing Manufacturing and Supply Chain Materials Management guide.

Maintenance Job Roles

Oracle Maintenance provides the following two predefined roles:

- Maintenance Manager
- Maintenance Technician

Oracle recommends that security administrators don't assign these predefined roles directly to users. Instead, make a copy of a predefined role, remove the privileges that your users don't need, and assign users the role that contains only the privileges they need. So, the names of the roles your enterprise uses may be different from the names in this list.

Maintenance Manager

A role that's responsible for managing the department where the equipment of an organization are maintained and repaired. The role is responsible for ensuring programs are in place for timely service of the equipment, work orders are being completed by the maintenance technicians as per the schedule, and emergency repairs are quickly done.

The following are the major tasks that a maintenance manager needs to perform:

- Communicate with the maintenance technicians regarding the scheduled maintenance work orders.
- Respond to emergency work orders that arise unexpectedly. Alert the maintenance technician and communicate the status back.
- Monitor completion of the maintenance work orders.
- Define maintainable assets and set maintenance strategy for the assets.
- Establish maintenance programs, such as maintenance work definitions, maintenance standard operations, and so on.
- Ensure parts and tools are procured as necessary.
- Review the work order cost and history.
- Review the asset history.

Maintenance Technician

A role that's responsible for maintaining and repairing the equipment of an organization. The role is responsible for completing the assigned work orders on time and in correct order.

The following are the major tasks that a maintenance technician needs to perform:

- Communicate with the maintenance manager regarding the scheduled maintenance work orders for the week.
- Understand which maintenance work orders needs to be worked on a particular day.
- Review the maintenance work order information, parts list information, part availability, and work order history.
- Perform the repair and maintenance of the equipment.
- Attend to the emergency work orders that arise unexpectedly.
- Update and complete the maintenance work order. Record the amount of time spent and materials used to perform the work.
- Take notes regarding the maintenance work.

Related Topics

- Oracle Maintenance
- Dependencies and Interactions with Other Cloud Applications

The Maintenance Management Landing Page

The Maintenance Management landing page provides a quick look at critical information about your maintenance operations for the selected maintenance-enabled organization. You can choose to use the existing page or the smart search enabled Redwood page as described later in this topic.

Infolets

Infolets are visual, actionable, and personalized information cards summarizing critical data about specific objects. Infolet cards display in the existing landing page to make key performance indicators easy to view, understand, and act upon. Metrics about your problematic assets, as well as the overall maturity of your maintenance program are also provided.

You can do the following with infolet cards:

- Flip or expand the card to view additional details about the object featured in the infolet card.
- Drill down to more details by navigating to relevant manage pages from the infolet view.
- Hide infolet cards.
- Reorder infolet cards.

Use the My Infolets icon in the right corner of the landing page to toggle your infolets on and off. Drag and drop infolets to rearrange them in the work area. This table describes the infolets available, along with the page that you can drill into by clicking details in the infolet.

Infolet	Description	Drill-Down Page
Work Orders	View the number of Released status work orders for your maintenance organization. You can click on these metrics: • Top Priority or Total: the search parameter Status is set to Released • Past Due: the search parameter Status is set to Released and the Scheduled Completion Date set to a period of five years before the system date	Manage Maintenance Work Orders
Scheduled vs Completed Work	View the number of Completed and Closed status work orders for your maintenance organization this week. The time period is defined as Sunday to Saturday. Additionally, the search parameter Actual Work Completion won't be set.	Manage Maintenance Work Orders
Work Completion	View the number of Completed and Closed status work orders for your maintenance organization this week. The time period is defined as Sunday to Saturday.	Manage Maintenance Work Orders

	Additionally, the search parameter Actual Work Completion is set to Late.	
Operations	View the number of Operations for your maintenance organization Ready for execution. Past Due: the search parameter Status is set to Ready and Completion date is set to Past Due. Ready: the search parameter Status is set to Ready	Maintenance Dispatch List
Released Work Orders	View the number of Released status work orders for the Top 5 Work Centers by volume in your maintenance organization. Click on the horizontal bar chart results to see the released work orders for a specific work center.	Manage Maintenance Work Orders
Work Orders with Work Definition	View the number of Completed, Closed and Released status work orders for your maintenance organization. The parameter Scheduled Completion Date set to a period of six months before the system date	Manage Maintenance Work Orders
Assets with Most Work Orders	View a list of Assets with the most work orders in the previous six months. You can click on the vertical bar chart results to view for a specific Asset, setting the Asset parameter, Status parameter to Completed, Closed and Released and the Scheduled Completion Date set to a period of six months before the system date.	Manage Maintenance Work Orders
Past Due Operations	View the number of Operations for the Top 5 Work Centers by volume in your maintenance organization. You can click on the horizontal bar chart results to view for a specific Work Center, which sets the search parameter of Status to In Process and Ready, set the Work Area and Work Center, and the parameter Completion Date is set to Past Due.	Maintenance Dispatch List

Tasks

The existing landing page provides a task navigator to access the different setup, management, and execution task flows. If you're responsible for maintenance manager and maintenance technician tasks for your enterprise, you can access these task flows.

Section	Task Flow	Description	Role Access
Asset and Work Definition	Manage Assets	Create, edit, view, and search installed base assets for enterprise and customer assets across each organization for which you have data access.	Maintenance Manager, Maintenance Technician
	Hierarchy Navigator	Logical hierarchies help you group assets that operate in the same or different inventory organizations.	Maintenance Manager

Section	Task Flow	Description	Role Access
		You can use your hierarchies to model a plant, production line, vehicle fleet, customer, or location. When created, you can easily search for, interact with, and manage your related assets. .	
	Print Maintenance Work Definition Report	Run a scheduled process to generate a maintenance work definition report with the work requirement details. When complete, you can view the report in the job output log in PDF format.	Maintenance Manager
	Manage Asset Groups	Create, edit, view, and search asset groups. You can then create, view, and edit the rules for a group.	Maintenance Manager
	Manage Meter Templates	Create, edit, view, and search meter templates. You can also define meter template item applicability for automatic association during asset creation.	Maintenance Manager
Work Management	Manage Maintenance Work Orders	Create, edit, view, and search maintenance work orders in the context of a specific maintenance organization. Additionally, you can: • Release or put work orders on hold. • Use mass actions to change priority and status of multiple work orders at the same time. • Perform mass close action on the completed work orders using the scheduled process. • View and manage the work order exceptions. • View the costs associated with the work orders. • Generate and print work order details report and material requirements report.	Maintenance Manager, Maintenance Technician
	Material Availability Rules	Create, edit, view, and search material availability rules in the context of a specific maintenance organization. Rules are used by the application to create an initial recommendation based on which work orders should be released when materials are scarce.	Maintenance Manager
	Material Availability Assignments	Workbench that's used to ensure all materials are available for a work order prior to its release to the shop floor. As priorities change, you can execute work orders of lower priority that become a high priority. When materials are scarce, you can decide which work orders you can release, and which work orders you must place on hold until materials become available.	Maintenance Manager

Section	Task Flow	Description	Role Access
	Manage Maintenance Exceptions	Create, edit, view, and search material exceptions rules in the context of a specific maintenance organization.	Maintenance Manager
	Print Material List	Run a scheduled process to generate a maintenance work order material report for one or more work orders of a specific maintenance organization. When complete, you can view the report in the job output log in PDF format.	Maintenance Manager, Maintenance Technician
	Print Work Order Details	Run a scheduled process to generate a maintenance work order operation details for one or more work orders of a specific maintenance organization. When complete, you can view the report in the job output log in PDF format.	Maintenance Manager, Maintenance Technician
	Review Maintenance Transaction History	Search and view work order transaction history for assets over time.	Maintenance Manager, Maintenance Technician
	Close Maintenance Work Orders	After performing all the activities on a maintenance work order, you must close the work order to prevent any further updates to it. The costing and variants of the work order are also posted upon closing of the work order. Run a scheduled process to mass close one or more work orders of a specific maintenance organization. When complete, you can view the output log.	Maintenance Manager
	Manage Production Calendar	View the production calendar for the schedule associated with a maintenance organization using the Manage Plant Parameters page. This page displays shift-level information.	Maintenance Manager
	Manage Work Center Resource Calendar	View the production calendar for the schedule associated with a maintenance organization using the Manage Plant Parameters page. This page displays work center and resource level shift-level information, including exceptions.	Maintenance Manager
Work Execution	Review Maintenance Dispatch List	Search, view and execute maintenance work order operations in the context of a specific maintenance organization. The maintenance dispatch list displays the maintenance work order operations that are actionable, that's the operations with ready, complete, or in process status.	Maintenance Manager, Maintenance Technician
	Create Inspection Results	Enter ad-hoc work-in-process inspection details for maintenance work order operation. You can record inspection results directly in the work order operation or using this ad-hoc entry task.	Maintenance Manager, Maintenance Technician

Section	Task Flow	Description	Role Access
	Manage Inspections	Create an ad-hoc work in-process inspection task for a maintenance work order operation. Inspection results can be recorded directly in the work order operation or using this ad-hoc entry task. **Note:** To define and collect data for a quality inspection plan, you must have an Oracle Fusion Cloud Product Management subscription.	Maintenance Manager, Maintenance Technician
	Pick Materials for Work Orders	Run a scheduled process to allocate and picks materials for the selected work orders of a specific maintenance organization. When complete, you can view the output log.	Maintenance Manager
	Issue and Return Materials from Inventory	Report the maintenance work order operation for the materials that are consumed in the operation. Issue and Return materials to an operation.	Maintenance Manager, Maintenance Technician
	Report Resource Transactions	Report the maintenance work order operation for the resources that are used in the operation.	Maintenance Manager, Maintenance Technician
	Transfer Transactions from Maintenance to Costing	Run a scheduled process to transfer transactions from Oracle Maintenance to Oracle Costing of a specific maintenance organization. This includes maintenance work orders that are in a closed status only. When complete, you can view the output log.	Maintenance Manager
Maintenance Programs	Manage Maintenance Programs	Create, edit, view, and search maintenance programs in the context of a specific maintenance organization.	Maintenance Manager
	Generate Maintenance Forecast	Run a scheduled process to generate and refresh the maintenance forecast for an organization and one or more maintenance programs. The forecast window parameter of number of days is referenced. This job is typically setup on a scheduled basis in your production environment.	Maintenance Manager
	Manage Maintenance Forecasts	Search, view, and update forecasted asset due dates from maintenance programs.	Maintenance Manager
	Generate Maintenance Work Orders	Run a scheduled process to create work orders based off the maintenance forecast for an organization and one or more maintenance programs. The work order window parameter of number of days is referenced. This job is typically set up on a scheduled basis in your production environment.	Maintenance Manager
Supplier Warranty	Manage Coverages	Create, edit, view, and search supplier warranty coverages.	Maintenance Manager

Section	Task Flow	Description	Role Access
	Manage Contracts	Create, edit, view, and search supplier warranty contracts.	Maintenance Manager
	Manage Claims	Create, edit, view, and search supplier warranty claims.	Maintenance Manager
	Manage Labor Reimbursement Rates	Create, edit, view, and search supplier warranty labor reimbursement rates.	Maintenance Manager
	Manage Standard Repair Times	Create, edit, view, and search supplier warranty standard repair times.	Maintenance Manager
Imports	Load Interface Files for Import		Maintenance Manager
	Import Assets	Run a scheduled process to import installed base assets for a unique batch code. You must have first uploaded the file into the interface tables using the Load Interface File for Import scheduled process. When complete, you can view the output log.	Maintenance Manager
	Import Maintenance Work Definitions	Run a scheduled process to import maintenance work definitions for a unique batch code. You must have first uploaded the file into the interface tables using the Load Interface File for Import scheduled process. When complete, you can view the output log.	Maintenance Manager
	Import Maintenance Work Orders	Run a scheduled process to import maintenance work orders for a unique batch code. You must have first uploaded the file into the interface tables using the Load Interface File for Import scheduled process. When complete, you can view the output log.	Maintenance Manager
	Import Meter Readings	Run a scheduled process to import maintenance asset meter readings for a unique batch code. You must have first uploaded the file into the interface tables using the Load Interface File for Import scheduled process. When complete, you can view the output log.	Maintenance Manager
	Import Maintenance Programs	Run a scheduled process to import maintenance program and work requirement definitions for a unique batch code. You must have first uploaded the file into the interface tables using the Load Interface File for Import scheduled process.	Maintenance Manager
Maintenance Setup	Manage Maintenance Work Areas	Create and maintain work areas to represent specific regions where maintenance activities are executed. Work areas are created in the context of a maintenance organization.	Maintenance Manager
	Manage Maintenance Work Centers	Create and maintain work centers to represent specific location where maintenance work is performed and is comprised of resources having similar capabilities. Work centers are created in the context of a work area.	Maintenance Manager

Section	Task Flow	Description	Role Access
	Manage Maintenance Resources	Create and maintain resources to model the labor or equipment used in a maintenance work center and operation and to track usages during maintenance execution. Resources are created in the context of a maintenance organization. They're then further defined for each work center, detailing their quantity, availability, and shifts.	Maintenance Manager
	Manage Maintenance Standard Operations	You can create operation templates by defining the operation details and its resources. These can then be referenced in one or more work definitions or manually selected when a work order is created in the user interface, REST API or file-based upload of maintenance work orders.	Maintenance Manager
	Manage Maintenance Standard Operations in Spreadsheet	You can create and update the standard operations and resources by using the Oracle Application Development Framework Desktop Integration (ADFdi).	Maintenance Manager
	Manage Condition Event Codes	Setup to define condition codes for a condition-based maintenance program.	Maintenance Manager
	Manage Work Order Statuses	Setup used to create user-defined work order status values. These values are based on the predefined status values codes.	Maintenance Manager
	Manage Asset Group Rules	Setup used to define asset group rules, asset groups, and associate assets to groups.	Maintenance Manager and Maintenance Technician
	Create Logical Hierarchy	Logical hierarchies help you group assets that operate in the same or even across different inventory organizations. You can use your hierarchies to model a plant, production line, vehicle fleet, customer, or location. When created, you can easily search for, interact with, and manage your related assets.	Maintenance Manager
	Manage Qualification Requirements	Setup related to managing qualification requirements.	Maintenance Manager
	Manage Qualification Profiles	Define qualification profiles	Maintenance Manager
	Manage Failure Sets	Manage failure sets for failure analysis during work order execution.	Maintenance Manager

The Redwood Landing Page for Maintenance Management

You can use the new Maintenance Management landing page to obtain a comprehensive view of all maintenance management activities, highlighting work orders that require immediate attention and enabling quick actions to navigate to additional maintenance activities.

- **Task Management with Organizational Context**: The landing page is customized to the default maintenance organization associated with your profile for you to manage work orders and perform actions within this context. You can switch to a different maintenance organization to manage additional maintenance work orders and tasks.

- **Performance Insights with Metrics**: Keep track of maintenance activities with a real-time summary of key performance indicators that enable you to prioritize tasks based on urgency and performance metrics. Add additional OTBI-based key performance indicators (KPIs) and visualizations using the Edit Page Layout button.
- **Maintenance Work Order Search**: Find maintenance orders using a powerful index-based search engine and navigate quickly to the relevant work order details page for viewing or editing.
- **Navigation for Maintenance Activities**: Access various Quick Actions using the links related to work order management, execution, and supervision. Enhance your user experience by pinning frequently used actions beyond the default actions, making them accessible at the top of your action list. You can use the new Maintenance Management landing page to obtain a comprehensive view of all maintenance management activities, highlighting work orders that require immediate attention and enabling quick actions to navigate to additional maintenance activities.

Actions

The Redwood landing page provides an actions menu to access the different setup, management, and execution tasks. Click the **View all actions** link on the page to see a list of all available actions in a drawer. You can pin your most frequently used actions and they appear on the landing page itself.

Section	Action	Description
Maintenance Asset Definition	Asset Information Management	Use Smart Search to search for and view assets Create and edit installed base assets for enterprise and customer assets across each organization for which you have data access. This action is available only if the following Opt-in is enabled: Use Smart Search to Search For and View Assets in the New Assets UI.
	Maintenance Assets	Create, edit, view, and search installed base assets for enterprise and customer assets across each organization for which you have data access.
	Hierarchy Navigator	Logical hierarchies help you group assets that operate in the same or different inventory organizations. You can use your hierarchies to model a plant, production line, vehicle fleet, customer, or location. When created, you can easily search for, interact with, and manage your related assets.
	Logical Hierarchy	Logical hierarchies help you group assets that operate in the same or even across different inventory organizations. You can use your hierarchies to model a plant, production line, vehicle fleet, customer, or location. When created, you can easily search for, interact with, and manage your related assets.
	Asset Groups	Create, edit, view, and search asset groups. You can then create, view, and edit the rules for a group.
	Asset Group Rules	Setup used to define asset group rules, asset groups, and associate assets to groups. This action is available only if the **Redwood Page for Manage Asset Group Rules Enabled** profile option is set to Yes.
	Meter Templates	Create, edit, view, and search meter templates.

Section	Action	Description
		You can also define meter template item applicability for automatic association during asset creation.
	Service Mappings	Create, edit, view, and search relationships between services, sources, entities, and attributes.
	Service Mapping Algorithms	Write Groovy Scripts used to execute service mappings.
	Correct Sales Order to Asset Data	Correct issues with service mapping data that were identified in the process error logs.
	Warranty Coverages	Create, edit, view, and search supplier warranty coverages.
	Warranty Contracts	Create, edit, view, and search supplier warranty contracts.
	Warranty Claims	Create, edit, view, and search supplier warranty claims.
	Warranty Labor Reimbursement Rates	Create, edit, view, and search supplier warranty labor reimbursement rates. This action is available only if the **Manage Supplier Warranty Claim Labor Rates** opt-in is enabled.
	Warranty Standard Repair Times	Create, edit, view, and search supplier warranty standard repair times. This action is available only if the **Manage Supplier Warranty Standard Repair Times** opt-in is enabled.
Maintenance Work Definition	Work Definitions	Create, edit, view, and search maintenance work definitions.
	Print Maintenance Work Definition Report	Run a scheduled process to generate a maintenance work definition report with the work requirement details. When complete, you can view the report in the job output log in PDF format.
	Work Areas	Create and maintain work areas to represent specific regions where maintenance activities are executed. Work areas are created in the context of a maintenance organization. This action is available only if the **Redwood Work Areas Enabled** profile option is set to Yes.
	Work Centers	Create and maintain work centers to represent specific location where maintenance work is performed and is comprised of resources having similar capabilities. Work centers are created in the context of a work area. This action is available only if the **Redwood Work Centers Enabled** profile option is set to Yes.
	Resources	Create and maintain resources to model the labor or equipment used in a maintenance work center and operation and to track usages during maintenance execution. Resources are created in the context of a maintenance organization. They're then further defined for each work center, detailing their quantity, availability, and shifts.

Section	Action	Description
		This action is available only if the **Redwood Production Resources Enabled** profile option is set to Yes.
	Standard Operations	You can create operation templates by defining the operation details and its resources. These can then be referenced in one or more work definitions or manually selected when a work order is created in the user interface, REST API or file-based upload of maintenance work orders. This action is available only if the **Redwood Standard Operations Enabled** profile option is set to Yes.
	Download Standard Operations to Spreadsheet	You can create and update the standard operations and resources by using the Oracle Application Development Framework Desktop Integration (ADFdi).
	Qualification Requirements	This is a setup related to managing qualification requirements.
	Qualification Profiles	Define qualification profiles.
	Condition Event Codes	This is a setup to define condition codes for a condition-based maintenance program. This action is available only if the **Redwood Page for Manage Condition Event Codes Enabled** profile option is set to Yes.
	Failure Sets	Manage failure sets for failure analysis during work order execution.
	Work Order Statuses	Setup used to create user-defined work order status values. These values are based on the predefined status values codes. This action is available only if the **Redwood Work Order Statuses Enabled** profile option is set to Yes.
	Maintenance Programs	Create, edit, view, and search maintenance programs in the context of a specific maintenance organization.
	Maintenance Forecasts	Search, view, and update forecasted asset due dates from maintenance programs.
	Operational Rules	Define operational rules for external integrations with connected assets.
	Generate Maintenance Forecast	Run a scheduled process to generate and refresh the maintenance forecast for an organization and one or more maintenance programs. The forecast window parameter of number of days is referenced. This job is typically set up on a scheduled basis in your production environment.
	Generate Maintenance Work Orders	Run a scheduled process to create work orders based off the maintenance forecast for an organization and one or more maintenance programs. The work order window parameter of number of days is referenced. This job is typically set up on a scheduled basis in your production environment.

Section	Action	Description
Manage Maintenance	Work Orders	Create, edit, view, and search maintenance work orders in the context of a specific maintenance organization. You can also: • Release or put work orders on hold. • Use mass actions to change priority and status of multiple work orders at the same time. • Perform mass close action on the completed work orders using the scheduled process. • View and manage the work order exceptions. • View costs associated with the work orders. • Generate and print work order details report and material requirements report.
	Maintenance Supervision	Create, edit, view, and search maintenance work orders in the context of a specific maintenance organization. This action is available only if the **Redwood page for Maintenance Supervision Enabled** profile option is set to Yes.
	Material Availability Rules	Create, edit, view, and search material availability rules in the context of a specific maintenance organization. Rules are used by the application to create an initial recommendation based on which work orders should be released when materials are scarce.
	Material Availability Assignments	Workbench that's used to ensure all materials are available for a work order prior to its release to the shop floor. As priorities change, you can execute work orders of lower priority that become a high priority. When materials are scarce, you can decide which work orders you can release, and which work orders you must place on hold until materials become available.
	Exceptions	Create, edit, view, and search material exceptions rules in the context of a specific maintenance organization.
	Print Material List	Run a scheduled process to generate a maintenance work order material report for one or more work orders of a specific maintenance organization. When complete, you can view the report in the job output log in PDF format.
	Print Work Order Details	Run a scheduled process to generate a maintenance work order operation details for one or more work orders of a specific maintenance organization. When complete, you can view the report in the job output log in PDF format.
	Maintenance Transaction History	Search and view work order transaction history for assets over time.
	Close Maintenance Work Orders	After performing all the activities on a maintenance work order, you must close the work order to prevent any further updates to it. The costing and variants of the work order are also posted upon closing of the work order.

Section	Action	Description
		Run a scheduled process to mass close one or more work orders of a specific maintenance organization. When complete, you can view the output log.
	Transfer Transactions from Maintenance to Costing	Run a scheduled process to transfer transactions from Oracle Maintenance to Oracle Costing of a specific maintenance organization. This includes maintenance work orders that are in a closed status only. When complete, you can view the output log.
	Work Order Groups	Search and view work order groups. You can optionally associate a work order to a group for search and organization in the Maintenance Supervision and My Maintenance Work pages.
	Maintenance Work Order Costs	Search and view work order cost details.
Execute Maintenance	Dispatch List	Search, view and execute maintenance work order operations in the context of a specific maintenance organization. The maintenance dispatch list displays the maintenance work order operations that are actionable, that's the operations with ready, complete, or in process status. This action is available only if the **Redwood page for Maintenance Dispatch List Enabled** profile option is set to No.
	My Maintenance Work	Search, view, and execute maintenance work order operations in the context of the logged in user. My maintenance work lists the maintenance work orders that are actionable by the user. Report transactions, issue and return materials, capture quality data and failure events. This action is available only if the **Redwood page for Maintenance Dispatch List Enabled** profile option is set to Yes.
	Pick Materials for Work Orders	Pick materials for work orders that are in released status.
	Report Exception	Report and review maintenance exceptions.
Maintenance Import	Load Interface File For Import	Run a scheduled process to upload file-based import files for processing.
	Import Assets	Run a scheduled process to import installed base assets for a unique batch code. You must have first uploaded the file into the interface tables using the Load Interface File for Import scheduled process. When complete, you can view the output log.
	Import Meter Readings	Run a scheduled process to import maintenance asset meter readings for a unique batch code. You must have first uploaded the file into the interface tables using the Load Interface File for Import scheduled process. When complete, you can view the output log.

Section	Action	Description
	Import Warranty Coverages	Run a scheduled process to process warranty coverages using file-based import.
	Import Maintenance Work Definitions	Run a scheduled process to import maintenance work definitions for a unique batch code. You must have first uploaded the file into the interface tables using the Load Interface File for Import scheduled process. When complete, you can view the output log.
	Import Maintenance Programs	Run a scheduled process to import maintenance program and work requirement definitions for a unique batch code. You must have first uploaded the file into the interface tables using the Load Interface File for Import scheduled process.
	Import Maintenance Work Orders	Run a scheduled process to import maintenance work orders for a unique batch code. You must have first uploaded the file into the interface tables using the Load Interface File for Import scheduled process. When complete, you can view the output log.
	Purge Records from Maintenance Interface	Run a scheduled process to purge records that were uploaded during the file-based import process.

Pre-Defined KPIs

TheMaintenance Management landing page shows these pre-defined KPIs:

- **Current work orders**: Shows the number of work orders that have started by the end of today. Work orders included in this metric have system statuses that are not Canceled, Closed, or Completed.
- **Past-due work orders**: This is the number of work orders that are not in system status Canceled, Closed, or Completed and have a planned completion date prior to today. You can use business rules to hide this KPI on the page.
- **Future work orders**: This is the number of work orders that are not in system status Canceled, Closed, or Completed and have a planned start date after today, within the number of days specified by the profile option, **Future Maintenance Work Orders Range in Days** (ORA_MNT_LANDING_PAGE_FUTURE_WO_METRICS_HORIZON). The default value for this profile option is 30 days and can be set at either a site or user level. You can use business rules to hide this KPI on the page.

Create KPI and Visualization to Add to Landing Page

You can define OTBI-based KPI and visualization using the Visualization Configurations tool. You must first create an analysis in OTBI. To create a KPI for the OTBI analysis, specify metric card as the visualization type. To create a visualization, specify bar chart, pie chart, tabular chart, etc. as the visualization type. The Visualization Configurations tool can be accessed using the following URL:

`https://<servername>/fscmUI/redwood/cx-analytics/application/container/dvconfig.`

You need these privileges:

- View Service Manager Dashboard (SVC_VIEW_SERVICE_MANAGER_DASHBOARD_PRIV)

- View Service Representative Dashboard (SVC_VIEW_SERVICE_REPRESENTATIVE_DASHBOARD_PRIV)

Configure Maintenance Management Landing Page

You can't remove seeded KPIs in Edit Page Layout. However, you can configure them - hide, show, or reorder - in Visual Builder Studio. After creating OTBI-based KPI and visualization using the Visualization Configurations tool, you can add these to the Maintenance Management landing page. You can also enable guided journey, which can be set up to guide the users to complete the tasks that include AI Agent support.

You need these privileges:

- Manage Maintenance Work Order (MNT_MANAGE_MAINTENANCE_WORK_ORDER_HEADERS_PRIV)
- Edit Maintenance Management Landing Page Layout (ORA_MNT_EDIT_MAINTENANCE_MANAGEMENT_LANDING_PAGE_LAYOUT)

Guided Journeys

- Manage Guided Journeys (ORA_PER_MANAGE_GUIDED_JOURNEYS)
- Use REST Service - Guided Journeys Read only (ORA_PER_REST_SERVICE_ACCESS_GUIDED_JOURNEYS_RO)
- Use REST Service - Guided Journey Responses(ORA_PER_REST_SERVICE_ACCESS_GUIDED_JOURNEY_RESPONSES)

Save Searches on the Maintenance Management Landing Page

After selecting a pre-defined KPI on the landing page, the results table shows the set of relevant work order assets. You can further reduce the result set using the filters or keyword search.

You can save frequently used criteria and filter settings for quick access. You can create both personal and shared search configurations, enabling you to set a default or select a saved context for future searches.

Searches are saved in the context of the KPI that is being filtered. Each pre-defined KPI has its own set of saved searches that you can add to and choose from.

Maintenance in Supply Chain Management Business Processes

As a part of Oracle Fusion Cloud Supply Chain Management, Oracle Maintenance plays an important role in supporting the following cross-functional and advanced fulfillment processes:

Outside Processing

Outside processing is a commonly observed business process where one or more operations of a work order are outsourced to a supplier who provides specialized services as required for maintenance activity. These services may vary depending on the type of asset and nature of the industry.

The first step is to create and release a work order with supplier operations in Maintenance. Work orders are scheduled using the unconstrained logic in Oracle Planning Central and Oracle Supply Planning. Once the work order is released, a request is sent to Oracle Supply Chain Orchestration to create a purchase requisition. Supply Chain Orchestration in turn creates a supply order and triggers the creation of a purchase requisition in Oracle Self Service Procurement. An outside

processing purchase order is created in Oracle Fusion Cloud Purchasing using the details maintained in the outside processing blanket agreement.

The next step is to execute work order by reporting quantities as completed at the operation prior to the supplier operation following which, a request is sent to Supply Chain Orchestration to create a shipment line. Supply Chain Orchestration in turn creates a supply order line and triggers the creation of a shipment line in Oracle Shipping. A shipment is manually created for the shipment line which is then confirmed and closed. Based on the options set for the Ship Confirm Rule, the processes to print packing slip and bill of lading are automatically launched.

The next step is to receive the goods from the supplier in Oracle Receiving and deliver them to maintenance. You can optionally create an Advance Shipment Notice (ASN) in Oracle Supplier Portal or Receiving which can be used to create a receipt. However, ASN creation is mandatory in case of consecutive supplier operations. For a maintenance supplier operation, receipt and delivery of goods to maintenance work order results in automatic completion of quantities at the supplier operation. Supplier operations are then managed and tracked in maintenance. The receipt, delivery and operation transactions result in receipt and cost accounting in Oracle Cost Management.

For more information about Outside Processing, refer to the Implementing Outside Processing chapter in the Oracle Supply Chain Management Cloud Implementing Manufacturing and Supply Chain Materials Management guide.

Direct Procurement of Materials for Work Orders

During a breakdown maintenance and even in planned maintenance, post tear down, certain materials could be required which are difficult to be planned in advance. In such cases, getting those items through normal procurement process might delay the repair of the asset. In such scenarios, you can procure material directly for a work order by creating a requisition and then associating the requisition to the work order and the desired operation in Self Service Procurement. A purchase order is created for the requisition, and material is received and delivered directly to the work order. You can review the details of purchase requisitions, purchase orders, and receipts from the work order page. The receipt returns and correction are done in the Receiving.

Pick Materials for Work Orders

Materials are issued to work order from a supply subinventory, and generally called shop floor inventory. It is very common for the companies store the materials in a centralized warehouse and there is a need to bring the materials from warehouse to the supply inventory for the work order consumption. The picking process initiates the movement of material from warehouse to the supply subinventory for one or more work orders. A scheduled process creates movement request for materials required for a work orders either full or partial quantity based on the quantity on-hand in the warehouse. Finally after a pick is confirmed the material is transferred to the supply subinventory and later the same would be issued to maintenance work order by the maintenance technician.

Reservation of work order materials

Material availability for a maintenance work order is crucial for reducing downtime of the asset and adhering to the preventive maintenance schedule. Even with the best planning, maintenance managers prefer to have the material guaranteed for a specific work order in the near term before scheduling the work order for release.

It is possible to reserve a material for a maintenance work order demand from various supply sources, however common supply is the inventory on-hand. The reservation can be done either for an item quantity called high level reservation or for an item in subinventory down to serial and lot level called detailed reservation.

The high level reservation can be done automatically using action either in manage work order page or create reservation page. The detail reservation has to be created manually by navigating to the create reservation page from the maintenance work order page.

If the reservation is enabled for the maintenance organization, then reservation and picking process compliments each other. The detail reservation done before picking is honored during movement request allocation process,

meaning reserved serial and lot number would be allocated. And if the picking process is initiated first then after pick confirmation a reservation is automatically created for the items transferred to the supply subinventory

Project-Driven Supply Chain

Project-Driven Supply Chain is an end-to-end, integrated solution across Oracle Fusion Cloud Supply Chain & Management and Oracle Project Management applications to support business processes of both manufacturing and asset-intensive companies. If your organization is project-tracked, you can perform project-specific maintenance by creating a work order, issue components from common or project-specific inventory, and complete the maintenance of the asset. You can also purchase outside processing services on project-specific work orders and import material and resource costs to the project.

For more details on setting up Maintenance, see the Implementing Manufacturing and Supply Chain Materials Management guide.

Dependencies and Interactions with Other Cloud Applications

Oracle Maintenance supports integration with these Oracle Fusion Cloud Supply Chain & Manufacturing applications:

Oracle Fusion Cloud Asset Lifecycle Management

Asset Lifecycle Management is a central repository for asset information across organization that provides a single source for accessing asset information. Maintenance leverages the integration with Asset Lifecycle Management, enabling the automatic creation of an asset upon receipt to inventory regardless of the transaction source. The asset can be a purchased or manufactured asset that's received into inventory, or it can be a miscellaneous inventory receipt. If the item associated the created asset is marked as maintainable, then the asset is eligible to be maintained in Maintenance. When you define the key asset information during creation of maintenance assets, the asset information can be easily accessed when performing the repair and maintenance work for the assets.

Oracle Product Hub

Maintenance references the items and item structures maintained in Product Hub to create and maintain the maintenance work definitions, maintenance work orders, and report material transactions.

Oracle Fusion Supply Chain Management Common Components

Maintenance references the plant parameters, units of measure (UOM), subinventories, locators, calendars, shifts, and exceptions maintained in Supply Chain Management Common Components.

Oracle Fusion Cloud Inventory Management

Inventory Management offers a complete materials management solution that enables you to manage and monitor the materials successfully. Maintenance leverages this functionality to optimize the flow of material so that it meets maintenance demand in a cost effective manner. The materials details maintained in Inventory Management are displayed in the maintenance work orders. Once the operation transactions are performed in Maintenance, the supply reservations in Inventory Management are updated accordingly.

Oracle Cost Management

Cost Management provides the costing information to Maintenance that's required to control the material and resource costs incurred during the maintenance process. Cost Management provides a setup that enables the user to define cost

by asset, work order, or type of the work performed. For example, segregating cost by corrective work or preventive work.

Oracle Service Logistics

Maintain your customer assets at customer locations using field service or return them for service using depot repair. To do so, you assets require a specific setup and must be based on a maintenance-enabled item that's full-lifecycle tracked. Also, your assets must operate in a maintenance-enabled inventory organization. Through an integration with Service Logistics, work orders costs are captured in the asset's operating organization.

Oracle B2B Service

If you're an Oracle customer who uses installed base assets for processes such as Supply Chain, Service Logistics and Service Contracts, you can opt-in to use the same asset model for your service request and work order processes. When you opt-in, you can add the installed base asset fields to the service request and work order page layouts in Application Composer. Then, you can pass the installed base asset ID to downstream processes such as Field Service or Service Logistics.

Related Topics

- Oracle Maintenance
- Maintenance Job Roles

2 Maintenance Organization

Overview of Maintenance Organization

A maintenance organization is a typically an inventory organization in which the maintenance and repair of the assets is carried out.

To enable an organization for maintenance, you must set up the organization as an inventory organization, and then categorize the inventory organization as a maintenance organization. You can then set up the plant parameters for the organization to determine various functionality of the organization. Besides the common tasks applicable to all Oracle applications, Oracle Maintenance requires additional setup for plant parameters, lookups, work areas, resources, and work centers. The setup tasks are performed in the Setup and Maintenance work area. You can also set up the work areas, resources, and work centers in the Maintenance work area. A maintenance organization must have at least one work area and one work center defined.

If you plan on defining engineer object globally, enable the master organization for maintenance. With this, you can define work definitions and standard operations globally, while allowing replication to maintenance-enabled child organizations. Additional details are covered later in this guide.

For more information regarding the setups, refer to the Using Maintenance chapter of the SCM Cloud Implementing Manufacturing and Supply Chain Materials Management guide.

The following shows the preferred order in which the work areas, resources, and work centers are to be set up:

1. Create the required work areas for the maintenance organization. Every maintenance organization has a specific region allocated for performing the maintenance activities. This region is referred to as work area.
2. Create the resources that you require to perform the maintenance activities. A resource can be of type labor or equipment.
3. Create the required work centers and associate each of them with the appropriate work area. A work center is a maintenance unit that consists of people or equipment.
4. Allocate the resources to the required work centers. You can also assign shifts to the resources and maintain a work center resource calendar for each resource.

Note: Set up as a project-tracked organization to perform project-specific maintenance work.

How You Manage Maintenance Work Areas

A work area is the specific region in a maintenance organization where the maintenance activities are executed. In other words, a work area identifies a physical, geographical, or logical grouping of work centers.

At least one work area must be defined for a maintenance organization. However, a maintenance organization can have one or more work areas defined within it. A work area consists of one or more work centers within it. Maintenance technicians can report material, resource, and operation transactions performed at work centers that belong to a specific work area.

The Manage Work Areas page serves as a starting point to create, edit, and delete the work areas. To access the Manage Work Areas page, based on your security privilege, you can do either of the following:

- In the Maintenance Management work area, in the Tasks pane, click the Manage Maintenance Work Areas link in the Maintenance Setup category.
- In the Setup and Maintenance work area, use the following:
    - Offering: Manufacturing and Supply Chain Materials Management
    - Functional Area: Maintenance Management
    - Task: Manage Maintenance Work Area

Create, Edit, and Delete Work Areas

You create a work area by providing a unique name and code for the work area.

A work area is deactivated or reactivated by updating the Inactive On field. When a work area is deactivated, the work area isn't available for further use until it's reactivated.

You can delete or deactivate a work area if either of the following is true:

- The work area has no associated work center.
- The work area has no active work center associated with it.

Related Topics

- How do I update existing setup data?

How You Manage Maintenance Resources

The resources are the labors, equipment, and tools allocated to a work center. Resources can be categorized into two types: Labor or Equipment.

The Manage Resources page serves as a starting point to create, edit, and delete the resources. To access the Manage Resources page, based on your security privilege, you can do either of the following:

- In the Maintenance Management work area, in the Tasks pane, click the Manage Maintenance Resources link in the Maintenance Setup category.
- In the Setup and Maintenance work area, use the following:
    - Offering: Manufacturing and Supply Chain Materials Management
    - Functional Area: Maintenance Management
    - Task: Manage Maintenance Resources

Create, Edit, and Delete Resources

You must create a resource with unique name and code. Additionally, you must define the resource type and usage UOM of the resource at the time of creation. If your organization is project-tracked, you can use the Default Expenditure Type field to specify the expenditure type that's defaulted onto the resource transactions when interfaced to costing.

You can't change the usage UOM of a resource once the resource is associated with a work center. However, you can edit all other resource attributes at any time.

> **Note:** The usage UOM field indicates the unit of measure for the planned and actual usage of a resource. You can use the resource in a work definition and work order if the usage UOM belongs to the UOM class as defined in the profile SCM Common: Default Service Duration Class (RCS_DEFAULT_UOM_CLASS_CODE_FOR_SVC_DURATION). For any scheduled resource, it's recommended that this profile be set to a UOM class that represents units of measure for Time.

A resource is deactivated or reactivated by updating the Inactive On field. When a resource is deactivated, the resource isn't available for further use until it's reactivated. You can delete a resource only if the resource isn't assigned to any work center and the resource isn't associated with any active resource instance.

Related Topics

- How You Manage Maintenance Resource Instances
- How do I update existing setup data?

How You Manage Maintenance Resource Instances

A resource instance is granular representation of a resource and is represented by a unique code and name. A resource instance may or may not be associated with a work center. A resource instance can be of labor type or equipment type based on the resource with which it's associated.

Labor Resource Instances

A labor resource instance is the name of a person working in the maintenance shop floor. You can associate specific person types to a labor resource instance. A person type in Oracle Maintenance must be an employee, a contingent worker, or a partner contact.

Here's how each person type is set up:

Person Type	How It's Set Up
Employee and Contingent Worker	Employees and contingent workers are defined in Oracle Fusion Cloud Human Capital Management and are automatically propagated by the auto-sync process to the Oracle Trading Community Model.
Partner Contact	A partner contact is set up in an Oracle Fusion Cloud Customer Relationship Management, which is automatically available in the Oracle Trading Community Model

> **Note:** A labor resource instance can only be assigned to a single resource.

Equipment Resource Instances

An equipment resource instance is the name of a machinery being used on the maintenance shop floor.

You can associate assets to your equipment resource instances. You must define assets in Maintenance with a location corresponding to your maintenance plant and a location type of Work Center.

If you intend to use the equipment qualification feature, then you must associate an asset number to the equipment resource instance. You can view the qualifications defined for the asset number in Maintenance Management using the View Asset qualifications button.

How You Manage Resource Instances

On the Resource Instances tab of the Edit Resource page, you can create, edit, and delete the resource instances.

You can access the Edit Resource page using either of the following steps:

- On the Maintenance Management work area, in the Tasks pane, click the Manage Maintenance Resources link. On the Manage Resources page, click the resource name to open the Edit Resource page.
- In the Setup and Maintenance work area, go to the following:
    - Offering: Manufacturing and Supply Chain Materials Management
    - Functional Area: Maintenance Management
    - Task: Manage Maintenance Resources or Manage Maintenance Resources Instances

  On the Manage Resources page, click the resource name to open the Edit Resource page.

Create a Labor Resource Instance

Here's how you create a labor resource instance:

1. On the Manage Resources page, click the resource link for which you want to create a resource instance.
2. On the Edit Resource page, in the Resource Instances section, click the Add icon.
3. Now you have one of two options:
    - Select a person as the basis for the resource instance. The person is unique to the maintenance plant location in HCM.

      If you select a person, then, the identifier and name will automatically get populated from HCM. You can edit these values as required, but the identifier must remain unique. For most setups, you don't need to edit these values.
    - Manually define the resource instance. If you don't select a person, you must define a unique code as identifier, and a name for the resource instance.
4. (Optional) Select and assign a primary work center to the resource instance to identify the department or location that the resource instance primarily works in. This helps in quick assignment of the resource instance in work orders and work execution transactions.
5. Click Save and Close.

Create a Equipment Resource Instance

Here's how you create a equipment resource instance:

1. On the Manage Resources page, click the resource link for which you want to create a resource instance.
2. On the Edit Resource page, in the Resource Instances section, click the Add icon.
3. Now you have one of two options:
    - Select an asset as the basis for the equipment instance. The asset is unique to the maintenance organization. The person is unique to the maintenance plant location in HCM.

If you select an asset, then the identifier, name, and work center will automatically populate from the asset record. You can edit these values as required, but the identifier must remain unique. For most setups, you don't need to edit these values.

- Manually define the equipment instance. If you don't select an asset, you must define a unique code as identifier, and a name for the equipment instance.

4. (Optional) Select and assign a primary work center to the equipment instance to identify the department or location that the equipment instance is located. We recommend you do this step.
5. Click Save and Close.

Deactivate a Resource Instance

You can also deactivate or reactivate a resource instance by updating the Inactive On field. When an instance is deactivated, the instance isn't available for further use until it's reactivated.

Related Topics

- How You Manage Maintenance Resources
- How do I update existing setup data?

How You Manage Maintenance Work Centers

The work centers are specific production units that consist of people or equipment with similar capabilities. Each work center is associated with a valid work area and can be used for capacity requirement planning and detailed scheduling.

The Manage Work Centers page serves as a starting point to create, edit, and delete work centers. To access the Manage Work Centers page, based on your security privilege, you can do either of the following:

- In the Maintenance Management work area, in the Tasks pane, click the Manage Maintenance Work Centers link.
- In the Setup and Maintenance work area, use the following:
  - Offering: Manufacturing and Supply Chain Materials Management
  - Functional Area: Maintenance Management
  - Task: Manage Maintenance Work Centers

Create, Edit, and Delete a Work Center

You create a work center by providing a unique name and code for the work center, and a valid work area to which the work center is associated.

A work center is deactivated or reactivated by updating the Inactive On field.

You can't delete a work center if:

- The work center has any resource associated with it.
- The work center is being referenced in a work definition operation.
- The work center is being referenced in a work order operation.

Add Resources to a Work Center and Allocate Resources to a Shift

After creating a work center, you can add resources to it and then allocate shift hours to each resource.

You can add a resource to a work center by selecting from or entering values for the following fields:

Field	Description
Resource	The unique identifier of the resource.
Inactive On	The date on which the resource becomes inactive.
Default Units Available	Number of resource units available in a work center.
Available 24 Hours	Indicator whether a resource is available 24 hours a day. A resource that isn't available 24 hours is available only during the shifts assigned to it.
Check Capable To Promise	Indicator whether the Global Order Promising engine considers the capacity of this resource during order promising.
Utilization	The percentage of the resource time available for the task.
Efficiency	The percentage of the time a resource takes to complete a task.

Utilization and Efficiency Percentages:

The utilization and efficiency percentages are by default set to 100%. When these percentages are set to less than 100%, they extend the scheduled duration of the resource during work order scheduling. For example, if 1 hour of work is required to be done using the resource R1 starting from 10 AM on a specific work order, and if its efficiency is 50%, and utilization is 50%, then the scheduler determines the end time for this resource as 2 PM, calculated as following:

1 / (0.5 * 0.5) = 4 hours

Resource Allocation:

A resource is available in shifts if the Available 24 Hours field isn't selected. When a shift-based resource is associated with a work center, default units of the resource are automatically assigned to all the shifts of the maintenance organization. You can update the availability of resource units across the shifts as required.

For example, consider that you have defined two 8-hour shifts for the work center WC1: Day shift and Night shift. You associate two units each of four resources R1, R2, R3, and R4 to the work center WC1. The following table shows the key scenarios and their implementations:

Scenario	Consideration	Solution
You want the resource R1 available for 24 hours a day.	You haven't associated the resource R1 to the work center WC1 yet.	Select the Available 24 Hours check box when associating the resource R1 to the work center WC1. Now, the two units of resource R1 are available 24 hours a day and you can't assign any shift for it.

Scenario	Consideration	Solution
You want two units of the resource R2 available for the Day shift only.	You have already associated the resource R2 to work center WC1 with Available 24 Hours check box deselected.	In Resource Availability region, in the Day shift column, enter 2 against the resource R2. Now, the two units of resource R2 are available for Day shift. For the Night shift, the resource R2 has zero or blank value.
You want one unit of the resource R3 available for Day shift and one unit of resource R3 available for Night shift.	You have already associated the resource R3 to work center WC1 with Available 24 Hours check box deselected.	In Resource Availability region, in the Day shift column, enter 1 against the resource R3 and in the Night shift column, enter 1 against the resource R3. Now, one unit of resource R3 is available for the Day shift and one unit of resource R3 is available for the Night shift.
You want all the units of resource R4 available for both the Day shift and Night shift.	You have already associated the resource R4 to work center WC1 with Available 24 Hours check box deselected.	In Resource Availability region, in the Day shift column, enter 2 against the resource R4 and in the Night shift column, enter 2 against the resource R4. Now, two units of resource R4 are available for both the Day shift and the Night shift.

View and Manage Resource Exceptions

You use the work center resource calendar to view and manage the exceptions related to the resources. In case of a conflict, the exceptions granted in the work center resource calendar override the exceptions granted in production calendar.

Related Topics

- How do I update existing setup data?

3 Assets

Overview of Assets

Oracle Maintenance provides an integrated asset management application that can be used to define and maintain assets for an internal organization or an external customer. An asset is an item, thing, or entity that has potential or actual value to an individual, customer or an organization. An asset definition is the data content representing an asset. When an asset is defined, the asset is available to be tracked, managed, maintained and repaired efficiently, resulting in maximum utilization of the asset over its lifetime.

If you've been assigned a job role your enterprise uses for maintenance manager or asset administrator work, you can manage assets. These roles include global grants for the Installed Base Asset data object to stripe some data conditions for customer assets. If user-defined roles are created to view, create, and edit assets, system administrators must create a new data security policy in case the Maintenance Manager, Technician, or Asset Administrator roles aren't assigned to a user.

- Create a Data Security Policy in the Data Security Policy train stop
  - Policy Name: Grant to Asset
  - Policy Description: Grant that enables access to assets.
  - Database Resource: Installed Base Asset
  - Data Set: All Values
  - Actions: Manage Installed Base Asset
- Save the Role
- Run the scheduled process: Import User and Role Application Security Data

Types of Assets

The assets are categorized into two types: customer assets and enterprise assets. The maintenance application enables you to manage and track both customer assets and enterprise assets. Enterprise assets are internally owned and managed and customer assets are owned by external customer parties, which may or not be maintained in Maintenance.

This table discusses the features of customer assets and enterprise assets:

Feature	Customer Assets	Enterprise Assets
Creation	Can be created in Maintenance, or using REST API and File-Based Data Import. **Note:** To create customer assets, you must have the Asset Administrator role.	Can be created in Maintenance, or using REST API and File-Based Data Import. **Note:** To create enterprise assets, you must have the Maintenance Manager role.
Update	Can be managed and edited in Maintenance, or using REST API and File-Based Data Import.	Can be managed and edited in Maintenance, or using REST API and File-Based Data Import.

Feature	Customer Assets	Enterprise Assets
	Customer assets are typically managed in the Engagement Cloud, SCM Cloud or functionality such as Service Logistics or Depot Repair.	
Item	Must have an item associated with the customer assets. **Note:** Items and assets may move between or be maintained across organizations over time. Therefore, it's recommended to have a consistent serial control policy across organizations to ensure a uniform and consistent tracking experience. For more details on item setup, refer to the Implementing Manufacturing and Supply Chain Materials Management.	Must have an item associated with the enterprise assets. **Note:** Items and assets may move between or be maintained across organizations over time. Therefore, it's recommended to have a consistent serial control policy across organizations to ensure a uniform and consistent tracking experience. For more details on item setup, refer to the Implementing Manufacturing and Supply Chain Materials Management.
Tracking Method	Can be tracked using the following methods in the item definition: • Full Lifecycle Tracking: if the asset could be maintained using work orders through Service Logistics or Depot Repair functionality. • Customer Asset Tracking: if the asset won't be maintained using work orders, but will be tracked in the Engagement Cloud and SCM.	Can be tracked using Full Lifecycle Tracking method in the item definition.
Asset Number	Assets are identified and referenced in the application by their asset number. This is an alpha-numeric identifier of up to 80 characters that can either be user-defined or system generated during asset creation. Customer assets that are created through automated processes, such as order fulfillment, may receive a system-generated number. After the asset is created, you can update its asset number to a more descriptive asset number. **Note:** Assets will be created with an asset ID that's automatically derived by the application using a database sequence. This value doesn't support a prefix, nor can a customer control it. The asset number is set to the same value as the asset ID during creation if a user-defined asset number is not provided. The asset number can be updated after the asset is created.	Assets are identified and referenced in the application by their asset number. This is an alpha-numeric identifier of up to 80 characters that can either be user-defined or system generated during asset creation. Enterprise assets are typically created with an asset number that descriptively identifies the asset. This can be used in combination with the item and serial number to provide differentiation between common assets. After the asset is created, you can update its asset number. **Note:** Note: Asset number is the primary identifier used throughout the user interfaces and for reporting. It's recommended to define an asset number that's easily recognizable to your users, because it's referenced in the definition of preventative maintenance, forecast planning, work order scheduling, and execution of maintenance work orders by technicians. .
Customer	Must have a customer.	Not Applicable
Shipment Date	Must have a shipment date to define a customer asset, because this is the date on which the new asset was shipped to the customer.	Not Applicable

Feature	Customer Assets	Enterprise Assets
	You can define this date in the past, present, or future. The date is usually on or after the Customer Purchase Date and is located Overview tab in the Edit Asset details page.	
Customer Purchase Date	The date on which the customer purchases the asset using a sales order. This date is set by the Sales Order or it can be manually defined and updated in the Last Sales Order details tab in the Edit Asset details page.	Not Applicable
Registration Date	The date on which the new asset is registered. This date must be greater than or equal to the Shipment Date and can be less than, greater than, or equal to the Installed Date or In-service Date. This date is set by the Sales Order or it can be manually defined and updated in the Last Sales Order details tab in the Edit Asset details page.	Not Applicable
Installed Date	The date on which the new asset has been installed at a customer location. This date must be greater than or equal to the Shipment Date, and can be less than the In-service Date. The Oracle Subscription Management Cloud references an asset's Installed Date to initiate a subscription, such as for product warranty. This date is set by the Sales Order or it can be manually defined and updated in the Last Sales Order details tab in the Edit Asset details page.	Not Applicable
In-Service Date	The date in which the new assets enter into service at a customer location. This date must be greater than or equal to the Shipment Date and must be greater than or equal to the Installed Date. This date is set by the Sales Order or it can be manually defined and updated in the Last Sales Order details tab in the Edit Asset details page.	Not Applicable
Operating Organization	Not required if the source item is set to Customer Asset Tracking. During creation, the organization is defaulted to the Validation Organization for Customer Assets value that is defined by an Administrator in the Manage Asset Maintenance Parameters page in the Setup and Manage work area. If the organization isn't defined, you get an error. **Note:** All customer assets are created and managed in this organization. Hence, enable the source item for an asset for this organization. You can't select items from other organizations when creating assets. You can select only those that are defined for an Item Validation Organization. Required if the source item is set to Full Lifecycle Tracking and the asset will be maintained using work orders through Maintenance, Service Logistics or Depot Repair.	Required for enterprise assets. The inventory organization in which the enterprise asset is created and is expected to be operated and maintained. • Typically, this is a maintenance-enabled organization. • This is the organization where manually created work orders are created. • This is the organization in which a preventative maintenance program forecast can be generated, and Work Orders created. Optionally, this organization can be a non-maintenance enabled organization. • In this case, creating organizational relationships supports or supports as primary to a maintenance-enabled organization allows for manual creation of work orders in other maintenance-enabled organizations.

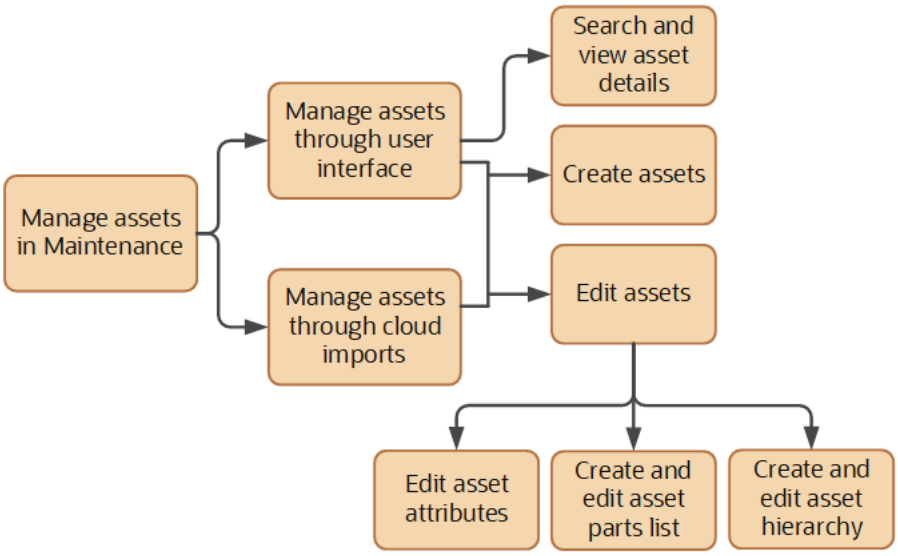
Feature	Customer Assets	Enterprise Assets
	A customer asset can be maintained in a Maintenance Program if it operates in a maintenance-enabled organization or if its operating organization has a supports or supports as primary organization relationship to a maintenance-enabled organization.	• Additionally, these relationships will enable a customer asset to be maintained in a Maintenance Program.
Applicable Tabs in the Edit Asset page	Vertical tabs rendered for customer assets: • Overview • Parts List • Meters • Last Sales Orders Details • Hierarchy History • Subscriptions • Contracts • Service Requests • Work Orders • Leads • Opportunities • Groups • Notes • History	Vertical tabs rendered for enterprise assets: • Overview • Parts List • Meters • Hierarchy • Groups • Notes • History

Managing Assets

You can manage the following aspects of an asset:

- Asset Data: The asset data or information is set of attributes which represents its physical form. These attributes enable you to uniquely identify an asset, define its relationship to an item, define location of the asset, and provide the default parameters for work order execution.
- Parts List: A list of all the parts and items that constitute an asset is known as the parts list for the asset. These items may or may not be defined as assets in the organization. After these are defined, they can be referenced when you create or edit a maintenance work definition. Additionally, you can reference the parts list as the source for an operation item in Work Execution if the items are enabled for your each of your respective maintenance organizations. More details, including using a profile option to assist in item searches, are covered in the maintenance work order sections.
- Hierarchy: The physical hierarchy of the asset, including the parent and relationships with other assets. You can add a new or existing asset as a child component to an asset residing in inventory. The new asset inherits the location of the parent asset. You can also remove a component from the structure of an asset.
- Logical Hierarchy: Used to maintain an asset is known as the parts list for the asset. These items can't be the same as the contextual asset's base item. However, these items may be the base item for a child asset or other assets in the same organization

This figure illustrates the tasks that aid in managing the assets. In Maintenance, the assets can be managed using both the user interface and cloud imports. Using the user interface, you can search for the assets, create new assets, and edit the existing assets. Using the cloud imports, you can create new assets and edit existing assets in bulk.



Additionally, in user interface, you can keep track of assets by marking them as favorite.

Asset Routes

Asset routes allow you to centrally plan, execute and record maintenance for a collection of assets using a single work order. Asset routes are useful for repetitive or routine maintenance such as inspections or preventative maintenance, eliminating the overhead of creating multiple work orders for the same activity.

For example, these are some use cases where you can use asset routes:

- Inspect and maintain Fire extinguishers in each floor of a building.
- Maintain hospital beds by room in each ward of a hospital.
- Perform basic preventative maintenance on forklifts in a production facility.

Routes are:

- Defined using a logical hierarchy.
- Forecasted using a maintenance program.
- Managed using the Maintenance Supervision page.
- Recorded for compliance in the My Maintenance Work page.
  For now, routes aren't supported in a manually created work orders.

To get started, model these assets:

- An asset that represents the asset route activity or a physical location such as a plant, building, floor, or a production line. This asset is forecasted by a preventative maintenance program and is used to create maintenance work orders. Therefore, it's recommended to name it something that represents the collection of assets being maintained by the asset route.
- Maintainable assets that are referenced in the asset route but can also be individually maintained.

Related Topics

- How You Manage Assets in the User Interface
- How You Create an Asset
- How You Edit Asset Attributes
- How You Import and Export Assets

How You Manage Assets in the User Interface

Manage your assets using either the Manage Assets page or the Asset Information Management.

Use the existing Manage Assets page to search for, create, and edit your assets. On this page, you enter one of several mandatory search criteria and optionally one or more additional filter criteria. A standard database search gives you results in a list, where you can view the attachments and details of the item associated with the asset. You can also mark an asset as favorite for easy tracking.

On the new Asset Information Management page, you can search for your assets using Oracle's smart search and filters. You can quickly and easily perform full-text searches for assets across dozens of attributes including descriptive flexfields, using this enhanced search function. You can view the search results in a table and sort your matching records further. For more details on setting up this new page, refer to the section entitled How to Use Smart Search to Search For and View Assets in the New Assets UI in the Maintenance chapter of the Implementing Manufacturing and Supply Chain Materials Management guide

> **Note:** You can use deep links to open asset pages without navigating through the menu structure. This helps you edit asset details by clicking a deep link that's embedded on an OTBI analysis, Application Composer-enabled page, or a custom page. For more details on deep Refer to the Maintenance chapter of the Implementing Manufacturing and Supply Chain Materials Management guide.

You can create or update assets manually in the UI, or via REST API or File-Based Data Import.

Search for an Asset Using the Manage Assets Page

You can search for assets based on the privileges you have. If you've been assigned a job role your enterprise uses for maintenance manager work, you can search for customer assets. If you've been assigned a job role your enterprise uses for asset administrator work, you can search for enterprise assets. A Maintenance Manager can only view enterprise assets that operate in maintenance-enabled organizations for which they have access. Defining an organization relationship expands the search to include assets that operate in a non-maintenance organization, provide they have access to those additional organizations. An Asset Administrator sees only customer assets, by default. However, a user with both privileges sees both enterprise and customer assets.

In the Maintenance work area, from the Tasks pane, click the Manage Assets link to open the Manage Assets page. Use basic keywords to look for one or more assets. The keyword is searched across the following attributes of all the assets: Asset Number, Description, and Item.

You can also use these filters for an advanced search using various attributes of the assets:

- Number
- Description

- Item
- Serial Number
- Show only IoT enabled assets
- Include child assets
- Operating Organization (applicable for maintenance assets only and is a required field)
- Customer (applicable for customer assets only)
- Location Type
- Location
- Assets Enabled for Maintenance
- Assets That Allow Work Orders

Note: You must define either a Number, Item, Serial Number, or Location type to use an advanced search.

By default, only assets without parent asset are considered by the keyword search. Select the Include child assets filter check box to expand the search to consider assets that have a parent asset.

You can also add these filter attributes to your filter region:

- Country of origin
- Group
- Include end dated assets
- Location organization
- Lot
- Sales order number
- Lot number
- Work center
- Work area
- Show only competitor assets
- Show only assets without item
- Project
- Task
- Sales order number
- Selling business unit (applicable for customer assets only)
- Bill-to account number (applicable for customer assets only)
- Last sales order (applicable for customer assets only)
- Contract (applicable for customer assets only)

Note: The location attribute filter is tied to all the location-based parameters such as location organization, work center, subinventory, locator, and customer address.End dated assets are excluded from the results by default. Add the filter option to include them in the results.

Here are some other things you can do on the Manage Assets page:

- Mark an asset as favorite in the search results.
- Export the search results to a spreadsheet.
- Save the frequently used search criteria as saved search
- Create a saved search and setting it as default to enable automatic searches. When you have a default search criteria, the Search Results region displays the assets matching the search criteria whenever the Manage Assets page is opened.

Search for an Asset Using the Asset Information Management Page

You can use Smart Search to search for and view assets in the new Asset Information Management search page. This new page works a little differently than the existing Manage Assets page. When you navigate to the new Assets page, you'll see search results in a table with a count of the total number of assets returned. The results are already filtered to return your top-level assets that are active (not end dated). These filters are displayed as smart filter chips in the search field and can be removed to broaden the results in the table. You can scroll through the table rows and click on column headings to sort and browse through the search results.

When you view your search results, you can click on a row the table to open a drawer that shows the asset groups and the global and context-sensitive descriptive flexfield segments for the asset in the selected row. When you click on a different row in the results table, the drawer contents will be updated to display the descriptive flexfields of the newly selected asset. You can close the drawer by clicking on the **X** at the top corner of the drawer or by hitting the Escape (Esc) key.

If you don't find the assets you are looking for, then use the smart search field to further narrow down the results. Simply type a representative term of what you are looking for in the smart search field and press the enter key. Your search term visually transforms into an applied filter chip in the search field and a full-text search is immediately performed. Full-text search results also include matches that start with the search term that was entered.

Each filter chip that you add to the search field reduces your result set even further. This is equivalent to performing a search using “and”. The results table shows the intersection of the search criteria in the applied filter chips.

When you type in more than one search term before hitting the enter key, the results table includes assets that match any of the terms in your filter chip. This is equivalent to performing a search using “or”. The results table shows the union of the search terms in your filter chip.

To remove a filter chip, simply click on the “x” inside the filter chip to remove it and the results table changes accordingly.

Full text searches are performed across the following attributes:

- Asset Number
- Asset Description
- Lot Number
- Serial Number
- Fixed Asset Number
- Project Number
- Task Number
- Country of Origin Name
- Country of Origin Description

- Operating Organization Code
- Operating Organization Name
- Item Number
- Item Description
- Item Long Description
- Group Number
- Group Name
- Part Number
- Part Description
- Customer Name
- Bill Account Number
- Sales Order Number
- Selling Business Unit Name
- Location Type
- Subinventory Code
- Customer Address
- External Address
- Internal Address
- Location Organization Code
- Location Organization Name
- Work Center Name
- Work Area Name
- Descriptive Flexfields
- Subscription Number

To search and locate assets by global descriptive flexfield, click on the Additional Information filter to add it to your search. Then, type a representative term of what you are looking for in the search field and press the enter key. Your search term visually turns into an applied filter and a full-text search is immediately performed across all searchable attributes, including global flexfields.

To search and locate assets by context-sensitive descriptive flexfield, add the Additional Information filter to your search, just like you would for searching by global flexfields. Then, click on the applied Additional Information filter for in your search field to see the list of available contexts. Select the context you want to search. Then, type a representative term of what you are looking for in the search field and press the enter key. Your search term visually turns into an applied filter and a full-text search is immediately performed across all searchable attributes, including the flexfields for the selected context and the global flexfields.

In addition to typing into the smart search field, you can also choose from predefined filters. These filters chips are suggested below the search field. To add a suggested filter chip your search, click on the chip to apply it to the search field. The Top-Level and Active filter chips are applied by default when you open the Asset Information Management page. You can change the value of a predefined filter chip by clicking on the filter after you have added it to the search field.

Predefined filter chips are available for the following attributes:

- Active

- Competitor Asset
- Description-Based
- IoT-Enabled
- Operating Organization Code
- Top-Level
- Active Asset Date
- Customer Active Asset Date
- In-Service Date
- Installed Date
- Origination Date
- Purchase Date
- Registration Date
- Shipment Date
- Creation Date
- Location Type
- Maintenance Programs Allowed
- Work Orders Allowed
- Contract Coverage Enabled

More Ways to Search Using Smart Search

Here are more ways to search using smart search:

- Searches are case insensitive. Both capitalized and noncapitalized keyword terms matches when searching for assets.
- When you add more than one filter to the search field, each filter added to the search field will further refine your search.
- When you type in more than one keyword in the search field before hitting the enter key, all of the keywords will be included in a single filter. The results table show assets that match any of the keywords within the filter.
- To search for a phrase, enclose your phrase in double quotation marks and add it to the search bar as a single filter.
- The character hyphen and the character period are delimiters. If you need to search for a term that includes a hyphen or a period, enclose the term in double quotation marks.
- To remove a filter, simply click on the **X** inside the filter to remove it. If you remove the Additional Information filter, the applied keyword filters will no longer search across descriptive flexfields.
- When searching by descriptive flexfields, the length of your search term must be within 2 characters of the matching descriptive flexfield value. If a flexfield value is less than 7 characters in length, then the length of the search term entered in the search field must be within 1 character length of the flexfield value it is matching.
- Searching by descriptive flexfields uses a search algorithm. Your search can return assets with flexfields that closely match your search term but don't exactly match.
- You can use the double quotation marks to enclose a search phrase for a descriptive flexfield, just like you do for any other asset attribute. However, only assets with descriptive flexfields that exactly match the enclosed phrase are returned.

- You can search assets by subscription number for the following:
  - Extended Warranty for parent assets
  - Extended Warranty for child assets
  - Included Warranty for top level assets
- You can search for included warranties for child assets if a full ingest of the asset index has been performed to get included warranties of child assets into the index.

View the Asset 360

For each asset the results table, you can click the Asset 360 View link to open the Asset 360 View page. On this page, you can view an interactive overview of the asset and its related objects. Each object will display key metrics and navigation links to the Edit Asset page or related object pages, depending on the type of asset. This can be useful to see the count of open maintenance work orders for an asset and quickly navigate to the Manage Work Orders page in the context of the asset.

How You Create an Asset

Click **Create** on the Manage Assets page to open the Create Asset page. The Create Asset page enables you to create an asset manually by one of these two methods:

- Create new asset
- Copy existing asset

Create a New Asset from Scratch

The Create Asset page has the following fields when you select the **Create new** option:

Attribute	Description
Asset Number	An asset number that uniquely identifies the new asset. This value can be alphanumeric and must be unique for each asset. If you don't enter any value, the asset number is automatically generated. **Note:** Assets are created with an asset ID that's automatically derived by the application using a database sequence. This value doesn't support a prefix, nor can a customer control it. The asset number is set to the same value as the asset ID during creation if a user-defined asset number is not provided. The asset number can be updated after the asset is created.
Description	Brief information describing the new asset. If you leave the asset description blank when you create an asset, then the description defaults from the description of the asset's associated item.
Operating Organization	This field is visible and enabled based on user privilege and the types of assets that you manage. If you manage enterprise assets using a Full Life Cycle tracked item, the operating organization is required because it's the organization where the asset operates and is typically maintained. The list of available organizations is limited to only those organizations that're associated to a selected inventory item. Enterprise assets don't have any customer reference, as they're internally owned. If you're managing customer assets using a Customer Asset tracked item, the operating organization won't be displayed because all the customer assets are created and managed in a single Item

Attribute	Description
	Validation Organization. Therefore, you don't see or search-and-select an operating organization. You have a customer in context as the operator of the asset. If you are managing customer assets using a Full Life Cycle tracked item, the asset can be maintained using work orders through Service Logistics or Depot Repair functionality. Therefore, you select an operating organization where the asset is managed and maintained, and also has a customer reference. In this case, the Item Validation Organization isn't considered because you select a maintenance-enabled organization as the operating organization. You can create organizational relationships for manual creation of work orders across maintenance organizations. Once you a create an asset, the asset displays the maintenance organizations attribute and dialog box. The dialog box lists the possible maintenance organizations based on the asset's item. However, the actual organizations where an asset work order can be created are determined by the organizational relationships that are defined.
Item required	Selected by default. This makes an item reference as required to create an asset.
Item	The item number of the item from which the new asset is to be created. To create an enterprise asset, you can only use the items that are full lifecycle tracked and serial controlled. This field is applicable only if the Item required checkbox is selected. For an enterprise asset, the list of available items is filtered by the selected operating organization. For a customer asset, an operating organization is defined only if the asset may be maintained using maintenance work orders in Service Logistics or Depot Repair. **Note:** • Maintenance work orders can only be created for an asset that's based on an item that's full lifecycle tracked. Assets based on an item set as customer asset tracking may not be used to create maintenance work orders. • Items and assets may move between or be maintained across organizations over time. Therefore, it's recommended to have a consistent serial control policy across organizations to ensure a uniform and consistent tracking experience.
Item Description	Brief information regarding the item from which the new asset is to be created.
UOM	Unit of measure. This field is only available and required for assets without item reference.
Serial	Serial number for the asset. This field is optional, but can be defined for assets based on serial tracked items.
Lot	Lot number. This field is optional.
Quantity	The quantity of the new asset. If the asset is associated with a serialized item, then the quantity is set to 1 and it isn't editable. If the asset is associated with a nonserialized item, then the quantity is set to 1 but it's editable.
Secondary Quantity	The quantity is based on the item setup:

Attribute	Description
	• When the item's UOM defaulting control is set to fixed, you enter the transaction quantity in the primary or transactional UOM, which is automatically converted to the secondary quantity in the secondary UOM based on the standard or item-specific UOM conversion. • When the item's UOM defaulting control is set to default, you can enter the transaction quantity in the primary or transactional UOM and override the secondary quantity that's defaulted from the standard or item-specific UOM conversion. • When the item's UOM defaulting control is set to no default, you can enter the transaction quantity in the primary or transactional UOM and enter the secondary quantity in the secondary UOM.
Use BOM for Initial Hierarchy	When set to Yes, an asset hierarchy is created by BOM explosion if the asset's base inventory item has a Bill of Materials defined. Each child asset is created on the first child level of the hierarchy as a logical asset. The logical asset is a placeholder asset that isn't transactable and must be enabled to a fully capable asset to be manage in the hierarchy, allow association to different levels in the hierarchy, or maintain using a maintenance work order. To enable each asset, click the edit pencil to update its asset details such as asset number, description, serial, or lot number, and click save to enable the asset. If a logical asset isn't required, you can leave it as is or you can use the delete icon to permanently remove it from the hierarchy. When set to No, there isn't a BOM explosion and child assets won't be created.
Enable IoT	Checkbox that identifies an asset as enabled for Internet of Things (IoT).
Competitor asset	Checkbox to determine if the asset is a competitor asset and isn't expected to be maintained. The checkbox isn't selected by default.
Customer	The customer of the new asset. This field is only available for customer assets.
Location Type	The location of the new asset. The valid values are: • Customer address: If selected, the location is defined using a customer's site address • External address: If selected, a location is defined using an external address • Internal address: If selected, a location is defined using an HCM location address • Unknown • Work center: If selected, a location organization and work center should be selected.
Location	The site address of the asset when it's located at a customer, external, or internal address location. • Customer address: location is setup for a customer party and is searched for and selected by customer name, site name, site number or address. • External address: location is setup for trading community location and is searched for and selected by the address. • Internal address:location is setup in HCM and is searched for and selected by the internal location name, location code, town, city, postal code, or country.

Attribute	Description
	Note: • For a customer asset, the location may be different that the customer's address. • External addresses are set up using a SOAP service. For more details on setting up a trading community location refer to the Business Object Services chapter of the SOAP Web Services for CX Sales and B2B Service guide.
Location Organization	The organization associated with the new asset. Currently, only maintenance and manufacturing organizations are supported. This field is applicable only if the location type is set as work center.
Work Center	The work center associated with the asset. This field is applicable only if the location type is set as work center.
Default Maintenance Work Order Type	Refers to the specific nature of the maintenance work being performed. You can set this value on the Edit Asset page after the asset is created. The valid values are: Corrective and Preventive. This attribute is applicable only for assets with item reference. **Note:** Additional validation and defaulting rules for the default work order type and subtype attributes are defined in the topic How You Edit Asset Attributes.
Default Maintenance Work Order Subtype	Refers to the specific nature of the maintenance work being performed at more granular level. You can set this value on the Edit Asset page after the asset is created. The valid values are: Condition based, Emergency, Planned, Reactive, Safety, and Under warranty. This attribute is applicable only for assets with item reference.
Shipment Date	The date on which the new asset is shipped to the customer. This field is initially populated by default by the application, but you can set it to a past, present, or future date. This field is available for customer assets only.

After you have entered the values, you can click any of the following buttons to create the asset:

- Save and Continue: The asset is created and the Edit Asset page opens for the asset.
- Save and Create Another: The asset is created and a new Create Asset page opens for creating another asset.
- Save and Close: The asset is created and the Create Asset page is closed.

Note: In the following scenarios, the asset is created with location type set as Unknown:

- You select the location type as either Customer address, External address, or Internal address but don't select the location for the asset.
- You select the location type as Work center but don't select the location organization or the work center for the asset.

Create an Asset in Asset Information Management

You can also create an asset from the Asset Information Management page. Select **Create Asset**, select **Create new**, and then select Enterprise asset or Customer asset.

Enter the asset information. The fields that are available depend on the asset type and item setup. For a customer asset, enter the customer information and, when applicable, the customer account, selling business unit, and shipment date. Select the location type and enter the related location information for the asset.

Select **Create and Open** to create the asset and open the asset details page, or select **Create and Close** to create the asset and close the page.

Create a New Asset by Copying from an Existing Asset

To create a new asset by copying an existing asset, search for and select an asset number in the Copy Existing Asset region. Once selected, the item and item description is populated automatically in the New Asset region. Also, a meters checkbox is displayed under the asset number, if the source asset has any utilization meters defined. If selected, then the meters are also copied and applied to the newly created assets. Regardless of selection, when you create the asset, the application verifies if there are any default meters defined, to ensure no duplicate meters are created for the asset.

The New Asset region has the following fields:

Attribute	Description
Asset Number	An asset number that uniquely identifies the new asset. This value can be alphanumeric and must be unique for each asset. If you don't enter any value, the asset number is automatically generated. **Note:** Assets will be created with an asset ID that's automatically derived by the application using a database sequence. This value doesn't support a prefix, nor can a customer control it. The asset number is set to the same value as the asset ID during creation if a user-defined asset number is not provided. The asset number can be updated after the asset is created.
Description	Brief information describing the new asset. If you leave the asset description blank when you create an asset, then the description defaults from the description of the asset's associated item.
Operating Organization	The organization in which the asset is where the asset is operating. The list of available organizations is limited to only those organizations which are associated to the selected inventory item. For an enterprise asset, this is the primary organization where work orders are created. This field is optional for a customer asset that isn't maintained using work orders. You can create organizational relationships for manual creation of work orders across maintenance organizations. Once you a create an asset, the asset displays the maintenance organizations attribute and dialog box. The dialog box lists the possible maintenance organizations based on the asset's item. However, the actual organizations where an asset work order can be created are determined by the organizational relationships that are defined. **Note:** Assets can only be defined in a Preventative Maintenance Program if they operate in a maintenance enabled organization.
Item required	An option that, when selected, makes an item reference is required to create an asset. The checkbox is selected by default.

Attribute	Description
Item	The item number of the item from which the new asset is to be created. To create an enterprise asset, you can only use the items that are full lifecycle tracked and serial controlled. This field is applicable only if the Item required checkbox is selected. For an enterprise asset, the list of available items is filtered by the selected operating organization. For a customer asset, an operating organization is defined only if the asset may be maintained using maintenance work orders in Service Logistics or Depot Repair. **Note:** • Maintenance work orders can only be created for an asset that's based on an item that's full lifecycle tracked. Assets based on a item set as customer asset tracking may not be used to create maintenance work orders. • Items and assets may move between or be maintained across organizations over time. Therefore, it's recommended to have a consistent serial control policy across organizations to ensure a uniform and consistent tracking experience.
Item Description	Brief information regarding the item from which the new asset is to be created.
UOM	Unit of measure. This field is only available and required for assets without item reference.
Serial	Serial number for the asset. This field is optional, but can be defined for assets based on serial tracked items.
Lot	Lot number. This field is optional.
Quantity	The quantity of the new asset. If the asset is associated with a serialized item, then the quantity is set to 1 and isn't editable. If the asset is associated with a nonserialized item, then the quantity is set to 1 but it's editable.
Secondary Quantity	The quantity is based on the item setup: • When the item's UOM defaulting control is set to fixed, you enter the transaction quantity in the primary or transactional UOM, which is automatically converted to the secondary quantity in the secondary UOM based on the standard or item-specific UOM conversion. • When the item's UOM defaulting control is set to default, you can enter the transaction quantity in the primary or transactional UOM and override the secondary quantity that's defaulted from the standard or item-specific UOM conversion. • When the item's UOM defaulting control is set to no default, you can enter the transaction quantity in the primary or transactional UOM and enter the secondary quantity in the secondary UOM.
Use BOM for Initial Hierarchy	The asset hierarchy is created by BOM explosion. During asset creation, an asset hierarchy is created if the base inventory item has a Bill of Materials defined.
Enable IoT	Checkbox that identify assets enabled for Internet of Things (IoT).
Competitor asset	Checkbox to determine if the asset is a competitor asset and isn't expected to be maintained. The checkbox isn't selected by default.

Attribute	Description
Customer	The customer of the new asset. This field is only available for customer assets.
Customer Account	The account for the customer that purchased the asset. This attribute is applicable only when the location type is customer address and is based on the selected customer and selling business unit. You can edit this field. If edited, the bill-to account information is updated in the Last Sales Order Details tab.
Selling Business Unit	The selling business unit for the asset. It's displayed once a customer account is selected.
Address	The address of the customer where the asset is located. This attribute is applicable only when the location type is Customer Address. This is a read-only attribute.
Location Type	The location of the new asset. The valid values are: • Customer address: If selected, a location should be selected by the site address. • External address: If selected, a location should be selected by the site address. • Internal address: If selected, a location should be selected by the site address. • Unknown • Work center: If selected, a location organization and work center should be selected.
Location	The site address of the asset when it's located at a customer, external, or internal address location. • Customer address: location is setup for a customer party and is searched for and selected by customer name, site name, site number or address. • External address: location is setup for a customer party and is searched for and selected by address. • Internal address: location is setup in human resources and is searched for and selected by name or code. **Note:** For a customer asset, the location may be different that the customer's address. Note: for a customer asset, the location may be different that the customer's address.
Location Organization	The organization associated with the new asset. Currently, only maintenance and manufacturing organizations are supported. This field is applicable only if the location type is set as work center.
Work Center	The work center associated with the asset. This field is applicable only if the location type is set as work center.
Shipment Date	The date on which the new asset is shipped to the customer. This field is initially populated by default by the application, but you can set it to a past, present, or future date. This field is available for customer assets only.

After you have entered the values, you can click any of the following buttons to create the asset:

- Save and Continue: The asset is created and the Edit Asset page opens for the asset.
- Save and Create Another: The asset is created and a new Create Asset page opens for creating another asset.
- Save and Close: The asset is created and the Create Asset page is closed.

Note: You can extend the Create Asset page using Application Composer. You can configure the page layout, change the display labels, and their order. You can also enable and add configured fields to the page and even hide non-required standard fields. For more details, refer to the topic Overview of Using Application Composer.

Split an Asset

Split non-serialized assets into unique asset numbers and quantity. The assets that are eligible to be split have a new Split icon beside the Quantity and Unit of Measure fields. Click the icon to open the Split Asset dialog box where you can enter either a split quantity or select a split all option, and then click the Split Asset button.

The Split Asset Dialog Box: You can consider a variety of options when you split an asset. For example, you split your original asset quantity from 100 to the new asset quantity of 50. In the same dialog box, you can continue to split the remaining quantity of 50 again to 25 and so forth, as needed. After each split action, the List of Split Assets section of the dialog box displays each newly created asset and quantity. When all the splits are completed, click Save and Close to create the new assets and quantity. At any time, if you click Cancel, the split action in the dialog box is canceled and no new assets are created. If you select the Split All checkbox, each of the newly created assets get a quantity of 1 after saving and closing.

Make sure the quantity your newly created assets is a whole number greater than or equal to one. If the asset has a primary and secondary unit of measure, the split quantity is always in the context of the primary unit of measure, however the new asset quantity is also recalculated for a secondary unit of measure.

There's an export function for all the rows in the List of Split Assets region that helps you export an excel-compatible file containing the list of assets. You can review the list of assets before committing to their creation using the Save and Close button. Remember, when you click Save and Close, your new assets are created.

New Assets: The newly created assets are assigned a new unique asset number based on the original asset being split. The new asset numbers have a sequential number appended to the end of the original asset number. But, you can select to enter a starting prefix and starting number for your newly created assets. For each new asset, the asset's number considers these prefixed or suffixed values and not base the new asset numbers off the original asset number. You can enter only a starting prefix or starting number, or a combination of both values.

In your new assets, all of the asset attributes are inherited from the original asset in the Edit Asset tab. Also, the new assets have a transaction created in the Asset History tab. This transaction displays details about the original asset that was split. This helps you keep track of old and new assets being split overtime. You can also know the number of times the original asset are split by looking at the asset history record individually for each new asset.

How an Asset is Created Automatically

When an asset tracked item is transacted in other integrated application, an asset is created automatically using the transactions details. For example, when an asset purchased is received in the inventory, an asset is created with the **Inventory** location type.

An asset is either created immediately after the transaction or deferred depends on the profile ORA_CSE_IB_INTERFACE_DEFERRED setup.

- Yes – Asset is created in deferred mode
- No – Asset is created immediately

If the asset is set for DEFERRED CREATION, then you must invoke the **Process Pending and in-Error Genealogy and Installed Base Transactions** ESS job for creating assets.

Here's the list of other transactions that creates an asset automatically.

- Miscellaneous receipts to inventory
- Purchase receipts to inventory destination

  For items received to inventory, only lot and serial controlled items are considered for asset creation.

  Serial control and lot control policy of the item impacts the automatic asset creation. For example, if the serial control policy of an item is set to **entry at inventory pick**, here are the following behaviors during miscellaneous receipt:

If an item is lot controlled	then an asset is created with the following behavior
Yes	Serial number isn't captured during the transaction. However, an asset is created with the lot number reference.
No	Serial number isn't captured during the transaction. Hence for a non-lot and non-serial item, asset isn't created.

- Manufacturing work order completion to inventory

  For a manufacturing work order completion, an asset is created for standard, non-standard, and transform work orders. The completed products are moved to inventory. Hence, only lot and serial controlled items are considered for asset creation as in case with any inbound transactions with inventory destination.
- Purchase receipts to work order destination

  For purchase receipts to work order destination, during the **put away** transaction, an asset is created automatically.
- Purchase receipts to expense destination

  For purchase receipts to expense destination, during the **put away** transaction, an asset is created automatically.

- Sales order fulfillment

  For an asset to get created automatically during sales order fulfillment:

  - The asset tracking value of the item must be **Full Lifecycle Tracked** or **Customer Asset**.
  - The Orchestration Process must be set appropriately. The process must have the step to create an **Installed Base Asset**.

  For more details about setting up the orchestration process, refer the SCM Cloud Implementing Order Management guide.

  You require the following details in the orchestration step within the orchestration process for creating an **Installed Base Asset**.

Step type	Service
Task type	DOO_AssetManagement
Task	DOO_AssetManagement
Service	Request Asset Creation

  Logical assets are created during Pick to Order or KIT components item BOM explosion. Mostly, model items are meant to be nontangible components, hence system creates logical asset for those and any child components beneath. You can turn those assets into tangibles assets by updating the related attributes, such as, asset number, serial number, lots, and quantities.

- During manual asset creation process

  When an asset is created manually, an item may have to be associated. In such case, you can use the item structure defined for the item to create child assets automatically.

  Enable the **Use BOM for Initial Hierarchy** attribute for creating the child assets for all the asset tracked items in the associated item structure. However, the child assets would be created as Logical assets, and the same can be updated with necessary details to make it an actual asset in the asset structure.

  Each logical child asset is created on the first child level of the hierarchy. The asset is a placeholder asset that isn't transactable and must be enabled to a fully capable asset to be manage in the hierarchy, allow association to different levels in the hierarchy, or maintain using a maintenance work order.

  To enable each asset, click the edit pencil to update its asset details such as asset number, description, serial, or lot number, and click save to enable the asset.

  If a logical asset is not required, you can leave it as is or you can use the delete icon to permanently remove it from the hierarchy.

Related Topics

- SCM Cloud Implementing Order Management Guide

How You View and Edit an Asset

The Edit Asset UI

After an asset is created, you can edit certain attributes and view details of the asset on Edit Asset page. On the Manage Assets page, click the asset name link in the search results to open the page for editing. On the edit page, you can update various asset attributes, mark an asset as favorite in a single click for easy access and tracking. Additionally, you can perform other functions on the vertical tabs that are rendered and populated based on whether the asset is an enterprise asset or a customer asset, and the user's assigned roles and privileges.

Here's a table with an overview of the different tabs, and whether they're available for enterprise assets and customer assets.

Tab	Description	Enterprise Assets	Customer Assets
Overview	Asset attributes that can be viewed and edited. This includes definable flexfields, custom fields added using Application Composer, asset image and attachments.	Yes	Yes
Parts List	List of parts that can be used to maintain the asset. If defined, the parts list will be available for defining work definition material requirements by operation step. Additionally, in execution you can use the parts list to add additional items to an operation step.	Yes	Yes
Meters	List of utilization meters that are instantiated and tracked for the asset	Yes	Yes
Last Sales Order Details	Details about the last time an asset was sold to a customer.	No	Yes
Hierarchy	Parent and child hierarchy view of related assets. You can view, add, remove, swap and create child assets in the hierarchy viewer.	Yes	Yes
Contracts or Subscriptions	List of contracts or subscriptions for the asset. There's a profile option that controls which object will be displayed.	No	Yes

Tab	Description	Enterprise Assets	Customer Assets
Service Requests	List of service requests created in the Engagement Cloud or SCM Cloud for the asset.	No	Yes
Work Orders	List of field service work orders created for the asset.	No	Yes
Leads	List of customer leads created in the Engagement Cloud or SCM Cloud for the asset.	No	Yes
Opportunities	List of customer opportunities created in the Engagement Cloud or SCM Cloud for the asset.	No	Yes
Asset Groups	List of groups for which the asset is associated. You can add a new group to create an association to the asset.	Yes	Yes
Notes	List of simple text-based reference notes for your assets. You create, update, and delete the notes.	Yes	Yes
History	List of the complete history of an asset. You can assess the transaction history, chronology, and changes to the asset to plan your maintenance.	Yes	Yes
Cost	View maintenance costs at an individual work order level or aggregated by period for the asset. The costs are then displayed for a selected maintenance organization and time period.	Yes	Yes
Fixed Assets	Integrate your installed base assets and fixed assets.	Yes	Yes

The Asset Details Page in Asset Information Management

From Asset Information Management, search for the asset and select the asset name to open the asset details page. The asset header remains available while you work with the asset and displays key information about the asset. Use the edit action to update the header attributes that are editable for the asset.

Use the tabs on the asset details page to access related information. The tabs can include Overview, Parts List, Notes, History, Fixed Assets, Cost, and Qualifications. Customer assets can also include Sales Order.

The Overview tab groups commonly used asset information into sections. For an enterprise asset, these sections include Asset Details, Location, Meters, Asset Groups, Supplier Warranty, Attachments, and Additional Information. A customer asset also includes Customer Details. Use the edit action for a section to update its editable attributes.

From the Meters section, you can manage the meters associated with the asset and record or review meter readings. From the Asset Groups section, you can view group assignments and assign or unassign the asset from a group. Supplier warranty information, attachments, and asset flexfields are also available from their corresponding sections on the Overview tab.

How You Edit Asset Attributes

Edit asset attributes in the Overview tab of the Edit Asset page. On the Manage Assets page, click the asset name link in the search results to open the page for editing. On the edit page, you can edit certain attributes as described in this table:

Field	Description
Asset Number	An asset number that uniquely identifies the asset. You can update the Asset Number, but the value must be unique across assets.
Description	Brief information describing the asset. You can choose to update this value.
Parent Asset	The asset that's directly above this asset in a hierarchical relationship. This field is read-only and is only displayed if there is a parent asset, else the value will be null.
Item	The item number of the asset. You can edit this field based on certain conditions. Here are the conditions when you can't update an item: • When the asset is created automatically during the transaction performed in integrated applications like Inventory, Order Management, and so on. • When the asset is already integrated with other applications like Subscriptions. • When the asset has an existing work order.
Item Description	Brief information regarding the item from which the new asset is to be created. This field is read-only.
Serial Number	The number of the asset. Optional to define and update for assets based on serial controlled items. For a maintainable asset, the serial number must be unique within the operating organization of the asset
Lot	Lot number. This field is optional to define and update.
Quantity	The quantity of the new asset. If the asset is associated with a serialized item, then the quantity is set to 1 and it isn't editable. If the asset is associated with a non-serialized item, then the quantity is set to 1 but may be editable or can be split into other assets, as described later in this section. **Note:** Customer assets using a non-serialized or non-inventory item aren't allowed to have their quantity edited, as there may be an impact to existing contracts or subscriptions. Therefore, splitting the asset may be an alternative.

Field	Description
Unit of Measure	The unit of measure is displayed to the right of the quantity
Split Asset	If an asset is eligible to be split, a split asset icon is displayed beside the Quantity and Unit of Measure fields. Click the icon to open the Split Asset dialog box where you can enter either a split quantity or select a split all option, and then click the Split Asset button.
Secondary Quantity	The quantity is based on the item setup: • When the item's UOM defaulting control is set to fixed, you enter the transaction quantity in the primary or transactional UOM, which is automatically converted to the secondary quantity in the secondary UOM based on the standard or item-specific UOM conversion. • When the item's UOM defaulting control is set to default, you can enter the transaction quantity in the primary or transactional UOM and override the secondary quantity that's defaulted from the standard or item-specific UOM conversion. • When the item's UOM defaulting control is set to no default, you can enter the transaction quantity in the primary or transactional UOM and enter the secondary quantity in the secondary UOM.
Enable IoT	Checkbox that identifies an asset as enabled for Internet of Things (IoT).
Competitor asset	Checkbox to determine if the asset is a competitor asset and isn't expected to be maintained. You can select or deselect this checkbox.
Operating Organization	The organization where the asset is operating. For an enterprise asset, this is the primary organization where work orders are created. This field is optional for a customer asset that isn't maintained using work orders. Its operating organization is defaulted to the Validation Organization value and can't be updated. You can update the operating organization of an asset to transition between organizations. For enterprise assets, this is helpful when an asset physically moves locations or is maintained by another maintenance-enabled organization. If an asset is located in an inventory location, then it can't be moved by updating the operating organization. Then, you must first perform the inventory move then update the asset's operating organization. You can create organizational relationships for manual creation of work orders across maintenance organizations. Once you a create an asset, the asset displays the maintenance organizations attribute and dialog box. The dialog box lists the possible maintenance organizations based on the asset's item. However, the actual organizations where an asset work order can be created are determined by the organizational relationships that are defined. **Note:** Assets can only be defined in a Preventative Maintenance Program if they operate in a maintenance-enabled organization. If they operate in a non-maintenance organization, they aren't included in any maintenance program. However, you can create manual work orders by setting up an organizational relationship between the non-maintenance organization and a maintenance-enabled organization to maintain the asset.
Maintenance Organization	When an asset is created, the asset displays the maintenance organizations attribute and dialog box as read-only. The dialog box lists the possible maintenance organizations where you can create manual work orders based on the asset's item and its maintenance-enabled organization associations. Additionally, you may create organizational relationships to support the manual creation of work orders across maintenance organizations.

Field	Description
	Note: You can use Application Composer to remove this attribute, icon, and dialog box by modifying and deploying changes to the Edit Asset Details Overview Tab.
Location Type	Location type of the asset. This can be updated to these values: • Customer address: If selected, the location is defined using a customer's site address • External address: If selected, a location is defined using an external address • Internal address: If selected, a location is defined using an HCM location address • Unknown • Work center: If selected, a location organization and work center should be selected. **Note:** Assets may be located in a location type of Inventory. You can't set the asset location type as Inventory from the Asset: Overview tab or through Asset REST API or file-based data import. To make an asset's location type as Inventory, it has to perform an inventory transaction.
Location	The site address of the asset when it's located at a customer, external, or internal address location. • Customer address: location is setup for a customer party and is searched for and selected by customer name, site name, site number or address. • External address: location is setup for a customer party and is searched for and selected by address. • Internal address: location is setup in human resources and is searched for and selected by name or code. **Note:** For a customer asset, the location may be different that the customer's address. Note: for a customer asset, the location may be different that the customer's address.
Location Organization	The organization to which the asset belongs. This attribute is applicable only when the location type is Inventory or Work Center. You can update this value.
Work Center	The work center to which the asset belongs.
Subinventory	The subinventory to which the asset belongs. This attribute is applicable only when the location type is Inventory. This is a read-only attribute.
Locator	The locator to which the asset belongs. This attribute is applicable only when the location type is Inventory. This is a read-only attribute.
Contact	The contact person for the asset. You can update this value. For the enterprise asset, the contact person must be an employee of the organization.

Field	Description
	For a customer asset the contact person must be a customer contact. The asset contact depends on the value of Customer attribute in the asset.
Customer	The customer to which the asset belongs. This attribute is applicable only when the location type is Customer Address. You can update this value.
Customer Account	The account for the customer that purchased the asset. This attribute is applicable only when the location type is customer address and is based on the selected customer and selling business unit. You can update this value.
Selling Business Unit	The selling business unit for the asset. It's displayed once a customer account is selected.
Address	The address of the customer where the asset is located. This attribute is applicable only when the location type is Customer Address. This is a read-only attribute.
Shipment Date	The date on which the new asset is shipped to the customer. This field is initially populated by default by the application, but you can set it to a past, present, or future date. This field is available for customer assets only. You can update this field to a value that's less than the customer asset end date and less than the asset end date.
Customer Asset Start Date	This date is a synchronized with the shipment during customer asset creation. It's displayed as a read-only value.
Customer Asset End Date	This date can be set to a value that represents the completion of an asset's lifecycle with a customer or at a customer's site. You can set it to a past, present, or future date.
Asset End Date	Date that's used to identify the end of an asset's usable and maintainable lifecycle. You can set this date to a present or future value and the value must be greater than the customer asset end date, therefore greater than the shipment date. Typically, this date is set at some point in the future to a present or past value that represents the completion of an asset's maintainable lifecycle. Once this date is set, you're not expected to make any further updates to the shipment or customer asset end dates. Assets may be located in a location type of Inventory. You can't set the asset location type as Inventory from the Asset: Overview tab or through Asset REST API or file-based data import. To make an asset's location type as Inventory, it has to perform an inventory transaction.
Allow maintenance programs	The checkbox indicates whether or not the asset can be maintained using a preventative maintenance program. The checkbox is selected by default for assets based on an item that's setup as full lifecycle tracked. You can deselect the checkbox if you don't want the asset to be considered for preventive maintenance. When the **Allow maintenance programs** checkbox is selected, you can use the asset to create a work requirement in a maintenance program, but only if the **Allow work orders** checkbox is also selected. For assets based on a customer tracked item, this checkbox can't be deselected as the asset isn't eligible for creating maintenance work orders.

Field	Description
Allow work orders	The checkbox indicates whether or not new maintenance work orders can be created for the asset. The value is selected by default for assets based on an item that's setup as full lifecycle tracked. You can deselect the check if you don't want the asset to be considered for preventive maintenance. When the **Allow work orders** checkbox is selected, you can create work orders for assets as long as they are based on an item that's setup as full lifecycle tracked.
Default Maintenance Work Order Type	Refers to the specific nature of the maintenance work being performed. The valid values are: Corrective and Preventive. This attribute is applicable only for assets with item reference. You can update this value. During work order creation using the Manage Work Orders page, the application defaults the work order type and subtype based on this logic: • When an asset is selected, the type will be first defaulted from the asset, if it's defined • Then, if a work definition is selected and it has default work order type and subtype defined, then it takes precedence over the values defaulted from the asset and overwrites the type and subtype • You can then manually update the values as required prior to creating the work order During work order creation using the Maintenance Work Order REST API, the application sets the work order type and subtype based on this order: • Work definition is used first • If not defined for a work definition, the asset values are used • If not defined for an asset, then the type and subtype must be in the REST payload, or an error is presented During work order creation from a maintenance program, the application looks at the asset to set the type and subtype. If not defined, then the application sets the type of Planned and subtype as Preventative. The work definitions aren't considered.
Default Maintenance Work Order Subtype	Refers to the specific nature of the maintenance work being performed at more granular level. The valid values are: Condition based, Emergency, Planned, Reactive, Safety, and Under warranty. This attribute is applicable only for assets with item reference. You can update this value.
Attachments	Attachments of type file, text, or URL in the assets. You can update the attachments.
Country of Origin	Optionally displayed if the asset is created automatically through Inventory and Manufacturing transactions. The attribute can't be updated.
Project	Optionally displayed if the asset is created automatically through Inventory and Manufacturing transactions. The attribute can't be updated.
Task	Optionally displayed if the asset is created automatically through Inventory and Manufacturing transactions. The attribute can't be updated.
Additional Information	Header for the show or hide region where DFFs are displayed. Expanding the region will show all the DFFs and optionally the context segment, if defined.

Note: You can extend the Edit Asset page using Application Composer. You can configure the page layout, change the display labels, and order. You can also enable and add configured fields to the page and even hide non-required standard fields. For more details, refer to the topic Overview of Using Application Composer.

How You Split Non-Serialized Assets into Separate Assets

Non-serialized Assets may have a quantity greater than one. If you want to split them into separate assets, then click the Split Assets icon. This opens the Split Asset dialog box, where you can enter either a split quantity or select a split all option, and then click the Split Asset button.

Non-serialized assets are eligible to be split only based on certain item and asset definitions, and current associations to other objects:

- An asset's item must be defined as:
  - Asset Tracked = Full Life Cycle or Customer Asset
  - Structure Item Type = Standard
  - Serial Generation = No serial Control
  - Lot Control, either of these options:
    - Full Lot Control
    - Not Lot Control, but inventory = No and Serial = No
    - Not Lot Control, but inventory = Yes and Serial No
    - Lot Divisible = Yes
- Dual Unit of Measure, either of these options:
  - Fixed
  - Default
  - No default
- An asset's details must be defined as:
  - Asset Quantity > 1
  - Asset Quantity is not a decimal for the Primary Unit of Measure
  - All Location types except *In Inventory*
  - For a customer asset, the customer end date can't be set
  - Asset End Date is not set
- An asset must also pass these validations:
  - Not associated to an open maintenance work order
  - Not reserved for an open maintenance work order
  - Not associated to an open service request

There are a variety of options you can consider when you split an asset. For example, you split your original asset quantity from 100 to the new asset quantity of 50. In the same dialog box session, you can continue to split the remaining quantity of 50 again to 25 and so forth, as needed. After each split action, the List of Split Assets section of the dialog box displays each newly created asset and quantity. When all the splits are completed, click Save and Close to create the new assets and quantity. At any time, if you click Cancel, the split action in the dialog box is canceled and

no new assets are created. If you select the Split All checkbox, each of the newly created assets get a quantity of 1 after saving and closing.

Make sure the quantity your newly created assets are a whole number greater than or equal to one. If the asset has a primary and secondary unit of measure, the split quantity is always in the context of the primary unit of measure, however the new asset quantity is also recalculated for a secondary unit of measure.

There's an export function for all the rows in the List of Split Assets region that helps you export an excel-compatible file containing the list of assets. You can review the list of assets before committing to their creation using the Save and Close button. Remember, when you click Save and Close, your new assets are created.

The newly created assets are assigned a new unique asset number based on the original asset being split. The new asset numbers have a sequential number appended to the end of the original asset number. But you can choose to enter a starting prefix and starting number for your newly created assets. For each new asset, the asset's number considers these prefixed or suffixed values and not base the new asset numbers off the original asset number. You can enter only a starting prefix or starting number, or a combination of both values.

In your new assets, all the asset attributes are inherited from the original asset in the Edit Asset tab. Also, the new assets have a transaction created in the Asset History tab. This transaction displays details about the original asset that was split. This helps you keep track of old and new assets being split overtime. You can also know the number of times the original asset is split by looking at the asset history record individually for each new asset.

Related Topics

- Overview of Assets
- How You Manage Assets in the User Interface
- How You Create an Asset
- How You Import and Export Assets

How You Manage Asset Images

Assets can have one or many images defined. Images can be uploaded to the asset record using files of an image file type. Examples are JPG, PNG, and so on. Optionally, an asset image can also be defaulted during asset creation based on the source item.

Upload images for an asset on the Asset: Overview tab of the Edit Asset page. You can then view the images on this page, the Manage Assets search result rows, and in the Asset: Hierarchy tab.

To upload images to your asset, click the Add icon (+) below the image area on the right of the UI to open the Attachments dialog box, where you can upload one or many images.

Select the Browse button for each image and select the image from your files. You can also enter a title and description.

After the images are uploaded, you must set at least one image as the primary image for the asset. Select the image row and click the Set Primary icon on the Attachments dialog box. When selected, a check box icon will appear for the primary image row. This enables the image to be visible across the pages and tabs. If you don't set the image as primary, the images are saved but not displayed for the asset.

You can view and download the catalog of images. You can also edit the images and delete images.

To default an image during asset creation, you must upload an image as an attachment in the Item header region using the + icon. While generically entitled Manage Attachments, this capability is intended to support the upload one or many files of an image file type. When uploaded the images are previewed in the header details region. After upload,

you must select an image in the list of files and click the Set as Primary action, then it's set as the primary image. If an item has a primary image defined, then each new asset that's created automatically inherits this image in the asset record.

> **Note:** The image region on the asset is approximately 200x200. Therefore, uploading images of high resolution will be adjusted by the image viewer. You may have to crop or reduce the resolution of images to improve clarity. If you want high resolution image, we recommend you to upload them and not display as the primary image or upload as a regular attachment to the asset as a file.

How You Edit Asset Parts List

The asset part list helps you plan your maintenance activities ahead of time by defining a list of replacement items for your asset. You can group the materials you add to a part list as not fully tracked, such as rivets, bolts, gaskets, to name few, or asset-track components, like filters, pumps, valves, which historically you know are material requirements to repair your assets.

When you create parts list for an asset, you can reference it when you create or edit a maintenance work definition. Additionally, you can reference the parts list as the source for an operation item in Work Execution, if the items are enabled for your each of your respective maintenance organizations.

You can define the parts list for an asset by adding a new item to the parts list on searching and selecting an item from the item repository. The item must be different than your asset item and must be enabled for each maintenance organization in which you intend to perform maintenance. Optionally, when you search for the item, you can expose the organization and organization name fields for the results. You can then choose an item by its organization relationship, but you can add at the master organization level. If you add an item that is for a specific organization, and if any assets have been created based on that same item, the Asset Item column shows a check icon. When added to the list, there's a final column with check icon that lists the maintenance organizations for which the item is enabled. This quickly confirms if the item you select supports maintenance in each your maintenance organizations.

You can perform the following edits to the parts list of an asset in the Parts List tab on the Edit Asset page:

- Add new items to the parts list
- Edit the quantity and UOM of the existing items in the parts list
- Remove existing items from the parts list

When adding new items to the parts list, you can also copy items from an existing asset. Consider the following points when copying the parts list items from an existing asset:

- Any duplicate items in the parts list are ignored. If the parts list to which the items are being copied contains any duplicate item, then that item isn't copied.
- You can copy the parts list items from an asset that's already inactive.
- You can copy the parts list items from multiple existing assets.

Parts list items are always in the context of an organization. Therefore, we recommend adding parts list items at a master organization level if you plan to use them in work definitions and maintenance work orders. The items must also be setup in each of the child organizations in which maintenance work orders are used. When parts list items are searched and selected in a maintenance work definition or a work order operation, the item picker on these pages confirms that the item is enabled for the contextual maintenance organization. If not set up, then they aren't returned or allowed in the work order definitions or the work order operations.

When adding a parts list item, the item picker allows for additional columns to view added using the view drop down. You should add the organization name and organization description columns. When searching for an item, you can then easily select an item at the master organization or child organization level, as required. Additionally, after a parts list item is selected a check mark icon may display in the final column. If displayed, then the parts list item is enabled for one or more child organizations that can perform maintenance. Hovering over the check mark icon renders a dialog box that lists the maintenance organizations for which the item is enabled.

How You View Sales Order Details for an Asset

View these details for the last time an asset was sold to a customer on the Last Sales Order Details tab on the Edit Asset page:

- Sales Order Header: View sales order details like sales order number, customer purchase date, registration date, in-service date, bill-to customer, and bill-to account number.
- Sales Order Charges: View related cost details like charge definition, priced quantity, product unit price, charges rollup, and tax included.

How You Edit Asset Hierarchy

You can perform these edits to the asset structure in the Hierarchy tab on the Edit Asset page:

- Select an asset at any level in the hierarchy and click to + icon to search for and add an existing asset as a child component
- Select an asset at any level in the hierarchy and click to + icon to create a new asset as a child component.
- Select a child asset in the hierarchy and click to X icon to remove the child asset.
- Select a child asset in the hierarchy and click to swap icon to search for and replace the existing child component with a newly selected asset. The newly selected asset can't be a child asset; however, it can be a parent asset that has child asset components.
- Select a child asset in the hierarchy and click to parent update icon to search for and move the asset underneath a different parent asset within the same hierarchy. If the asset is a parent asset, its child asset components will also move
- Edit key details of the asset direction in the hierarchy. This includes the asset number description, serial number, and lot number.
- View details about assets in the hierarchy. Click the details link to open dialog box with key asset details.

Note: When you add or move an asset within an asset structure, the child asset component inherits the location of the top parent asset of the hierarchy. This includes inventory location details. Additionally, any changes in the location of the top parent will result in updates to all of its child assets.

Note: If you want to manage a hierarchy of assets across different locations, then consider creating a logical hierarchy. Additional details are covered in the section How You Manage an Asset Logical Hierarchy.

Note: When an asset hierarchy is created using the Use BOM for Initial Hierarchy option, all the child assets are created at the same level right below the parent asset. You must review each child asset and determine if additional actions are required to edit the hierarchy levels, which may include removing and adding the children at different levels of the hierarchy. Additionally, you can split multiple quantity assets and create individual assets with a quantity of one in order to properly track each as individual assets.

How You Cascade The Operating Organization of A Parent Asset to Its Child Assets During Transfers

If you change the operating organization of a parent asset, cascade the change to the child assets within a physical hierarchy to ensure that they are in sync. You do this using the **Synchronize Item Control Attributes to Assets** scheduled process. When you run the scheduled process, the application uses an internal database column, Validation Organization. It copies the changed organization into the Validation Organization column internally in the database. It's then cascaded down to all the child assets within the physical hierarchy after a successful run.

How You View Subscription or Contract Details for an Asset

Choose to display either the Subscriptions tab or the Contracts tab in the Edit Asset page, based on a new profile option within Oracle Subscription Management. The profile option is set to display subscriptions by default. The profile selection will also adjust the Asset 360 View page to display the correct card.

On the Subscriptions tab, you can view asset subscriptions details like subscription number, customer, start date, end date, and status.

On the Contracts tab, you can view asset contracts details like number, primary party, start date, end date, and status.

How You View Service Requests for an Asset

View details of the service requests created for your asset in Oracle Fusion Cloud ERP. You can view details like severity, reference number, account, and status of the service requests. You can also filter the service requests by status.

How You View Work Orders for an Asset

View details of the field-service work orders created for your asset in Oracle Fusion Cloud ERP. You can view details like reference number, type, contact information, date and time the work is scheduled, estimated arrival time, and status of the work order. You can also filter the work orders by status.

How You View Leads for an Asset

View details of the leads created for your asset in the Oracle Sales Cloud. You can view details like rank lead name, deal size, status, and age of the leads. You can also filter the leads by status.

How You View Opportunities for an Asset

View details of the opportunities created for your asset in the Oracle Sales Cloud. You can view details like win percentage, name, primary contact, amount, close date, sales stage, and status of the opportunities. You can also filter the opportunities by status.

How You Manage Notes for an Asset

Use the new Notes tab on the Edit Asset page to manage how you create, update, and delete simple text-based notes for your assets. You can also mark a note as private, allowing only the creator to view or edit the note details.

You can also manage notes using a new child resource of the asset using the Install Base Assets REST API. New notes are created by passing note text that's encoded in base64 format. When created, asset notes can be viewed, edited, or deleted using the REST API.

> **Note:** By default, only the Maintenance Manager is given access to create, update, and delete asset notes. The Maintenance Technician is granted read-only access to the notes. If the Technician needs access to create, update, and delete notes then they should be assigned the privilege Manage Asset Notes using a configured role. Additionally, notes can only be created and updated using the note type of General

How You View Asset History

View all transactions performed on an asset in Oracle Maintenance as well as all integrated applications. You can use the Asset History tab on the Edit Asset page to view all the transactions.

On the Asset History tab, you can use the filter panel to search transactions by a period, data range, source application, and so on. The search results table shows these details:

Attribute	Description
Reference	Unique identifier of the asset transaction. You can also view the details of the transaction using the reference hyperlink that navigates to the View Details page. However not all the transaction details are supported. Click the reference to navigate to the appropriate transaction details page. To access these details, a user must have the appropriate roles and privileges for viewing this reference. For example, to view a transaction for an RMA receipt, here's what you need: • **Name:** View Sales Order • **Code:** ZCS_VIEW_SALES_ORDE_PRIV • **Description:** Allows viewing of sales order

Attribute	Description
Date	Date on which the transaction took place.
Source	Source product where the transaction was initiated. The sources are: • Asset Tracking • Common Work Execution • Distributed Order Orchestration • Inventory Management • Maintenance Management • Receiving
Type	Type of the transaction. There are over a 100 transaction types.
Group	The group to which the transaction logically belongs. For a better search and viewing experience, each transaction is grouped and can be used as a filter to search. A single transaction can be a part of multiple groups based on asset attributes that get updated. The groups that the transactions are grouped into are: • Asset Changes: o Asset Attribute Changes: Includes transactions resulting from changes to any asset attribute other than location attributes. o Asset Location Changes: Includes transactions resulting from changes to the asset's location attributes. o Asset Relationships: Includes transactions resulting from changes to asset components. This includes asset hierarchy updates and parts change. • Inventory and Sales: o Inventory: Includes all transactions with the product code as INVENTORY. o Sales Order: Includes all transactions with the product code as OM. • Work Orders and Inspections: o Work Orders: Includes all Maintenance and Manufacturing work orders created for the asset. o Inspections: Includes all work orders with inspections recorded for them.
User	Name of the user who performed the transaction.
Details	Icon that opens the slide panel with transaction details. Drill down to the Details panel to see the changes on the asset due to a transaction. The Details panel shows the list of attributes that are updated by the transaction with the old and new values of those attributes. For example, if the asset was issued out of subinventory some attributes like Location Type, Location Organization, Location, Subinventory on the asset change. These attributes are listed in the Details panel with the values before and after the transaction.

How You Audit Asset History

You can't create and update the attributes for the Asset object with the common Audit History functionality. However, similar functionality is recorded by the Asset history table CSE_ASSETS_HIST. This table includes most of the standard

attributes, and additional (Application Composer) and extensible (Definable Flexfield) attributes. Attributes that are excluded from audit history are typically not expected to be updated over an Asset's lifetime or do not have to be audited.

Additionally, audit history of key Asset attributes are included in the Maintenance Management - Asset History Real Time subject area in OTBI. You can create an Analysis to view the old and new values of these key fields.

How You View Asset Work Order Cost

View maintenance work order costs for an asset directly on the Cost tab of the Edit Asset page.

You use the filters on the Asset Cost tab to view costs at an individual work order level or aggregated by period for the asset. The costs are then displayed for a selected maintenance organization and time period. The search results table shows these details:

Attribute	Description
Period	Period from which the cost is displayed.
Work Order	The work order corresponding to the displayed cost.
Asset	The work order asset corresponding to the displayed cost.
Material Cost	Total material cost for the corresponding work order asset for the period.
Labor Cost	Total labor cost for the corresponding work order asset for the period.
Equipment Cost	Total equipment cost for the corresponding work order asset for the period.

Asset Work Order Cost in Asset Information Management

On the Asset Details page of Asset Information Management page, use the Cost tab to view maintenance work order costs for the asset. In addition to the cost information described earlier, the results can show total cost, currency, inventory organization, cost organization, and cost book.

You can export the cost information displayed for the asset. Select a work order to view the associated maintenance work order details. Select the total cost to view additional maintenance cost details, including the maintenance expense analysis for material and resource costs and overheads.

Considerations for Transferring An Asset To Another Organization

You can update the operating organization of an enterprise or customer asset to transition it between organizations. This is helpful when an asset physically moves locations or is maintained by another maintenance-enabled

organization. If an asset is in an inventory location, then it can't be moved by updating the operating organization. First, move the inventory to the new location and then update the asset's operating organization.

> **Note:** You need to have inventory organization access to a location in order to transfer an asset. Additionally, if the organization is not maintenance-enabled, set up an organizational relationship to maintenance-enabled.

Here are some additional considerations for maintenance work orders when you transfer an asset to another organization:

- Open maintenance work orders don't move because they're organization specific. They remain open and you must execute them in their organization only or cancel them.
- You can't search for the complete work order history of an asset on the Manage Work Orders page because it's organization specific. Alternatively, review the Transactions tab on the Edit Asset page and leverage OTBI for access cross-organization work order history.
- Cost history is organization specific. Use the Costs tab on the Edit Asset page and leverage OTBI for access cross-organization work order cost history.
- Asset meters aren't organization specific, so no impact.
- Preventative maintenance programs traditionally don't move with an asset as they're organization specific. However, if a program is enabled for assets across organizations, then updating an asset's operating organization will be considered when the forecast is generated and recreated for future due dates. Therefore, if an asset is expected to transfer to another organization during its lifetime, then it should be forecasted in a program that supports assets across organizations. Else, the forecast in a program will stop when an asset transfers to another operating organization.
- Parent and child assets must be in the same organization, so both must move together.

How You Manage an Asset Logical Hierarchy

Logical hierarchies help you group assets that operate in the same or even across different inventory organizations. You can use your hierarchies to model a plant, production line, vehicle fleet, customer, or location. When created, you can easily search for, interact with, and manage your related assets.

Logical hierarchies can also be used to model asset routes. Asset routes allow you to centrally plan, execute and record maintenance for a collection of assets using a single work order. Asset routes are useful for repetitive or routine maintenance such as inspections or preventative maintenance, eliminating the overhead of creating multiple work orders for the same activity.

Logical Hierarchy Name

To start, create a new logical hierarchy by name using the existing Create Logical Hierarchy or the Redwood enabled Hierarchies page. The name will be the top-level node of the logical hierarchy under which assets and their levels will be defined. You can disable a logical hierarchy name, then you can't edit it any longer.

Field	Description
Name	Name of the logical hierarchy.

Field	Description
	Note: It's recommended that you give a unique name to each logical hierarchy for clarity and better ability to search.
Code	Unique code for the logical hierarchy.
Description	Optional description for a logical hierarchy.
Disabled	On the existing page, use the checkbox option to disable a hierarchy. If set to Yes, the hierarchy can't be edited to add or remove child assets; it won't be considered for an asset route as well.
Status	On the Redwood page, displays the hierarchy status of either Active or Disabled.
Asset Route	Optional field to enable a hierarchy as an asset route. • If set to Yes, the hierarchy can be used to model an asset route and is searchable in a work requirement. • If set to No, the hierarchy isn't an asset route and won't be available in a work requirement.
Route Asset	Required if a hierarchy is enabled as an asset route. Select a maintainable asset that represents an activity or a physical location such as a plant, building, floor, or a production line. This asset is forecasted by a preventative maintenance program and used to create maintenance work orders. **Note:** Define the selected asset in the hierarchy header only and not as a child asset in the logical hierarchy list of assets for the asset route.
Allow Skip	Optional checkbox that indicates if a supervisor can indicate or technician can report assets as being skipped and not requiring completion during reporting in a work order. • If set to Yes, assets can be reported as skipped, regardless of the reporting option below. • If set to No, assets can't be reported as skipped. You must follow the reporting option below.
Reporting	Required if a hierarchy is identified as an asset route. The reporting option indicates if each asset requires reporting to complete a work order: • Automatically (default): Reporting for each asset is optional. Assets in pending status are automatically reported as completed after work order completion. • Manually: Reporting for each asset is required. Assets in pending status must be set to completed or skipped. You can't complete a work order until all assets are reported.

Hierarchy Definition Using the Existing Page

Using the existing Hierarchy Navigator page, you can search and associate assets at different levels in the hierarchy.

You can only associate an asset to a hierarchy if:

- They aren't already associated under the same logical hierarchy name.

- They aren't at a child position in an existing asset physical hierarchy. Only the topmost parent of a physical hierarchy can be associated to a logical hierarchy position.
- They're in a physical hierarchy of assets, but they're the topmost asset parent.
- They aren't already defined in the hierarchy header as the work order asset route.

Logical hierarchies can contain a mix of enterprise and customer assets, depending on your user role and privilege.

You can move and rearrange logical assets within the hierarchy by updating their parent and child positions using the action buttons. If you associate an asset that's the topmost parent of a physical hierarchy, you can view the children in the Hierarchy Navigator as well. However, you can't edit these physical hierarchy relationships.

When defining an asset route, the collection of included assets must be added only at the first child level under the hierarchy's name. Else, they won't be included for reporting in the resulting work orders.

When an asset is associated to the hierarchy, you can click on the asset number hyperlink to navigate to the Edit Asset page. You can view and edit the asset details based on your user role and privileges.

You can also search for any asset in the hierarchy by its attributes, both logical and physical, using multiple search criteria. Search matches are identified to the user using a count of matching results, as well as displaying a push pin icon at the matching hierarchy level.

For each asset level in a hierarchy, there may be icons displayed to indicate if an asset has related maintenance work orders or a maintenance program. Click the icon to navigate to these respective objects in the context of the asset.

Use the new Create Order button on the navigator header to create a work order for the selected asset. Select an asset row in the hierarchy and click the button. This opens a Create Maintenance Work Order dialog box, where you can enter the details for the work order. The asset field is filled by default with the value of the selected asset row. After you enter other details for the work order in the dialog box, you have two options:

- Save and Close: Use this button on the Create Maintenance Work Order dialog box to return to the Hierarchy Navigator page. When you refresh this page, you'll see a new Review Work Order icon in the work order column for the context asset. Click the icon to go to the Manage Work Orders page that displays a list of orders in Unreleased and Released statuses
- Save and Edit: Use this button to go to the Edit Work Order page for the newly created work order. You can update your work order as you like, and even release it. Click the Save and Close button or the Cancel button to return to the Hierarchy Navigator page.

Hierarchy Definition Using the Redwood Page

Using the Redwood Hierarchies page, you can search and associate assets at different levels in the hierarchy. Click the expand icons to expose lower-level assets in the configuration. The page will display assets that are associated to the logical hierarchy using logical or component relationships:

- The top node in the hierarchy with a document icon is the logical hierarchy's name. Assets are associated to its first child level.
- An asset that has an icon with 3 stacked cubes is in a logical relationship with its parent asset, either the hierarchy's name or another child asset in the hierarchy. These assets can be added, deleted, and rearranged in a logical hierarchy.
- An asset an icon with a single cube represents a component relationship with is parent asset. These relationships can only be edited directly from the asset using the Asset Information Management search page.

For a newly created hierarchy name, initially you will only see the name with the document icon and not any child assets. Select the hierarchy's name link to add child assets, rendering a new browser tab. The new tab will allow editing at the first child level under the hierarchy's name. Here are the actions available:

- Select the plus icon to add a new child asset, rendering a selection drawer. Search for an asset and click the submit action. The hierarchy level will refresh and display the asset.
- Select the delete trashcan icon to delete an existing asset. The hierarchy level will refresh, and asset will no longer be displayed.
- Select the Up-arrow icon to move the asset up one position in the display.
- Select the Down-arrow icon to move the asset up one position in the display.

You can only add an asset to a logical hierarchy if:

- They aren't already associated under the same logical hierarchy.
- The hierarchy is enabled as an asset route and the asset is not defined in the hierarchy header as the route asset.
- The asset is in a physical hierarchy of assets, and it is the topmost asset. Children in a physical relationship can't be directly associated to a logical hierarchy.
- Additionally, logical hierarchies can contain a mix of enterprise and customer assets, depending on your user role and privilege.

When done editing a hierarchy level, close the browser tab and return the tab with the logical hierarchy. Click the refresh icon to see the latest version of the hierarchy. To edit lower levels, click an existing asset to render the selected lever in a new browser tab for editing.

The Redwood page doesn't provide a navigation to an assets details, nor any reference to a child asset's preventive maintenance program or open work orders.

Managing Hierarchies Using Rest API

You can also create logical hierarchy names using the new Asset Logical Hierarchies REST API. When created, assets can be associated or removed from a hierarchy using a new Asset Logical Hierarchy Relationships REST API. This is helpful in creating logical hierarchies for large numbers of assets at different levels.

You can create logical hierarchy relationships by passing object and subject identifiers or by passing object and subject asset numbers. You can create relationships for an asset directly under the hierarchy name node and then create asset to asset relationships as needed. Additional documentation is found in the REST API documentation.

Update Hierarchy on the Oracle Visual Builder Studio Spreadsheet Using REST API

Using the Oracle Visual Builder Studio spreadsheet, you can add a new hierarchy name, associate an existing asset to a hierarchy name, and add a child asset to an existing parent asset's root node in a logical hierarchy name. You can also add an existing asset to a hierarchy name or update the position of an asset within a hierarchy through the Asset Logical Hierarchy Relationships REST resource. This REST resource communicates with Oracle Visual Builder Studio to show asset logical hierarchy data in the Oracle Visual Builder spreadsheet.

These are the attributes you can update on the Oracle Visual Builder spreadsheet:

- Object Type
- Object Id

    - This value can be derived from the Object Hierarchy Code and the Object Asset Number
- Object Hierarchy Code
- Object Asset Number
- Position Number

Here are some examples of updates you can make. Assume you have 6 assets from A to F. Asset B and C are child assets of Asset A and Asset E and F are child assets of Asset D. Let's see the cases of switching positions among these assets and also rearranging their hierarchies:

1. Switch the position of Asset A to the position of Asset E by updating the Asset Number

Hierarchy Name: Building 200

Asset Number	Position Number
• Asset A o Asset B o Asset C	• No position o 1.0 o 2.0
• Asset D o Asset E o Asset F	• 3.0 o No position o No position

2. Change Asset E's position to have this layout

Hierarchy Name: Building 200

Asset Number	Position Number
• Asset E o Asset F	• No position o No position
• Asset A o Asset B o Asset C o Asset D	• No position o 1.0 o 2.0 o 3.0

3. Change the positions of Assets B, C, and D by updating the corresponding position number

In this scenario, Asset C's position is changed to 1.0, Asset D's position is changed to 2.0, and Asset B's position is changed to 3.0.

Hierarchy Name: Building 200

Building 200	Position Number
• Asset E o Asset F	• No position o No position
• Asset A o Asset C o Asset D o Asset B	• No position o 1.0 o 2.0 o 3.0

4. Make Asset A a child of Asset F, rather than a child of Building 200, by updating Asset A's object hierarchy code

Hierarchy Name: Building 200

Building 200	Position Number
• Asset E o Asset F - Asset A o Asset C o Asset D o Asset B	• No position o No position - No position o 1.0 o 2.0 o 3.0

How You Manage Asset Flexfields

Your Installed Base Asset object is enabled for flexfields, so you can manage additional details of an asset. Flexfields are defined during the implementation of Oracle Maintenance, but can be further defined and deployed once assets are created.

For an asset, these are the numbers of additional attribute fields available:

- Character: 30
- Number: 10
- Date: 5
- Date and Time: 5

You can manage the flexfields in the Additional Information show/hide region of the Overview tab in the Edit Asset page. You can view and edit the field values, including conditional fields guided by a context segment. You can also define, view and update the flexfields using the Installed Base Asset REST API and File-Based Data Import.

For additional details about flexfields, refer to the Configuring and Extending Applications guide of Oracle Applications Cloud.

Note:

- If you need additional fields, use Application Composer to extend the Asset: Overview tab. For more details, refer to the details can be found in the Implementing Manufacturing and Supply Chain Materials Management guide or in the Configuring Applications Using Application Composer guide.
- When you define flexfields, you can enable them for Business Intelligence. When creating a flexfield segment, select the BI Enabled check box under the Business Intelligence section. When a flexfield is deployed, run the Import Oracle Fusion Data Extensions for Transactional Business Intelligence scheduled process while selecting the CRM parameter check box. This will import the flexfields into Oracle Transactional Business Intelligence (OTBI).

How You Import and Export Assets

Oracle Maintenance enables you to create and update assets in bulk using a File-Based Data Import and Export process.

How You Import Assets

The Installed Base Assets Import is used to:

- Create and update an asset record and its core attributes. This includes values of asset definable flexfields.
- Create, update, and delete the asset parts list.
- Create, update, and delete asset charges.
- Create, update, and delete asset associations to a group.

Note: Assets can’t be created with a location type of Inventory. These assets can only be created using Purchasing and Inventory Management processes with use integration and orchestration flows for the creation of assets. Examples are purchase order receipt and miscellaneous receipt.

Note: For more details, refer to the File-Based Data Import for Oracle Supply Chain Management Cloud guide and Scheduled Processes for SCM guides.

Purge Batch Data from Maintenance Import Interfaces

The upload or import of data may result in a warning or error status sue to issues with the data. When this occurs, the data can't be further processed from the interface tables. In such a case, the Asset Administrator can run the Purge Maintenance Records from Interface process to delete the asset data from the interface tables from all or just a specific import process. The scheduled process can be run on demand or setup on a schedule as required by your business processes.

How You Export Assets for Mass Editing

On the Manage Assets page or the Asset Information Management page, you can search for a range of assets and export them for mass edits. Then, using the standard upload process, you can import the edited records using the latest spreadsheet.

Exporting Assets from the Manage Assets page

In the Manage Assets page, search for a range of assets for mass editing, then click the Export Assets icon at the search header, to open the Asset Export Parameters dialog box with these options:

- Include asset charges: the exported file will include asset charge details.
- Include child assets: the exported file will include child assets for the parent assets returned in the results.
- Include part list components: the exported file will include parts list details for each asset.

Click **OK** to generate the Export Assets scheduled process job with a reference number. When the job is successfully completed, an output file in Excel format is created to closely match an asset's File-Based Data Import format. You can click the file name, called Default Document, to download the output file to your desktop for further editing.

Exporting Assets and Asset Meters from the Asset Information Management page

In the Asset Information Management Page, search for assets you want to mass edit then click on the Export icon above the results table to open a drawer from which you can select Export options.

If you export assets, you will also be able to export the following:

- Asset charges: The exported assets file will include asset charge details.
- Child assets: The exported assets file will include child assets for the parent assets returned in the results.
- Part list components: The exported assets file will include parts list details for each asset.

If you export asset meters, you will also be able to export the following:

- Child assets: The exported asset meters file will include the meters for the child assets of the assets in your search results.

You can export both assets and asset meters at the same time.

Click the Export button in the drawer to generate the Export Assets and Assets Meters scheduled process job. You will see a toast notification with the process number. Depending on which export options you selected, the Export Assets and Assets Meters process schedules one or two of the following child processes:

- Export Assets
- Export Asset Meters

You can find these child processes by using the hierarchy view in the Scheduled Processes page. When the child jobs are successfully completed, an output file in Excel format is created to closely match an asset's File-Based Data Import format for each child process. You can click the file name, called Default Document, to download the output file to your desktop for further editing.

Mass Editing Exported Assets

After exporting assets and downloading the file from the scheduled process, you must then copy and paste this data into the latest asset import spreadsheet for your release. In this file, you define the import batch details, update key fields such as the action required for the asset, as well as editing key data attributes as part of the mass edit.

After editing is complete, you can follow the normal import process to make the updates to the asset records.

Note: You can't edit the exported spreadsheet and upload it. You must copy and paste the details into the latest upload spreadsheet.

How You Manage Assets Using REST API

Create or update your assets using REST API or File-Based Data Import. This is very useful during implementation or the introduction of large volumes of new assets. Additionally, you can also make mass edits to existing assets.

Use the Installed Base Assets REST API to:

- Create, get, and update an asset record and its core attributes.
- Create, get, update, and delete the asset parts list.
- Create, get, update, and delete asset charges. The asset charge provides pricing details that are used for a flow such as billing or contract renewal.
- Create, get, and delete asset relationships. These are the parent and child relationships to other assets that are rendered in the asset hierarchy.
- Create, get, update, and delete asset notes. These are user-defined notes.
- Get asset meters details for meters that have been instantiated for the asset.
- Create, get, update, and delete asset definable flexfields values. These are user-defined flexfields for an asset.
- Create, get, update, and delete asset user-defined field values. These are fields configured using Application Composer for the Installed Base Asset object.

Use the Asset Group Rules and Asset Groups REST API to:

- Create, get, and update group rules, including grouping attributes and usages.
- Create, get, and update an asset group, including grouping attributes.
- Create, get, and update asset associations to a group.
- Create, get, update, and delete asset group user-defined field values. These are configured fields using Application Composer for the Asset Group object.

Use the Meter Template REST API to:

- Create, get, and update meter Template definitions.
- Create, get, and update meter applicability by item and master organization.

Use the Meter Reading REST API to create and get meter readings for an asset meter.

For more details, refer to the REST API for Oracle Supply Chain Management Cloud guide.

How You Connect Your Installed Base Assets to Fixed Assets

Integrate installed base assets and fixed assets. Sometimes, the maintenance cost incurred on the installed base asset increases the asset value and needs to be appropriately updated in the asset book. To initiate the cost transfer from maintenance to financial application, the fixed asset context is needed for adding the value. Hence, it's imperative to have an association between the installed base asset and fixed assets.

Define a relationship between an installed base asset and one or more fixed assets. Each relationship has a valid date range. If a relationship is end dated, the same fixed asset can be added again without overlapping dates with the previous associations.

You can also use a REST service to establish and maintain the relationship between an installed base asset and the corresponding fixed asset.

Sync Location Changes Between Fixed and Installed Base Assets

Synchronize location changes between installed base and fixed assets so you have up-to-date and accurate operational and financial information about your assets.

You can sync the location of an installed base asset with the associated fixed asset only if the installed base asset is serial-controlled and the fixed asset unit quantity is one.

To allow data sync between the installed base and fixed assets, enable the opt in feature, Synchronize Change Between Installed Base and Fixed Asset for Asset Termination.

How You Sync the Changes

1. Open an installed base asset you want to change the location for. Ensure that it has only one fixed asset.
2. Update the location of the installed base asset. For now, sync is supported for only these:
    - Location Type = Internal Address
    - Location Type = Inventory
    - Transfer Orders
    - Subinventory Transfers
3. Go to the Fixed Assets tab, open a fixed asset, and ensure that the **Eligible to Sync** checkbox is selected. The status of the fixed asset shows Pending.
4. Run the Synchronize Location program from the installed base asset. This starts the **Connect and Synchronize Fixed Assets to Operational Assets** scheduled process.

    After the process completes successfully, the location changes are synced to the corresponding fixed asset.

How You Capitalize Fixed Assets Upon Purchase Receipt to Expense Destination

Create an installed base asset and capitalize it as a fixed asset for nonproject purchases with a receipt destination type of expense. A relationship between the installed base asset and the associated fixed asset is automatically established without any manual intervention. This functionality allows you to capitalize your asset as soon as it's received.

To accomplish this, perform the following steps:

> **Note:** To enable this feature, create the purchase order after the cutoff date. The cutoff date is set after at the feature opt in date task execution.

1. Create a purchase order in Oracle Fusion Cloud Procurement.
    - Select the required parameters that includes business unit, supplier, and supplier site.
2. When adding purchase order line items, ensure you provide the following parameters:
    - Set the destination type to Expense
    - Select the Accrue At Receipt item set up.
    - Enter PO account a other mandatory attributes to create a purchased order:
        - Item Price if this is not derived from item definition
        - Quantity
        - Request Delivery Date
        - Location
        - PO Charge Account
        - User defined Fiscal – Classification (Optional)
            - Invoice Tolerance Percent (Option and if User defined Fiscal – Classification is selected)
3. Submit the purchase order for approval and make sure your purchase order is set to the Open status.

   After successful procurement of the item, process receipt of the item into the inventory organization defined in the purchase order.
4. Provide the required values as per the item's definition, including serial number, lot number, item quantities, and so on.
5. If you've been assigned a job role your enterprise uses for Costing role, you can run the following scheduled jobs to process costing balances and distributions for the purchase order:
    - Transfer Transactions from Receiving to Costing
    - Create Receipt Accounting Distributions
    - Run the Create Accounting process for your receipt, and post it to the General Ledger
    - Transfer Receipts to Mass Additions
6. Ensure a fixed asset role is assigned to your user by navigating to **Fixed Asset**, **Asset** user interface.
7. Prepare the newly created source lines for your receipt in the Fixed Asset Corporate Book.

8. Edit your source line user interface:
    - Queue: Post
    - Category: Select one

      > **Note:** Specify the Asset Category on your Item Definition; Oracle will default the Asset Category in your mass addition line within Fixed Assets. If the asset category is not set up on the item master, Oracle will try to match the natural account segment of your PO Charge account with the Asset Clearing account on your asset category definition. If a match is found, Oracle will default this asset category on the mass addition lines.

    - In Service Date : Enter one within Open Period Month.
    - Depreciation Expense Account : Select One
    - Location : Select One.

      > **Note:** You can default the location for your mass addition lines transferred from receiving, if you configure your mapping between your fixed assets location and your ship-to location.

    - Run the Post Mass Additions scheduled job to create a fixed asset for your received item.
9. Ensure an installed base user role is assigned to your user and run the Connect Fixed Asset to Operational Asset scheduled job to complete the first step of the fixed asset and installed base asset integration.
10. Create an installed base asset and a fixed asset using this feature.
    - In service date for your fixed asset, it will be the goods receipt date on the receipt.
    - Oracle Fusion Cloud defaults the asset type as Capitalized, if it's greater than the capitalization threshold that you have specified for your asset book.
    - When the line is posted and a new asset is created, Oracle Fusion Cloud further adds costs to this asset as an adjustment using the Add to Asset feature of Fixed Assets.
    - On the Fixed Asset tab of the Edit Asset user interface, you can see the fixed asset associated with your installed base asset.
11. Create an invoice for the received item by providing information in the Create Invoice user interface. You can update your item's amount, and any additional information such as, Freight and Miscellaneous.
12. Run the following scheduled jobs to process the updates to the fixed asset and costing distribution:
    - Transfer Costs to Cost Management
    - Create Receipt Accounting Distributions
    - Create Accounting
    - Transfer Receipts to Mass Additions
13. With the fixed asset role assign to your user, run the Post Mass Additions scheduled job to create a fixed asset for your received item.
14. The following additional charges can appear as an Expense Adjustment transaction type on your accounting distribution:
    - You can transfer any costs such as the purchase order cost for your items and your estimated taxes at receipt and transfer them to Fixed Assets for capitalization.
    - After you enter and account for the invoice for this receipt, you can transfer any adjustments to the asset. These include freight charges, miscellaneous charges and taxes that are prorated to the item distribution from which the asset was created earlier. Any unallocated and nonprorated charges wouldn't be transferred to fixed assets via Receiving.
    - Only nonrecoverable portion of the taxes gets transferred to fixed assets as capitalized cost.
    - You can't transfer payment discounts to fixed assets for such invoices. You must apply such discounts manually to your fixed assets.

- You can also transfer any invoice price variance for your item and tax lines to fixed assets, when you account for your invoice in Accounts Payables. The invoice price variance is the quantity invoiced multiplied by the difference between the invoice unit price and the purchase order unit price.

Automatically Generate Assets When Capital Costs are Created in Oracle Procurement

This process automatically generates assets when capital costs are created in procurement to an expense or inventory destination. It eliminates the manual effort and processing of data to define and assign project assets.

Automatic creation and assignment of project assets happens when:

- Item costs for receipts to an inventory or expense are accrued at receipt or destination.
- Supplier invoice costs matched to purchase orders having a destination type of expense and not accrued at receipt.
- Supplier invoice costs not matched to purchase orders.

Use the new capitalization option for project types to enable automatic creation of project assets for capital projects. Maintain project assets automatically by having receipt returns, receipt corrections, invoice cancellations, or invoice quantity corrections for the related project asset automatically updated for the project asset units.

Additionally, create a maintenance asset for project purchases that have an inventory or expense, accrued at receipt or destination and automatically establish a relationship between the maintenance asset, project asset, and corresponding fixed asset without any manual intervention. The application creates a single maintenance asset, project asset, and fixed asset for non-serialized items, whereas a unique project asset is created for each serial number associated with the receipt of a serial controlled item. The maintenance assets are created in Oracle Fusion Cloud Maintenance, project assets in Oracle Fusion Cloud Project Management, and the fixed assets in Oracle Fusion Cloud Fixed Assets.

For detailed steps on each business process, see these:

- How You Capitalize Fixed Assets Upon Purchase Receipt to Expense Destination in this guide
- How You Capitalize Fixed Assets Upon Purchase Receipt to Inventory Destination in this guide
- 25C What's New on Capital Project Automatic Asset Generation for Expense and Inventory Destination Costs

Oracle Fusion Asset Tracking

- Use the new opt in under the Manufacturing and Supply Chain Materials Management offering in Functional Setup Manager, to enable this feature to create project assets for project related item receipts.
  - Go to **Setup and Maintenance** > **Manufacturing and Supply Chain Materials Management** > **Change Feature opt in** > **Maintenance Management** .
  - Click Edit Feature and go to **Create Provisional Assets in Projects at Point of Material Receipts**.
  - Click the **Opt-in task** button to submit the process, **Capture Cutoff Date** to create provisional assets in Projects.
- Only receipts for capital project related purchase orders created on or after the date that this opt-in is enabled, qualifies for this feature.
- The **Create Project Asset Automatically** checkbox controls the auto creation of project asset. Create a new project based on the project type with this checkbox enabled to propagate changes to projects.

This feature offers:

- Automatic creation, assignment, and update of project assets for capital project related item receipts that have an inventory or expense, accrued at receipt, destination, and supplier invoice costs, with no user intervention.
- Automatic relationship between maintenance assets, project assets and the fixed assets without any manual intervention for capital project related item receipts.
- Complete visibility into the project asset lifecycle, including costs, sourcing, maintenance, and capitalization.

How You Capitalize Fixed Assets Upon Purchase Receipt to Inventory Destination

Earlier, you could manually establish a relationship between a fixed asset and an installed base asset. In addition, you could systematically create an installed base asset and capitalize it as a fixed asset for nonproject purchases with a receipt destination type of expense, and automatically establish a relationship between the installed base asset and the associated fixed asset without any manual intervention.

You can now systematically create an installed base asset and capitalize it as a fixed asset for nonproject purchases with a receipt destination type of inventory. This automatically establishes a relationship between the installed base asset and the associated fixed asset without any manual intervention. This functionality lets you to capitalize your asset as soon as it's received in your inventory.

This functionality supports multiple business units and multiple currencies. For example, you can create a purchase order in a Canadian business unit and Canadian currency. The corresponding cost distribution amount and fixed asset cost can be in both Canadian currency and United States currency.

To accomplish this, perform the following steps:

1. Create a purchase order in Oracle Fusion Cloud Procurement.
    - Select the required parameters that includes business unit, supplier, and supplier site.
2. When adding purchase order line items, ensure you provide the following parameters:
    - Set the destination type to Inventory
    - Select the Accrue At Receipt item set up.
    - Select your subinventory
3. Submit the purchase order for approval.
4. After successful procurement of the item, process receipt of the item into the inventory organization defined in the purchase order.
    - - Transfer Transactions from Receiving to Costing
        - Transfer Transactions from Inventory to Costing
        - Transfer Costs to Cost Management
        - Create Receipt Accounting Distributions
        - Create Cost Accounting Distributions
        - Create Accounting
5. Review Cost Accounting Distributions and verify that your transactions are fully costed and accounted.
6. Ensure an installed base asset role is assigned to your user, and run this scheduled process:
    - Transfer Receipts to Mass Additions
7. Ensure a fixed asset role is assigned to your user.

- Check the Mass Additions data and enter the following:
  - In-service date
  - Location
  - Amount
- Run the Post Mass Additions scheduled process to create a fixed asset for your received item.
- When the line is posted and a new asset is created, Oracle Fusion Cloud further adds costs to this asset as an adjustment using the Add to Asset feature of Fixed Assets.

8. Ensure an installed base user role is assigned to your user and run the Connect Fixed Asset to Operational Asset scheduled process. On the Fixed Asset tab of the Edit Asset user interface, you can see the fixed asset associated with your installed base asset.
9. Create an invoice for the received item by providing information in the Create Invoice user interface.
   - Add the required information, such as Number, Amount, Type, and Invoice Group.
   - Search for your purchase order and select the purchase order number.
   - You can update your item's amount, and any additional information such as Freight and Miscellaneous. If applicable, these can be prorated across the Purchased Item quantities.
   - Calculate tax, validate your invoice, and post the invoice to ledger tasks.
10. After invoicing, ensure the costing role is assigned to your user.
11. Run the following scheduled processes:
    - Transfer Transactions from Receiving to Costing
    - Transfer Transactions from Inventory to Costing
    - Transfer Costs to Cost Management
    - Create Receipt Accounting Distributions
    - Create Cost Accounting Distributions
    - Create Accounting
12. Review the cost accounting distributions. Verify that your transactions are fully costed and accounted.
13. With the installed base asset role assigned to your user, run the Transfer Receipts to Mass Addition scheduled process.
14. With the fixed asset role assign to your user:
    - Check the Mass Additions data and enter the following:
      - In-service date
      - Location
      - Amount
    - Run the Post Mass Additions scheduled process and verify that the fixed asset is created.
    - Review the cost accounting distributions and ensure your transactions are fully costed and accounted.
      - These additional charges can appear as an Expense Adjustment transaction type on your accounting distribution.
      - You can transfer any costs such as the purchase order cost for your items and your estimated taxes at inventory and transfer them to fixed assets for capitalization.
      - After you enter and account for the invoice for this receipt, you can transfer any adjustments to the asset.
      - Only the nonrecoverable portion of taxes gets transferred to fixed assets as capitalized cost.
      - You can't transfer payment discounts to fixed assets for such invoices. You must apply such discounts manually to your fixed assets.
      - When accounting for your invoice in accounts payable, you can also transfer any invoice price variance for your item and tax lines to fixed assets.

- The invoice price variance is the quantity invoiced multiplied by the difference between the invoice unit price and the purchase order unit price.

How You Synchronize Changes Between Installed Base and Fixed Assets After Asset Terminations

The fixed asset and installed base asset can be terminated from either installed base or fixed asset sides. Remember, you can terminate only serial-controlled installed base assets and those fixed assets with quantity one.

Termination and retirement synchronization between the installed base and fixed assets can be done in any of these two ways:

- End date an installed base asset and then retire the associated fixed asset.
- Retire a fixed asset, which automatically ends the installed base asset associated to it.

End Date an Installed Base Asset

1. Login as an installed base user and open the asset you want to end date.
2. Go to the Fixed Assets tab, open a fixed asset, and ensure that the **Eligible to Sync** checkbox is selected.
3. Next, go to the Edit Installed Base Asset tab, and enter an end date for the installed base asset.
4. In the Fixed Assets tab, check the status of the fixed asset. It shows, Pending.
5. Go to **Tools** > **Scheduled Processes** and run the **Connect and Synchronize Fixed Assets to Operational Assets** scheduled process.
6. Next, log in as a fixed asset user and do this:
    a. Go to Fixed Assets, Retirements panel, and click the **Incomplete** link. Click the asset number link of the fixed asset you want to retire, check the asset details, and click **Done**.
    b. Click the **Unit Retirement** link.
    c. On the Retire Units page, under Transaction Details, enter a retire date, additional information, and reason.
    d. Under Retirement Details on the same page, enter a reason for retirement and additional information.
    e. Click **Save and Close**.

Retire a Fixed Asset

1. Login as a fixed asset user and navigate to the **Asset Retirement** Task from the panel drawer.
2. Search and select a fixed asset you want to retire.
3. Select Unit Retirement or Cost Retirement according to your preference.
4. Enter the required details to retire the fixed asset.
5. Select the check box to terminate the installed base asset associated to this asset and save your changes.

How Customer Data Is Updated During Party Merge

The party merge process is used to resolve duplicate account and customer information in the Oracle Engagement Cloud and Oracle Financials Cloud. This includes sales and B2B accounts or contacts, as well as receivables customers,

customer accounts, and customer account sites. The process results in a surviving party based on rules that are defined in these products.

Customer assets are identified during the party merge process if the assets contain customer information for the duplicate party. Based on the type of party merge, the customer information is updated on the asset to the surviving party.

If there is a conflict between business units across the parties being merged, then the customer information isn't updated on the asset and the party merge isn't completed. Then, you must manually update the customer information on all the related assets and reprocess the party merge.

How You Configure and Extend Assets Using Application Composer

Use Application Composer to extend and configure the install base asset object by creating fields, objects, and relationships between objects. Here are some changes you can make using this tool:

- Modify the Install Base asset object by adding new user-defined fields or create entirely new objects.

  New objects can be either standalone and not related to the asset object, or standalone but related to the asset object, or directly associated as a child object of an asset.
- Create foreign key-based relationships between two objects.
- Modify user interface pages by exposing your newly created user-defined fields for an object, or create an entirely new work area for your configured objects.
- Display object relationships on pages in the form of subtabs. You can display the child objects for an asset using subtabs on the Edit Asset Details page
- Write application logic, such as triggers and validation rules, for an object or for use across multiple objects.
- Implement functional and data-level security for configured objects.
- Enable configured objects for reporting by creating configured subject areas.
- Write Groovy scripts using the expression builder, which appears in many places as you modify existing objects or create new configured ones.

> **Note:** By default, a configured object and its records are visible and editable only to users who are provisioned with the Custom Objects Administration (ORA_CRM_EXTN_ROLE) role. This role should be given to any user who's using Application Composer. Additionally, the UI pages you create for configured objects aren't visible to additional users unless you provide access in Application Composer using the object's Security node. Use the Security node to specify not only which job roles can access the UIs, but the levels of access. Provision data security for configured object records and restrict users who have privileges to view, update, or delete records. You can give access to all users or only to members of access groups, to owners of records or to an owner and his management hierarchy, and to user-defined roles.

Before You Start

To use Application Composer, you should have the Application Implementation Consultant role.

Next, create a Sandbox in which to create, edit, preview, and deploy your changes to the install base asset object. Here are the steps:

1. Navigate to Configuration > Sandboxes
2. Click Create Sandbox
3. On the Create Sandbox page, enter a name and description
4. Select Application Composer as the tool using the check box. You can also select flexfields if you also want to setup and verify adding flexfields to the Asset Overview Tab in the context of a sandbox
5. Click Create and Enter. You will now be in the context of the sandbox for this environment

Create, Edit, and Preview Your Changes

When you create a sandbox, you can then navigate to the Application Composer page. Here are the steps:

1. Navigate to Configuration > Application Composer
2. Select the Application > ERP and SCM Cloud.
3. Under Objects, expand the Standard Objects region.
4. Under Standard Objects, expand the Installed Base Asset object
5. You can now:
    - Manage child or related objects
    - Define your own fields or manage standard fields
    - Edit certain pages
    - Manage actions and links
    - Manage server scripts

Here are the pages that can be extended:

Page	Description	Extensibility
Landing Page Layouts	This page is Service Assets and is included in the Service work area only. The page is used to search customer assets and includes a filter region and a table of results. This isn't the Manage Assets page that's you access from the Maintenance Management landing page. Application Composer doesn't support the Manage Assets page.	You can control the fields that are displayed as columns in the result table. This includes deciding which columns are displayed by default and those which can be manually added to the table layout. Additionally, you can create your own fields to add to the results region, as well as to the search filter as additional criteria.
Creation Page Layouts	This page is used to create new assets and is exposed both in the Service and Maintenance Management work areas.	You can control the fields that are displayed in the create page. This includes deciding which attributes are displayed by default and the optional attributes which can be hidden. Additionally, you can create your own fields to include in the create page.
Details Page Layouts	This page is used to manage asset details and is exposed both in the Service and Maintenance Management work areas for a contextual asset.	You can control the fields that are displayed in the Overview tab. This includes deciding which attributes are displayed by default and the optional attributes which can be hidden.

Page	Description	Extensibility
		Additionally, you can create your own fields to include in the Overview tab.

To extend a page, first create a duplicate copy of the page and then you can edit it. When all the changes are made, you can preview the changes using the same sandbox.

Using User-Defined Fields and Objects

You can choose to create user-defined objects using Application Composer.

Here are the types of user-defined objects:

Type	Description
User-defined Fields	Create user-defined fields for the Install Base Asset object: • You can then add these fields on the overview tab of the Edit Asset Details page • This is an alternative to using Definable Flexfields (DFFs) and is the main use for Apps Composer to extend the IB Asset • These fields are assigned to the Extended Attribute fields in the CSE_ASSETS_B table o The fields are automatically provisioned in the Installed Base Asset REST API o These fields aren't currently exposed in the IB Asset subject area in OTBI o However, you can create a user-defined data model and SQL to access these fields for reporting and analysis purposes
User-defined Object – not related	Create a user-defined object if you want to track data about an object that's not already delivered with your cloud service. • We recommend a user-defined object if you want a stand-alone object that doesn't have a relationship with another object • After you create the object, you then add user-defined fields and design user interface pages where your users can enter object records. When defined, you can view these pages from the Home screen. • At some point in the future, you can choose to create a relationship to another object. However, this could then result in mixed data of related and non-related data. • There's no fixed limit on the number of user-defined objects that you can create.
User-defined Object – related	A user-defined object can have a relationship defined to another object, such as a standard object like the Installed Base Asset: • For example, after a relationship is created with the Installed Base Asset, you can expose the user-defined object through Application Composer by adding a new tab to the Asset's details page. • When added, the user-defined object stores a foreign key between the two related objects. o After you define a relationship, you can create new records in the context of an Asset. Therefore, each row is stamped with the Asset_ID reference. o However, you can also create new records in the context of other objects or even without any context This may be the preferred method in you want to primarily create new records in the context of a single parent object:

	• You can leverage a groovy script to automatically store a foreign key to the Installed Base Asset object in a field in your user-defined object. You can then create a user-defined subject area (CSA) which can be used for reporting. This is covered later in this document. • Keep in mind that you may want to remove access on the Home screen to the landing page for the object, or a user could create a stand-alone new record without a reference to the Installed Base Asset.
Child Object – related	Child objects are created in the context of a parent object. The parent can be a user-defined object or a standard object, such as the Install Base Asset object. • This is performed by creating the child directly under the Installed Base Asset in the Standard Objects region of Application Composer • Child objects neither include an object overview page, nor are they accessible from the home page. You can create a child object and then expose it on a new tab in the Edit Asset Details page. • Since a child object is embedded on the user interface pages of its parent object, the relationship between the two is always in context This may be the preferred method in you only want to always create new records in the context of a single parent object. • However, you can't create a user-defined subject area (CSA) which can be used for reporting. Therefore, it may be a better practice to create a stand-alone user-defined object, then relate it to the Installed Base Asset object as future enhancements could be leveraged for reporting using a CSA, which is supported for a user-defined object that's not a child object. • At this time, you must follow a SQL-based approach in order to relate this data to the Asset for reporting purposes, as covered later in this document.

Save Your Work and Publish the Sandbox

When you're done making your changes, you must publish the sandbox by clicking the sandbox name and selecting Publish. This deploys your changes to the environment and your users can start to use the extended and configured pages.

For more information, refer to the Configuring Applications Using Application Composer and the Groovy Scripting Reference guides.

Related Topics

- Oracle Applications Cloud Configuring Applications Using Application Composer
- Oracle Applications Cloud Groovy Scripting Reference

Component Returns During Material Transactions

You can return asset-tracked components, full-lot components, full plain asset-tracked components, non-serialized – non-asset tracked items, and predefined serial components from the hierarchy.

Here are the details:

Return asset tracked components from the hierarchy with material demand: You can complete a single return transaction with the same material demand without having to issue the material first.

You can return materials from these two user interfaces:

- The Material Transaction Page from the Review Maintenance Dispatch List task
- The Issue and Return Materials From Inventory page

Return a full lot component from the hierarchy: You can return a full lot component from the hierarchy report during the material transaction. This allows sync between the quantity in the Manage Asset page with that of the Inventory On-Hand quantity.

Return full plain asset-tracked component from the hierarchy: Plain items refer to those that are neither serial nor lot-controlled. Use the **Replace** check box at the row level to indicate that the plain item quantity installed on the hierarchy needs to be replaced during the return transaction. If this check box isn't selected, it indicates that the full quantity of plain components continue to remain in the hierarchy.

Return non-serialized, non-asset tracked items from the hierarchy with a quantity higher than one: You can return more than one never-issued, non-asset-tracked components that happen to be lot-controlled and plain items. Use the **To Transact** drop down or directly enter the quantity you want to return.

Return predefined serial components: You can return predefined serial components to inventory from the Manage Material Transaction page. The application shows those serial numbers as set to the **Defined and Not in Use** status in inventory.

How Transaction Types Affect Edit Operation Items and Material Transaction History

After work orders are executed, you see material transaction updates on the Edit Operation Items page. The values in the fields change based on material demand and transactions that're handled in the back end.

Let's see what changes and what doesn't change on the page, when you update material demand and transactions:

- Your changes to miscellaneous receipt and miscellaneous issue transaction types from the back end won't affect material demand. Therefore, status of material demand doesn't change on the Edit Operation Items page.
- The **Include in planning** check box value depends on the material demand. If the work order operation doesn't have a material demand, the **Include in planning** check box is set as unselected.
- Inventory-on-hand adjustments depend on back-and-forth material transactions.

Here's a table that shows how issue and return of serial only and serial items affect the attributes on the Material Transaction History page:

#	Use Case	Material Requirement	Material Quantity	First Transaction (UI)	First Transaction Saved on Transaction History	Material Quantity After Issue	Second Transaction (UI)	Second Transaction Saved in Transaction History	Material Quantity After Return
1	**Issue** first and then **Return** Same	Yes	Required Quantity: 1 Reserved Quantity: 0	Issue	Material Issue	Required Quantity: 1 Reserved Quantity: 0	Return	Material Return	Required Quantity: 1 Reserved Quantity: 0

#	Use Case	Material Requirement	Material Quantity	First Transaction (UI)	First Transaction Saved on Transaction History	Material Quantity After Issue	Second Transaction (UI)	Second Transaction Saved in Transaction History	Material Quantity After Return
	Serial Number		Allocated Quantity : 0 Picked Quantity: 0 Issue Quantity: 0 Open Quantity: **1** Org on Hand Balance: **10** Including in Planning: **Checked**			Allocated Quantity : 0 Picked Quantity: 0 Issue Quantity: **1** Open Quantity: **0** Org on Hand Balance: **9** Including in Planning: **Checked**			Allocated Quantity : 0 Picked Quantity: 0 Issue Quantity: **0** Open Quantity: **1** Org on Hand Balance: **10** Including in Planning: **Checked**
2	**Return** first and then **Issue** Same Serial Number	Yes	Required Quantity: **1** Reserved Quantity: 0 Allocated Quantity : 0 Picked Quantity: 0 Issue Quantity: 0 Open Quantity: **1** Org on Hand Balance: 10 Including in Planning: Checked	Return	Miscellaneous Receipt	Required Quantity: **1** Reserved Quantity: 0 Allocated Quantity : 0 Picked Quantity: 0 Issue Quantity: 0 Open Quantity: **1** Org on Hand Balance: **11** Including in Planning: Checked	Issue	Miscellaneous Issue	Required Quantity: **1** Reserved Quantity: 0 Allocated Quantity : 0 Picked Quantity: 0 Issue Quantity: 0 Open Quantity: **1** Org on Hand Balance: **10** Including in Planning: Checked
3	**Issue** first and then **Return** Different Serial Number	Yes	Required Quantity: **1** Reserved Quantity: 0	Issue	Material Issue	Required Quantity: **1** Reserved Quantity: 0	Return	Miscellaneous Receipt	Required Quantity: **1** Reserved Quantity: 0

#	Use Case	Material Requirement	Material Quantity	First Transaction (UI)	First Transaction Saved on Transaction History	Material Quantity After Issue	Second Transaction (UI)	Second Transaction Saved in Transaction History	Material Quantity After Return
			Allocated Quantity : 0 Picked Quantity: 0 Issue Quantity: 0 Open Quantity: **1** Org on Hand Balance: 10 Including in Planning: Checked			Allocated Quantity : 0 Picked Quantity: 0 Issue Quantity: **1** Open Quantity: **0** Org on Hand Balance: **9** Including in Planning: Checked			Allocated Quantity : 0 Picked Quantity: 0 Issue Quantity: **1** Open Quantity: **0** Org on Hand Balance: **9** Including in Planning: Checked
4	**Return** first and then **Issue Different** Serial Number	Yes	Required Quantity: **1** Reserved Quantity: 0 Allocated Quantity : 0 Picked Quantity: 0 Issue Quantity: 0 Open Quantity: **1** Org on Hand Balance: **10** Including in Planning: Checked	Return	Miscellaneous Receipt	Required Quantity: **1** Reserved Quantity: 0 Allocated Quantity : 0 Picked Quantity: 0 Issue Quantity: 0 Open Quantity: **1** Org on Hand Balance: **11** Including in Planning: Checked	Issue	Material Issue	Required Quantity: **1** Reserved Quantity: 0 Allocated Quantity : 0 Picked Quantity: 0 Issue Quantity: **1** Open Quantity: **0** Org on Hand Balance: **9** Including in Planning: Checked
5	**Issue** first and then **Return** Same Serial Number	No	Required Quantity: **0** Reserved Quantity: 0	Issue	Material Issue	Required Quantity: **0** Reserved Quantity: 0	Return	Material Return	Required Quantity: **0** Reserved Quantity: 0

#	Use Case	Material Requirement	Material Quantity	First Transaction (UI)	First Transaction Saved on Transaction History	Material Quantity After Issue	Second Transaction (UI)	Second Transaction Saved in Transaction History	Material Quantity After Return
			Allocated Quantity : 0 Picked Quantity: 0 Issue Quantity: 0 Open Quantity: **0** Org on Hand Balance: **10** Including in Planning: **Un-Checked**			Allocated Quantity : 0 Picked Quantity: 0 Issue Quantity: **1** Open Quantity: **-1** Org on Hand Balance: **9** Including in Planning: **Un-Checked**			Allocated Quantity : 0 Picked Quantity: 0 Issue Quantity: **0** Open Quantity: **0** Org on Hand Balance: **10** Including in Planning: **Un-Checked**
6	**Return** first and then **Issue** Same Serial Number	No	Required Quantity: **0** Reserved Quantity: 0 Allocated Quantity : 0 Picked Quantity: 0 Issue Quantity: 0 Open Quantity: **0** Org on Hand Balance: **10** Including in Planning: **Un-Checked**	Return	Miscellaneous Receipt	Required Quantity: **0** Reserved Quantity: 0 Allocated Quantity : 0 Picked Quantity: 0 Issue Quantity: 0 Open Quantity: **0** Org on Hand Balance: **11** Including in Planning: **Un-Checked**	Issue	Miscellaneous Issue	Required Quantity: **0** Reserved Quantity: 0 Allocated Quantity : 0 Picked Quantity: 0 Issue Quantity: 0 Open Quantity: **0** Org on Hand Balance: **10** Including in Planning: **Un-Checked**
7	**Issue** first and then **Return Different**	No	Required Quantity: **0**	Issue	Material Issue	Required Quantity: **0**	Return	Miscellaneous Receipt	Required Quantity: **0**

#	Use Case	Material Requirement	Material Quantity	First Transaction (UI)	First Transaction Saved on Transaction History	Material Quantity After Issue	Second Transaction (UI)	Second Transaction Saved in Transaction History	Material Quantity After Return
	Serial Number		Reserved Quantity: 0 Allocated Quantity : 0 Picked Quantity: 0 Issue Quantity: 0 Open Quantity: **0** Org on Hand Balance: **10** Including in Planning: **Un-Checked**			Reserved Quantity: 0 Allocated Quantity : 0 Picked Quantity: 0 Issue Quantity: **1** Open Quantity: **-1** Org on Hand Balance: **9** Including in Planning: **Un-Checked**			Reserved Quantity: 0 Allocated Quantity : 0 Picked Quantity: 0 Issue Quantity: **1** Open Quantity: **-1** Org on Hand Balance: **9** Including in Planning: **Un-Checked**
8	**Return** first and then **Issue Different** Serial Number	No	Required Quantity: **0** Reserved Quantity: 0 Allocated Quantity : 0 Picked Quantity: 0 Issue Quantity: 0 Open Quantity: **0** Org on Hand Balance: **10** Including in Planning: **Un-Checked**	Return	Miscellaneous Receipt	Required Quantity: **0** Reserved Quantity: 0 Allocated Quantity : 0 Picked Quantity: 0 Issue Quantity: 0 Open Quantity: **0** Org on Hand Balance: **11** Including in Planning: **Un-Checked**	Issue	Material Issue	Required Quantity: **0** Reserved Quantity: 0 Allocated Quantity : 0 Picked Quantity: 0 Issue Quantity: **1** Open Quantity: **-1** Org on Hand Balance: **10** Including in Planning: **Un-Checked**

The table here shows how issue and return of lot-controlled items affect material quantities on the Material Transaction History page:

#	Use Case	Material Requirement	Material Quantity	First Transaction (UI)	First Transaction Saved on Transaction History	Material Quantity After Issue	Second Transaction (UI)	Second Transaction Saved in Transaction History	Material Quantity After Return
1	**Issue** first and then **Return** Same Lot Number	Yes (10 Ea)	Required Quantity: **10** Reserved Quantity: 0 Allocated Quantity : 0 Picked Quantity: 0 Issue Quantity: 0 Open Quantity: **10** Org on Hand Balance: **10** Including in Planning: **Checked**	Issue **Qty = 5 Ea**	Material Issue	Required Quantity: **10** Reserved Quantity: 0 Allocated Quantity : 0 Picked Quantity: 0 Issue Quantity: **5** Open Quantity: **5** Org on Hand Balance: **5** Including in Planning: **Checked**	Return Qty = **3 Ea**	Material Return	Required Quantity: **10** Reserved Quantity: 0 Allocated Quantity : 0 Picked Quantity: 0 Issue Quantity: **2** Open Quantity: **8** Org on Hand Balance: **8** Including in Planning: **Checked**
2	**Return** first and then **Issue** Same Lot Number	Yes (10 Ea)	Required Quantity: **10** Reserved Quantity: 0 Allocated Quantity : 0 Picked Quantity: 0 Issue Quantity: 0 Open Quantity: **10**	Return Qty = 4 Ea	Miscellaneous Receipt	Required Quantity: **10** Reserved Quantity: 0 Allocated Quantity : 0 Picked Quantity: 0 Issue Quantity: 0 Open Quantity: **10**	Issue Qty = 4 Ea	Miscellaneous Issue	Required Quantity: **10** Reserved Quantity: 0 Allocated Quantity : 0 Picked Quantity: 0 Issue Quantity: 0 Open Quantity: **10**

#	Use Case	Material Requirement	Material Quantity	First Transaction (UI)	First Transaction Saved on Transaction History	Material Quantity After Issue	Second Transaction (UI)	Second Transaction Saved in Transaction History	Material Quantity After Return
			Org on Hand Balance: **10** Including in Planning: **Checked**			Org on Hand Balance: **14** Including in Planning: **Checked**			Org on Hand Balance: **10** Including in Planning: **Checked**
3	**Issue** first and then **Return** Different Lot Number	Yes (10 Ea)	Required Quantity: **10** Reserved Quantity: 0 Allocated Quantity : 0 Picked Quantity: 0 Issue Quantity: 0 Open Quantity: **10** Org on Hand Balance: **10** Including in Planning: **Checked**	Issue qty = 5 Ea	Material Issue	Required Quantity: **10** Reserved Quantity: 0 Allocated Quantity : 0 Picked Quantity: 0 Issue Quantity: **5** Open Quantity: **5** Org on Hand Balance: **5** Including in Planning: **Checked**	Return qty = 4 Ea	Miscellaneous Receipt	Required Quantity: **10** Reserved Quantity: 0 Allocated Quantity : 0 Picked Quantity: 0 Issue Quantity: **5** Open Quantity: **5** Org on Hand Balance: **9** Including in Planning: **Checked**
4	**Return** first and then **Issue Different** Lot Number	Yes (10 Ea)	Required Quantity: **10** Reserved Quantity: 0 Allocated Quantity : 0 Picked Quantity: 0 Issue Quantity: 0	Return qty = 5 Ea	Miscellaneous Receipt	Required Quantity: **10** Reserved Quantity: 0 Allocated Quantity : 0 Picked Quantity: 0 Issue Quantity: 0	Issue Qty = 7 Ea	Material Issue	Required Quantity: **10** Reserved Quantity: 0 Allocated Quantity : 0 Picked Quantity: 0 Issue Quantity: **7**

#	Use Case	Material Requirement	Material Quantity	First Transaction (UI)	First Transaction Saved on Transaction History	Material Quantity After Issue	Second Transaction (UI)	Second Transaction Saved in Transaction History	Material Quantity After Return
			Open Quantity: **10** Org on Hand Balance: **10** Including in Planning: Checked			Open Quantity: **10** Org on Hand Balance: **15** Including in Planning: **Checked**			Open Quantity: **3** Org on Hand Balance: **8** Including in Planning: **Checked**
5	**Issue** first and then **Return** Same Lot Number	No	Required Quantity: **0** Reserved Quantity: 0 Allocated Quantity : 0 Picked Quantity: 0 Issue Quantity: 0 Open Quantity: **0** Org on Hand Balance: **10** Including in Planning: **Un-Checked**	Issue qty = 8 Ea	Material Issue	Required Quantity: **0** Reserved Quantity: 0 Allocated Quantity : 0 Picked Quantity: 0 Issue Quantity: **8** Open Quantity: **-8** Org on Hand Balance: **8** Including in Planning: **Un-Checked**	Return Qty = 5 Ea	Material Return	Required Quantity: **0** Reserved Quantity: 0 Allocated Quantity : 0 Picked Quantity: 0 Issue Quantity: **3** Open Quantity: **-3** Org on Hand Balance: **13** Including in Planning: **Un-Checked**
6	**Return** first and then **Issue** Same Lot Number	No	Required Quantity: **0** Reserved Quantity: 0 Allocated Quantity : 0 Picked Quantity: 0	Return Qty = 25 Ea	Miscellaneous Receipt	Required Quantity: **0** Reserved Quantity: 0 Allocated Quantity : 0 Picked Quantity: 0	Issue Qty = 20 Ea	Miscellaneous Issue	Required Quantity: **0** Reserved Quantity: 0 Allocated Quantity : 0 Picked Quantity: 0

#	Use Case	Material Requirement	Material Quantity	First Transaction (UI)	First Transaction Saved on Transaction History	Material Quantity After Issue	Second Transaction (UI)	Second Transaction Saved in Transaction History	Material Quantity After Return
			Issue Quantity: 0 Open Quantity: **0** Org on Hand Balance: **10** Including in Planning: **Un-Checked**			Issue Quantity: 0 Open Quantity: **0** Org on Hand Balance: **35** Including in Planning: **Un-Checked**			Issue Quantity: 0 Open Quantity: **0** Org on Hand Balance: **15** Including in Planning: **Un-Checked**
7	**Issue** first and then **Return** Different Lot Number	No	Required Quantity: **0** Reserved Quantity: 0 Allocated Quantity : 0 Picked Quantity: 0 Issue Quantity: 0 Open Quantity: **0** Org on Hand Balance: **10** Including in Planning: **Un-Checked**	Issue Qty = 5 Ea	Material Issue	Required Quantity: **0** Reserved Quantity: 0 Allocated Quantity : 0 Picked Quantity: 0 Issue Quantity: **5** Open Quantity: **-8** Org on Hand Balance: **5** Including in Planning: **Un-Checked**	Return Qty = 8	Miscellaneous Receipt	Required Quantity: **0** Reserved Quantity: 0 Allocated Quantity : 0 Picked Quantity: 0 Issue Quantity: **5** Open Quantity: **-8** Org on Hand Balance: **13** Including in Planning: **Un-Checked**
8	**Return** first and then **Issue Different** Lot Number	No	Required Quantity: **0** Reserved Quantity: 0 Allocated Quantity : 0	Return Qty = 10 Ea	Miscellaneous Receipt	Required Quantity: **0** Reserved Quantity: 0 Allocated Quantity : 0	Issue Qty = 8 Ea	Material Issue	Required Quantity: **0** Reserved Quantity: 0 Allocated Quantity : 0

#	Use Case	Material Requirement	Material Quantity	First Transaction (UI)	First Transaction Saved on Transaction History	Material Quantity After Issue	Second Transaction (UI)	Second Transaction Saved in Transaction History	Material Quantity After Return
			Picked Quantity: 0 Issue Quantity: 0 Open Quantity: **0** Org on Hand Balance: **10** Including in Planning: **Un-Checked**			Picked Quantity: 0 Issue Quantity: 0 Open Quantity: **0** Org on Hand Balance: **20** Including in Planning: **Un-Checked**			Picked Quantity: 0 Issue Quantity: 8 Open Quantity: **-8** Org on Hand Balance: **12** Including in Planning: **Un-Checked**

How Issue and Return of Plain Items Affect Material Transactions

Plain items refer to those that are neither serial nor lot-controlled. Plain items returned to a subinventory or locator can be returned for a replacement and not always returned for being excess. To track the returned and replaced items separately, use the Replace check box at the row level on the Report Material Transactions page. If this check box isn't selected, the entire quantity of plain components will continue to remain in the hierarchy.

When updating inventory, components that are issued or returned aren't separately tracked because on-hand quantities are added to the same subinventory and locator. For instance, let's say you have 10 plain items installed on the hierarchy and 10 on-hand quantity in inventory. If you issue 5 to the hierarchy, then you have 5 in inventory and 15 in the hierarchy; panels of 5 and 10 each. Later, if you return 10 from the hierarchy, the on-hand quantity becomes 15. In such scenario, the application won’t know which components were returned as excess from those that were added to the inventory for the first time.

To differentiate returns and replacements, use the **Replace** check box at the row level on the Report Material Transaction page. The Replace check box works alongside the return transaction type and lets you to control whether the return transactions are meant for replacement of the component. When the check box is left blank, it means that the previously issued component is returned for being excess. On the other hand, if the check box is selected, the return component replaces the existing one. Selecting the Replace check box updates the existing panel quantities on the hierarchy, whereas leaving the check box blank won’t.

Your selection for the Replace check box decides the recorded transaction in the back end, as shown in this table:

#	Use Case	Material Requirement	Material Quantity	First Transaction (UI)	First Transaction Saved on Transaction History	Material Quantity After Issue	Second Transaction (UI)	Second Transaction Saved in Transaction History	Material Quantity After Return
1	**Issue** first and then **Return** Item Replace Check Box = Un checked	Yes (10 Ea)	Required Quantity: **10** Reserved Quantity: 0 Allocated Quantity : 0 Picked Quantity: 0 Issue Quantity: 0 Open Quantity: **10** Org on Hand Balance: **10** Including in Planning: **Checked**	Issue **Qty = 5 Ea**	Material Issue	Required Quantity: **10** Reserved Quantity: 0 Allocated Quantity : 0 Picked Quantity: 0 Issue Quantity: **5** Open Quantity: **5** Org on Hand Balance: **5** Including in Planning: **Checked**	Return Qty = **3 Ea**	Material Return	Required Quantity: **10** Reserved Quantity: 0 Allocated Quantity : 0 Picked Quantity: 0 Issue Quantity: 2 Open Quantity: **8** Org on Hand Balance: **8** Including in Planning: **Checked**
2	**Return** first and then **Issue** Item Replace Check Box = Un checked	Yes (10 Ea)	Required Quantity: **10** Reserved Quantity: 0 Allocated Quantity : 0 Picked Quantity: 0 Issue Quantity: 0 Open Quantity: **10** Org on Hand Balance: **10** Including in	Return Qty = 4 Ea	Miscellaneous Receipt	Required Quantity: **10** Reserved Quantity: 0 Allocated Quantity : 0 Picked Quantity: 0 Issue Quantity: 0 Open Quantity: **10** Org on Hand Balance: **14** Including in	Issue Qty = 4 Ea	Material issue	Required Quantity: **10** Reserved Quantity: 0 Allocated Quantity : 0 Picked Quantity: 0 Issue Quantity: 4 Open Quantity: **6** Org on Hand Balance: **10** Including in Planning: **Checked**

#	Use Case	Material Requirement	Material Quantity	First Transaction (UI)	First Transaction Saved on Transaction History	Material Quantity After Issue	Second Transaction (UI)	Second Transaction Saved in Transaction History	Material Quantity After Return
			Planning: **Checked**			Planning: **Checked**			
3	**Issue** first and then **Return Different** Replace Check Box = checked	Yes (10 Ea)	Required Quantity: **10** Reserved Quantity: 0 Allocated Quantity : 0 Picked Quantity: 0 Issue Quantity: 0 Open Quantity: **10** Org on Hand Balance: **10** Including in Planning: **Checked**	Issue qty = 5 Ea	Material Issue	Required Quantity: **10** Reserved Quantity: 0 Allocated Quantity : 0 Picked Quantity: 0 Issue Quantity: **5** Open Quantity: **5** Org on Hand Balance: **5** Including in Planning: **Checked**	Return qty = 4 Ea	Miscellaneous Receipt	Required Quantity: **10** Reserved Quantity: 0 Allocated Quantity : 0 Picked Quantity: 0 Issue Quantity: **5** Open Quantity: **5** Org on Hand Balance: **9** Including in Planning: **Checked**
4	**Return** first and then **Issue Different** Replace Check Box = checked	Yes (10 Ea)	Required Quantity: **10** Reserved Quantity: 0 Allocated Quantity : 0 Picked Quantity: 0 Issue Quantity: 0 Open Quantity: **10** Org on Hand Balance: **10**	Return qty = 5 Ea	Miscellaneous Receipt	Required Quantity: **10** Reserved Quantity: 0 Allocated Quantity : 0 Picked Quantity: 0 Issue Quantity: 0 Open Quantity: **10** Org on Hand Balance: **15**	Issue Qty = 7 Ea	Material Issue	Required Quantity: **10** Reserved Quantity: 0 Allocated Quantity : 0 Picked Quantity: 0 Issue Quantity: **7** Open Quantity: **3** Org on Hand Balance: **8**

#	Use Case	Material Requirement	Material Quantity	First Transaction (UI)	First Transaction Saved on Transaction History	Material Quantity After Issue	Second Transaction (UI)	Second Transaction Saved in Transaction History	Material Quantity After Return
			Including in Planning: Checked			Including in Planning: **Checked**			Including in Planning: **Checked**
5	**Issue** first and then **Return** Replace Check Box = Un checked	No	Required Quantity: **0** Reserved Quantity: 0 Allocated Quantity : 0 Picked Quantity: 0 Issue Quantity: 0 Open Quantity: **0** Org on Hand Balance: **10** Including in Planning: **Un-Checked**	Issue qty = 8 Ea	Material Issue	Required Quantity: **0** Reserved Quantity: 0 Allocated Quantity : 0 Picked Quantity: 0 Issue Quantity: **8** Open Quantity: **-8** Org on Hand Balance: **8** Including in Planning: **Un-Checked**	Return Qty = 5 Ea	Material Return	Required Quantity: **0** Reserved Quantity: 0 Allocated Quantity : 0 Picked Quantity: 0 Issue Quantity: **3** Open Quantity: **-3** Org on Hand Balance: **13** Including in Planning: **Un-Checked**
6	**Return** first and then **Issue** item Replace Check Box = Un checked	No	Required Quantity: **0** Reserved Quantity: 0 Allocated Quantity : 0 Picked Quantity: 0 Issue Quantity: 0 Open Quantity: **0**	Return Qty = 25 Ea	Miscellaneous Receipt	Required Quantity: **0** Reserved Quantity: 0 Allocated Quantity : 0 Picked Quantity: 0 Issue Quantity: 0 Open Quantity: **0**	Issue Qty = 20 Ea	Material Issue	Required Quantity: **0** Reserved Quantity: 0 Allocated Quantity : 0 Picked Quantity: 0 Issue Quantity: 20 Open Quantity: **-20**

#	Use Case	Material Requirement	Material Quantity	First Transaction (UI)	First Transaction Saved on Transaction History	Material Quantity After Issue	Second Transaction (UI)	Second Transaction Saved in Transaction History	Material Quantity After Return
			Org on Hand Balance: **10** Including in Planning: **Un-Checked**			Org on Hand Balance: **35** Including in Planning: **Un-Checked**			Org on Hand Balance: **15** Including in Planning: **Un-Checked**
7	**Issue** first and then **Return Different** Replace Check Box = checked	No	Required Quantity: **0** Reserved Quantity: 0 Allocated Quantity : 0 Picked Quantity: 0 Issue Quantity: 0 Open Quantity: **0** Org on Hand Balance: **10** Including in Planning: **Un-Checked**	Issue Qty = 5 Ea	Material Issue	Required Quantity: **0** Reserved Quantity: 0 Allocated Quantity : 0 Picked Quantity: 0 Issue Quantity: **5** Open Quantity: **-8** Org on Hand Balance: **5** Including in Planning: **Un-Checked**	Return Qty = 8	Miscellaneous Receipt	Required Quantity: **0** Reserved Quantity: 0 Allocated Quantity : 0 Picked Quantity: 0 Issue Quantity: **5** Open Quantity: **-8** Org on Hand Balance: **13** Including in Planning: **Un-Checked**
8	**Return** first and then **Issue Different** Replace Check Box = Un checked	No	Required Quantity: **0** Reserved Quantity: 0 Allocated Quantity : 0 Picked Quantity: 0 Issue Quantity: 0	Return Qty = 10 Ea	Miscellaneous Receipt	Required Quantity: **0** Reserved Quantity: 0 Allocated Quantity : 0 Picked Quantity: 0 Issue Quantity: 0	Issue Qty = 8 Ea	Material Issue	Required Quantity: **0** Reserved Quantity: 0 Allocated Quantity : 0 Picked Quantity: 0 Issue Quantity: 8

#	Use Case	Material Requirement	Material Quantity	First Transaction (UI)	First Transaction Saved on Transaction History	Material Quantity After Issue	Second Transaction (UI)	Second Transaction Saved in Transaction History	Material Quantity After Return
			Open Quantity: **0** Org on Hand Balance: **10** Including in Planning: **Un-Checked**			Open Quantity: **0** Org on Hand Balance: **20** Including in Planning: **Un-Checked**			Open Quantity: **-8** Org on Hand Balance: **12** Including in Planning: **Un-Checked**

How You Use Assets in Service Logistics

Maintain your customer assets at customer locations using field service or return them for service using depot repair. To do so, you assets require a specific setup and must be based on a maintenance-enabled item that's full-lifecycle tracked. Also, your assets must operate in a maintenance-enabled inventory organization. Through an integration with Oracle Service Logistics, work orders costs are captured in the asset's operating organization.

Overview of Service Logistics

Service Logistics is a part of Oracle Fusion Cloud Supply Chain & Manufacturing and interacts with Oracle B2B Service and other SCM products to support customer and field service as well as manage preventive maintenance work on customer-owned assets.

Using the Service Logistics work area, you can order parts for service requests and work orders that are created in Oracle B2B Service UIs. You can also order parts for third party service requests and work orders. You can set up a variety of field stocking locations and manage the trunk stock of these stocking locations as well as the inventory of field service technicians. Service Logistics also offers depot repair functionality so that you can manage the repair and return of broken parts.

For more details, refer to the Getting Started with Service Logistics Implementation guide

Field Service Preventive Maintenance

Organizations that maintain assets deployed at their customer locations need to perform preventive maintenance activities on those assets using field service functionality. There are two ways to execute field service preventive maintenance: through an OFSC (Oracle Field Service Cloud) activity or through a B2B Service generic work order.

- Preventive maintenance work orders for the installed base assets are created in the Oracle Maintenance application.
- A scheduled process is run in Service Logistics to generate B2B service SR (service request) and service work orders with the maintenance work order details. These service requests and service work orders are then accessible in the B2B Service UIs, Service Logistics UIs, as well as the Field Service application.

- Field service technicians execute these work orders and create debrief using the Field Service application.
- Field service administrators edit and create part requirements, review, debrief, finalize, and post charges for the work orders in Service Logistics.
- The maintenance work order is then updated to reflect the task completion.

Service Logistics facilitates the integration between Maintenance, B2B Service, and Field Service cloud applications such that field service administrators can oversee preventive maintenance work on customer-owned assets using the Service Logistics application.

- When a work order is completed and debriefed, the field service administrator reviews the charges submitted by field service technicians.
- The field service administrator may add or edit the debrief lines, make price adjustments if required, and post the charges.
- At this stage, a maintenance work order is created to capture the cost of the service, adjust the inventory balances, and update the asset configuration. It's important to configure the items, assets, and the inventory organization properly so that the maintenance work order is created successfully. Note that these setups are specific to field service debrief posting.

Depot Repair

Service Logistics also offers depot repair functionality so you can manage the repair and return of broken parts. In complex depot repair and return logistics environments, the customer asset may be transferred across several locations before it's returned to the customer, for example from a local warehouse to a distribution center and then to the repair depot.

The repaired product may also need to be transferred from the repair depot back to the local warehouse before it's shipped back to the customer. To manage such a multi-location and complex depot repair process, it's important that you set up the depot repair and return supply chain properly in Oracle SCM. Check that your organization, subinventories, interorganization parameters, and ship methods are defined to execute transfer orders between your source and destination organization.

How You Use Assets in B2B Service

If you're an Oracle Cloud customer who uses installed base assets for processes such as Supply Chain, Service Logistics, or Service Contracts, you can opt-in to use the same asset model for your service request and work order processes.

When you opt-in, you can add the installed base asset fields to the service request and work order page layouts in Application Composer. Then, you can pass the installed base asset ID to downstream processes such as Field Service or Service Logistics.

> **Note:** This is a global setting where you choose whether to use installed base assets or the default asset object for the service request and work order process. You can't use both asset objects in B2B Service so you should carefully consider the impact if you have requirements to support asset management outside these processes. For example, installed base asset doesn't currently support sales processes in CX Sales and B2B Service and has limited support for extensibility.

For more details, refer to the Implementing B2B Service guide.

Overview of Service Mapping

A service mapping is a map that creates relationships between services, sources, entities, and attributes.

These source and destination entities are available for mapping to Installed Base Assets:

- Sales Order Header and Sales Order Lines (source entities)
- Installed Base Assets (destination entity)

After you set up the integration and create a sales order, the information loads on the Sales Order flexfield or Sales Order line flexfield, and then transfers to the destination attributes. Destination attributes can be either Installed Base Asset Descriptive flexfields or Application Composer custom fields.

To create service mappings, you must have the Installed Base Administrator privilege.

Use these tasks in the Manage Maintenance work area to create and manage service mappings:

- Manage Service Mapping
- Manage Algorithms
- Manage Sales Order to Asset Data Correction in Spreadsheet

Manage Service Mapping

Use this task to create or access the sandbox used to define the actual mapping of the entities. All mapping is first done within a sandbox before you deploy the mappings to your production environment.

Manage Algorithms

An algorithm is a set of rules that uses conditional logic, variables, functions, and Groovy scripting to manipulate data. After you have created your service mappings in your sandbox, you use the Manage Algorithms task to write Groovy Scripts used to execute the mapping. The algorithm references the service mappings that you created in your sandbox.

Manage Sales Order to Asset Data Correction in Spreadsheet

When creating assets, service mapping data that fail destination field validations will be identified in the process error logs. Use the in-session ADFdi spreadsheet, *Manage Sales Order to Asset Data Collection in Spreadsheet,* to correct these source-data issues. The spreadsheet is available from the task menu in the Maintenance Management work area. After you reprocess the mapping, a confirmation message will confirm successful completion. You then can verify the data on the Asset Overview page.

Create a Sandbox for Service Mapping

Use sandboxes to make and test application changes without impacting other users in the environment.

Sandboxes isolate untested configuration changes from the mainline environment. This enables you to test your changes in the sandbox and then publish the changes to make the changes available in the mainline metadata or in other sandboxes.

When you create a new service mapping, you first create a sandbox to edit your service mapping context. If you attempt to access the Manage Service Mappings page outside of a sandbox, then the actions that you need to edit the mapping, such as **Add Row**, are disabled.

To create a new sandbox:

1. From the Maintenance work area, select **Manage Service Mappings**.
2. Click **Go to the Sandboxes Page** to access the Sandbox work area.
3. In the Sandbox work area, click **Create Sandbox**.
4. Enter a name and a description for your sandbox.
5. Select **Yes** for the Publishable field.
6. Select **Manage Service Mappings** in the **All Tools** table.
7. Click **Create and Enter** to enter or activate the sandbox.

Manage Service mappings

Use the tabs in Service Mapping to perform the tasks required to manage the application.

Service Mapping Entities

You must use a sand box to edit a service mapping. If you access the Manage Service Mappings page outside of a sandbox, then the actions that you need to edit the mapping, such as Add Row, are unavailable.

From the Sandbox edit page, select Manage Service Mapping from the task menu to create or manage your service mapping. The AssetIntegration service mapping is predefined with the delivered values.

These entities contain a set of attributes available for the integration:

- AssetOrderMap
- SalesOrderFulfillLine
- SalesOrderHeader

You can add new attributes to an existing entity or to a new entity. It's recommended that you create new source entities and add new attributes for the destination entity. You must append the newly created entity attributes with the word **_Custom**. For example, Header EFF_Custom or LineEFF_Custom.

You also can add your attributes on an existing entity by adding them below below the AssetOrderMap: Details Region.

Service Mapping - Source Tab

This tab enables you to reference your inputs and output Service Data Objects (SDO). The service mapping uses the Source tab to structure both objects. In this section, you can select your existing entity and map your newly created attributes, along with the view object attributes. For example, the AssetAppCompChar4_Custom attribute is mapped against the ExtnAttributeChar003 Application composer extended attribute.

When you create a new entity, enter these values in the columns of the newly added row.

Column Name	Column Value	Notes
Entity	HeaderEFF_Custom	This is the entity name defined on your entity tab.

Column Name	Column Value	Notes
Type	View Object	Select this value.
View Object	HeaderEffBHeaderContext1privateVO	This view object is extracted from the Download Flexfield Archive option on the Manage Extensible Flexfields page.
Query Type	Join	Select this value.
Query Attribute	HeaderId	This is the unique identifier for the view object selected.
Join Entity	SalesOrderHeader	This column appears when you select the Add more columns option.
Join Entity Attribute	HeaderId	This column appears when you select the Add more columns option.

Note: Go to **Set Up and Maintenance > Manage Extensible FlexField > Name Header Information > Action > Download Flexfield Archive** to extract the view object. Extract the .ZIP file named *DOO_HEADER_ADD_INFO*. The extracted folder contains a list of contextual .XML files that are used in the sales order header.

Select a sales order line to create a new row. Note that you might have to enter these values into this row.

Column Name	Column Value	Notes
Entity	LineEFF_Custom	This is your entity name set up on your entity tab.
Type	View Object	Select this value.
View Object	FulfillLineEffBFulfillLineContext1privateVO	This view object is extracted from the Download Flexfield Archive option on the Manage Extensible Flexfields page.
Query Type	Join	Select this value.
Query Attribute	FulfillLineId	This is the unique identifier for the view object selected.
Join Entity	SalesOrderFullfillment	This column renders with the Add more columns option.
Join Entity Attribute	FulfillmentLineId	This column renders with the add more columns option.

Note: Go to **Set Up and Maintenance > Manage Extensible FlexField > Name Header Information > Action > Download Flexfield Archive** to extract the view object. Extract the generated DOO_FULFILL_LINE_ADD_INFO.zip file. The extracted folder contains a list of contextual .XML files that are used in the sales order fulfillment lines.

Service Mapping - Service Tab

Use the Services tab to set up your attribute's characteristics. Most likely, you will set up your destination entities and attributes as READ and WRITE, this will allow you to perform downstream corrections with the spreadsheet task option. You should set up your source attributes, however, as READ only. All the entities and attributes that you previously set up on the Entities and Source tabs must also be added here.

Manage Algorithms

Service mappings are used with algorithms to customize data sent to the destination tables.

Entities are used to create custom fields or identify standard fields that receive their input values from view object attributes. Services refer to the algorithms that can be used to modify or transform a field in the entity based on Groovy scripts and define the entity attributes that can be read and written by the algorithm.

If you need to make any customizations in your algorithm, then the customization option must be enabled by changing the **Customization** option of the QP_ALGO_ENABLE_FACTORY_MODE_RUN profile option to **True**. Go to **Setup and Maintenance > Manage Administrator Profile Values** to update this value.

If you customize the algorithm but don't change the **Customization** option to **True**, then your customizations won't be picked.

To promote existing algorithms or create a new version, click the Action menu from the Manage Algorithms page. The new version of the algorithm's status will be *In Progress*.

The algorithm has two predefined data sets:

- AssetMap
- Fline

On the Edit Algorithm you can create new rows, such as SoHeader and LineEFF, to manage your custom attributes. Use values such as these:

Column Name	Column Value	Notes
Name	SoHeader	Custom Name
Variable Path	Enter AssetRequest.SalesOrderHeader	• AssetResquest: Target entity. • SalesOrderHeader: This comes from the Service Mapping set up document.
Cardinality	Zero or One	Pick this value.
Data Set Join	[HeaderId: {SoHeader.HeaderId}]	• HeaderId: Sales Order Header ID • SoHeader: Target Entity Value • HeaderId: Sales Order Header ID

For Header lines, use information such as this.

Column Name	Column Value	Notes
Name	HeaderEFF	Entity Name
Variable Path	AssetRequest.HeaderEFF_Custom	• AssetResquest: Value of your target Entity. • HeaderEFF_Custom: This Service Mapping set up Document.

Column Name	Column Value	Notes
Cardinality	Zero or One	Pick This Value.
Data Set Join	[HeaderId_Custom: {SoHeader.HeaderId}]	• HeaderID_Custom: Custom Attribute name represents the Sales Order Header ID • SoHeader: Value for the target entity. • HeaderId: Header ID Unit identifier.

For lines, use information such as this.

Column Name	Column Value	Notes
Name	LineEFF	Entity Name
Variable Path	AssetRequest.LineEFF_Custom	• AssetResquest: Your target Entity. • LineEFF_Custom: Value of the table of the service mapping set up Document.
Cardinality	Zero or One	Pick this value.
Data Set Join	[FulfillLineId_Custom : {Fline.FulfillLineId}]	• FulfillLineId: This is the custom Attribute name represents the Sales Order Header ID. • Fline: Value for the target entity. • FulfillLineId_Custom: This comes from the entity value of the table of the Service Mapping set up document.

Execute Conditions for Algorithms

You define the set up the rules for your entities and attributes. These are groovy scripts statements. Groovy is a standard, dynamic scripting language for the Java platform for which your Oracle cloud provides deep support. You may want leverage groovy documentation to understand the basics of how you can use the Groovy scripting language to enhance your applications.

When a context requires using a Groovy script, you will typically use a short one-line script, called an expression, however technically the terms script and expression are interchangeable. Anywhere you can provide a one-line expression is also a valid context for providing a multi-line script if the need arises. Whether you provide a short expression or a multi-line script, the syntax and features at your disposal are the same. You only need to verify that your code returns a value of the appropriate type for the context in which you use it.

Here are some sample of groovy scripts:

- *AssetMap.CutomerAssetStartDate = FLine.FulfillLineFulfillmentDate ? : Fline.FulfillLineActualShipDate ?: Now ())*
    - When a service order is created both the Customer and Asset Start Date are equal to Sales Order Fulfillment Date and Asset Actual Ship Date is equal to System Date.

- *AssetMap.CustomerAssetStartdate = now () – 30*
    - When a service order is created the Customer Asset Start Date would be System date minus 30 Days.
- *AssetMap.AssetAppCompChar4_Custom = HeaderEFF?.HeaderEFFAttri1_Custom*
    - When SO is created the Value entered under you SO header Custom Attribute (Custom Attribute 1) is mapped Asset App Composer Custom attribute (Char 4)

Testing Algorithms

The goal of the testing is to simulate data entry at the source attribute and to retrieve the results on the same .XML file. You can test your algorithm by selecting the Test tab and then click the Add New button to create a new xml script name.

Then, click on the pencil icon to edit your .XML file. This will enable a popup dialog for you to interact with your variable values.

Next, run your testing script by entering your test inputs values on the .XML file type. Follow this sample below.

Source data	Example	Notes
<CustomerAssetStartDate>	2022-06-27T22:00:00.000	This is your asset start date. A system date is OK here. Make sure you are following this format.
<AssetOrderService:FulfillLineId>	111	This is your sales order line ID, a number value should OK.
<AssetOrderService:HeaderId>	222	This is your sales order header ID, a number value should be OK.
<AssetOrderService:MapId>	333	This is your map ID, a number value should be OK.
<AssetOrderService:HeaderEFFAttri1_Custom>	ATTR1	This is your source Sales Order Header Custom attribute. Make sure to select the correct attribute type (Character, Number, Date, and so on.)
<AssetOrderService:HeaderEFFNum1_Custom>	10101	This is the source Sales Order Header Custom attribute. Make sure to select the correct attribute type (Character, Number, Date, and so on.)
<AssetOrderService:HeaderEFFDate1_Custom>	2022-06-27T22:00:00Z	This is the source Sales Order Header Custom attribute. Make sure to select the correct attribute type (Character, Number, Date, and so on.)
<AssetOrderService:FulfillLineEFFAttri1_Custom>	ATTRFL1	This is the source Sales Order Line Custom attribute. Make sure to select the correct attribute type (Character, Number, Date, and so on.)
<AssetOrderService:FulfillLineEFFNum1_Custom>	101001	This is the source Sales Order Line Custom attribute. Make sure to select the correct attribute type (Character, Number, Date, and so on.)

Source data	Example	Notes
<AssetOrderService:FulfillLineEFFDate1_ Custom>	2022-06-27T22:00:00Z	This is the source Sales Order Line Custom Attribute. Make sure to select the correct attribute type (Character, Number, Date, and so on.)

You should see the results you expect. For example, if you enter a value of *HeaderEFFAttri1_Custom> ATTR1*< Then, the same value would be displayed as outcome on the *AssetAppCompChar4_Custom>ATTR1* < result region when the test is executed.

In order to have the result rows corrected, you may need to run your script by selecting the RUN TEST button.

Your test is ended when the Last Execution Status displays a check mark.

How You Audit Asset History

The creation and update of attributes for an asset object isn't included in the common audit history that's accessed using the Audit Reports functionality. However, similar functionality is provided directly in the table CSE_ASSETS_HIST. This table includes most of the standard attributes, as well as additional (Application Composer) and extensible (Definable Flexfield) attributes. Attributes that are excluded from audit history are typically not expected to be updated over an asset's lifetime or aren't required to be audited. This history is also accessible in the Maintenance Management - Asset History Real Time OTBI subject area. You can create an analysis to view the old and new values of these key fields as they are updated over time.

Additional details about audit reports is covered in the applications common guide called Using Common Features.

4 Asset Groups

Overview of Asset Groups

Manage your assets more efficiently by classifying them into groups according to your needs. For example, you can create an asset group for trucks of the same model based in a given location.

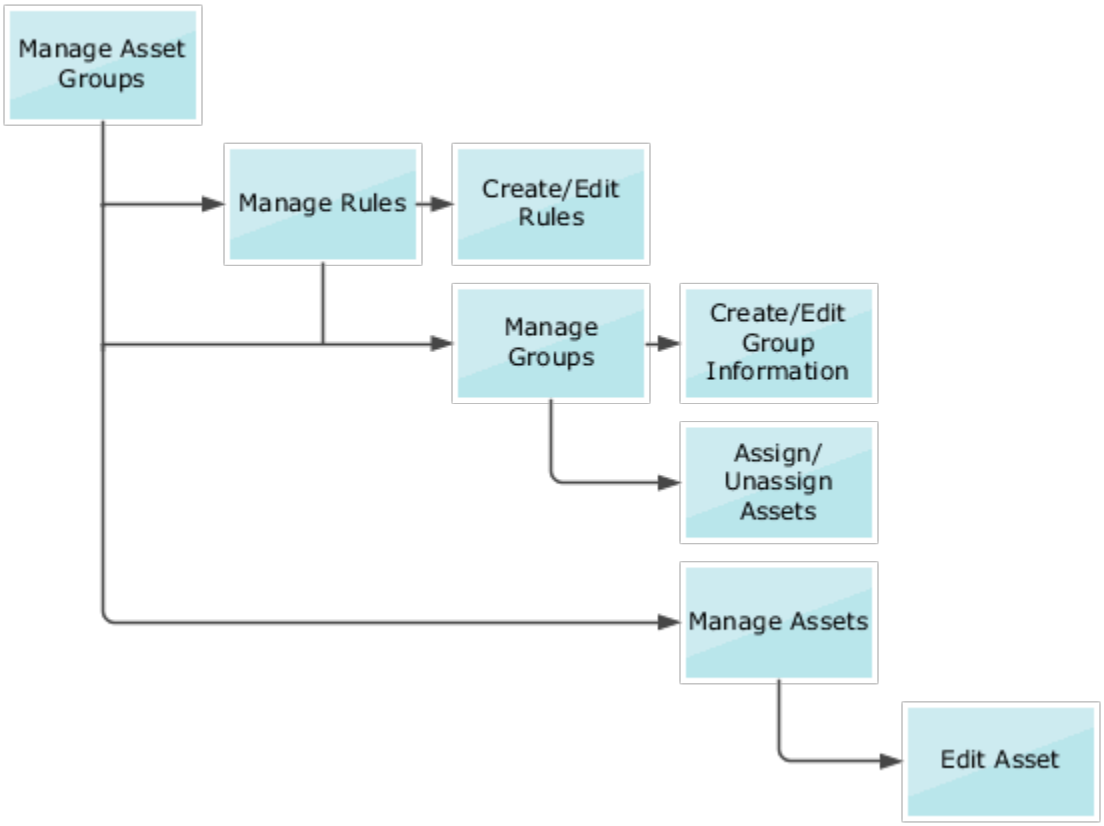
Here are the tasks you perform to manage your assets in groups:

- Define Asset Group Rules: Group rules are the common characteristics of the groups that you create under the rule. You must define group rules before you create a group.
- Create Asset Groups: An asset group handles asset assignments based on the group rules. Assets assigned to a group must honor the grouping attributes. You can assign the eligible assets to one or multiple groups of the rule.
- Asset Assignments: The asset assignment specifies if the asset is end dated or doesn't match the grouping criteria after update.

You can use the user interface, REST API, and File-Based Data Import to manage the group rules, groups and asset assignments. This includes the ability to create, edit, and delete group rules, create groups, and manage asset assignments. Here is an overview of the capabilities by method:

Action	Methods
Manage Asset Group Rules	Define manually using the Manage Asset Group Rules page. Define using the Asset Group Rules REST API.
Manage Asset Group	Define manually using the Manage Asset Groups page. Define using the Asset Groups REST API.
Assign Assets to Group	Associate manually using the Manage Asset Groups page. Associate using the Asset Groups REST API. Associate using the Asset Import.

This figure illustrates the tasks that help you manage asset groups. First you create asset groups rules, then you create asset groups within the rules. You can then assign assets to your groups.



Manage Asset Group Rules

Use the Asset Group Rules page to search for, create, edit, and delete asset group rules. You need to create asset group rules before creating asset groups. You can also use the Asset Group Rules Redwood page for creating rules.

Note: To use the Asset Group Rules Redwood page, set the ORA_CSE_GROUP_RULES_REDWOOD_ENABLED profile option to Yes. The profile option is available in the Manage Administrator Profiles Values task of the Setup and Maintenance work area.

Create Asset Group Rules

To open the regular Asset Group Rules page select Manage Asset Group Rules from the Tasks pane. On the Asset Group Rules page, click the **Create** button to open the Create Asset Group Rule page. Enter values for these attributes:

Attribute	Description
Name	The name of the asset group rule.

Attribute	Description
Code	Code that uniquely identifies the asset group rule.
Description	Description of the asset group rule.
Grouping Attributes	Attributes that asset groups created for the group rule must honor. This is an optional attribute. You can select multiple grouping attributes from the selected list. When you create a group for the group rule, you must enter a value for each grouping attribute. The assets you assign to the group must also honor the group attribute values. For example, if you create a rule using Customer Number as a grouping attribute, then you must enter a value for Customer Number for each group you create for the rule. You can only assign assets to the group if the asset customer matches the group customer.
Usages	A usage is where you use asset groups in the application, such as for either order entries and subscriptions, or for customer asset statuses: • For order entries, you can specify a group while entering a new sales order line for an asset-tracked product. Once the sales order line is fulfilled, the created assets are automatically assigned to the group. • For subscriptions, you can use groups for contract lines in contract or subscription products. • For customer assets, you can use groups for asset validation rules. Select this usage in the rule to configure your asset groups to exclude their assets from service requests or contracts. You can't select the customer asset status usage if you also select other usages options. **Note:** When you select the customer asset status usage, the rule will control if newly created customer assets are automatically added to a default customer asset validation rule group or not. The grouping attributes are disabled for group rules, so any asset can be assigned to the group and the Enforce unique assignment of assets to groups within the rule check box is also selected and can't be deselected. You can create only one rule with the customer asset status usage, and you can't delete the rule while it's associated to an active group. While the rule can then be used as the basis for one or more groups, you can only assign customer asset to only one group using the rule. And, only one of these groups can be defined in the profile option (ORA_CSE_DFT_AST_VLD_GROUP) as the default group during asset creation or shipment to the customer.
Enforce unique assignment of assets to groups within the rule	Select the check box to ensure an asset can only be assigned to one group within a given rule. If not selected, you can assign an asset to multiple groups within the rule. **Note:** The check box is selected and can't be deselected when you select the customer asset status usage.
Inactive On	Date when the rule becomes inactive. Beyond this date, you can't create groups within the rule.

Edit Asset Group Rules

Edit an asset group rule on the Edit Asset Group Rule page. On the Asset Group Rules page, click the group rule name in the search results to open the page for editing. Here are some things to consider when you edit a group rule:

- You can always edit the group rule name, code, and description.
- You can edit grouping attributes only if no groups are defined for the rule.
- You can update the **Enforce unique assignment of assets to groups within the rule** check box only if no assets are assigned to the groups within the rule.

Delete Asset Group Rules

Delete an asset group rule on the Asset Group Rules page. Use the **Delete** icon against the group rule listed in the search results. You can delete a rule only if no groups are created for it.

Manage Asset Groups

Use the Asset Groups page to search for, create, edit, and delete asset groups. To open the Asset Groups page, on the Tasks pane, select Manage Asset Groups.

Create Asset Groups

Create asset groups for your rules. On the Asset Groups page, click the **Create** button to open the Create Asset Group page. Enter values for these attributes:

Attribute	Description
Group Rule	The name of the group rule to which the group is associated. This is a required attribute.
Number	Number that uniquely identifies the asset group. A unique group number is generated by default, but you can update the field with any alphanumeric value.
Name	Name of the group. The group name is generated by default from the group number, but you can update with any meaningful value.
Description	Description of the asset group.
Grouping Attribute Values	List of grouping attributes you selected in the asset group rule. The list is empty if you didn't select any grouping attribute in the rule. You must enter a value for each grouping attribute. The assets you assign to the group must also honor the group attribute values. For example if the grouping attribute is Customer Number and the entered value is 1006, you can only assign assets if the customer number of the group is 1006.

Attribute	Description
Asset Validation Rule	The validation rule associated to the asset. You can specify one or both of these validation rules for your group: • Exclude Asset from Contracts • Exclude Asset from Service Requests
Inactive On	Date when the group becomes inactive. Beyond this date, you can't assign new assets to the group.

Edit Asset Groups

Edit an asset group on the Edit Asset Group page. On the Asset Group page, click the group name in the search results to open the page for editing. Here are some things to consider when you edit a group:

- You can always edit the group name, code, and description.
- You can edit grouping attribute values and the asset validation rule only if no assets are assigned to the group.

Delete Asset Groups

Delete an asset group on the Asset Groups page. Use the **Delete** icon against the group listed in the search results. You can only delete a group if no assets are assigned to it.

Manage Asset Group Assignments

Use the Asset Group Assignments page to view the assets assigned to the asset group, and to assign and unassign assets. To open the Asset Group Assignments page, on the Asset Groups page, select a group in the search results and click the **Assign Assets** button.

How You Assign Assets to A Group

On the Asset Group Assignments page, use the **Add** button to open the Add Assets dialog box. In the Add Assets dialog box, you can search for and select assets to add to the group. Here are some things to consider when you assign assets to a group:

- If the group doesn't have grouping attributes, all assets not already assigned to the group will be eligible for assignment.
- If the group has grouping attributes, only assets matching the grouping attribute values and not already assigned to the group are listed.
- If your group rule enforces unique assignment of assets, the assets already assigned to another group of the same rule aren't listed.

How You Unassign Assets from A Group

Unassign an asset from a group on the Asset Group Assignments page. In the Assigned Assets section, use the **Delete** icon against the asset assignment.

Manage Asset Assignments on The Manage Assets and Edit Asset Pages

On the Manage Asset page, search for assets using the asset group name.

On the Edit Asset page, the Asset Groups tab listing all the group assignments for the asset. On the tab, you can:

- Assign the asset to new groups using the **Add** button. Refer to the topic Manage Asset Group Assignments for details about the rules that apply to assignments of assets to groups.
- Unassign the asset from a group.

How Updated and End-Dated Assets Affect Asset Assignments

View the assignment end date for an asset assignment in the Assigned Assets section of the Asset Group Assignments page. You can also view why the assignment is end dated when you hover over theWarning icon displayed for each end dated assignment. Then, you can choose to unassign the asset from the group.

Here are two reasons why an asset assignment gets end dated:

- You update an asset in a way that the asset no longer matches the grouping attribute values of the group it's assigned to. The assignment end date is populated in all group assignments of the asset with the date of asset update.
- If you end date the asset by either updating the asset active end date or the customer asset end date. The asset assignment end date is populated in all group assignments of the asset with the asset end date. If you update both the asset active end date and customer asset end date, the assignment end date is populated with the customer asset end date.

How You Configure and Extend Asset Groups Using Application Composer

Use Application Composer to extend and configure the asset group object by defining your own fields and adding them to the Create and Edit Asset Group pages. The new user-defined fields are then exposed in the Asset Group REST API. Note that you can't extend the Manage Asset Groups search page using Application Composer.

Here are some changes you can make using this tool:

- Modify the Asset Group object by defining new user-defined fields.
- Modify the Create and Edit Asset Group user interface pages by exposing your newly created fields for the object.
- Implement functional and data-level security for configured objects.
- Write Groovy scripts using the expression builder that appears in many places as you modify existing objects.

You can also use the Application Composer tool to create your own objects and child objects related to the Asset Group object. These objects can't be exposed in the Create and Edit Asset Group pages. However, if created, they are automatically provisioned in the Asset Group REST API.

> **Note:** By default, a configured object and its records are visible and editable only to users who are provisioned with the Custom Objects Administration (ORA_CRM_EXTN_ROLE) role. Ensure that this role is given to any user using Application Composer.

Before You Start

To use Application Composer, you must have the Application Implementation Consultant role.

Next, create a Sandbox in which to create, edit, preview, and deploy your changes to the Asset Group object. Here are the steps:

1. Navigate to Configuration > Sandboxes
2. Click Create Sandbox
3. On the Create Sandbox page, enter a name and description
4. Select Application Composer as the tool using the check box
5. Click Create and Enter. You will now be in the context of the sandbox for this environment.

Create, Edit, and Preview Your Changes

After you create a sandbox, you can navigate to the Application Composer page. Here are the steps:

1. Navigate to Configuration > Application Composer
2. Select the Application > ERP and SCM Cloud
3. Under Objects, expand the Standard Objects region
4. Under Standard Objects, expand the Asset Group object
5. You can now:
    - Define custom fields or manage standard fields
    - Edit the Create and Edit Asset Group pages
    - Manage actions and links
    - Manage server scripts

Here are the pages that you can extend:

Page	Description	Extensibility
Create Asset Group	This page is used to create a new Asset Group and is exposed both in the Maintenance Management work area as well as the Functional Setup Manager.	You can control the fields that are displayed in the create page. This includes deciding which attributes are displayed by default and the optional attributes which you can hide. Additionally, you can create your own fields and add them to the Create page.
Edit Asset Group	This page is used to edit an existing Asset Group and is exposed both in the Maintenance Management work area as well as the Functional Setup Manager.	You can control the fields that are displayed in the edit page. This includes deciding which attributes are displayed by default and the optional attributes which you can hide.

		Additionally, you can create your own fields and add them to the Edit page.

To extend a page, first create a duplicate copy of the page and then you can edit it. When all the changes are made, you can preview the changes using the same sandbox

Note: We recommend that you add any configured fields to both the Create and Edit Asset Group pages for consistency. The configured fields are automatically provisioned in the Asset Group REST API.

Save Your Work and Publish the Sandbox

When you're done making your changes, you must publish the sandbox by clicking the sandbox name and selecting Publish. This deploys your changes to the environment and your users can start to use the extended and configured pages.

For more information, refer to the Configuring Applications Using Application Composer and the Groovy Scripting Reference guides.

Related Topics

- Oracle Applications Cloud Configuring Applications Using Application Composer
- Oracle Applications Cloud Groovy Scripting Reference

5 Meters for Assets

Overview of Meters for Assets

Oracle Maintenance provides you the ability to define and use meters to track your asset utilization. You can define multiple reusable meter templates that can then be assigned to the applicable assets. You can also set up multiple meters for an asset to track different parameters of the asset.

The meters are created to model a physical meter that's installed on an asset. The physical meters have mechanical or electrical properties that define how they capture and record the utilization of an asset over time. The meter templates can be modeled for both types of meter: Continuous meter (for example, an Odometer) and Gauge meter (for example, a Thermometer).

The meter readings provide a historical record of an asset use or asset condition at user-defined intervals. The meter readings provide insight into the asset conditions and requirements that can be useful in scheduled and unscheduled maintenance. Typically, the meter readings are tracked by a physical counter on the asset or by the computer controls that are used to operate and monitor the asset. Few examples of the meter readings are number of operating hours, number of cycles, revolutions, and so on.

Use meters to forecast a preventative maintenance program if they're ascending in direction. Their Life-to-date cumulative value can be used along with an incremental base interval value to forecast future due dates for maintenance. Enter reading history over time to dynamically recalculate the forecast and adjust future dates. See the Maintenance Program chapter for more information.

As part of meters management, you can perform the following tasks:

- Define a meter template for an asset.
- Associate a meter to an asset.
- View the asset meter details.
- Delete an asset meter that doesn't have any meter reading history.
- Enter new meter readings.
- View meter reading history.
- Insert, edit, and disable meter readings in history.
- Edit the asset meter details.
- Manage meter templates

How You Create Meter Templates

Meter template begins by defining meter templates. Use the Manage Templates page to search for existing meter templates, view template details, and to create a new meter template.

Use meters to forecast a preventative maintenance program if they're ascending in direction. Their Life-to-date cumulative value can be used along with an incremental base interval value to forecast future due dates for maintenance. Enter reading history over time to dynamically recalculate the forecast and adjust future dates. See the Maintenance Program chapter for more information.

Search Meter Template

You can access the Manage Meter Templates page from the Maintenance Management landing page task menu, under the Asset and Work Definition section. This page consists of a search bar, results region, and an action button to create a new template. Upon rendering, the page automatically presents a list of search results sorted alphabetically. The search bar allows you to further refine the search results for existing coverages by Code, Name, Description, Unit of Measure, Meter Type, Reading Type, and Reading Direction. Clicking the hyperlinked name of an existing meter template navigates you to the meter template. where you can further edit and save any changes to the meter template.

1. Open the Meter Templates page by clicking the Manage Meter Templates link on the Tasks pane.
2. On the Meter Templates page, displays the following fields:

Field	Description
Meter Name	The name of the meter template.
Meter Code	The code of the meter template.
Meter Description	The description of the meter template.
Unit of Measure	The unit of measure of the meter template.
Meter Type	The type of the meter. The valid values are: - Continuous: The meter readings are sequential, and each new reading is related to the previous and next reading. - Gauge: The meter readings are unique, and each new reading is independent of the previous and next reading.
Reading Type	The type of the meter reading. The valid values are: - Absolute: The displayed reading on the physical meter at the time of recording. - Change: The net change in the current and last displayed readings on the physical meter.
Reading Direction	The direction of the meter reading. The valid values are: - Ascending: Increases in value. - Descending: Decreases in value. **Note:** Only Ascending direction meters are recommended to be used in a Preventative Maintenance Program, else the forecast dates won't calculate correctly.
Status	Status of the meter template.
Start Date	The date on which the meter template becomes active.
End Date	The date on which the meter template becomes inactive.
Asset Meters	A check box icon is displayed for a meter template if one or more asset meter associations are defined.

Define a New Meter Template

Clicking the Create Template button navigates you to the New Meter Template page, wherein, by clicking **Start**, you can define and save a new meter template and its details. You may click **Cancel** to return to the Manage templates page.

Perform the following 3 steps to define a new meter template for an asset:

First step is to define template essentials.

1. Open the Meter Templates page by clicking the Manage Meter Templates link on the Tasks pane.
2. Click on the Create Template button
3. Click on the Start button New Meter Template page
4. On the Define template essentials page
5. On the Create Template page, select from or enter values for the following fields and click Save:

Field	Description
Meter Name	The name of the meter template.
Meter Code	The code of the meter template.
Meter Description	The description of the meter template.
Unit of Measure	The unit of measure of the meter template.
Meter Type	The type of the meter. The valid values are: • Continuous: The meter readings are sequential, and each new reading is related to the previous and next reading. • Gauge: The meter readings are unique, and each new reading is independent of the previous and next reading.
Reading Type	The type of the meter reading. The valid values are: • Absolute: The displayed reading on the physical meter at the time of recording. • Change: The net change in the current and last displayed readings on the physical meter.
Reading Direction	The direction of the meter reading. The valid values are: • Ascending: Increases in value. • Descending: Decreases in value.
Start Date	The date on which the meter template becomes active.
End Date	The date on which the meter template becomes inactive.
Reading Minimum Value	The lowest value that can be accepted as a meter reading value. The attribute value is used for validation at the time of entering a new meter reading. **Note:** The Reading Minimum Value can only be defined for a meter of Continuous type with Change as reading type and a meter of Gauge type.
Reading Maximum Value	The highest value that can be accepted as a meter reading value. The attribute value is used for validation at the time of entering a new meter reading.

Field	Description
	Note: The Reading Maximum Value can only be defined for a meter of Continuous type with reading type as Change and a meter of Gauge type.
Record Meters at Work Order Completion	Option to control the meter reading entry at work order completion. The valid values are: • Do not allow • Mandatory The default value is Do not allow. **Note:** We recommend setting this value to Mandatory if this is the primary method for capturing an asset's meter readings, especially for a meter-based forecast
Record an initial meter reading for all meters	The initial meter reading value. If defined, the value becomes the first meter reading in history for the associated meter and will use the templates start date. Initial readings can only be created when asset meters are associated automatically during asset creation or during the manual association of an asset meter.
Allow meters to be reset to a predefined value	Option to specify whether or not the meter is to be reset. Applies only to meters defined as Absolute or Change in an Ascending direction. When a reset meter reading event is recorded, the Displayed Reading value will set equal to the Reset Value.
Allow meters to roll over from the end value to the start value	Specifies whether or not the meter rollover is to be enabled. A rollover event occurs when the physical meter reaches its maximum reading value and resets to a new value, typically zero. **Note:** A rollover can only be defined for a meter of Continuous type with reading type as Absolute and direction as Ascending.
Use meters to schedule forecasts in a maintenance	Option to indicate whether the meter can used to schedule a maintenance program. This field isn't applicable for Gauge meter type. **Note:** Only Ascending direction meters are recommended to be used in a Preventative Maintenance Program, else the forecast dates won't calculate correctly.
Calculate utilization rate from prior meter reading	The number of meter readings in history that are to be used for calculating a daily utilization rate. This field is optional if you select the Allow meter to schedule a maintenance program check box.

Note: For a Gauge meter, the reading type is always Absolute, and the direction is always Bidirectional. You should only enable meters for reset events if there's a business requirement to periodically reset the meter at the completion of a maintenance work order created using a preventative maintenance program or manually created work order. Also, the maintenance forecast uses the life-to-date meter, therefore, a reset doesn't directly impact the forecast but provides more of a visual indicator.

Second step is to set template options.

After the meter template essentials are defined and saved, you can optionally navigate to the other steps to further define the template with the following set options along with the respective questionnaire.

1. Click on the Continue button or Click on the Set Template Options Tab
2. On the Set Template Options page, select from or enter values for the following fields and click Save:

Field	Description
What should be the initial value when a meter is created?	The initial meter reading value. If defined, the value becomes the first meter reading in history for the associated meter and will use the templates start date. Initial readings can only be created when asset meters are associated automatically during asset creation or during the manual association of an asset meter. **Note:** • We recommend you to only set the initial value for templates that will be manually associated to an asset. During association, you can validate and set the initial value and start date in order to provide a baseline reading for each asset. • You can't mark readings as initial during creation in the Meter Readings REST API.
What should be the meter value after a reset?	The value to which the meter reading value is reset. This value is typically defined zero or one.
What should be the asset's daily utilization rate when scheduling a forecast with the meter?	The daily average total of meter readings that are expected to be recorded for the meter. This value is used to generate a meter-based forecast in a maintenance program for the asset by incrementing the last meter reading in history on a daily basis. You must enter this value if you select the Allow meter to schedule a maintenance program check box. You can also get a daily utilization rate calculated using your meter reading history. To do so, enter a value for the Number of Readings for Calculating a Utilization Rate field. After the calculated value is generated, the base utilization rate will be permanently disregarded by the preventative maintenance forecast. Additionally, you can also to calculate a historical daily utilization rate using your meter reading history. This value is used to supersede the manually defined Base Utilization Rate per Day, giving you a more accurate maintenance forecast that's adjusted routinely based on the latest meter readings. **Note:** This field isn't applicable for Gauge meter type.
How many meter readings should calculate an average utilization rate?	When the number of readings is reached in history, a calculated utilization rate is generated and displayed for the asset meter. When the calculated value is generated, the base utilization rate will be permanently disregarded by the preventative maintenance forecast. Therefore, you must set the number of readings to a value that accurately encompasses a range of reading history that will produce a calculated rate that tracks fluctuations in an asset's utilization. When calculated, the value will be recalculated after each new meter reading is recorded. The number of readings value can be updated, but care must be taken as changes in the calculated rate may adjust the maintenance forecast next due dates. The calculated rate is based on this logic: • Each time a meter reading is recorded, the application confirms if a value is defined for the Number of Readings field. • If defined, the application uses this value to count back into active reading history and confirm there's adequate number of active readings to consider. • If there's adequate history, the application identifies the two readings that are considered as the start and end dates of the reading period history that's being evaluated for a calculated rate. • The application then determines the number of elapsed days between these two readings: End Reading Date and Start Reading Date. • The application then calculates the average change per day in the Meter's Net Value over these dates using this formula: Calculated Utilization Rate = (End Reading Date Net Value – Start Reading Date Net Value)/(Number of Days). For example:

Field	Description
	• On day 1 your car has a Meter Net Value of 10,000 miles • On day 3 your car has a Meter Net Value of 10,500 miles • On day 6 your car has a Meter Net Value of 10,900 miles • On day 8 your car has a Meter Net Value of 11,345 miles • On day 11 your car has a Meter Net Value of 12,000 miles • If number of readings is set to 5, then when the 5th reading is recorded, the application determines that over a period of 10 days, you drove 2,000 miles • This equates to 200 miles per day = (12,000 – 10000)/(10 days), which is the new Calculated Daily Utilization Rate per Day. **Note:** • When a calculated rate is generated and saved for an asset meter, setting the number of readings value to zero doesn't disable or suspend the calculation of the daily rate. Additionally, setting the number to a high value will only delay the next recalculation of the rate, resulting in a static calculated utilization rate value. Therefore, we generally recommend to not set a value unless there's a sufficient history of asset utilization. • If the initial meter reading for an asset reflects the cumulative meter reading for an asset during creation, using this method to calculate the utilization rate may lead to undesirable results as the initial reading will be greater than the expected daily meter reading value. This field isn't applicable for Gauge meter type and will only apply to meters defined as Absolute or Change in an Ascending direction.
What should be a meter's minimum value when it rolls over?	The lowest meter reading value supported by the meter during a rollover event. The attribute value is used for validation at the time of entering a new meter reading when a rollover event is encountered. **Note:** If a reset value if defined, then the meter minimum value must be equal to the reset value.
What should be a meter's maximum value when it rolls over?	The highest meter reading value supported by the meter during a rollover event. The attribute value is used for validation at the time of entering a new meter reading when a rollover event is encountered.

Third step Add applicable items

You can also associate applicable inventory items to each template definition by organization for both subscription and asset type.

1. Click on the Continue button or Click on the Add applicable items tab
2. On the Add applicable items tab page, select from or enter values for the following fields and click Complete.

Field	Description
Master Organization	The master organization context of the associated item or the item class.
Item Number	Number that identifies the applicable item.
Item Description	Description of the applicable item.
Start Date	The date on which the applicable item association becomes active.
End Date	The date on which the applicable item association becomes inactive.
Actions	A menu that indicates the available user actions.

Note: The Item Applicability is optional and should only be defined if the meters are intended to “automatically” associate during asset creation.

How You Create Meters for an Asset

To Create a meter for an asset, first define a meter template in which you specify the behavior and validations for the meter. Then, associate the meter template to an asset for capturing the meter readings. If you have an existing meter template that you want to use, then you can skip the first step and just associate an existing template.

A meter template can be associated to one or many assets that share the same type of meter. Also, multiple meters can be associated to an asset to track various parameters of an asset. When you associate a meter template to an asset, a unique relationship is created. The corresponding meter reading history of each meter association is also unique.

Meter templates can also be automatically associated during asset creation or when copying an existing asset.

Use meters to forecast a preventative maintenance program if they're ascending in direction. Their Life-to-date cumulative value can be used along with an incremental base interval value to forecast future due dates for maintenance. Enter reading history over time to dynamically recalculate the forecast and adjust future dates. See the Maintenance Program chapter for more information.

Use meters to forecast a preventative maintenance program if they're ascending in direction. Their Life-to-date cumulative value can be used along with an incremental base interval value to forecast future due dates for maintenance. Enter reading history over time to dynamically recalculate the forecast and adjust future dates. See the Maintenance Program chapter for more information.

Define a New Meter Template

The meter template enables you to control how the corresponding meter readings are recorded. The meter template also enables you to define specific data validation rules that can be enforced at the time of recording the meter readings. You can create a meter template on the Create Template page in the context of an asset or by using a REST API.

Perform the following steps to define a new meter template for an asset:

1. Open the Assets page by clicking the Manage Assets link on the Tasks pane.
2. Search for the asset and click on the asset number link.
3. On the Asset: Overview page, select the Meters tab.
4. On the Asset: Meters page, from the Add from Template drop-down button, select: Create Template.
5. On the Create Template page, select from or enter values for the following fields:

Field	Description
Name	The name of the meter template.
Code	The code of the meter template.
Description	The description of the meter template.

Field	Description
UOM	The unit of measure of the meter template.
Meter Type	The type of the meter. The valid values are: - Continuous: The meter readings are sequential and each new reading is related to the previous and next reading. - Gauge: The meter readings are unique and each new reading is independent of the previous and next reading.
Reading Type	The type of the meter reading. The valid values are: - Absolute: The displayed reading on the physical meter at the time of recording. - Change: The net change in the current and last displayed readings on the physical meter. **Note:** Absolute and change readings that are created based on the displayed readings are used to increment the life to date meter reading value.
Reading Direction	The direction of the meter reading. The valid values are: - Ascending: Increases in value. - Descending: Decreases in value. **Note:** Only Ascending direction meters are recommended to be used in a Preventative Maintenance Program, else the forecast dates won't calculate correctly.
Start Date	The date on which the meter template becomes active.
End Date	The date on which the meter template becomes inactive.
Initial Value	The initial meter reading value. If defined, the value becomes the first meter reading in history for the associated meter and will use the templates start date. Initial readings can only be created when asset meters are associated automatically during asset creation or during the manual association of an asset meter. **Note:** - We recommend you to only set the initial value for templates that will be manually associated to an asset. During association, you can validate and set the initial value and start date to provide a baseline reading for each asset. - You can't mark readings as initial during creation in the Meter Readings REST API.
Reading Minimum Value	The lowest value that can be accepted as a meter reading value. The value is used for validation at the time of entering a new meter reading.

Field	Description
	The values for the Reading Minimum and Maximum parameters can only be defined for a meter of Continuous type with reading type as Change or a meter of Gauge type with Bidirectional as the reading type. For a Change meter, the value must be greater than or equal to zero. For a Gauge meter, the value can be positive or negative. You can define either a Reading Minimum, Maximum or both values to control the validation range of a meter reading. Examples include validating daily utilization between 0 and 24 hours, daily mileage ranges and temperature reading ranges.
Reading Maximum Value	The highest value that can be accepted as a meter reading value. The value is used for validation at the time of entering a new meter reading.
Reset allowed	Option to specify whether or not the meter is to be reset. Applies only to meters defined as Absolute or Change in an Ascending direction. When a reset meter reading event is recorded, the Displayed Reading value will set equal to the Reset Value.
Reset Value	The value to which the meter reading value is reset. This value is typically defined zero or one.
Rollover allowed	Specifies whether or not the meter rollover is to be enabled. A rollover event occurs when the physical meter reaches its maximum reading value and resets to a new value, typically zero. **Note:** A rollover can only be defined for a meter of Continuous type with reading type as Absolute and direction as Ascending.
Meter Maximum Value	The highest meter reading value supported by the meter during a rollover event. The attribute value is used for validation at the time of entering a new meter reading when a rollover event is encountered.
Meter Minimum Value	The lowest meter reading value supported by the meter during a rollover event. The attribute value is used for validation at the time of entering a new meter reading when a rollover event is encountered. **Note:** If a reset value if defined, then the meter minimum value must be equal to the reset value.
Record Meters at Work Order Completion	Option to control the meter reading entry at work order completion. The valid values are:

Field	Description
	○ Do not allow ○ Mandatory ○ Blank/Null The default value is Mandatory. This value ensures that all meters for an asset are required to be recorded during work order completion. Set the value to Do not allow to prohibit the recording of meters during work order completion. Delete the option, setting it to a blank/null value, for a meter to be optionally reported in the Redwood My Maintenance Work page. **Note:** We recommend setting this value to Mandatory if this is the primary method for capturing an asset meter reading, especially if the asset has a meter-based preventative maintenance forecast. If meters are captured programmatically using REST API, then set it to the default value of Do not allow.
Allow meter to schedule a maintenance program	Option to indicate whether the meter can used to schedule a maintenance program. This field isn't applicable for Gauge meter type. **Note:** Only Ascending direction meters are recommended to be used in a Preventative Maintenance Program, else the forecast dates won't calculate correctly.
Allow meters to be reset to a predefined value	Option to specify whether or not the meter is to be reset. Applies only to meters defined as Absolute or Change in an Ascending direction. When a reset meter reading event is recorded, the Displayed Reading value will set equal to the Reset Value. **Note:** It's not recommended to enable a meter for reset if it will be used to forecast a meter-based preventative maintenance program. Meter resets aren't supported and will result in incorrect forecast due dates.
Estimated Daily Utilization Rate	The daily average total of meter readings that are expected to be recorded for the meter. This value is used to generate a meter-based forecast in a maintenance program for the asset by incrementing the last meter reading in history on a daily basis. You must enter this value if you select the Allow meter to schedule a maintenance program check box. You can also get a daily utilization rate calculated using your meter reading history. To do so, enter a value for the Number of Readings for Calculating a Utilization Rate field. After the calculated value is generated, the base utilization rate will be permanently disregarded by the preventative maintenance forecast. Additionally, you can also to calculate a historical daily utilization rate using your meter reading history. This value is used to supersede the manually defined Base Utilization Rate per Day, giving you a more accurate maintenance forecast that's adjusted routinely based on the latest meter readings.

Field	Description
	Note: This field isn't applicable for Gauge meter type.
Number of Readings for Calculating a Utilization Rate	The number of meter readings in history that are to be used for calculating a daily utilization rate. This field is optional if you select the Allow meter to schedule a maintenance program check box. When the number of readings is reached in history, a calculated utilization rate is generated and displayed for the asset meter. When the calculated value is generated, the base utilization rate will be permanently disregarded by the preventative maintenance forecast. Therefore, you must set the number of readings to a value that accurately encompasses a range of reading history that will produce a calculated rate that tracks fluctuations in an asset's utilization. When calculated, the value will be recalculated after each new meter reading is recorded. The number of readings value can be updated, but care must be taken as changes in the calculated rate may adjust the maintenance forecast next due dates. The calculated rate is based on this logic: o Each time a meter reading is recorded, the application confirms if a value is defined for the Number of Readings field. o If defined, the application uses this value to count back into active reading history and confirm there's adequate number of active readings to consider. o If there's adequate history, the application identifies the two readings that are considered as the start and end dates of the reading period history that's being evaluated for a calculated rate. o The application then determines the number of elapsed days between these two readings: End Reading Date and Start Reading Date. o The application then calculates the average change per day in the Meter's Net Value over these dates using this formula: Calculated Utilization Rate = (End Reading Date Net Value – Start Reading Date Net Value)/(Number of Days). For example: o On day 1 your car has a Meter Net Value of 10,000 miles o On day 3 your car has a Meter Net Value of 10,500 miles o On day 6 your car has a Meter Net Value of 10,900 miles o On day 8 your car has a Meter Net Value of 11,345 miles o On day 11 your car has a Meter Net Value of 12,000 miles o If number of readings is set to 5, then when the 5th reading is recorded, the application determines that over a period of 10 days, you drove 2,000 miles o This equates to 200 miles per day = (12,000 – 10000)/(10 days), which is the new Calculated Daily Utilization Rate per Day.

Field	Description
	Note: - When a calculated rate is generated and saved for an asset meter, setting the number of readings value to zero doesn't disable or suspend the calculation of the daily rate. Additionally, setting the number to a high value will only delay the next recalculation of the rate, resulting in a static calculated utilization rate value. Therefore, we generally recommend to not set a value unless there's a sufficient history of asset utilization. - If the initial meter reading for an asset reflects the cumulative meter reading for an asset during creation, using this method to calculate the utilization rate may lead to undesirable results as the initial reading will be greater than the expected daily meter reading value. - This field isn't applicable for Gauge meter type and will only apply to meters defined as Absolute or Change in an Ascending direction.

Note: For a Gauge meter, the reading type is always Absolute and the direction is always Bidirectional.

Note: You should only enable meters for reset events if there's a business requirement to periodically reset the meter at the completion of a maintenance work order created using a preventative maintenance program or manually created work order. Also, the maintenance forecast uses the life-to-date meter, therefore, a reset doesn't directly impact the forecast but provides more of a visual indicator.

6. Click the Save button or the Save and Close button.

For more details on creating and editing meter templates using a REST API, refer to the REST API for Oracle Supply Chain Management Cloud guide.

Meter Template Modeling Examples

You can define meter templates to model these common types of meters. Note that all continuous meter readings will create a historical record that includes not only the recorded reading value, but also calculated net change value from the last reading in history, and a cumulative life to date reading value. Therefore, no matter if an absolute or change reading is recorded, these values can provide insight in the exact reading, its change since the last reading, and its overall cumulative reading value.

Meter Example	Meter Setup
Hour Meter – Displayed Value	This meter represents the latest displayed reading (absolute value) value on the meter. Therefore, you must define the meter as Continuous > Absolute > Ascending. Hour meters are typically not allowed to be Reset; however, they may encounter a rollover event after they reach their maximum values. An example is an hour meter that has 6 digits and will rollover once it reaches 99999.9 hours back to a reading of 0. Hour meters can be easily modeled to guide the required preventative maintenance for the asset. For example, you can model the requirement for an oil change with an interval of every 100 hours.

Meter Example	Meter Setup
Hour Meter – Incremental Value	This meter represents the incremental value between the latest displayed reading value and the last recorded displayed reading value on the meter. This is helpful to understand the incremental utilization of an asset within or across days in time. Therefore, you should define the meter as Continuous > Change > Ascending. This type of meter can be helpful if you record multiple readings within a single day, representing the utilization of the asset between events, without using having to Reset the meter. The most common example is used for aviation, where individual flight segments are recorded based on the incremental flight time. Not only are the flight times for each segment captured as individual readings, but the total life to date cumulative meter reading history is calculated as well. This type of hour meter definition can also be used to guide the preventative maintenance using the same method as the Absolute meter example. The Maintenance Program always uses the meter's life to date value to forecast maintenance, so no matter which meter definition you use, the forecast will be the same.
Odometer – Displayed Value	This meter represents the latest total displayed reading on the meter. This type of meter is exactly like the hour meter. Therefore, you should define the meter as Continuous > Absolute > Ascending. Odometer meters are typically not allowed to be Reset; however, they may encounter a Rollover event once they reach their maximum values. An example is an Odometer meter that has 7 digits and will rollover once it reaches 999999.9 hours back to a reading of 0.
Trip Odometer - Incremental Value	This meter is used to represent the total incremental value of an odometer over a specific time period, trip or event since the last time the meter was Reset. While similar to the incremental Hour Meter, what makes this unique is that user or system intervention is taken to perform a reset of the Meter after a recorded event or trigger event. An example is a delivery truck which makes several deliveries during a day. A trip odometer meter could be used to record the individual distances between deliveries. The meter would be expected to be reset to 0 before the first leg of the trip, then reset each time a new leg is started. The displayed value of the meter that's recorded with the trip distance, while the meter's life to date readings will be incremented by each trip odometer reading for the leg. Therefore, you must define the meter as Continuous > Absolute > Ascending and include the ability to perform a Reset to a Reset value.
Manufacturing Input – Descending Value	You can define meters that have a displayed value that descends to support processes such as Manufacturing. While not as common as ascending meters, an example could be a process that has an input material that only lasts for X iterations before needing replacement. Therefore, understand how many additional widgets can be produced before the input is out could be an import meter reading. Therefore, you must define the meter as Continuous > Absolute > Descending. For example, you have a bottling process where you can fill 1000 bottles from a source tank before it need to switch to another tank to continue the bottling process. Using a descending meter, you can set the initial reading at 1000, then record periodic meter readings such as 994, 963, etc. to monitor how much source material in the tank is left. After the tank is empty, you can reset the Meter to 1000 and begin using the next tank. **Note:** Use only Ascending direction meters in a Preventative Maintenance Program, else the forecast dates won't calculate correctly. The Life-to-date reading value won't accurately reflect the cumulative usage of the meter over time. Therefore, it's recommended to use an ascending meter, either change or absolute, to model an preventative maintenance forecast.
Temperature Probe	This meter represents an independent value at a point in time, such as the current temperature. The reading may or not be relevant to the previous or next reading in history but is recording for historical monitoring and trend analysis.

Meter Example	Meter Setup
	Therefore, you must define the meter as Gauge > Absolute > Bidirectional. You can leverage the Reading Minimum and Maximum Value definitions in the Meter to control the physical limit range of the temperature readings.

Assign Meter Template to an Asset

You can search for a meter template and add it to an asset on the Meter Template dialog box. The search result doesn't display the inactive meter templates and duplicate meters, or the meters that are already associated to the asset.

Perform the following steps to associate a meter template to an asset:

1. On the Asset: Overview page, select the Meters tab.
2. On the Asset: Meters page, click the Add from Template button.
3. On the Meter Template dialog box, search for the meter template.
4. In the Search results region, select the meter template.
5. Click the Apply button and then the OK button.
6. Verify that the template is displayed in the meter list.
7. Click Save to create a unique relationship between the asset and the meter template.

How You Delete Meters for an Asset

You can delete a meter association to an asset only if there isn't any meter reading history recorded beyond an initial reading. When you delete a meter from the list, the meter association with the asset and the initial reading entered for the asset meter are deleted. Now, the meter template remains available to be associated with the same or any other assets.

The **Asset: Meters** page lists all the active meters associated to an asset. A **Delete** icon is shown only for the meters that can be deleted. Click the **Delete** icon to delete the asset meter. A warning message is displayed and you can click the **OK** button to proceed with the delete action.

An alternative to deleting a meter association with an asset is to end date the meter association by setting the end date to a value that's equal to or prior to the current date.

How You Record Meter Readings for an Asset

You can record the new meter readings using the Enter Readings page, REST API, or by File-Based Data Import.

Access this page for each asset on the Meters tab of the Asset Overview page and during Work Order Operation completion using the Complete with Details flow.

The following are the points to remember when entering a new meter reading:

- The new meter readings should be recorded sequentially by date and time. However, you can enter historical meter readings out of sequence during data correction only using the Enter Readings page. Additional details about out of sequence recordings are listed later in this section.
- Readings may be recorded daily, multiple times a day, or even only when maintenance is completed as governed by your business requirements and asset activity. If multiple readings are recorded, the application uses the last reading of a day for the forecast program.
- If an asset meter is used to forecast a maintenance program, then frequent meter recordings can more accurately update the future forecasted due dates for preventative maintenance.
- Duplicate meter readings, by date and time, are never permitted for active readings.
- Meter readings can be recorded one a day, multiple times a day, once a week, or perhaps even only when maintenance is accomplished using a work order. Regardless of the recording frequency, the meter reading history will reflect the incremental changes as well as record the cumulative life to date history of the meter.
- Continuous meter readings will create a historical record that includes not only the recorded reading value, but also a calculated net change value from the last reading in history, the displayed reading value and a cumulative life to date reading value. Therefore, no matter if an Absolute or Change reading is recorded, these values can provide insight in the exact reading, its change since the last reading, its displayed reading, and its overall cumulative reading value. During a Reset or Rollover event, while the Displayed reading will reflect the encountered event, the life to date reading value will continue to increment and will not be set to 0.
- If multiple readings are recorded in a single day, then the system uses the last reading of a day for the forecast program.
- Duplicate meter readings, by date and time, are never permitted for active readings.
- The new meter readings must follow the validation rules defined in the meter template. You can only insert new readings after the last reset or locked meter reading in history
- In case of a meter Rollover event for Absolute meter, you can specify it when entering the meter reading. This relaxes certain validations and enables recording of the meter reading.
- In case of a meter Rollover event for a Change meter, the application will automatically indicate when the rollover event occurs
- In the case of a meter Reset event for either an Absolute or Change meter, there isn't any requirement to enter a reading value, as the meter definition contains the value to which the meter will be Reset. It's recommended to be 0 or 1 in most cases.
- You can record readings for inactive meters only if the reading date is prior to the meter end date.
- When you enter a new reading, the status column is updated with a status of Recorded, Reset, or Rolled over. Only Initial readings will display a status of Initial.
- If meter readings are mandatory at work order completion, then you must enter readings for all the meters. You can't optionally record meters or only record certain meters.

Steps to Enter a New Meter Reading

Perform the following steps to enter a new meter reading:

1. Open the Assets page by clicking the Manage Assets link on the Tasks pane.
2. Search for the asset and click on the asset number link.
3. On the Asset: Overview page, select the Meters tab. The Asset: Meters page displays the meters associated with the asset.
4. On the Asset: Meters page, click the Enter Reading button.

5. By default, the Enter Readings page displays the active meters only. To display all the meters including the inactive meters, from the Show drop-down list, select: All meters.
6. For the specific meter, select from or enter values the following fields:

Field	Description
Reading Type	The type of reading as defined by the meter definition. The field will only be enabled as a drop down if the meter can also be Reset. By default, the drop down will display the default Reading type, such as Absolute or Change. You don't need to change this value for a regular reading event. You can update the Reading Type to Reset only if the reading is a Reset event. When updated, the New Reading and Rollover fields below disabled, as the reading's Reset value will come automatically from the meter definition.
New Reading	Enter the new meter reading value.
Rollover	Select the check box to indicate that the new meter reading has incurred a roll over. This field is applicable only for the meter of Absolute Ascending type.
Reading Date	Enter the date on which the meter reading is recorded.
Comments	Enter any comment regarding the new meter reading.

7. Click Save or Save and Close.
8. The Net Change, Displayed Reading, and Life-to-Date Reading values are then calculated for the meter reading. For a historical reading, all the subsequent active reading rows will have the Net Change, Displayed Reading, and Life-to-Date Reading values recalculated based on the newly inserted reading row.
9. Click the History icon to view the recorded readings on the Meter row in the Readings page, or from the Asset: Meters tab for a unique Asset Meter.

Validations at the Time of Entering a New Meter Reading

At the time of a new meter reading entry, there are certain validations in place that are driven by the meter template. The meter type, reading type, and direction defined in the meter template determine the validation rules. The Net Change, Displayed Reading, and Life-to-Date Reading values are also calculated based on the meter type, reading type, and direction defined in the meter template.

The following table discusses the meter template combinations and their respective validations at the time of entering a new meter reading value:

Meter Type	Reading Type	Direction	Validations
Continuous	Absolute	Ascending	The date and time of new reading must be later than or equal to the date and time of last reading. The new reading value must be greater than or equal to the last reading value.

Meter Type	Reading Type	Direction	Validations
Continuous	Absolute	Descending	The date and time of new reading must be later than or equal to the date and time of last reading. The new reading value must be less than or equal to the last reading value.
Continuous	Change	Ascending	The date and time of new reading must be later than or equal to the date and time of last reading. The new reading value must be greater than or equal to the last reading value. The new reading value may also be validated against the minimum and maximum reading thresholds.
Continuous	Change	Descending	The date and time of new reading must be later than or equal to the date and time of last reading. The new reading value must be greater than or equal to the last reading value. The new reading value may also be validated against the minimum and maximum reading thresholds.
Gauge	Absolute	Bidirectional	The date and time of new reading must be later than or equal to the date and time of last reading. The new reading value is validated against the minimum and maximum reading thresholds.

The Net Change value is calculated as the difference between the current and last Displayed Reading values for a meter. For a Change meter, this value is the same as the reading value. For an Absolute meter, this value indicates the delta value between readings in history.

The Displayed Reading represents the current value that's shown on a physical meter. This value is the same as the Life-to-Date Reading value up until the point that a meter is reset or encounters a Rollover event. For a Change meter, this value is calculated by adding the current Net Change value to the previous Displayed Reading value. For an Absolute meter, this value is always the same as the reading value.

The Life-to-Date Reading represents the cumulative reading value for an asset meter, irrespective of Reset or Rollover events.

The following table discusses the meter template combinations and their respective Life-to-Date Reading value calculation:

Meter Type	Reading Type	Direction	Life-to-Date Reading Value
Continuous	Absolute	Ascending	The current Life-to-Date Reading value is typically equal to the new reading value and the Displayed Reading value. It is calculated by adding the current Net Change value to the previous Life-to-Date Reading value. As an exception, the Life-to-Date Reading value isn't equal to the new reading value and the Displayed Reading value if a reset or rollover event occurs during the meter reading entry.
Continuous	Absolute	Descending	The current Life-to-Date Reading value is equal to the new reading value and the Displayed Reading value.

Meter Type	Reading Type	Direction	Life-to-Date Reading Value
Continuous	Change	Ascending	The current Life-to-Date Reading value is calculated by adding the new reading value to the previous Life-to-Date Reading value. It will be equal to the Displayed Reading value unless a reset or rollover event occurs during the meter reading entry
Continuous	Change	Descending	The current Life-to-Date Reading value is calculated by subtracting the new reading value from the previous Life-to-Date Reading value. If will be equal to the Displayed Reading value.
Gauge	Absolute	Bidirectional	The current Life-to-Date Reading value is equal to the new reading value and the Displayed Reading value.

Recording Out of Sequence Readings

Meter readings are generally expected to be recording sequentially by date and time. However, historical readings can be recorded between existing active readings. When this occurs, the system must adjust all the future reading history based on the new reading. The system will set all future readings to a status of canceled and will automatically recreate new readings on the same date and time with updated Net Change, Displayed Reading, and Life-to-Date Reading values. This will ensure reading history is correctly maintained, regardless of meter type.

> **Note:** Use the Enter Reading page to enter the Historical readings that're out of sequence. REST API and File-Based Data Import can't be used to enter the out-of-sequence historical readings.

Additionally, new readings can only be inserted after the last locked date in history. This and the process for disabling historical readings are covered in the section *How You View and Edit Meter Readings for an Asset .*

How You View and Edit Meter Readings for an Asset

You can view and edit the meter reading history of an asset and its associated meters on the Reading History page.

Access this page for each asset meter on the Meters tab of the Asset Overview page, on the Meter Reading page, and during Work Order Operation completion using the Complete with Details flow on the Meter Reading page.

When viewing the Reading history page, you will see that page only displays meter reading history for the last seven days from the current date by default. You can select the period from the Show drop-down list for which you want to view the history.

The reading history region will display the latest reading in history first, followed by previous readings. For each reading you will see:

Column	Overview and Actions Allowed
Reading Type	The type of reading that was recorded. This field is not updatable for a reading.
Reading Date and Time	The reading event date and time.

Column	Overview and Actions Allowed
	Only the latest active reading in history can be updated. The Date and Time value can be updated as long as the reading value follows the meter definition rules.
Reading value	The reading event value. Only the latest active reading in history can be updated. The Reading value can be updated as long as the reading value follows the meter definition rules, similar to a new reading.
Net Change value	The difference between the current Reading value and the last active Reading value in history. This value is automatically calculated and is not updatable for a reading.
Displayed Reading value	The cumulative Reading Value that is displayed on the Meter. This value is automatically calculated as the Reading value + the previous active reading's Displayed Reading value. For an Absolute meter reading, the Reading value and Displayed Reading value are the same. For a Change meter reading, the values will be different, as the previous reading's Displayed Reading is incremented by the current reading's Change reading. This field is not updatable for a reading. During a Reset or Rollover event, the Displayed Reading value will be automatically adjusted. This means it could be reset to 0, 1 or the latest Rollover reading value.
Life-to-Date Reading value	The cumulative Reading Value for the Meter. This value is automatically calculated as the Reading value + the previous active reading's Life-to-Date Reading value. This field is not updatable for a reading. The Displayed Reading and Life-to-Date Reading value will be equal until the first Reset or Rollover event. Once this occurs, these values will not be the equal, allowing for current and lifetime utilization to be recorded in history.
Work Order	A work order reference will be displayed if the reading is recorded during Work Order completion using the Complete with Details flow.
Comments	Optional comments about the reading. The comments can be updated except for a Disabled reading.
Status	The status of the reading. Upon creation, it will display as Recorded. If updated, then the status changes to Edited. If you disable the reading, the status will go to Disabled.

The following are the points to remember when editing the meter reading history:

- You can edit meter reading history for both active and inactive meters.
- You can disable any reading if it was recorded after the last reset or locked meter reading in history, and if the Disable icon is active for the reading. When disabled, all the subsequent active reading rows will be canceled and new replacement readings will be created with the updated Net Change, Displayed Reading, and Life-to-Date Reading values recalculated based on the last active row in the reading history
- You can also edit a historical meter reading by first disabling the reading, and then insert a new reading in the Enter Readings page for the same date and time, but with a new reading value and comments. Once recorded, all the subsequent active reading rows are canceled, and new replacement readings are created with the updated Net Change, Displayed Reading, and Life-to-Date Reading values recalculated based on the last active row in the reading history.
- When you edit or disable a reading, the status column is updated with a status of either Edited or Disabled.

Note: Use the Enter Reading page to enter the Historical readings that're out of sequence. REST API and File-Based Data Import can't be used to enter the out-of-sequence historical readings.

Meter readings can be locked by other Oracle Cloud solutions, such as Oracle Subscription Management. Once a historical reading is locked, the date of the last locked reading in history is displayed in the asset meters list for an asset. The date value will be visible to all users, however, there is no direct locking capability available in the asset meter pages. This capability will only be available from other Oracle Cloud solutions and isn't intended to be used by Maintenance users in the asset pages.

The locked date will be used to validate any new readings that you enter using the Enter Readings page. You can only enter new readings that are greater than the locked date in history, else a validation will produce an appropriate error message, preventing you from entering a reading that could impact the integrity of reading history. Additionally, you can't disable readings before the last locked reading in history.

You can continually lock readings in history by other solutions if they're for a date that's greater than the last locked reading in history. Typically, this occurs for a billing cycle, such as locking the last reading in a billing period.

How You Update Meters for an Asset

You can view and update the details for an asset meter using the show/hide region. The fields are defaulted from the Meter Template, if defined, during asset meter creation. They can then be further edited at the asset meter level. These values are typically used if the meter is used to forecast a preventative maintenance program.

The show/hide region shows these attributes:

Name	Description
Record Meters at Work Order Completion	Option to control the meter reading entry at work order completion. The valid values are: • Do not allow • Optional • Mandatory • Blank/Null The default value is Mandatory. This value ensures that all meters for an asset are required to be recorded during work order completion. Set the value to Do not allow to prohibit the recording of meters during work order completion. Delete the option, setting it to a blank/null value, if you wish for a meter to be optionally reported in the Redwood My Maintenance Work page. **Tip:** We recommend setting this value to Mandatory if this is the primary method for capturing an asset meter reading, especially if the asset has a meter-based preventative maintenance forecast. If meters are captured programmatically using REST API, then set it to the default value of Do not allow.
Allow meter to schedule a maintenance program	Option to indicate whether the meter can used to schedule a maintenance program. This field isn't applicable for Gauge meter type.

	Note: Use only Ascending direction meters in a Preventative Maintenance Program, else the forecast dates won't calculate correctly.
Estimated Daily Utilization Rate	The daily average total of meter readings that are expected to be recorded for the meter. This value is used to generate a meter-based forecast in a maintenance program for the asset by incrementing the last meter reading in history on a daily basis. You must enter this value if you select the Allow meter to schedule a maintenance program check box. You can also get a daily utilization rate calculated using your meter reading history. To do so, enter a value for the Number of Readings for Calculating a Utilization Rate field. After the calculated value is generated, the base utilization rate will be permanently disregarded by the preventative maintenance forecast. Additionally, you can also to calculate a historical daily utilization rate using your meter reading history. This value is used to supersede the manually defined Base Utilization Rate per Day, giving you a more accurate maintenance forecast that's adjusted routinely based on the latest meter readings. **Note:** This field isn't applicable for Gauge meter type.
Number of Readings for Calculating a Utilization Rate	The number of meter readings in history that are to be used for calculating a daily utilization rate. When the number of readings is reached in history, a calculated utilization rate is generated and displayed for the asset meter. When the calculated value is generated, the base utilization rate will be permanently disregarded by the preventative maintenance forecast. Therefore, you must set the number of readings to a value that accurately encompasses a range of reading history that will produce a calculated rate that tracks fluctuations in an asset's utilization. When calculated, the value will be recalculated after each new meter reading is recorded. The number of readings value can be updated, but care must be taken as changes in the calculated rate may adjust the maintenance forecast next due dates. The calculated rate is based on this logic: • Each time a meter reading is recorded, the application confirms if a value is defined for the Number of Readings field. • If defined, the application uses this value to count back into active reading history and confirm there's adequate number of active readings to consider. • If there's adequate history, the application identifies the two readings that are considered as the start and end dates of the reading period history that's being evaluated for a calculated rate. • The application then determines the number of elapsed days between these two readings: End Reading Date and Start Reading Date. • The application then calculates the average change per day in the Meter's Net Value over these dates using this formula: Calculated Utilization Rate = (End Reading Date Net Value – Start Reading Date Net Value)/ (Number of Days). For example: • On day 1 your car has a Meter Net Value of 10,000 miles • On day 3 your car has a Meter Net Value of 10,500 miles • On day 6 your car has a Meter Net Value of 10,900 miles • On day 8 your car has a Meter Net Value of 11,345 miles • On day 11 your car has a Meter Net Value of 12,000 miles

	• If number of readings is set to 5, then when the 5th reading is recorded, the application determines that over a period of 10 days, you drove 2,000 miles • This equates to 200 miles per day = (12,000 – 10000)/(10 days), which is the new Calculated Daily Utilization Rate per Day. In the Redwood Asset details page, you manage an asset's meters using a region the overview tab. You can set, edit, and even delete the number of readings value. If you choose to delete the value, the next reading will also delete the calculated utilization value per day as well. If you are using the meter to forecast preventative maintenance, the system will revert to using the base utilization rate. At any time in the future, you can optionally set a new number of readings value. **Note:** • When a calculated rate is generated and saved for an asset meter, setting the number of readings value to zero doesn't disable or suspend the calculation of the daily rate. Additionally, setting the number to a high value will only delay the next recalculation of the rate, resulting in a static calculated utilization rate value. Therefore, we generally recommend to not set a value unless there's a sufficient history of asset utilization. • If the initial meter reading for an asset reflects the cumulative meter reading for an asset during creation, using this method to calculate the utilization rate may lead to undesirable results as the initial reading will be greater than the expected daily meter reading value. • This field isn't applicable for Gauge meter type and will only apply to meters defined as Absolute or Change in an Ascending direction.
Calculated Utilization Rate per Day	A read-only value is displayed if the number of readings for calculating a utilization rate value is defined and there's sufficient active reading history to calculate a rate. Every new reading results in an updated value. If you change the number of readings, then the next new reading also results in an updated value.

How You Perform Mass Association of Meter Templates

You can do the mass association of meter templates by running the Perform a Mass Association of Meter Templates scheduled process either from the Scheduled Processes work area or from the Meter Template UI.

After the scheduled process runs and completes successfully, you see the generated reports in the Scheduled Processes work area.

Run the Process from Scheduled Processes Work Area

1. From the Scheduled Process work area, click **Schedule New Process**.
2. In the Schedule New Process dialog, Name field, enter **Perform a Mass Association of Meter Templates** and click **OK**.

3. In the Process Details dialog, you can configure an optional parameter:

Scheduled Process Parameter	Description
Meter Template	Name of a meter template.

4. Click **Submit** to run the process.

   After the scheduled process completes, review the log files. The log files show details such as parameters used for job run, the assets that are newly added to meter templates, and assets that are already associated with the meter templates.

Run the Process From The Meter Templates Page in The Context of an Item

1. Navigate to the Asset and Work Definition work area and select **Manage Meter Templates**.
2. Search for the meter template and navigate to the Edit Meter Template page.
3. Select the Add applicable items tab and make sure the applicable item is added.
4. Click the **Schedule Mass Asset Update** button and note down the process ID.

   This runs the Perform a Mass Association of Meter Templates scheduled process in the context of the item or items mentioned in the add applicable tab. From the Scheduled Processes work area, search for the submitted process ID to track the status of the process. After the process completes, review the log files. The log files show details such as parameters used for job run, the assets that are newly added to meter templates, and assets that are already associated with the meter templates.

How You Manage Meters Using REST API

Define, view, and update meter templates and then record view, and edit meter readings using REST services.

Use the Meter Template REST API to:

- Create and view a meter template to specify the behavior and validations for the meter. This includes the meter applicability of the template.
- Update a limited set of attributes for the meter template that are only defined at the template:
  - Initial Reading
  - Reset allowed check box
  - Reset Value
  - Rollover allowed check box
  - Rollover Maximum Value
  - Rollover Reset Value
  - Active End Date
- Update the meter applicability
  - Item

    - Organization
    - Active End Date

- Update a limited set of attributes for the meter template that are defined at the template, but will be applied to only newly created asset meters:
    - Base Utilization Rate per Day
    - Record Meters at Work Order Completion
    - Allow meter to schedule a maintenance program
    - Number of Readings for Calculating a Utilization Rate

Meter Readings REST API

Use the Meter Reading REST API to create, view, and edit meter readings. Here's more about how this works:

- When you create using REST API, new readings are created in sequence over time, following the validations of the meter template.
- You can't update a reading date, time, or value. However, you can use the service to disable a historical reading if it is after the last locked reading in history.
    - You can disable both asset and subscription meter readings.
    - After the readings are disabled, the system cancels and recreate any historical records. This updates key fields such as the net change, displayed reading, and life-to-date reading values.
    - You can disable a Reset or Rollover reading only if it's the last active reading in history and you can't disable a locked reading.

See the REST API for Oracle Supply Chain Management Cloud guide to learn more.

How Asset Meters Get Automatically Associated

When you define or update a meter template using REST APIs, you can associate inventory items as child resources of the template using the Meter Applicability child resource.

When you create a new asset, either manually, via services, or upload, the application looks to see if there a meter applicability for the asset's item. If there is a match, then the application automatically creates an asset meter for the asset. Thus, you get a seamless process for the automatic creation of asset meters and supports the standardization of asset meters across similar types of assets that share a common item.

The meter applicability is defined for the item at the master organization level. This is because items are uniquely created for the master and all its associated organizations. Therefore, defining the applicability at the master organization allows for any asset created in one of its associated organizations to be validated for the automatic creation of an asset meter.

The meter applicability is further controlled by a start and end date. Only a start date is required to activate the applicability definition. Once an end date is set and reached in time, the applicability will be deactivated.

Use the following actions in Meter Template REST API for this purpose:

- Use the POST method to create new inventory item associations by organization.

- Use the GET method to obtain the inventory item applicability for a meter template definition.
- Use the PATCH method to edit certain attributes of an inventory item association for a meter template definition.

How You Import and Export Meter Readings

Create and update asset meter readings in bulk using the File-Based Data Import process.

How You Import Meter Readings

Use meter reading imports to:

- Create new sequential readings by value and date/time for an asset-based meter
- Create new sequential readings by value and date/time for a subscription-based meter

For more details, refer to the File-Based Data Import for Oracle Supply Chain Management Cloud and Scheduled Processes for SCM guides.

Purge Batch Data from Maintenance Import Interfaces

The upload or import of data may result in a warning or error status sue to issues with the data. When this occurs, the data can't be further processed from the interface tables. In such a case, the Asset Administrator can run the Purge Maintenance Records from Interface scheduled process to delete the asset data from the interface tables from all or just a specific import process. The scheduled process can be run on demand or setup on a schedule as required by your business processes.

How You Export Asset Meters for Bulk Recording

On the Manage Assets page, you can search for a range of assets and export their Meters details. You can then use the information as the basis for creating a meter reading import template.

To begin, search for a range of assets in the Manage Assets page, then click the Export Asset Meters icon at the search header, to open the Meter Export Parameters dialog box On this dialog box, if you use the **Include child assets** check box, the exported file includes child asset meters for the parent assets returned in the results.

Click the OK button to generate the Export Asset Meters scheduled process job with a reference number. When the job is successfully completed, an output file in Excel format is created to closely match an asset's File-Based Data Import format. You can click the file name, called Default Document, to download the output file to your desktop for further editing.

The exported asset meter file includes the asset number, meter code, last active reading date and value. The format is very similar to the readings tab in the import file. You can copy and paste the applicable asset meters into the meter reading import template, update the reading date and value as required, in reference to the last reading date, time and value.

> **Note:** You can't edit the exported spreadsheet and upload it. You must copy and paste the details into the latest upload spreadsheet.

6 Asset Supplier Warranty

Overview of Supplier Warranty

Oracle Fusion Cloud Maintenance provides an integrated Asset Supplier Warranty solution for Enterprise Assets, allowing you to track warranty for an asset throughout its service lifetime, from purchase until disposal.

> **Note:** Supplier warranty can only be tracked for assets that are based on items defined as full life cycle, maintainable, serial controlled and purchasable from suppliers.

The warranty can then be considered during work order execution for an asset, providing you the ability to make timely repair decisions that may result in a warranty claim for the reimbursement of expenses or replacement of a component. Warranty is expected to naturally expire over time for an asset.

Asset warranty is typically used to seek reimbursement for the cost of repairing the top-level asset in a complex assembly, such as a truck, forklift, or assembly line. This includes the material and resources that are used in a maintenance repair work order. After the warranty period of an asset expires, individual piece part warranty would be used to track the replacement of components that are covered by purchase warranty agreements. Individual piece part warranty is not currently covered by this solution.

Here's the list of flows in the Supplier Warranty Solution:

- Manage condition event codes (optional)
- Manage items in *Product Information Management* (optional)
- Manage standard operations (optional)
- Manage provider labor rates using REST API (optional)
- Manage provider standard repairs using REST API (optional)
- Manage work definitions (optional)
- Manage *Cost Accounting*
- Manage warranty coverages
- Manage warranty contracts
- Purchase, receipt, and creation of an asset based on an item
- Manage maintenance work order execution
- Create supplier warranty entitlements and claims using a scheduled process
- Manage supplier warranty entitlements and claims

To access these flows you must have the Manage Supplier Warranty Duty privilege assigned to your job role or the View Supplier Warranty Duty privilege for view only access:

- Manage Supplier Warranty Duty (ORA_MNT_MANAGE_SUPPLIER_WARRANTY_DUTY_CRM)
- View Supplier Warranty Duty (ORA_MNT_VIEW_SUPPLIER_WARRANTY_DUTY)

Warranty contracts naturally expire over time when their end date or calculated end date reaches the current date. To ensure the routine recalculation of the calculated end date, for contracts that use meters, and to update the status of

all contracts when the expire, you should routinely run the **Process Supplier Warranty Contracts - Additions and Changes** scheduled process.

> **Note:** This solution isn't intended for Customer Assets that are sold as part of the Sales Order process, or for Assets that are maintained using the Depot Repair, Field Service, or Service Logistics processes. Extending warranty for services is typically covered by the Oracle Subscription Management offering.

How You Create Supplier Warranty Provider Rates

The supplier warranty provider rates resource manages the reimbursable labor rates for a warranty provider over time.

Manage Labor Reimbursement Rates

You can use the Manage Labor Reimbursement Rates page to search for existing labor reimbursement rates, view labor reimbursement rates details, and to create a new labor reimbursement rate. You can access the Manage Labor Reimbursement Rates page from the Maintenance Management landing page task menu, under the Maintenance Setup section. This page consists of a search bar, results region, and an action button to create a new labor reimbursement rate. Upon rendering, the page automatically presents a list of search results sorted alphabetically. The search bar allows you to further refine the search results for existing labor reimbursement rates by warranty provider and warranty provider number. Clicking the action pencil icon on an existing row, you can further edit and save any changes to the labor reimbursement rate.

1. Open the Labor Reimbursement Rates page by clicking the Manage Labor Reimbursement Rates link on the Tasks pane.
2. On the Labor Reimbursement Rates displays the following fields:

Field	Description
Warranty Provider	Name of the warranty provider who provides warranty coverage.
Warranty Provider Number	Number that uniquely identifies the warranty provider who provides warranty coverage.
Currency	Name of the currency of the labor rate.
Hourly Rate	Value that identifies the labor rate per hour for a resource.
Submission Due In(Days)	Value that identifies the number of days in which a claim must be submitted based on the claim date.
Start Date	The date on which the supplier warranty labor reimbursement rate becomes active.
End Date	The date on which the supplier warranty labor reimbursement rate becomes inactive.
Actions	A menu that indicates the available user actions.
Active	Displays all the active supplier warranty labor reimbursement rate.
All	Displays all the supplier warranty labor reimbursement rate.
Inactive	Displays all the inactive supplier warranty labor reimbursement rate.

Define a Labor Reimbursement Rate

By clicking the + icon (Create Labor Rates), a new row gets added. You provide here the warranty provider, currency, hourly rate, submission due in, start date, and end date of a labor reimbursement rate and click on the tick icon. You can define and save a new labor reimbursement rate. You may click the × icon to remove the newly added row.

Note: Supplier warranty labor reimbursement rate must have a date before or equal to the contract start date.

How You Create Supplier Warranty Standard Repair Times

The supplier warranty standard repair times resource manages the reimbursable quantity of labor hours when a standard operation is completed under warranty for a warranty provider.

Manage Standard Repair Times

You can use the Manage Standard Repair Times page to search for existing standard repair times, view standard repair times details, and to create a new standard repair times. You can access the Manage Standard Repair Times page from the Maintenance Management landing page task menu, under the Maintenance Setup section. This page consists of a search bar, results region, and an action button to create a new standard repair times. Upon rendering, the page automatically presents a list of search results sorted alphabetically. The search bar allows you to further refine the search results for existing standard repair times by warranty provider, warranty provider number, standard operation code and standard operation name . Clicking the edit icon, you can further edit and save any changes to the standard repair times.

1. Open the Standard Repair Times page by clicking the Manage Standard Repair Times link on the Tasks pane.
2. On the Standard Repair Times page displays the following fields:

Field	Description
Warranty Provider	Name of the warranty provider who provides warranty coverage.
Warranty Provider Number	Number that uniquely identifies the warranty provider who provides warranty coverage.
Organization	Name of the organization when generating supplier warranty entitlements for claim reimbursement.
Standard Operation Code	The code that uniquely identifies the maintenance standard operation
Standard Operation Name	The name of the maintenance standard operation.
Repair Time(Hours)	The reimbursable repair time for a standard operation, measured in hours
Start Date	The date on which the supplier warranty standard repair time becomes active.
End Date	The date on which the supplier warranty standard repair time becomes inactive.
Actions	A menu that indicates the available user actions.

Field	Description
Active	Displays all the active supplier warranty standard repair times.
All	Displays all the supplier warranty standard repair times.
Inactive	Displays all the inactive supplier warranty standard repair times.

Define a Standard Repair Time

By clicking the **+** icon (Create Repair times), a new row gets added. Provide the warranty provider, organization, standard operation code, repair time, start date, and end date of a standard repair time and click on the **tick** icon. You can define and save a new standard repair time. You may click the **×** icon to remove the newly added row.

Note: Supplier warranty standard repair times must have a date before or equal to the contract start date.

How You Manage Warranty Coverages

Supplier Warranty begins by defining warranty coverages. The warranty coverages are reusable templates used to translate and model the warranty terms extended by a warranty provider from the purchase of an asset or the continued support of an existing asset through an extended warranty period.

The provider is the main supplier reference on the coverage and its related warranty contracts. The provider will also be the supplier to whom you will typically submit a warranty claim for the reimbursement of inhouse repair or component replacement expenses. A coverage includes what's extended under the warranty terms, who is responsible for the repair or replacement of an asset or its associated components, and how long the warranty period would last. After a contract is defined and set to a status of Ready, a coverage is used to instantiate a unique warranty contract for an asset. Contracts can then be viewed and considered during maintenance work order execution. The contracts expire for an asset using a scheduled process and their status is updated.

Warranty Coverages may also be created for an Original Equipment Manufacturer (OEM). This will provide a single source of tracking for warranty contracts for an asset regardless of the supplier from whom the asset's item was purchased. In this case, the coverage warranty provider will be the OEM, so claims will be created against this supplier. However, you can choose to submit them to the appropriate supplier or a warranty processor that works with the OEM for review and reimbursement.

If you have a limited number of suppliers for an item, you may wish to create individual coverages by warranty provider to track asset contracts and claims directly against each purchasing supplier. If a provider changes its warranty terms over time, such as a catalog or model year, you may need to create multiple coverages with start and end date ranges to cover the applicable time periods in which you will purchase the items or provide extended warranties. These types of scenarios are covered in the *Examples of Coverages for Assets* section.

The warranty period of a coverage could be defined by a time duration, utilization meter interval (such as an Odometer or Hour meter) or by using both methods. When a coverage uses both Duration and Meter Interval, its warranty period will be determined by whichever method expires first. When the coverage is used to instantiate a contract for an asset, the contract is assigned a start date. If the asset and contract are created by the Receipt of an Item using a purchase order, then the start date is to the asset's created date. If the contract is created manually using the user interface or the REST API, then either a user-defined or the present date will be set as the start date.

When the start date is assigned to a contract, the system determines if an end date, calculated expiration date, or both will be assigned to the contract. If a time duration is defined in the coverage, then the resulting contract will have an end date calculated as the start date + duration value. If one or more meters intervals are defined in the coverage, then the resulting contract will calculate which meter interval expires first and sets it as the calculated expiration date. If both methods are defined in the coverage, then both dates will be displayed in the contract and the system uses whichever date comes first rule to determine when to expire a contract. This supports both a static end date, and a dynamically calculated expiration date that will be updated over time as meter readings are recorded for the asset.

Note: Additional details about the calculated expiration date for contract meters are covered in the *How You Edit a Warranty Contract* section. A general understanding of assets, meters and utilization rates is recommended in order to use meters in a coverage and contract.

Get Started with Warranty Coverages

Warranty coverages can be modeled to cover a single stand-alone asset, the top node asset of a hierarchy of assets, or a child component that is installed anywhere in an asset hierarchy. The coverage may also apply to not only the top node asset of a hierarchy of assets, but all its originally delivered child components. The modeling of coverages must be determined by the warranty provider's terms, your business processes for asset management and tracking, and maintenance work order execution and warranty claim management. Warranty contracts at all levels of an asset or its related assets will be viewable to you in maintenance work order execution.

You can create coverages for existing assets, and assets that will be created in the future through the purchase and receipt of an item from a supplier by using a purchase order. For existing assets, you will manually create warranty contracts based on a selected coverage, while purchased assets can have contracts automatically created using a scheduled process after receiving.

Note: To prevent the creation of duplicate warranty contracts during purchase order receipt, the same item and supplier combination must not be defined across multiple active warranty coverages.

Before you create a first coverage, here's a list of prerequisite setups that you must complete:

- Items that will be used to create Enterprise Assets must be setup in the Product Information Management (PIM) offering. The items must be setup as full life cycle, maintainable, serial controlled and purchasable from suppliers. They can be optionally referenced in a coverage, allowing for the automatic instantiation of warranty during the purchase of an item from a supplier.
- If you would define coverages, you must have Inventory Organization and Item Class access granted to define Items and Suppliers in Step 3 of a coverage. For more information, refer to the maintenance chapter within the Implementing Manufacturing and Supply Chain Materials Management guide.
- Assets that are based on these types of items are eligible for supplier warranty. The assets can be created from purchase order receipt or manually created.
- Suppliers must be setup in Oracle Supplier Management. These setups include the supplier from whom an item is purchased and the supplier who will extend warranty terms as the warranty provider.
- Manufacturer is an optional attribute in the coverage header that can be used to track an Original Equipment Manufacturer (OEM) reference for a supplier warranty, typically if the warranty provider isn't the OEM. If used, they must be setup as a party that has a usage as a Manufacturer.
- Coverage type is an optional attribute in the coverage header that can be used to further describe or group similar coverages. The type may be helpful to manage coverages across users and to further refine your search results. Examples may include types such as new purchase, extended warranty, OEM warranty, and so on. An administrator can define the type codes by using the user-defined lookup ORA_CSE_WTY_COVERAGES_TYPE.

- Utilization meters may be optionally used to define and track the coverage terms using a warranty contract. Examples may include an odometer or hour meter. You must first define the meter templates and then instantiate them against each applicable asset that uses the meter before creating a warranty contract using the coverage. For each asset, you must have a daily utilization rate defined to calculate a future expiration date of a warranty contract.
- Repair transaction codes may be optionally used to define the unique references for a location on an asset by system, assembly, and component (item) that are covered by warranty. These codes can then be referenced in warranty coverages, engineering setup, item definition, and then used during work order execution for resource and material transactions. These codes are set up using the Manage Condition Event Codes task flow. When defining new codes, you must select the transaction code type only.
- When contracts are created, you can run the Process Supplier Warranty Contracts - Additions and Changes scheduled process on a regular basis. This process will review every contract, update its calculated expired date (if meter intervals are defined), update the contract status (if expired), create new warranty contracts for purchased items and assets, and enrich assets with supplier warranty details to allow the viewing of warranty in the execution process.
- When creating new contracts in the user interface, you must select an asset using an LOV that uses the asset smart search. Therefore, the asset smart search must be enabled and the latest asset data ingested. For more information about the asset smart search, refer the following:
    - *How You Configure and Use Smart Search For Assets*
    - *How You Manage Assets in the User Interface*

Note: There are additional required and optional setups to create and manage warranty claims. They are covered in the *How You Manage Warranty Claims* section.

How You Use the Manage Coverages User Interface

Use the Manage Coverages page to search for existing coverages, view coverage details or to create a new coverage. Access this page from the Maintenance Management landing page task menu, under the Maintenance Setup section. The page consists of a search bar, results region, and create Coverage button. Upon rendering, the page automatically presents a list of search results, sorted alphabetically by coverage name. The search bar allows you to further refine the search results for existing coverages by name, code, description, type, or warranty provider. Type in your search criteria and click the enter key to search across coverages.

Click **Create** to navigate to the warranty coverage guided process, where you can define and save a new coverage and its details. When created, you can view the coverage in the list of results in the Manage page. Click the hyperlinked name of an existing coverage to navigate you to the warranty coverage guided process, where you can further edit and save any changes to the Coverage.

Note: You can create and edit warranty coverages only if you have required access permissions to manage coverages. Users with view-only access can only search for and view existing warranty coverage details.

How You Use Repair Transaction Codes in Warranty

Repair transaction codes may be used as a unique reference for a location on an asset by system, assembly, and component (item). These codes can then be optionally defined in a warranty coverage as a guide to determine which repairs are covered under a warranty contract or not. If coding is defined in a coverage, and also in work order operations, then the claims process will validate if the work order costs for material, resources and equipment are

covered or not in a claim. If coding is not used, then the system will not validate the codes, but only verify if an asset is under warranty or not in order to create a claim.

An example for coding that follows the Vehicle Maintenance Reporting Standards (VMRS) coding convention is a 3 segment code 013-001-005. Each segment represents the system, assembly, and component (item), such as:

- 013 – Brakes
- 013-001 – Front Brakes & Drums
- 013-001-005 – Guide – Front Brake Shoe

The coding example above is very specific for a single item and may be useful for reporting for a work order material; however, this level of coding may be too granular for use in warranty coverages as you would have to setup codes for every item covered by a coverage. Therefore, you may wish to setup codes such as 013-001 or 013-001-000 to cover the front brakes component and assembly. Or you may wish to stay at a higher level of component and only setup a code of 013 or 013-000-000 for brakes. These decisions need to be taken in account for setups that will be required and maintained across an item, standard operation, and warranty coverage.

Here's an example of how the brake system coding would be defined and used to determine warranty coverage during asset repair:

- Define a condition event code 013 or 013-000-000 of type “transaction code” to describe the brake system
- Reference this code in all items that are used to maintain the brake system. Examples are brake pads, rotors, drums, wheel cylinders, calipers, etc.
- Reference this code in a standard operation that is defined for a standard repair such as brake pad replacement.
- Reference this code in a warranty coverage for a vehicle OEM as being covered by warranty
- Create a warranty contract for the vehicle using the coverage
- Create a maintenance work order for the vehicle, note the warranty contract is listed for the asset. Reference a work definition or standard operation for replacing the brake pads.
- Verify that the work order is indicated for warranty repair and matching of transaction codes.
- Verify that repair coding persists at the operation header, items, and resources.
- Release and execute each operation sequence to complete the work order.
- Run the scheduled process for claims and entitlements. This process will verify and match the repair coding used in the warranty contracts based coverage against the operation transactions. Those transactions where coding matches will create entitlements that are included in the claim. Any mismatches will still create entitlements, but they will be excluded from the claim.

Additional details for code matching are covered in the *Warranty Claims and Entitlements* section of this guide.

How You Edit a Coverage

Warranty contracts will reference their source coverage for key details about the warranty that’s extended by the warranty provider. Hence, it’s important to understand how revisions to a coverage will change their existing contracts. For example, changes to the duration in step 1, items and suppliers in step 3 and meter intervals in step 4 wouldn’t flow from the coverage to an existing contract. They will only apply to new contracts that are created using the coverage. However, changes in the terms and conditions in step 2 and the repair codes in step 5 will apply to the existing contracts. If any planned revisions fundamentally change the coverage terms, it’s expected that an existing coverage would be end dated and a new coverage would be created.

To edit an existing coverage, click the coverage Name hyperlink in the results rows of the Manage Coverages page. This action navigates you to the warranty coverage guided process, where you can edit or view an existing coverage. You can navigate to any step and provide updates using the Save button or inline save actions.

Editing data in steps 3, 4, and 5 will be based on if whether or not there has been a contract created using the coverage. If there have not been any contracts created, then you can click the edit pencil action icon on any existing row, allowing you to edit the row's details. If at any time during data correction you don't want to keep the changes to the edited row, you can click the cancel X action icon to discard the changes on the row. After the details are ready to commit, you can click the checkbox action icon on the same row to save it. Or, if you click outside the row at any time, it will be saved. The row will be validated, and if no error message is presented, then the save was successful.

You can also only delete a row if there has not been a contract created using the coverage. To delete an existing row, click the delete trashcan action icon to discard the row. After a contract has been created, you can only disable an existing row. To disable a row, click the edit pencil action icon on any row, allowing you to edit its details. You can then update the warranty enabled column by moving its slider icon to the left, which will turn the icon from green to gray in color, indicating the meter is now disabled. You can click the checkbox action icon on the same row to save it. Or, if you click outside the row at any time, it will be saved. After a row is disabled, you can't enable it again. However, you can create a new duplicate row.

Examples of Coverages for Assets

You can view warranty contracts at all levels of an asset, or its related assets, in Maintenance work order execution.

Here are several modeling examples of Coverages for assets:

Scenario	Coverage Modeling Suggestion
A supplier extends a warranty term of 1 year across all items in their catalog that are purchased during the year 2023.	You typically will create a single Warranty Coverage for a warranty provider to cover the items in a supplier's product catalog. The provider's warranty would supersede any manufacturer warranties for the individual items. For warranty assignment during item purchase, you would define an item with a single supplier reference in the coverage. When a new catalog is released for the next year, a new coverage would be created, and the old coverage would be end dated. This scenario would cover both assets that are the top-node of an Asset hierarchy, and any replacement parts that would be installed as child assets under the top-node of an Asset hierarchy.
A supplier extends warranty terms of 1, 2 and 3 years for different items in their catalog that are purchased during the year 2023.	You must define multiple Warranty Coverages for the same warranty provider to cover the specific items in the supplier's product catalog and the applicable warranty periods. The provider's warranty would supersede any manufacturer warranties for the individual items. For warranty assignment during item purchase, you would define each unique item with a single supplier reference in the specific coverage for the applicable warranty term.
An Original Equipment Manufacturer (OEM) extends a warranty term of 1 year for items purchased from some or all their distributing suppliers.	You typically will create a single Warranty Coverage for an OEM warranty provider to cover the items that will be purchased from one or many suppliers. In this case, the OEM provider's warranty would supersede the purchase supplier warranty terms for the individual items. For warranty assignment during item purchase, you could define an item with or without a specific supplier reference in the coverage. As the warranty is from the OEM across suppliers, if there isn't

Scenario	Coverage Modeling Suggestion
Warranty tracking and claims management will be directed to the OEM and not to the supplier from whom the item is purchased. The OEM must be set up as a supplier and not simply as a manufacturer in the system.	supplier reference, the same warranty is extended no matter from which supplier an item is purchased from.
A supplier sells a finished product that's manufactured and/or assembled using components from different suppliers and OEMs. The supplier will extend the warranty on all components for the first year. After that time, only certain components will be covered by their source supplier or OEM for an additional warranty that covers years 2 to 5 after the purchase or entry into service.	You must first decide how you are going to model and track your Assets. At a minimum, you will need to create the top node Asset for the purchase, receipt, tracking, warranty, and work order execution of the finished product Asset purchased from the supplier. However, you must decide how you are going to track installed components that may have additional warranty. For example, the supplier covers the cab, interior, box, frame, and additional components such as head lights and tires for a delivery truck. Other components such as the engine, transmission, and rear axle are first covered by the supplier for the initial warranty period, then are covered directly by the OEMs for remaining warranty periods. You typically will create a single Warranty Coverage for a warranty provider to cover the purchase of finished goods from the supplier with a duration of 1 year. The provider's warranty would supersede any OEM warranties for the individual items during this period. A single Warranty Contract would be created for the top-node Asset. You then will have to decide if components are to be tracked as part of the Asset's initial hierarchy. For components that are covered directly by the OEMs either immediately or after the initial supplier warranty period – such as the engine, transmission, and rear axle the recommendation is to update the top-node Asset's hierarchy to include these child assets. If you choose not to track its additional installed components as Assets, then it will be difficult to track their individual OEM warranty over time. You then would create Warranty Coverages for each OEM warranty provider to cover the items that are part of the finished good for their respective time periods. In this case, the OEM provider's warranty would become effective after the original supplier's warranty expires. Once these Coverages are defined, you can instantiate Warranty Contracts manually for each installed component Asset individually for the top-node Asset. Other components, such as an alternator, would most likely not be tracked as part of the initial top-node Asset's hierarchy. Therefore, only when they are removed and replaced will they be updated on the top-node Asset's hierarchy. The component that's removed must be evaluated for a warranty based on the top-node Asset.
A supplier extends a warranty term of 5 years, 5,000 hours, or 100,000 miles for a new vehicle.	You typically will create a single warranty coverage that includes multiple calculation methods. Use the coverage essentials to define a duration of 5 years or 60 months. This will be used to calculate a contract end date value based on a contract start date + duration value. Use the coverage meters to define 2 different utilization meters with intervals: • Odometer – the meter should have a starting value of 0 (zero) and an interval of 100,000 miles • Hour meter – the meter should have a starting value of 0 (zero) and an interval of 5,000 hours These meters will be used to calculate a contract calculated expiration date based on the first expiring meter interval, asset utilization rate and latest asset meter reading in history. Note: An understanding of assets, meters and daily utilization rates is necessary to understand how meters can be used to estimate the future expiration date of a warranty contract. The same method is used to forecast future due dates in a preventative maintenance program. Both dates will be displayed in the contract and the system uses whichever date comes first rule to determine when to expire a contract. You will use the scheduled job *Process Supplier Warranty Contracts - Additions and Changes* to update the contract status and calculated expiration dates over time.

Scenario	Coverage Modeling Suggestion
	After contract creation, you may optionally choose to update the contract meter intervals with a different start value based on the actual mileage or hour reading at the start of their warranty period. This will then update the contract calculated expiration dates as well.
A supplier extends different supplier warranty terms for different systems on the asset. The power train systems are covered for 10 years, but the hydraulic system is only covered for 5 years. Only 1 asset is created and will be used to track of all related systems.	You must define multiple warranty coverages for the same warranty provider to cover the specific systems and the applicable warranty periods. This will result in multiple warranty contracts for an asset that are system specific. Additionally, you can define repair transaction codes in a coverage as a method to uniquely identify which systems are covered. During work order execution, the system will be able to use repair transaction codes in the operation transactions to determine which coverage is applicable for the creation of a warranty claim and entitlements for the reimbursement of the operation costs. The scheduled process *Generate Supplier Warranty Entitlements considers repair transaction codes during claim creation.*
A supplier extends different supplier warranty terms for different systems on the item. The power train systems are covered for 10 years, but the hydraulic system is only covered for 5 years. Multiple assets are created for tracking each major system that can be independently managed as an asset.	If you manage your asset using a physical hierarchy, you will create a structure of parent and child assets. Supplier warranty can be managed at the parent asset, child asset or both levels. Maintenance work orders are typically created for a parent asset. However, supplier warranty can be managed at the parent and child levels concurrently in the work order. Therefore, based on the type of maintenance being performed, supplier warranty claim assessment can happen across all levels of an asset. You may define multiple warranty coverages for the same warranty provider to cover the specific systems at a parent and child asset levels for each applicable warranty periods. This will result in multiple warranty contracts for assets that are system specific. Additionally, you can define repair transaction codes in a coverage as a method to uniquely identify which systems are covered. During work order execution, the system will be able to use repair transaction codes in the operation transactions to determine which coverage is applicable for the creation of a warranty claim and entitlements for the reimbursement of the operation costs. The scheduled process *Generate Supplier Warranty Entitlements considers repair transaction codes during claim creation.*

How You Create a Coverage

Here's the process to create a coverage:

1. Click **Create Coverage** to navigate to the Warranty Coverage guided process.
2. Define and save a new coverage.

3. On the Process Overview page, click **Start** to create a new coverage. Follow the 5 steps that make up the coverage guided process.
    - Step 1 – Coverage essentials (required)
    - Step 2 – Terms of service (optional)
    - Step 3 – Covered items (optional)
    - Step 4 – Utilization Meters (optional)
    - Step 5 – Repair transaction codes (optional)

Step 1: Coverage Essentials

Use this step is to define the header details for the coverage.

1. Define the following required attributes before continuing to any of the other steps:
    - Coverage name
    - Coverage code
    - Start date (defaulted to the present date)
    - Status (defaulted to Draft)
    - Warranty provider

Attribute	Required?	Description
Coverage Name	Yes	The name of a coverage. Names can be duplicated across coverages, but each must have a unique code. The same name must be reserved for similar coverages that repeat over time and are replaced by an updated version.
Coverage Code	Yes	The unique value that identifies a coverage. Values must be alphanumeric and in ALL CAPS. An underscore "_" can be used as a delimiter in the Code. Examples may include ABC1YRWTY22 or ABC_1_YR_WTY_22. A coverage code can't be changed after the it's created.
Coverage Description	No	The description of a coverage.
Coverage Status	Yes	The status of a coverage. A new coverage begins in Draft status and can only be set to Ready status after the required attributes are defined and either a time Duration, Meter or both are defined. Only coverages in a status of Ready can be used to create a warranty contract. You can't set the status from Ready back to Draft if a contract has been created using the coverage. You can set an end date on the coverage to prevent the creation of new contracts.

Attribute	Required?	Description
Start Date	Yes	The start date of a coverage. Value can be in the past, present, or future, but must be less than or equal to the end date.
End Date	No	The end date of a coverage is optional and should generally only be set if there is a logical date in which the coverage should no longer be used to instantiate new contracts. Value must be greater than the present date and greater than or equal to the start date.
Warranty Duration	No	The time value of how long a warranty coverage will be in effect for an asset using a warranty contract. The duration and unit of measure is used to calculate a contract end date. If not defined, then a contract wouldn't have an end date based on time, but instead will be expected to use meter intervals and have a calculated expiration date. A duration may also be paired with one or more meters to provide competing date methods for expiration. Hence, a contract may have both an end date and calculated expiration date. Either a duration, meter, or both must be defined to move a coverage status from Draft to Ready.
Unit of Measure	No	Unit of measure for the warranty duration value. Values include days, months, and years. Required if duration is defined.
Coverage Type	No	(Optional) Indicates to further describe or group similar coverages. The Type may be helpful to manage coverages across users and to further refine your search results. Examples may include types such as New Purchase, Extended Warranty, OEM Warranty, and so on. An administrator can define the type codes by using the user-defined lookup ORA_CSE_WTY_COVERAGES_TYPE.
Manufacturer Name	No	The OEM (Original Equipment Manufacturer) of a coverage. The manufacturer may also be the same as the warranty provider, if they are extending the supplier warranty.
Supplier Name	No	The supplier reference of a coverage. The supplier may also be the same as the warranty provider, if they are extending the supplier warranty.
Warranty Provider Name	Yes	The main supplier reference on the warranty coverage and its related warranty contracts. The provider is the supplier who's extending the warranty coverage and to whom you would submit a warranty claim for the reimbursement of expenses.

Attribute	Required?	Description
		The provider can be a supplier from whom you purchase an Item or an OEM who extends warranty across some or all suppliers from whom you would purchase an Item.

2. To move the coverage status from Draft to Ready, provide a defined period using either a Duration, Meter or both methods. These methods are required to calculate an end and / or expiration date on a warranty contract.
3. Click **Save** to create or update the coverage essentials.

Step 2: Terms of Service

Though this is an optional step in creating a coverage, this step is used to define additional details about the terms and conditions of the warranty, and reimbursement details. The free-form text fields are used to capture different aspects of the warranty from the provider.

You can also use the slider options to highlight key coverage details, which will be viewable in the supplier warranty tab of a work order and will be referenced during the creation of warranty claims and entitlements.

- Requires Repair Authorization: Informational only.
- Labor Reimbursement: If this indicator is set to Yes, then resource and equipment transactions are eligible to create entitlements that are covered under warranty and associated to a claim. Otherwise, entitlements are created but not associated to a claim.
- Parts Return Required: Informational only.
- Allows Internal Repair: informational only.
- Parts Reimbursement: If this indicator is set to Yes, then material transactions are eligible to create entitlements that are covered under warranty and associated to a claim. Otherwise, entitlements are created but not associated to a claim.

Click **Save** to update the coverage terms of service.

Step 3: Covered Items

Though this is an optional step in creating a coverage, this step is used to define items and suppliers from whom you would purchase an item that becomes an enterprise asset. This setup that is only recommended if you wish to automatically create warranty contracts for newly purchased and received items. Contracts are instantiated from matching coverages by item and supplier by running a scheduled process after an Item is received and the asset is created.

1. Click **Add Item** to add a new row to the table.
2. Search and select a valid inventory organization.
3. Search and select a valid item, which you can set up and enable for the selected organization.
   You can define duplicate items only if they have a unique supplier and item combination defined. It's recommended to either define one item without a supplier or only rows with a unique item and supplier combination. If you define both, then the row with the unique combination is used. Set up items as full life cycle, maintainable, serial controlled, and purchasable from suppliers to be defined for a coverage.

   > **Note:** You must have the Inventory Organization and Item Class access granted to search and view a list of organizations and items.

4. Define a supplier or leave blank if the item can be purchased from any supplier and extend this warranty coverage.

5. Determine if a warranty contract will automatically be created during item receipt and asset creation, and its contract status.
6. After you define the item details, you can click the checkbox action icon on the same row to save it.
7. Click **Continue** to navigate to next step.

Step 4: Utilization Meters

Though this is an optional step in creating a coverage, this step is used to define meter intervals that are used to track the dynamic expiration of a warranty contract for an asset over time. As an asset gains utilization through meter reading reporting, the calculated expiration date and status of a warranty contract will be updated by the scheduled process. When a meter interval is reached, the contract moves from Ready to Expired status.

Define meter intervals in a coverage only if they match the asset meters for which a warranty contract is expected to be created using this warranty coverage. If you create a warranty contract for an asset and the meters don't match, then they wouldn't be tracked by the contract, causing a mismatch of the intended warranty coverage expiration method. The contract will also be set to a status of Draft, requiring manual review.

1. Click **Add Meter** to add a new row to the table.
2. Search and select a valid meter code.
3. Define the meter start and meter interval values.

   The start value must be defined with a value of 0 for newly purchased assets. However, for an extended warranty scenario, the start value would typically be greater than 0. The interval value is the warranty duration of the meter that when reached will expire the contract.
4. After you define the meter details, you can click the check box action icon on the same row to save it.

   > **Note:** Define meters only if they are used generically across different items and assets. If a meter is specific to a unique asset, then it can still be defined, but warranty contracts considering this meter can only be instantiated for a unique asset.

5. Click **Continue** to navigate to next step.

Step 5: Repair Transaction Codes

Though this is an optional step in creating a coverage, this step is used to define repair transaction codes that reference the asset system, component, and item that are covered by the warranty. Use these codes only if you want to reference them in downstream processes.

1. Click **Add Code** to add a new row to the table.
2. Search and select a valid transaction code. Only condition event codes that are of type "Transaction code" will be displayed in the list of values for selection.
3. Search and select a valid transaction code and click the checkbox action icon on the same row to save it.
4. Click **Complete** to create a coverage.

How You Manage Warranty Coverages Using REST API

Define, view, and update warranty coverages using REST services. This is very useful during implementation or the introduction of large volumes of new coverages. Additionally, you can also make certain mass edits to existing coverages.

Use the warranty coverages REST API to:

- Create, get, and update the warranty coverage header, terms and conditions

- Create, get, update, disable, and delete the covered items
- Create, get, update, disable, and delete the utilization meters
- Create, get, update, disable, and delete the repair transaction codes

For more information, refer the REST API for Oracle Supply Chain Management Cloud guide.

How You Manage Warranty Contracts

Use the Manage Contracts page to search for existing contracts, view contract details, or to create a new contract for an asset.

> **Note:** You can create and track supplier warranty contracts for assets that are based on items defined as full lifecycle, maintainable, serial controlled, and purchasable from suppliers.

You can access this page from the Maintenance Management landing page task menu, under the Asset and Work Definition section. The page consists of a search bar, results region, and Create Contract button. Upon rendering, the page automatically presents a list of search results, sorted alphabetically.

The search bar allows you to further refine the search results for existing contracts by contract number, coverage name, asset number, or warranty provider. Type in your search criteria and click the enter key to search across contracts. Select the hyperlinked name of an existing contract navigates you to the warranty contract guided process, where you can further view, edit, and save any changes to the coverage.

Warranty contracts naturally expire over time when their end date or calculated end date reaches the current date. To ensure the routine recalculation of the calculated end date, for contracts that use meters, and to update the status of all contracts when the expire, you should routinely run the **Process Supplier Warranty Contracts - Additions and Changes** scheduled process.

This process reviews every contract, updates their calculated expired date (if meter intervals are defined), updates the contract status (if expired), creates new warranty contracts for purchased items and assets, and enriches assets with supplier warranty details to allow the viewing of warranty in the execution process for a work order.

> **Note:** The **Create** button and the ability to edit an existing warranty contract is accessible only if you can manage contracts. Users with view-only access only can search for and view existing warranty contracts details.

Create a Warranty Contract

Click **Create** to render a drawer to the right. Here, you can select an asset, coverage, and other inputs that are used to create a new contract:

Attribute	Required?	Description
Asset Number	Yes	Asset for which the contract will be created. The asset list of values uses the asset smart search. Therefore, the asset smart search must

Attribute	Required?	Description
		be enabled, and the latest asset data ingested. Clicking on the asset list of values will call the smart search and return a list of assets. However, you will want to further refine these results by entering search text. After you enter each character, the smart search will return a further refined list of results as it finds matching characters across asset fields.
Coverage Name	Yes	The name of a coverage for which they will be created. The coverage list of values uses a query search using the warranty coverages REST API. Clicking on the coverage list of values will not return any results by default. This type of search requires you to enter at least 3 characters before it will query the coverages and return a list of results.
Start Date	Yes	The beginning date of coverage under the warranty contract. This date will be used to calculate the contract end date if the coverage has a duration and unit of measure defined.
Status	Yes	The status can be set to Draft or Ready during creation. If set to Draft, then you can edit the contract before changing to Ready. After it's set to Ready, the status can't be changed back to Draft.
External Reference Number	No	Optional field used to define a contract reference. Examples could be a purchase order number.
Contract Notes	No	Optional field used to describe the contract.

If you decide not to create the contract, click **Cancel** to return to the search results. After you have defined the inputs for a new contract, click **Create** to create the Contract. You can navigate to the Warranty Contract guided process to review and further edit the Contract.

How You Edit a Warranty Contract

To review or edit an existing contract, click the Contract name hyperlink in the results rows of the Manage Contract page.

You will navigate to the Warranty Contract guided process page, where you can click Start to begin the review of the contract. Click **Start** to navigate to step 1, where you can review the main details of the contract.

Here's how you can edit a contract using the 5 steps that make up the contract guided process:

- Step 1 – Contract essentials (required)

- Step 2 – Contract meters (optional)
- Step 3 – Coverage Essentials (reference only from the source coverage)
- Step 4 – Terms of service (reference only from the source coverage)
- Step 5 – Repair transaction codes (reference only from the source coverage)

Step 1: Contract Essentials

Use this step to review and edit header details for a contract. A contract must typically be created with a status of Ready but could be set to a status of Draft during creation if additional review is required. It's also possible that if the end date or calculated expiration date has been reached for a contract, the status will be set to Expired by the scheduled process or a manual update to the contract.

Click **Save** to create or update the contract essentials.

Click **Continue** to navigate to step 2.

Here are the fields for the contract essentials:

Attribute	Editable?	Description
Contract Number	No	This is the system generated identifier for the contract.
Status	Yes	The status can be set to Draft or Ready during creation. If set to Draft, then you can edit the contract before changing to Ready. After it's set to Ready, the status can't be changed back to Draft. When the end date or the calculated expiration date are reached, the scheduled process or editing of a contract will set the status to Expired. You can update a contract to move its end date or meter interval into the future, and the contract will move back to Ready status upon saving if at least one date is in the future. **Note:** To ensure that the routine recalculation of the calculated end date for contracts that use meters and to update the status of all contracts when they expire, you should routinely run the **Process Supplier Warranty Contracts - Additions and Changes** scheduled process.
Asset Number	No	Asset for which the contract was instantiated.
Serial Number	No	Serial number of the asset, if defined.
Coverage Name	No	The name of a coverage for which the contract is based.
Coverage Description	No	The description of the source coverage.
Start Date	Yes	The beginning date of coverage under the warranty contract. The value was required during the creation of a contract but can be updated.
End Date	Yes	The ending date of coverage under the warranty contract based on a time duration. This field may be blank if the source coverage didn't have a time duration and UOM defined. However, during editing you can manually enter a value. When the date is reached, the contract status will be set to Expired. You can manually update this value at any time to end date or extend the life of a contract.
Calculated Expiration Date	Yes	The ending date of coverage under the warranty contract based on one or more-meter intervals. This field may be blank if the source coverage didn't have any meter intervals, or the contract asset does not have the matching meters from the coverage.

Attribute	Editable?	Description
		The date will be recalculated by the scheduled process to take into consideration the asset's daily utilization rate, meter end value, as well as the latest historical meter reading recorded for the asset at the time of recalculation. When the date is reached, the contract status will be set to Expired. You can optionally adjust the meter interval to extend the life of a contract. The expiration date for each contract meter is calculated using this formula: • Find the Meter Reading Net Value for the last active reading in history for the asset meter. This is also known as the Life to Date value. • Find the Meter Utilization Rate for the asset meter. This will either be the manually defined Daily Utilization Rate or the system Calculated Utilization Daily Rate based on meter reading history. • Calculate the Number of Days until expiration as = (Contract Meter End Value – Meter Reading Net Value)/ Meter Utilization Rate per day • Calculate the Expiration Date as = System date + Number of Days until expiration Example: • Contract Meter End Value = 100,000 • Meter Reading Net Value = 66,000 • Meter Utilization Rate per day = 300 • Number of Days until expiration = (100,000 - 66,000)/300 = 113.33 days. If the Number of Days until expiration is a negative number, then the meter has already expired • Calculated Expiration Date = system date + 113 days (round down) This calculation is performed for each contract meter and the first expiring date, even if in the past, is used as the Calculated Expiration Date in the contract essentials page.
External Reference Number	Yes	An external reference, such as the purchase order number for the asset.
Contract Notes	Yes	Used to enter notes over the life of the contract.

Step 2 – Contract Meters

Though this is an optional step in editing a contract, it's used to manage meter intervals that will be used to track the dynamic expiration of a warranty contract for an asset over time. It's expected that meter intervals would be defined in the source coverage. During contract creation, the system verifies if matching meters for the asset exist. If all matches are found, then the contract meters will be added to the contract and the Calculated Expiration Date set in the contract header. If one or more matches are not found, then the contract meters that do match (if any) will be added to the contract and the Calculated Expiration Date set in the contract header. However, the contract status will be set to Draft, requiring manual review to see why there were missing meter intervals.

1. Click **Add Meter** to add a new row to the table.
2. Search and select a valid meter code.
3. Define the meter start and meter interval values.
    - The start value must be defined with a value of 0 for newly purchased assets. However, for an extended warranty scenario, the start value would typically be greater than 0. The interval value is the warranty duration of the meter that when reached will expire the contract.

4. After you define the meter details, you can click the check box action icon on the same row to save it.

   Note: Define meters only if they are used generically across different items and assets. If a meter is specific to a unique asset, then it can still be defined, but warranty contracts considering this meter can only be instantiated for a unique asset.

5. Click **Continue** to navigate to next step.

Every time a contract is updated and saved; the system will determine if its status needs to move from Ready to Expired. For example, if you set the End Date to the present date and save, the status would move from Ready to Expired. If you then edited it again, change to 1 year in the future and click save, the status would move from Expired to Ready. The same is true for the meter intervals. You can adjust the start and interval values, which upon saving could update the Status. Typically, edits to the start and end date, and meter intervals are only required during the initial review or a contract or to fix a data entry or initial setup issue.

Steps 3-5 – Coverage Essentials, Terms of Service, and Repair Transaction Codes

Click **Continue** to navigate to step 3 or click on the step by name using the table of contents on the right. Steps 3 to 5 are from the source coverage and are read-only reference information.

How You Create Warranty Contracts During Asset Purchase

Use purchase orders to buy an Item from a supplier in an organization. If the item is set up as asset-tracked, then the asset will be created when it's received.

During creation, the asset may also have one or meters instantiated. After it’s created, you can validate the asset with a a scheduled process to determine if you should create one or more warranty contracts as well. This process will look for warranty coverages where the purchased item and, optionally a supplier, have been defined. If matching items are found, new contracts will be created for each coverage with the indicated contract status. You then can review the newly created contracts, and edit if necessary.

How You Manage Warranty Contracts Using REST API

You can define, view, and update warranty contracts using REST services, which is useful during implementation or the introduction of large volumes of new contracts for existing assets.

Additionally, you can also make certain mass edits to existing contracts.

Use the Warranty Contracts REST API to:

- Create, get, and update the warranty contracts for an asset based on a coverage
- Create, get, update, and disable the contract asset utilization meters

For more information, refer the REST API for Oracle Supply Chain Management Cloud guide.

How You Manage Warranty Contracts in Work Orders

Several user interfaces enable you to view and manage supplier warranty information in the maintenance work order execution flows.

The warranty solution is meant to support a touchless user experience in simple scenarios where an asset is being repaired under warranty. An example could be unplanned repairs that are covered on a vehicle by a bumper to bumper warranty. If you are using repair coding, then you will most likely rely on the warranty claims validation process to determine warranty applicability or not. An example could be that only the replacement of an alternator is covered by a bumper to bumper new vehicle warranty, while the replacement of brake pads is not.

Regardless of your business processes, the complexity of your warranty setup and the type of repair should govern how you review and confirm if a work order is covered under warranty or not. This review can happen before work order release, work order execution and the warranty claims validation process.

Here are some suggested steps for managing supplier warranty in execution:

- Before a work order is created for an asset under warranty, it's recommended for a system admin to run the *Process Supplier Warranty Contracts - Additions and Changes* scheduled process. This process will review every contract, update its calculated expired date (if meter intervals are defined), update the contract status (if expired), create new warranty contracts for purchased items and assets, and enrich assets with supplier warranty details to allow the viewing of warranty in the execution process for a work order. If this process isn't run, then the work order wouldn't be evaluated for warranty repair, nor will it display warranty contracts if they exist for the asset or its related assets. Therefore, it's recommended to schedule this process on a daily basis.
- After work order creation, you should verify if an asset or its related assets are under warranty. If a maintenance work order has the warranty repair check box = yes in the work order search page, then the repair is expected to be covered under warranty in most cases. However, you must your own business rules for the final determination of warranty in execution. The table below provides guidance and suggested approaches to validate and manage warranty in execution.

Information About Warranty-Repair Decisions

User Interface	Warranty Visibility
Manage Maintenance Work Orders	Search results include a Warranty column, with a check box icon. If the icon is displayed for a work order, then either the work order asset or an asset in its physical hierarchy has an active warranty contract. In most cases, if this checkbox icon is enabled, the repair order is also flagged as a warranty repair. **Note:** This check box doesn't mean the work order is considered a warranty repair. The icon's purpose is to identify that there is active warranty for the work order asset or related assets only. You must review the work order details for additional warranty information. Click the icon to access the Edit Work Order user interface, rendering the Supplier Warranty tab and results.
Edit Work Order (Maintenance only) – Supplier Warranty tab	The tab is enabled for all maintenance work orders and displays a count of the number of active warranty contracts, and the list of contracts, by asset that are active. The list includes contracts for the work order asset, and any related assets in its physical hierarchy.

User Interface	Warranty Visibility
	You must review each warranty contract to verify if the repair is covered or not. If the repair is covered, you wouldn't need to take any further action and the system considers the repair for warranty claims and entitlements. However, if you find the repair must not be covered, then you can optionally uncheck the Warranty Repair indicator on the General Overview tab, as detailed in the next row. The work order will be disregarded and not considered for warranty claims and entitlements.
Edit Work Order (Maintenance only) – General Overview tab	Work Orders will be automatically indicated as a Warranty Repair or not during creation if there are one or more active warranty contracts for the asset or its related assets. This is further explained in the next section entitled *How You Manage the Warranty Repair Indicator.* • This indicates that the repair will be considered as covered by warranty and evaluated for warranty claims and entitlements by the scheduled process. • Deselecting this check box means the work order will be disregarded and not considered for warranty. If the Warranty Repair check box is set to yes, then the Match Transaction Codes check box will also be set yes if there are active warranty contracts that have repair transaction codes defined in their base coverages. • This indicates that warranty claim entitlements should be created only if there is a matching warranty contract found for an operation transaction for items, resources, or equipment by repair transaction code. • Deselecting this check box means the code matching will be disregarded and the first expiring warranty contract will be considered for warranty claim entitlements. • If transactions codes are not defined in the warranty contracts, this check box will be set to null and isn't editable. This means that coding isn't considered, and the earliest expiring warranty contract will be used for the warranty claim. If both checkboxes are set to No, then there aren't any active warranty contracts for the asset. Setting the Warranty Repair to yes, without any active contracts, will not result in a warranty claim from the scheduled process. After a claim is created, both of the check boxes become read-only.
Edit Work Order (Maintenance only) – Operation header	The operation includes these optional fields Reason for Repair Code, Repair Transaction Code and Work to Be Accomplished Code They are used to describe a repair and will be used in execution for supplier warranty claims and entitlements. These codes are defined using Condition Event Codes for each type of code and will default from a Standard Operation if defined, else they can be manually set or updated.
Edit Work Order (Maintenance only) – Operation Item	The operation includes these optional field Repair Transaction Code The code is used to describe an item's system, assembly, and component location on an asset. The code will be used in execution for supplier warranty claims and entitlements. These codes are defined using Condition Event Codes for each type of code and will default from a master item if defined, else it can be manually set or updated.
Edit Work Order (Maintenance only) – Operation Resource	The operation includes these optional fields Reason for Repair Code, Repair Transaction Code and Work to Be Accomplished Code

User Interface	Warranty Visibility
	They are used to describe a repair and will be used in execution for supplier warranty claims and entitlements. These codes are defined using Condition Event Codes for each type of code and will default from a Standard Operation if defined, else they can be manually set or updated.
Manage Maintenance Dispatch List	Search results include a Warranty column, with a check box icon. If the icon is displayed for a work order, then either the work order asset or an asset in its physical hierarchy has an active warranty contract. In most cases, if this checkbox icon is enabled, the repair order is also flagged as a warranty repair. **Note:** This check box does not mean the work order is considered a warranty repair. The icon's purpose is to identify that there is active warranty for the work order asset or related assets only. You must review the work order details for additional warranty information. Click the icon to access the Edit Work Order user interface, rendering the Supplier Warranty tab and results.
Report Resource Transactions	Each transaction row includes a repair transaction code attribute that can be optionally defined to reflect the asset's system, component, and item that were repaired. These attributes will be used for reporting and the warranty claims and entitlements process.
Report Material Transactions – only the version with a Hierarchy viewer	Each transaction row includes a repair transaction code attribute that can be optionally defined to reflect the asset's system, component, and item that were repaired. These attributes will be used for reporting as well as the warranty claims and entitlements process.

Note: For more information about the execution of work orders, review the *Manage Maintenance Work* section .

How You Define Costing for Work Orders

Cost accounting is a required setup that must be routinely maintained in order to track the latest work order costs for materials, resources, and equipment. These costs are then used as the basis for the reimbursement of a warranty repair claim for maintenance work order assets covered under supplier warranty.

It's recommended to define standard costs for items, and resource rates for resources and equipment, in a cost scenario. These costs can then be routinely published and used for work order costing. Work order costs can then be calculated by running several scheduled processes. These processes will transfer work order and inventory transactions to Costing, then create accounting distributions that will populate the work orders costs.

For more information, refer the *Cost Accounting* section of the guide *Implementing Manufacturing and Supply Chain Materials Management*

How You Manage the Warranty Repair Indicator

Work Orders will be automatically indicated as a warranty repair or not during creation if there are one or more active warranty contracts for the asset or its related assets. However, based on certain work order type and subtype combinations, you may wish to control the defaulting behavior of this indicator.

For example, work orders created as preventative maintenance by a maintenance program will typically not be a warranty repair. Therefore, you may want to define one or more combinations of work order type and subtype that will

not be indicated as a warranty repair during work order creation. A system administrator can define these combinations using settings in the Functional Setup Manager under the task *Manage Asset Maintenance Parameters*. On the tab entitled *Work Order Defaults,* you can optionally define the combinations of types. The types can include standard and custom subtype values.

After work order creation, the warranty repair checkbox can be manually set to “yes” or “no” up until a warranty claim has been created. This gives you flexibility to leverage the defaulting logic, while adjusting this indicator after review of the work scope and coverage under supplier warranty.

To define a defaulting combination, create a new row, select the work order type and subtype, then set the *Default Warranty Repair Flag* indicator to No and click save. This indicates the checkbox will always be set to no during creation and warranty will not be validated. At some point in the future, you can choose to disable the row by setting an inactive date to the present date. You can then verify this validation by manually creating a work order for an asset that has an active warranty contract.

Note: When selecting the *Default Warranty Repair Flag* indicator, you can optionally select a value of yes. While not required, this combination will consider warranty in setting the indicator, which is the default behavior. Therefore, it is recommended to only define rows with a value of No that will override the default validation.

How You Manage Warranty Claims and Entitlements

Warranty Claims are used to submit a request for reimbursement of asset repair costs to a supplier warranty provider. Claims are created in the context of a maintenance work order for an asset, and its related assets, that are covered under supplier warranty contracts.

Claims are primarily created using a scheduled process. However, claims can also be manually created to split an existing claim, allowing you to submit certain costs for reimbursement to a different warranty provider.

Claims can be automatically created only for work orders that are identified as a warranty repair. During work order creation, the checkbox will be set to “yes” on a work order header if one or more active contracts are found. The checkbox can then be manually set to “no” if the repair is determined not to be covered under warranty. After work order completion, this indicator will be used by the scheduled process, **Generate Supplier Warranty Entitlements** to determine if warranty claims should be created or not. The results can be reviewed using the output log of the scheduled process and by querying the results from the Warranty Entitlement and Warranty Claim REST APIs, as well as the Warranty Claims page.

Note: Disable default of the checkbox for work orders that're created from the preventative maintenance forecast because the service won't be eligible for warranty reimbursement. A system administrator can define these settings in the Functional Setup Manager under the task Manage Asset Maintenance Parameters. See the *Implementing Manufacturing and Supply Chain Materials Management* guide for more information.

Claims can also be manually created for any work order, regardless of the warranty repair indicator. If you have a work order with an existing claim, then you can manually create a new claim using the same or a different warranty provider. Then you can manually include any entitlements that aren't already included in another claim. For a work order without an existing claim, you can create a new claim and then manually create new entitlements for the reimbursement of work order costs.

Note: Work Orders with the warranty repair checkbox set to No won't have any Entitlements, nor a Claim created.

Warranty Claims Entitlements

Entitlements are used to track reimbursable expenses for items, resources, equipment, and standard repairs that are transacted during operation and work order completion. The scheduled process, **Generate Supplier Warranty Entitlements** evaluates each work order warranty repair indicator, then determine if a transaction is covered or not. Therefore, entitlements may or may not be created, based on setup and validations covered in this and the following sections.

For a warranty repair work order (checkbox is set to Yes), the scheduled process will review each work order operation transaction to determine if it is covered under warranty or not. During this review, the process will verify if one or more active warranty contracts for the work order asset, or its related assets, will cover the transaction cost or not for reimbursement:

- If the transaction is covered, a claim entitlement is created that references the warranty contract. This entitlement is then used as the basis of creating a warranty claim against the contract's warranty provider. The entitlement will reference the earliest expiring contract.
- If a transaction is not covered, a claim entitlement is also created, with or without a warranty contract reference. It will not be associated to a claim as reimbursable. However, the entitlement can be later updated as covered by warranty and associated to a claim for the same work order.

As each subsequent transaction in the work order is reviewed, additional entitlements may be created and associated as reimbursable for the same claim, or even a different claim, or marked as not reimbursable. Each entitlement has a warranty contract reference that matches the claim's warranty provider. If all entitlements are created for a work order as not reimbursable, then a claim will not be created by the process. In this case, you can edit the entitlements to associate them to a manually created claim to resolve any data mismatch issues.

Entitlements will include the transaction costs once a work order has been successfully costed. By default, these costs will provide the basis for their reimbursement costs in a claim. The original costs can't be edited in an entitlement; however, the reimbursement quantity and unit cost can be updated to reflect the requested amounts if they are different than the standard costs. The scheduled process *Generate Supplier Warranty Entitlements* will update existing entitlement costing if they were created before costing was completed.

Entitlements may be created that reference warranty contracts for different providers for the same work order. In this scenario, multiple claims may be automatically created for a work order. Each claim only has its matching entitlements associated by the common warranty provider. Additionally, you can manually create entitlements to recover additional work order costs, or to represent work order costs that aren't automatically created using the scheduled process.

Warranty Coverage For Material and Resource Transactions

A warranty coverage has optional indicators that guide if entitlements are created or not for resource and material transactions. Based on their values, entitlements may or not be created, or they may be created but not associated with a claim:

- Labor Reimbursement – if this indicator is set to Yes, then resource and equipment transactions are eligible to create entitlements that are covered under warranty and associated to a claim. Else, entitlements are created but not associated to a claim.
- Parts Reimbursement – if this indicator is set to Yes, then material transactions are eligible to create entitlements that are covered under warranty and associated to a claim. Else, entitlements are created but not associated to a claim.

Matching Transaction Coding

During work order creation, if the asset or its related assets are found to have active warranty contracts that use repair transaction codes in their base coverage, then the **Match Transaction Codes** checkbox is set to Yes at the work order header. In this case, it is expected that during the claims process only transactions that are covered by matching codes in warranty contract will be considered as covered by warranty. If the checkbox is set to No, then either there

are no warranty contracts found or none of them have coding defined. Therefore, repair coding validations won't be considered by the warranty claims process.

If coding is defined in the warranty contract base coverages, it is also expected that coding is defined in the standard operations used to create work order operations and in the item definitions. In this case, operations, items, and resources will have repair coding included during work order creation. Before the completion of the first operation, you can update the **Match Transaction Codes** checkbox to No, regardless of coding on the operations. This setting will disregard warranty entitlement validation by coding in the claims and entitlements process. If coding was not defined in a standard operation or manually created operations are defined, you then you can optionally select coding at the operation, item, and resource levels prior to or during operation completion. The codes persist to the operation transactions and be considered by the warranty claims process.

For example, you have an operation transaction for an item that is being consumed in order to repair the brake system on a vehicle. The item has a code value that indicates it is part of a brake system. The transaction will be validated by the claims and entitlements scheduled process as follows:

- If work order asset or related assets has one or more active contracts as of the work order start date, then verify if one or more contracts has a code in their base coverage that matches the transaction.
    - If a match is found, create an entitlement, and reference the first expiring contract, and include in a claim for the work order by matching warranty provider
    - If a match is not found, then create an entitlement, don’t reference a contract, and exclude it from any claims for the work order

If coding is not used, or the **Match Transaction Codes** checkbox is set to No, then the warranty claims and entitlements process won't use coding to validate warranty contracts. The entitlement will reference the earliest expiring contract. If an active contract is found, then entitlements are created for operation transactions for items, resources, and equipment. Otherwise, no entitlements nor claims are created.

Standard Repairs and Costs

Entitlements created for a warranty claim will include transaction costs based off the item, resource or equipment cost setups. For each operation, you may wish to use a standard repair labor cost and quantity instead of using the actual resource transactions and their costs. You can define the following:

- Labor Rates: Use the Warranty Provider Rates REST API or manage page to define the hourly rate and currency for a resource by warranty provider. This value is used along with the Standard Repair Time by the claims and entitlements process for each resource entitlement instead of the standard resource cost and currency. The entitlement must have a warranty contract identified in order to match a labor rate by warranty provider. If a contract is not found, the standard resource cost rate will be used.

  > **Note:** The Start Date of a Warranty Contract will be used to find the corresponding Labor Rate during Warranty Claim and Entitlement validation. Therefore, you will need to define past dated Labor Rates if you have Contracts that have past dated start dates.

- Standard Repair Times: Use the Warranty Standard Repair Times REST API or manage page to define the repair time for a standard operation for a warranty provider. This value will be used along with the Labor Rate by the claims and entitlements process to create a unique entitlement by operation sequence, representing the labor quantity for the provider. If created, this entitlement will be included in the claim; however, entitlements for resources will be created but not included in a claim. The entitlement must have a warranty contract identified in order to find a matching standard repair time by warranty provider. If not found, then the unique entitlement will not be created and individual resource entitlements will be created for resource transactions.

  > **Note:** The Start Date of a Warranty Contract will be used to find the corresponding Standard Operation Repair Times during Warranty Claim and Entitlement validation. Therefore, you will need to define past dated Repair Times if you have Contracts that have past dated start dates.

Warranty Claims Scheduled Process

It is recommended to run this process frequently after operation and work order completion, as well as after costing is complete. The process reviews warranty-entitled work orders, creating claim entitlement records for each material, resource, and equipment transaction. If these expenses are covered by a warranty contract, then they will be grouped in one or more warranty claims by a matching provider.

The process also takes into consideration if repair coding is defined in warranty coverages or not by referencing the Match Transaction Codes checkbox at the work order header. If this checkbox option set to Yes on the work order header, the process only creates warranty entitlements and claims for those expenses where the repair code matches a warranty contract. Else, the entitlements are created, but indicated as not warranty in the claim.

> **Note:** It is generally recommended to run costing for work orders prior to generating warranty claims. While the claims scheduled process will update existing entitlements with costing information, it may be more useful for you to create claims after costing has already processed.

How You Manage And Create Claims

You can search, view, update, and create claims using the Manage Claims page. The results can be filtered by attributes such as the work order number, asset number, warranty provider, claim number or claim type. Clicking on the work order or asset hyperlinks will navigate you to their respective pages, where you can use the back navigation arrow on the browser to return to the list of claims. Click the claim hyperlink to view and edit a claim.

You can also optionally select a claim row and click the Update action. This renders a drawer where you can review and edit key attributes for claim.

Field	Description
Claim Status	The status of a claim can be updated to a seeded or customer-defined status value.
Submit By (Date)	Optional date by which you should submit a claim to a warranty provider.
Claim Type	Optional customer-defined value for the type of a claim.
Assigned To	Optional reference to the worker who is managing or responsible for the claim.

Claims may be manually created using the Create Claim action. This action will render a drawer where you can define key attributes for claim.

Field	Description
Work Order	Maintenance work order for which you are creating a claim.
Warranty Provider Name	Supplier to whom you submit the claim.
Claim Status	The status of a claim can be updated to a seeded or customer-defined status value.
Submit By	Optional date by which you should submit a claim to a warranty provider.
Claim Type	Optional customer-defined value for the type of a claim.
Assigned To	Optional reference to the worker who is managing or responsible for the claim.

Field	Description
Claim Notes	Optional reference notes for a claim.

Claims that are created by the scheduled process will be defaulted to a status of Pending Review. It is expected that Claims will be reviewed, updated, submitted to a provider, and then finally closed as resolved over their lifetime. During this process, you can manually progress the claim by updating its status value. For some providers, you may need to extract the claim and entitlement details and submit using provider specific formats.

How You View and Edit a Claim

Click the **Claim** hyperlink in the results rows to see the Claim Details pages.

Step 1: Check your claim

Step 1 lets you to check your claim by reviewing a read-only summary of the claim:

Field	Description
Claim Amount	Total amount of all entitlements and adjustments that are included in a claim.
Entitlements to Be Reimbursed	Number of entitlements that are included in a claim.
Warranty Provider Name	Supplier to which you submit your claim.
Claim Status	Status of a claim.
Submit By	Optional date by which you should submit a claim to a warranty provider.
Asset Number	The asset from a work order.
Serial Number	Serial number of a work order asset.
Organization	Maintenance organization of a work order.
Work Order Number	Reference to a work order.
Work Order Total Cost	Total cost of a work order.
Work Order Description	Description of a work order.

Note: If Claim Amount and Work Order Total Cost are different, it means that one or more work order transactions weren't included as entitlements in the claim. You can review these details on Step 3.

Step 2: Claim Essentials

Step 2 is used to review and update the claim essential details:

Field	Description
Work Order	You can only update the work order and warranty provider for a manually created claim that doesn't have any entitlements included. Otherwise, it's read-only.
Warranty Provider Name	You can only update the work order and warranty provider for a manually created claim that doesn't have any entitlements included. Otherwise, it's read-only.
Start Date	Defaults to the creation date of the claim but can be updated to any date.
Claim Status	Status of a claim.
Claim Type	Optional customer-defined value for the type of a claim.
Submit By	Optional date by which you should submit a claim to a warranty provider.
Assigned To	Optional reference to the worker who is managing or responsible for a claim.
Claim Reference	Optional reference for the reimbursement of a claim. Examples include a credit memo or reimbursement check reference.
Claim Resolution Date	Date when a claim is resolved.
Reimbursement Type	Optional customer-defined value for the type of reimbursement of a claim.
Reimbursement Amount	Optional value that represents the reimbursement of a claim.
Claim Notes	Optional reference notes for a claim. Default value may be the work order number.

Step 3: Include Entitlements

Step 3 is used to view the included, excluded, or all entitlements in a claim. By default, the page only displays the included entitlements. For each entitlement row, you can view the entitlement details, including:

- Operation transaction type and description
- Warranty contract (optional) is entitlements created by the scheduled process will have a contract value
- Repair Coding, if defined, comes from the operation, item, or resource transaction
- Total Reimbursement Cost defaults from the work order transaction costs

When an entitlement is included or excluded, the claim totals are recalculated.

For each entitlement row, click the edit pencil to view and edit the key details of an entitlement:

Field	Description
Type	The type of an entitlement based on the source of the operation transaction: • Equipment charge • Equipment reversal • Material issue • Material return • Other

Field	Description
	• Standard repair • Resource charge • Resource reversal The type is read-only for entitlements created by the scheduled process. The type is required for manually defined entitlements.
Description	The entitlement description is read-only for entitlements created by the scheduled process based on an operation transaction: • For a material issue, the value will be item and item description • For a resource charge, the value will be the resource code and name • For an equipment charge, the value will be the resource code and name • For a standard repair, the value will be the standard operation code The description is optional for manually defined entitlements.
Reason for Repair Code	The reason for repair code is displayed if the entitlement was created by the scheduled process and the value was recorded in the operation or resource transaction. You can optionally update the value. The code is optional for manually defined entitlements.
Repair Transaction Code	The repair transaction code is displayed if the entitlement was created by the scheduled process and the value was recorded in the material issue transaction. You can optionally update the value. The code is optional for manually defined entitlements.
Work Accomplished Code	The work accomplished code is displayed if the entitlement was created by the scheduled process and the value was recorded in the operation or resource transaction. You can optionally update the value. The code is optional for manually defined entitlements.
Warranty Contract	The warranty contract will be displayed if the entitlement was created by the scheduled process for a warranty repair. You can optionally update the value to another contract that is active for the asset or its related assets. The code is optional for manually defined entitlements. If a contract is defined for an entitlement, then it may only be included in a claim that has a matching provider, else an error is presented.
Contract Status	Read-only value for the selected contract.
Contract Start Date	Read-only value for the selected contract.
Contract End Date	Read-only value for the selected contract.
Calculated Expiration Date	Read-only value for the selected contract if meters are referenced.
Asset Number	Read-only value for the selected contract's asset. This may be the same as the work order asset or may be a child asset.

Field	Description
Asset Serial Number	Serial number of the selected contract asset. The value is read-only.
Cost Quantity	Quantity of the operation transaction that was costed. The value is read-only. Manually created entitlements won't display this value.
Cost UOM	Unit of measure of the operation transaction that was costed. The value is read-only. Manually created entitlements won't display this value.
Currency	Currency of the operation transaction that was costed. The value is read-only. Manually created entitlements won't display this value.
Unit Cost	Unit cost of the operation transaction that was costed. The value is read-only. Manually created entitlements won't display this value.
Total Cost Amount	Total cost amount of the operation transaction that was costed. The value is read-only.
Reimbursement Quantity	Quantity of the reimbursement for the entitlement.
Reimbursement UOM	Unit of measure of the entitlement. Examples are EA or Hour.
Currency	Currency of the entitlement.
Reimbursement Unit Cost	Cost per unit of quantity of an entitlement.
Total Reimbursement Amount	Total cost of the entitlement. Equal to the Quantity x Unit Cost.
Additional Notes	Optional notes for an entitlement.

Note: If you are defining reimbursement details, you must define the quantity, UOM, currency and unit cost. Else, the total reimbursement amount won't be calculated, and an error appears.

Step 4: Review claim amounts

Step 4 provides an overview of each type of included entitlement reimbursable amount and a claim total. When an entitlement is included or excluded, the claim totals by type and the claim total recalculates. Optionally, you can define an adjustment value, making a quick edit to the total claim amount.

How You Manage Warranty Claims and Warranty Entitlements Using REST API

You can define, view, and update warranty claims and entitlements using their REST services. These services are also used by the Warranty Claims search, view and edit pages.

- Use the Warranty Entitlements REST API to create, get, and update the warranty entitlements for work order or claim.
- Use the Warranty Claims REST API to create, get, and update the warranty claims for a work order.

See the REST API for Oracle Supply Chain Management Cloud guide to learn more.

How You Import Warranty Coverages

Create and update supplier warranty coverages in bulk using the File-Based Data Import process.

You can use warranty coverage imports to:

- Create new warranty coverage templates with details. Optionally, you can define covered items, meters, and repair transaction codes.

  > **Note:** If you have created more than one warranty contract using a single template, you can't delete such a warranty contract entirely. When you try to delete, the application does nothing more than disabling the existing item, meter, and repair transactions.

- Update existing warranty coverage templates with details. Optionally, you can update or delete the existing covered items, meters, and repair transaction codes.

  > **Note:** Be watchful when updating existing templates after you create warranty contracts because the changes you make can fundamentally change how new contracts are created using a coverage.

To learn more about the FBDI imports see the File-Based Data Import (FBDI) for SCM and Scheduled Processes for SCM guides.

Purge the Batch Data from Maintenance Import Interfaces

Sometimes, the upload or import of data may result in a warning or error status due to issues with the data. When this happens, the data can't be further processed from the interface tables. Clear the data using the **Purge Maintenance Records from Interface** scheduled process. The process deletes the asset data from the interface tables from all or specific import processes. You can run the scheduled process on demand or set up on a schedule based on your business processes.

7 Maintenance Standard Operations

Overview of Maintenance Standard Operations

Oracle Maintenance provides you the option of creating operation templates called standard operations by defining the operation details and its resources. Each standard operation has a unique ID and can be reused in multiple maintenance work definitions and work orders. When you have similar operations in the maintenance process, you can create standard operations that can be reused.

The standard operations for maintenance-only organizations can be created, updated, and deleted (only using the user interface). You can then search and add the standard operation when creating a work definition or adding operations to a work order or reference it in a REST API of FBDI import.

The standard operations act as a standardized library of common operations facilitating the following:

- You can centrally maintain and reuse the common and frequently used operations. This also reduces the possible data entry errors.
- You can easily create the work definitions and maintain the work definitions and work orders faster. This also helps create standardized master data for maintenance.
- Using the referenced option, you can automatically synchronize any change to a standard operation to the work definitions where the standard operation is referenced.

You can optionally define additional attributes in the bottom show/hide region of page. These are used to describe a standard repair and will be used in execution for supplier warranty claims and entitlements. These codes are defined using Condition Event Codes for each type of code.

Standard Operations can be created, updated, and deleted using REST API and Oracle Application Development Framework Desktop Integration (ADFdi). They can be enabled for both manufacturing, and maintenance or even both work methods in the plant details setup for the organization.

How You Manage Maintenance Standard Operations

The Manage Maintenance Standard Operations page serves as a starting point to create a new maintenance standard operation and manage the existing maintenance standard operations. You can open the page from the Tasks pane.

On the Manage Maintenance Standard Operations page, you can perform the following tasks:

- Search for the maintenance standard operations
- Create the maintenance standard operations
- Edit the maintenance standard operations
- Delete the maintenance standard operations

Note: To use the Maintenance Standard Operations page in Redwood, set the ORA_WIS_STANDARD_OPERATIONS_REDWOOD_ENABLED profile option to Yes. The profile option is available in the Manage Administrator Profiles Values task of the Setup and Maintenance work area.

Search for Maintenance Standard Operations

The Manage Maintenance Standard Operations page displays all the existing maintenance standard operations along with their details. You can use the Filter field to search for a specific standard operation or narrow down the list of standard operation to be displayed.

The following are some key usage points for the search feature:

- You can search for a standard operation using the name, code, description, work center, work center code, or supplier information of the standard operation.
- You can select or deselect the Include inactive operations check box to include or exclude the standard operations that are inactive.

Create Maintenance Standard Operations

Use the Create Standard Operation dialog box to specify the operation details and add resources to create a standard operation. The Create Standard Operation dialog box is accessible from the Manage Maintenance Standard Operations page when you click the Add icon.

These attributes are available for specifying the operation details when creating a maintenance standard operation.

Attribute	Description
Operation Type	The type of the maintenance standard operation. The valid values are In-House and Supplier.
Name	The name of the maintenance standard operation.
Code	The code that uniquely identifies the maintenance standard operation. This code must be unique within the organization. The standard operation code can't be updated when the standard operation is being used in a work definition or a work order.
Description	The description of the maintenance standard operation.
Work Center	The name of the work center to which the maintenance standard operation is to be associated. Only the active work centers can be assigned to an operation.
Work Center Code	The unique code of the work center to which the maintenance standard operation is to be associated. The value is automatically derived based on the selected work center.
Work Center Description	The description of the work center to which the maintenance standard operation is to be associated. The value is automatically derived based on the selected work center.
Count point	Indicator whether the maintenance standard operation completion must be explicitly reported. The Count point and Automatically transact attributes are mutually exclusive.
Automatically transact	Indicator whether the maintenance standard operation is automatically completed, the pull components are backflushed, and the resources are automatically charged when the next count point operation is completed. The Count point and Automatically transact attributes are mutually exclusive.

Attribute	Description
Inactive Date	The date on which the maintenance standard operation becomes inactive.
Attachments	The attachments of type file, text, or URL in the maintenance standard operation. **Note:** The attachments are automatically inherited by the work definition or the work order when a standard operation is selected. They can't be edited once associated and are displayed in the details for each work order operation in execution.
Default for automatic work definition	Automatic work definitions are applicable for only discrete manufacturing. Always leave the value as unchecked.
Additional Manual Material Issue	Controls if you can issue additional materials that aren't defined in the work order with supply type of push. Additionally, it controls if you can manually issue quantities greater than those specified in the work order. The values are Allow, and Do not allow.
Completions with Under Issues	Controls if you can complete an operation when materials with push supply type haven't been issued. The values are Allow, Allow with warning, and Do not allow.
Completions with Open Exceptions	Controls if you can complete an operation if there are any open exceptions. The possible values are Allow, Allow with warning, and Do not allow.

If your operation is a supplier operation, you specify some details in the Supplier Operations Details region of the Create Standard Operation dialog box:

Attribute	Description
Outside Processing Item	An item that represents the value added service being performed on the assembly in outside processing. The item is defined in Oracle Fusion Product Information Management. If the finished goods item is a dual units of measure item, which means the Tracking Unit of Measure is set to primary and secondary, then the outside processing item should be defined as a dual units of measure item as well. For more information about setting up items for outside processing, refer to the Implementing Outside Processing chapter in the Oracle Supply Chain Management Cloud Implementing Manufacturing and Supply Chain Materials Management Guide. **Note:** You can update the outside processing attributes of the supplier operation only if the Work Order Status is Unreleased, or On Hold (without release date). **Note:** You can't add an outside processing item as a component to an operation.
Item Description	The description of the outside processing item.
Supplier	The supplier associated with the work order operation.
Supplier Site	The location of the supplier associated with the standard operation

In the Resources region of the Create Standard Operation dialog box, you can add the required resources by clicking the add icon. This section is applicable only for in-house operations.

Here are the details you can specify for resource when you create a maintenance standard operation.

Attribute	Description
Sequence	The resource sequence of the standard operation resource. You can repeat a resource sequence to indicate the simultaneous resources.
Resource	The name of the resource. The associated resources must pertain to the designated standard operation work center and be active.
Units Assigned	The number of assigned resources. The assigned units can't exceed the available units for the resource as defined in the work center resource availability definition.
Basis	The valid values are: Fixed and Variable. Select Fixed if the resource usage is fixed per product quantity produced. Select Variable if the resource usage varies with the product quantity produced.
Usage	The usage amount of the standard operation resource.
Inverse Usage	Inverse Usage = 1 / Usage If you specify the Usage field, then the Inverse Usage field is calculated automatically. Similarly, if you specify the Inverse Usage field, then the Usage field is calculated automatically.
UOM Name	The usage unit of measure as defined in the resource definition. This is a read only field inherited from the resource definition.
Scheduled	The indicator that the resource is a scheduled resource. A resource can be scheduled if the Resource UOM belongs to the UOM class defined in the profile option RCS_DEFAULT_UOM_SRVICE_DURATION_CLASS.
Principal	The indicator that a resource is the principal resource within a group of simultaneous resources. The simultaneous resources must have only one resource designated as principal resource.
Charge Type	The valid values are: Automatic and Manual.
Job Profile	The job profile for a labor resource. A job profile comprised of a set of qualifications that are required for an operator to perform a job. When a job profile is specified for an operation resource, then only those labor resource instances that meet the qualifications can perform the operation.
Equipment Profile	The equipment profile for an equipment resource. An equipment profile specifies the set of qualification requirements that an equipment must possess when performing operations in manufacturing. When an equipment profile is specified for an operation resource, then only those equipment resource instances that meet the qualifications can perform the operation. You set up the profile, requirements, and asset qualifications in Oracle Maintenance.

Attribute	Description
Resource Code	The code of the resource. This is a read-only field and the value is inherited from the resource definition.
Activity	The predefined values are: Setup, Run, and Tear Down. The lookup can be configured by adding new values.
Costing enabled	The indicator that the resource cost is charged to the work order. This is a read only field inherited from the resource definition.
Inactive On	The date on which the resource becomes inactive.
Attachments	Attachments of type file, text, or URL in the resource.
Alternates	Alternate resources are defined in this region.

In the Resources region of the Create Standard Operation dialog box, you can add the required resources by clicking the add icon. This section is applicable only for in-house operations.

Here are the details you can specify for resource when you create a maintenance standard operation.

In the Additional Attributes show and hide region, you can optionally define repair codes that will persist to Maintenance Work Orders for use in Supplier Warranty and reporting using OTBI. The codes are defined as Condition Event Codes and are selected based on their code type.

- Reason for Repair Code – describes the reason why the asset is being repaired.
  - Define using a Condition Code type of “Reason for repair code”
  - Examples may include Breakdown, Preventative Maintenance or Warranty
- Repair Transaction Code – describes the System, Assembly and Component being repaired on an asset
  - Define using a Condition Code type of “Transaction code”
  - Examples may include standard industry coding such as *Vehicle Maintenance Reporting Standards* (VMRS) or similar taxonomies
- Work to Be Accomplished Code – describes the activity that was used to repair the asset.
  - Define using a Condition Code type of “Work accomplished code”
  - Examples may include Clean, Repair or Replace

The codes will not be viewable in a Work Definition. However, when a Maintenance Work Order is created, the codes will persist to the Operation Header and each Resource. They can be optionally edited in the Work Order and will persist to the Resource Transactions, as well as Warranty Claims and Entitlements.

Editing Maintenance Standard Operations

You can edit a maintenance standard operation in the Edit Standard Operation dialog box. In the Manage Maintenance Standard Operations page, click the name of the standard operation that you want to edit.

In the Edit Standard Operation dialog box, you can edit the following standard operation details:

- You can edit the following attributes: Name, Code, Description, Inactive Date, and Attachments.

- You can edit the Work Center attribute only if there are no resources associated with the standard operation.

Deleting Maintenance Standard Operations

You can delete a standard operation on the Manage Standard Operations page. However, you can't delete a standard operation if it's referenced in any of the work definitions or work orders.

How You Manage Maintenance Standard Operation Flexfields

Your Standard Operation and Standard Operation Resource objects are enabled for flexfields, so you can manage additional details for an operation. Flexfields are defined during the implementation of Oracle Maintenance, but can be further defined once deployed and standard operations are created.

The Standard Operation objects are shared by Oracle Manufacturing and Maintenance. Therefore, any flexfields that are defined will be visible in both applications.

For a standard operation, these are the numbers of additional attribute fields available:

- Character: 20
- Number: 10
- Date: 10
- Date and Time: 10

You can manage the flexfields in the Additional Information show/hide region of the Edit Standard Operation dialog box. You can view and edit the field values, including conditional fields guided by a context segment.

For additional details about flexfields, refer to the Configuring and Extending Applications guide of Oracle Applications Cloud.

> **Note:** When you define flexfields, you can enable them for Business Intelligence. When creating a flexfield segment, select the BI Enabled check box under the Business Intelligence section. When a flexfield is deployed, run the Import Oracle Fusion Data Extensions for Transactional Business Intelligence scheduled process while selecting the CRM parameter check box. This will import the flexfields into Oracle Transactional Business Intelligence (OTBI).

How You Manage Standard Operations Using REST API

Define, view, and update maintenance standard operations using REST services. You can use REST services for standard operations used in maintenance-enabled organizations as well those organizations enabled for both Oracle Manufacturing and Oracle Maintenance.

Use the Standard Operation REST API to:

- Create new standard operations, including resource and resource instance definitions

- Update existing standard operations

For more details, refer to the REST API for Oracle Supply Chain Management Cloud guide.

Manage Standard Operations in a Spreadsheet

If you need to work offline, then manage your standard operations using a Microsoft Excel spreadsheet. You can mass create and update the standard operations and resources by using the Oracle Application Development Framework Desktop Integration (ADFdi).

Here's how the ADFdi feature benefits you:

- After you download the standard operation data hosted on the Oracle Fusion Cloud Manufacturing application to a spreadsheet, you can modify it even when you're disconnected from the application.
- You can perform bulk entry and update of data with ease through a spreadsheet.

To manage standard operations in spreadsheet, you must first download and run the ADFdi Installer:

1. Click **Navigator > Tools > Download Desktop Integration Installer**.
2. Click **Save File** to download the desktop integration installer.
3. Double-click the executable file to install the ADF Desktop Integration Installer.
4. Click **Install** to proceed with the installation process.
5. Click **Close** to complete the installation process.

Then, download the standard operation data:

1. Click **Navigator > Work Definition**.
   In the Tasks pane, click the **Manage Work Definitions in Spreadsheet** link to download the worksheets.
2. Select the **Open with** option to open the Work Definition Excel file.
   The three worksheets are Standard Operations, Standard Operations Resources, and Standard Alternate Resources.
3. Click **Yes** to connect to the application.
4. Login with your credentials and start working.

Here's how you manage the standard operations in a spreadsheet:

1. Create and update the standard operations and resources in bulk by using the ADFdi.
   You must create the standard operation header details first, and then define the resource details and alternate resources for it.
2. Search for the standard operation details based on the search criteria available on each spreadsheet.
   You must search for the standard operation header or resource details before you can update any of the attributes.
   You must not run a blind report with values not specified for any of the parameters.
3. Update the data by overwriting the data in the search results table.
   After the update, an indicator appears in the Changed column for each updated row. The inactive cells are read only fields and are not included in the upload process.
4. Click **Upload** when you're ready to synchronize the changes with the Oracle Fusion applications. Any data validation errors will be shown in the spreadsheet after the upload. Check the Row Status column to know if the upload was successful.

Note: You can upload, query, or update the descriptive flexfields details in the work definitions using ADFdi. However, while uploading or updating the descriptive flexfields in the standard operation using ADFdi, only data type validations are performed. You can also query, create, update, or delete a standard operation using a REST API.

How You Use Maintenance Standard Operations

When you add a maintenance standard operation to a maintenance work definition or a maintenance work order, all the attributes of the standard operation are inherited by the work definition or the work order. This includes the operation details, resources, and attachments such as work instructions. When inherited, attachments can't be edited and will be displayed in the details for each operation.

You can only add an active standard operation, that's when the Inactive On attribute is null or a future date, to a work definition or work order.

You can use the standard operations in two different ways:

- By selecting the Referenced check box: When adding the standard operation in a work definition, select the Referenced check box. This enables the standard operation to be referenced in the work definition at all times. Any future changes to the standard operation are automatically reflected in the work definition.
- By deselecting the Referenced check box: When adding the standard operation in a work definition or work order, deselect the Referenced check box. This adds a copy of the standard operation in the work definition or work order. Any future changes to the standard operation aren't reflected in the work definition or work order. If the changes are required in the work definition or work order, they have to be manually done.

Note:

- In a work order, the standard operation is always a copy and the work order doesn't reflect any changes when the standard operation is updated.
- Once a standard operation is overridden by deselecting the Referenced check box, you can't change it back to referenced standard operation.

8 Maintenance Work Definitions

Overview of Maintenance Work Definitions

Work definitions are pre-defined work instructions for accomplishing the inspection, service, or repair of an asset. They represent the operation steps, material items, and resources required. They can be optionally used when creating a work order, providing a quick method to define the work scope. They are also used as a basis for defining a preventative maintenance program for an asset or group of like assets.

Work definitions can be managed globally or locally in your maintenance organizations. Additional details are covered in the next section.

Work definitions are revision controlled by numerical versions and effective on dates. This provides you the ability to track changes in the definition over time, while allowing for future versions as well.

After creation, you can generate the maintenance work definition details report, allowing for offline reviews and information exchange.

To summarize, the maintenance work definition feature enables you to perform the following tasks:

- Manage maintenance work definitions in user interface: search for, create, edit, and delete the maintenance work definitions.
- Work definitions can be managed globally or locally in your maintenance organizations.
- Generate and print the maintenance work definition report that contains the maintenance work definition details. For further details on this report, refer to the Reports and Analytics chapter of this guide.
- Create and manage the maintenance work definition versions.

Maintenance Work Definition Structure

A maintenance work definition consists of the following elements:

- Operations
- Operation Items
- Operation Resources

The work definition's operations are executed following a linear path based on the operation sequence. A work definition must have at least one operation and it must be associated to a work center. You can either use predefined standard operations or you can manually define and enter each of the operations. We recommend you create and use standard operations wherever possible, allowing them to be reused across different work definitions.

> **Note:** To define a global definition, you must ensure that all the child objects match by name and code across all maintenance organizations, else the replication will error out for the organization.

Typically for asset maintenance, each operation is defined as including a count point. This means that the operation is expected to be executed by a technician, indicating they have completed each of the steps of the operation. During this time, any additional material, resources, or meter readings can be entered.

If an operation is not identified as a count point, then it's automatically transacted when the next count point operation is completed. These operations are typically defined to trigger the backflush pull-type items and even charge pre-defined resource usage.

Alternatively, if an operation isn't indicated as a count point or an automatically transact operation, then it's considered as an optional operation. In this case, there's no action required by the technician during execution of the work order. This capability is available, but typically not utilized for most maintenance work order operations. However, there may be some cases where common tasks that don't require manual reporting can be modeled without any count points, thus they will automatically be completed once the work order is released for execution.

> **Note:** When defining Global work definitions, you must first ensure common data is defined at all the child organizations, else replication will fail.

Operations

The work definition operations define the sequence of steps to be performed in maintaining an asset. The operations are executed following a linear path based on the operation sequence. A work definition must have at least one operation and the operation must be associated to a work center. You can either use standard operations, or you can manually define the operations. If an operation isn't indicated as a count point or an automatically transact operation, then it's considered as an optional operation.

Operations can also be worked out-of-sequence if enabled at the work definition header. This allows count point operations in the My Maintenance Work page to be completed in any order.

Operation Items

The operation items define the material requirements for operations. Non-asset tracked items will be consumed and costed by the work order, while asset-tracked items will be installed on the work orders asset's configuration and will be visible in the physical hierarchy.

Operation Resources

The operation resources define the resource requirements for operations. The pool of resources available comes from the work center assigned to the operation. A resource represents either a labor or equipment that performs or assists in the accomplishment of the operation step.

> **Note:** If you use a referenced standard operation, then you can't add, edit, or delete the resources, as the resources are a part of the standard operation definition. You must update the resources on the Manage Maintenance Standard Operations page.

Operation Parameters

The operational parameters tab is enabled by a manufacturing opt-in feature and will be used in a future version by maintenance. See the Implementing Manufacturing and Supply Chain Materials Management guide for more details.

How You Model Maintenance Work Definitions

When you translate an asset service interval into a work definition, you review the originating service tasks and determine how work definitions should be defined into a unique and logical sequence of steps.

Based on the service interval definitions, you can model work definitions using one of several approaches:

- Unique Work Definitions: contain all the steps required to perform a task
- Incremental Work Definitions: contain all the steps required to perform a task based on the combination of operations from an existing work definition plus incremental additional operation steps.
- Add-On Work Definitions: contain only the incremental steps to perform specific task. It's expected to be combined with another unique work definition during the creation of a work order.

Note: Note: It's important to understand the role of the merge and suppress option while modeling your work definitions. When work definitions are merged to create a work order, they lose their identity and attachments don't persist to the final work order.

Unique Work Definitions

Create these types of definitions to represent the complete set of steps for a task. You can use these work definitions as the work scope for the manual creation of a work order or in a work requirement.

These types of work definitions are typically not expected to be combined with other work definitions in a work order, as it would result in duplicate operation steps. Therefore, if used in a work requirement, they typically aren't modeled to merge with other work definitions. It's expected that you use unique work definitions with the suppress option for each interval.

For example, a work definition for an oil change that's due every 5,000 miles for a truck. This work definition includes all the steps to:

- Inspect the truck
- Drain the existing oil
- Remove and replace the oil filter
- Fill the new oil
- Run the engine and check for leaks

Incremental Work Definitions

Create these types of definitions to represent the complete set of steps for a task that's based on an existing work definition plus additional steps. You can use these work definitions as the work scope for the manual creation of a work order or in a work requirement.

These types of work definitions are typically not expected to be combined with other work Definitions in a work Order. However, they could be defined in a work requirement with other work definitions, representing the unique work that's required at a unique interval in a cycle-based forecast. It's expected that you use incremental work definitions with the suppress option for each interval.

For example, a work definition to replace the air cleaner every 10,000 miles for a truck. This work is executed at the same time as the oil change. Therefore, this work definition includes all the steps to change the oil and replace the air cleaner in a single work definition:

- Inspect the truck
- Drain the existing oil
- Remove and replace the oil filter
- Fill the new oil
- Remove and replace the air filter
- Run the engine and check for leaks

Add-On Work Definitions

Create these types of definitions to represent only the incremental set of steps for a task. You can only use these work definitions as the work scope in a work Requirement where it's expected that they would be merged with a unique work definition, typically at an interval in a cycle-based forecast. It's expected that you use add-on work definitions with the merge option for each interval.

- The unique work definition would contain the common steps that don't need to be repeated in each of the other add-on work definitions.
- The add-on work definitions would define additional steps to be added and it's expected that the work definitions would be merged into a single work order

For example, create these types of work definitions that work together in a work requirement:

- Every 5000 miles, the engine oil and filter require replacement (unique Work Definition)
- Every 10000 miles, the engine air cleaner element requires replacement (Add-On Work Definition)
- Every 25000 miles, the engine's accessory belts require replacement (Add-On Work Definition)
- Every 50000 miles, the transmission fluid and filter require replacement (Add-On Work Definition)
- Every 75000 miles, the brake pads and rotors require replacement (Add-On Work Definition)

During work requirement modeling, work definition 1 would be due every time a work order is created. Then, starting at 10,000 miles, additional add-on work definitions would be merged with the work definition 1 to create a unique work scope in the work order for the Asset. While this modeling may seem a little more complicated, it does provide some flexibility for preventive maintenance modeling over time.

How You Manage Maintenance Work Definitions in the User Interface

The Maintenance Work Definition page allows you to manage current and future versions of maintenance work definitions. You can open the page from the Tasks pane by clicking the Manage Maintenance Work Definitions link.

By default, the page displays a list of active work definitions. Here are the actions you can perform on this page:

- Search for a work definition

- Create a new work definition
- Assign a global definition to one or more child organizations
- Edit a version of a work definition
- Create a new version of a work definition
- Delete a version of a work definition
- Deactivate a version of a work definition
- Reactivate a version of a work definition
- Export a list of all work definitions to an Excel file
- Print a work definition report for a selected work definition from the results table

Note: To use the Maintenance Work Definitions page in Redwood, set the ORA_MNT_WORK_DEFINITIONS_REDWOOD_ENABLED profile option to Yes. The profile option is available in the Manage Administrator Profiles Values task of the Setup and Maintenance work area.

Search for a Work Definition

On the Maintenance Work Definition page, you can perform a basic search for an existing maintenance work definition based on the work definition name and version. You can narrow the search result by performing an advanced search using the filters. The filters enable you to perform a search based on other attributes of the maintenance work definition such as work definition name, work definition description, work order type, work order subtype, version status, start date, operation item, operation resource, and operation work center. You can also export the search results to a spreadsheet.

You can save the frequently used search criteria, and it will be shown in the Search drop-down list. You can also run a search automatically by creating a saved search and setting it as default. When you have a default search criteria, the maintenance work definitions matching the search criteria are displayed automatically whenever the Maintenance Work Definition page is opened.

Create a Work Definition

You can create a new maintenance work definition in the Create Maintenance Work Definition dialog box. To open the dialog box, click the Add icon or select Add from the Actions menu on the Maintenance Work Definition page. You can create a new maintenance work definition by providing all the required information or by copying the information from an existing maintenance work definition. You must define at least one operation, either manually or based on a standard operation to create and edit the new work definition using the visual designer page.

Note: Global work definitions can only be defined in a master organization enabled for maintenance.

Assign a Global Definition to Child Organizations

After you create a global work definition, you are ready to replicate it to one or many child organizations. To do that, from the search results, click **Assign Global Work Definition**. In the drawer, you can search and select one, many or all organizations. Clicking the Assign action generates a scheduled process that you can monitor and verify no errors occur during the sync.

After the process completes successfully, go back to the drawer and click the **Assigned** toggle button to see the list of replicated organizations. At any time in the future, click the **Unassigned** toggle to select and assign additional organizations.

During replication, if any errors are encountered, you can see them in the process logs. Typically, errors occur due to missing setups in the child organizations. For example, a missing resource can cause an error. After you resolve the setup issues, click the **Unassigned** toggle to reselect and assign the organization for replication.

Edit a Work Definition

You can edit a maintenance work definition on the Edit Maintenance Work Definition page. To open the page, click the work definition name link in the search results table on the Maintenance Work Definition page. You can also select the work definition row in the search results table and select Edit from the Actions menu. You can then edit the work definition using the visual designer page.

For global definitions, click **Sync Changes to Assigned Organizations** to persist the edits to each of the child organizations. This starts a scheduled process. You can monitor and verify the process so that no errors occur during the sync.

Create a New Version of a Work Definition

You can create a new version of a maintenance work definition directly from the results table. A new version allows for greater capabilities than editing an existing version. To create a new version, click the pencil icon next to the version number in the result row, which will render Manage versions dialogue box. You can then click the + plus icon to create a new version row. Use the system incremented version number, or define your own sequential value, and enter a future start date and time. Click Save and Edit or Save and Close to save the new version.

The new version start date can be before or after another future version's start date. If it's before, then it will be created with an end date and time that is 1 minute before the start date of the future version. If it's created after a future version, then the future version will be updated with an end date and time that is 1 minute before the start date of the new version.

For global definitions, this action is disabled for the replicated copies in the child organizations. In the global organization, creating a new version is a multi-step process. After defining the new future dated version details, save and close. This saves the new version and generates a scheduled process to replicate it to each of the child organizations. You can monitor and verify so that no errors occur during the creation of the new versions. After the process successfully ends, you can edit the new global version. After the editing is complete, select **Sync Changes to Assigned Organizations** to persist the edits to the new version to each of the child organizations. This generates a scheduled process, which you can monitor and verify no errors occur during sync.

Delete a Work Definition

You can delete a future version or all versions of a maintenance work definition directly from the results table. To delete a future version, click the pencil icon next to the version number in the result row, which will render Manage versions dialogue box. You can then select any future version of the work definition from the list and click the X icon to delete it. If you wish to delete all versions of a work definition, select the result row, and select Delete from the Actions menu. There isn't a warning presented, so care should be taken before performing this action.

You can't delete a maintenance work definition if it's being referenced in any maintenance work order or a maintenance program.

For global definitions, this action is disabled for the replicated copies in the child organizations. In the global organization, when you delete a version, a scheduled process is run to delete it in each of the child organizations. You can monitor and verify that no errors occur during the deletion of these versions.

Deactivate a Work Definition

You can deactivate all versions of a maintenance work definition directly from the results table. For example, you can deactivate a work definition if the maintenance process it represents is no longer valid. You can't deactivate a maintenance work definition if it's being referenced in any maintenance program.

When you deactivate a work definition, its status changes from Active to Inactive. You can't reactivate or create a new version of a deactivated work definition, but you can:

- Search and view the deactivated work definition.
- Create a new work definition by copying the deactivated work definition.
- Continue to process work orders that use the deactivated work definition

For global definitions, this action is disabled for the replicated copies in the child organizations. In the global organization, when you deactivate a version, a scheduled process is run to update it in each of the child organizations. You can monitor and verify that no errors occur during the deactivation of these versions.

Reactivate a Work Definition

You can reactivate a version that was previously deactivated directly from the results table.

For global definitions, this action is disabled for the replicated copies in the child organizations. In the global organization, when you reactivate a version, a scheduled process is run to update it in each of the child organizations. You can monitor and verify that no errors occur during the deactivation of these versions.

Related Topics

- Maintenance Work Definition Structure
- How You Create a Maintenance Work Definition
- How You Edit a Maintenance Work Definition

How You Create a Maintenance Work Definition

You can create a maintenance work definition in the Create Maintenance Work Definition dialog box. To open the dialog box, on the Maintenance Work Definition page, click the add icon or select Add from the Actions menu.

Create a Maintenance Work Definition From Scratch

In the Create Maintenance Work Definition dialog box, retain the New work definition option to create a maintenance work definition from scratch.

The following are the major steps in creating a maintenance work definition from the scratch:

1. Enter the details of maintenance work definition
2. Create the operations
3. Add items from inventory to the operations
4. Add asset parts list to the operations
5. Add resources to the operations

Note: To fulfill the material requirement, you can choose to add items from inventory or add asset parts list.

Enter the Maintenance Work Definition Details

In the Create Maintenance Work Definition dialog box, you must provide a unique code, name, and start date for the maintenance work definition. You may optionally provide other details. Click the Show More link to view more fields.

The maintenance work definition has the following attributes:

Attribute	Description
Code	The unique code of the maintenance work definition that you're creating.
Name	The name of the maintenance work definition that you're creating.
Description	The brief description of the maintenance work definition that you're creating.
Work Order Type	The type of the maintenance work order. The valid values are Corrective and Preventive. This is an optional attribute. When you create a work order referring to this work definition, the value of Work Order Type is defaulted to the work order. **Note:** The work order type and subtype are only considered in the creation of maintenance work orders using the Manage Work Orders page and Maintenance Work Order REST API. The maintenance program will only consider the type and subtype from the asset definition.
Work Order Subtype	The subtype of the maintenance work order. The valid values are Condition based, Emergency, Planned, Reactive, Safety, and Under warranty. This is an optional attribute. When you create a work order referring to this work definition, the value of Work Order Subtype is defaulted to the work order.
Start Date	The start date of the maintenance work definition that you're creating. The value is set to the system date and can be overridden.
End Date	The end date of the maintenance work definition. The value is set when a new version is created.
Version	The version date of the maintenance work definition. The value is set when a new version is created.
Allow out of sequence completion	Optional. You can define a work order to have its count point operations be completed out-of-sequence. If enabled, you can complete count point operations in any order in the Report Work page of the My Maintenance Work Orders.
Allow completion to inventory	Optional. You can define a work order to issue and return the repaired assets to a sub inventory location. If enabled, you can define a sub inventory location and locator. The sub-inventory and location values you define appear during the work order completion in the Completion page of the My Maintenance Work Orders.
Completion Subinventory	If Allow completion to inventory is selected, you can define a completion subinventory location. For a global definition, leave this field blank, as you must manually define at each of the replicated organizations.

Attribute	Description
Completion Locator	If Allow completion to inventory is selected, you can define a completion locator location. For a global definition, leave this field blank, as you must manually define at each of the replicated organizations.
Global	Read only indicator that's displayed only in global definitions: • If Yes, the global definition has replicated to one or many child organizations. • If No, it hasn't replicated to any child organizations.
Replicated	Indicator that's displayed only in replicated child organizations. • If Yes, the definition is in sync to the global version and receives updates that are persisted. • If No, then it's disconnected from the global version and will no longer receive updates that are persisted. **CAUTION:** Care should be taken when disconnecting a replicated work definition, as this can't be reversed. Only users with a specific privilege WIS_UNLINK_REFERENCED_WORK_DEFINITION can disconnect them.
Attachments	The attachments in the maintenance work definition. It can be of file, text, or URL type. **Note:** • If a work order is created using a work definition, then the attachments are displayed in the Details section of the General Information tab of the Edit Work Order page. • If a work order is created by a maintenance program by merging two or more work definitions, the attachments won't be inherited by the work order.

Create Operations

After you have entered the maintenance work definition details, click the Next button to create operations for the maintenance work definition.

On the Create Maintenance Work Definition: Create Operations dialog box, you can create the operations using any of the following three options:

- Reference a maintenance standard operation: You can reference a maintenance standard operation by selecting the code of the maintenance standard operation and retaining the Referenced check box as selected. The operation attributes can't be edited.

  Note: When you reference a maintenance standard operation, you can't edit the resources assigned to the operation in the maintenance work definition. Referencing also ensures that any future changes to the maintenance standard operation are reflected in the maintenance work definition operation.

- Copy a maintenance standard operation: You can copy a maintenance standard operation by selecting the code of the maintenance standard operation and deselecting the Referenced check box. The operation attributes can be edited. Once you remove the reference to a maintenance standard operation, you can't reference it again.

  > **Note:** When you remove the reference to a maintenance standard operation, you can add or delete the resources assigned to the operation in the maintenance work definition. Any future changes to the maintenance standard operation aren't reflected in the maintenance work definition operation.

- Manually enter the operation details: You can create an operation for the maintenance work definition by manually entering the operation details. Click the Add icon in the Operations table to add a row for creating an operation manually.

The maintenance work definition operation has the following attributes:

Attribute	Description
Sequence	The sequence of operation based on which the operations are executed. The value is derived from the plant parameters Starting Operating Sequence and Operation Sequence Increment. The value can be overridden but must be unique.
Code	The code of the maintenance standard operation if you want to reference or copy the maintenance standard operation.
Referenced	If selected, the maintenance standard operation is referenced in the maintenance work definition operation. Any future changes to the maintenance standard operation are reflected in the maintenance work definition operation. Once you deselect the Referenced check box, you can't select it again.
Operation Type	The type of the operation. The valid values are In-house and Supplier.
Name	The name of the operation.
Work Center	The work center that's associated to the operation.
Start Date	The start date of the operation, which is aligned to the maintenance work definition version start date.
End Date	The end date of the operation. Initially, the value is null.
Count Point	Indicator whether the operation completion needs to be explicitly reported. The last operation in a work definition has to be a count point operation. The Count Point and Automatically Transact attributes are mutually exclusive.
Automatically Transact	Indicator whether the operation is automatically completed, the pull components are backflushed, and the resources are automatically charged when the next count point operation is completed. The Count Point and Automatically Transact attributes are mutually exclusive.
Description	The description of the operation.
Work Center Inactive Date	The inactive date of the work center that's associated to the operation.

Attribute	Description
Allow Resequencing	Indicates that the operation can be resequenced during work execution. **Note:** You can't use ADFdi to create, update, or delete resequenceable operations, or search for work definitions with resequenceable operations. Consider these rules before allowing resequencing: • Only count point operations can be defined as resequenceable operations. • Resequenceable operations can't be the first and last operations of a work definition. • A resequenceable operation can't be a serialization start operation. • A set of resequenceable operations must be preceded and succeeded by count point operations. In other words, an automatically transact or optional operation can't be defined next to a resequenceable operation. • You can define multiple sets of resequenceable operations within a work definition, and any number of resequenceable operations within a given set. • You can add a resequenceable work definition to a work requirement in a maintenance program only if the override option for suppress and merge is enabled.
Attachments	The attachments in the operation. It can be of file, text, or URL type. **Note:** • If the operation is created based on a standard operation, then the attachments are automatically inherited from the standard operation definition and can't be edited. If you manually create the operation, then you can define one or more attachments in the operation, and edit them during future revisions. When a work order is created using the work definition, the attachments can be viewed for each operation on the Edit Work Order page. • If the work order is created by a maintenance program through merging two or more work definitions, then only attachments which are defined for standard operation are inherited to the work order operations. Operations that you create manually don't get their attachments carried forward into the work order.

After creating the operations, click the Save and Edit button. The Edit Maintenance Work Definition page opens. On the Edit Maintenance Work Definition page, the operations are shown in the work definition region.

Add Items From Inventory to the Operations

The items from inventory are shown in the Items vertical tab. A count badge is shown against the items indicating their assigned quantity out of total quantity, for example, 0 or 1.

There are multiple ways to assign an item to an operation:

- Drag and drop: You can drag and drop an item to an operation. The entire quantity of the item is assigned. After a successful assignment, the component is shown in the work definition region against the operation. A check mark is shown against the item indicating that all of the quantity is assigned.
- Right-click Assign action: You can right-click an item and from the Actions menu, select Assign. In the Assign Operation Item dialog box, you can edit the operation item attributes if needed. Then, click the OK button.
- Multiselect item: You can click the Collect icon (check mark icon) in the Items vertical tab. The Not Collected icon (also a check mark icon) is shown against the items. When you click the Not Collected icon to select a component, the component is collected as indicated by the count against the Collected Items icon (basket icon). Select the other items that you want to assign. Drag and drop the basket icon to an operation for which they're

required. You can also right-click the basket icon and from the Actions menu, select Assign. In the Assign Operation Items dialog box, you can edit the operation item attributes if needed. Then, click the OK button.

To assign an ad hoc item to an operation, click the Items vertical tab. Perform a search for the item. Then, from the search results, either drag and drop the item card to an operation or right-click the item and from the Actions menu, select Assign.

Note:

- The Items vertical tab isn't shown if you don't have the Override Item Structure Components in Work Definition privilege.
- When you add an item to an operation, you can choose to add one or more item-level attachments and edit them during future revisions. When a work order is created using the work definition, the attachments can be viewed for each operation item on the Edit Work Order page.
- If the work order is created by a maintenance program through merging two or more work definitions, the operations won't have their item-level attachments carried forward into the work order.
- For a global definition, you won't define the supply subinventory and supply locator. Instead, you manually define it in each of the replicated copies.

Add Asset Parts List to the Operations

The available asset parts list is shown in the Parts List vertical tab.

There are multiple ways to assign an asset parts list to an operation:

- Drag and drop: You can drag and drop an asset to an operation. The asset parts list is assigned to the operation. After a successful assignment, the asset parts list is shown in the work definition region against the operation. A check mark is shown against the asset parts list indicating that all of the quantity is assigned.
- Right-click Assign action: You can right-click an asset and from the Actions menu, select Assign. In the Assign Operation Item dialog box, you can edit the operation item attributes if needed. Then, click the OK button.

To assign a specific asset parts list to an operation, click the Parts List vertical tab. Perform a search for the asset and the parts list associated with the asset is displayed. Then, from the search results, either drag and drop the asset parts list card to an operation or right-click the item and from the Actions menu, select Assign.

Note:

- When you add an item to an operation, you can choose to add one or more item-level attachments and edit them during future revisions. When a work order is created using the work definition, the attachments can be viewed for each operation item on the Edit Work Order page.
- If the work order is created by a maintenance program through merging two or more work definitions, the operations won't have their item-level attachments carried forward into the work order.

Add Resources to the Operations

The resource tree hierarchy is shown in the Resources vertical tab. It shows the work center and the resources available in the work center.

There are multiple ways to assign a resource to an operation:

- Drag and drop: You can drag and drop a resource to an operation for which it's required. In the Assign Operation Resource dialog box, you can edit the operation resource attributes if needed. Then, click the OK button. After a successful assignment, the resource is shown in the work definition region against the operation.
- Right-click Assign action: You can right-click a resource and from the Actions menu, select: Assign. In the Assign Operation Resource dialog box, you can edit the operation resource attributes if needed. Then click the OK button.
- Multiselect resources: You can click the Collect icon (check mark icon) in the Resources vertical tab. The Not Collected icon (also a check mark icon) is shown against the resources. When you click the Not Collected icon to select a resource, the resource is collected as indicated by the count against the Collected Items icon (basket icon). Select the other resources that you want to assign. Drag and drop the basket icon to an operation for which they're required. You can also right-click the basket icon and from the Actions menu, select: Assign. In the Assign Operation Resources dialog box, you can edit the operation resource attributes if needed. Then, click the OK button.

Note:

- When you add an resource to an operation, you can choose to add one or more resource-level attachments and edit them during future revisions. When a work order is created using the work definition, the attachments can be viewed for each operation item on the Edit Work Order page.
- If the work order is created by a maintenance program through merging two or more work definitions, the operations won't have their resource-level attachments carried forward into the work order.

Create a Maintenance Work Definition by Copying From an Existing Work Definition

In the Create Maintenance Work Definition dialog box, select the Existing work definition option to create a maintenance work definition by copying from an existing maintenance work definition. The Create Maintenance Work Definition dialog box reopens with Existing Work Definition region and New Work Definition region. In the Existing Work Definition region, enter the code of maintenance work definition from which you want to copy. In the New Work Definition region, enter the code, name, and start date for the new maintenance work definition. You can then click the Save and Edit button to continue to the Edit Maintenance Work Definition page.

How You Edit a Maintenance Work Definition

After a work definition is created, you can edit certain header information, operations, operation items, and operation resource attributes.

By default, the start date of a new work definition is set to the application date. While editing the work definition, you can update the start date to a future date so that you can continue adding or deleting operations while designing the work definition.

You can perform the following updates to a maintenance work definition:

- Edit the work definition header details.
- Add, edit, and delete operations.
- Add a parts List item to an operation.
- Add, edit, and delete items within an operation.
- Add, edit, and delete resources within an operation.
- For global definitions, synchronize changes to the child organizations.
- For global definitions, disconnect a replicated copy in a child organization.

Besides the editing the maintenance work definitions, you can also perform search within a work definition by expanding the Search: Work Definition region. The Contains search is conducted across the operations, operation items, and operation resources based on the keywords, such as name, code, description, and supply type. The search result cards for the matching entities are displayed in the search results pane and they're also highlighted in the work definition region. You can then drag and drop the same type of objects to the Collected Items icon for updating. You can also right-click the search result card to perform an action, such as edit.

For global definitions in the Redwood page, after you perform edits, select **Sync Changes to Assigned Organizations** to persist the changes to each of the child organizations. This runs a scheduled process; you can monitor and verify that no errors occur during the sync.

> **Note:** Dual units of measure isn't supported for work definition operation items and outputs. You can add a dual unit of measure item as an operation item or an output item, but the secondary unit of measure and quantity aren't displayed in the work definition user interface.

Edit Work Definition Header Details

Click the Edit pencil icon on the Edit Maintenance Work Definition page to open the Edit Maintenance Work Definition dialog box. In the Edit Maintenance Work Definition dialog box, you can update the name, description, default work order type, default work order subtype, and attachments.

For global definitions in the Redwood page, you can optionally disconnect a replicated copy in a child organization from the global version.

> **CAUTION:** Care should be taken when disconnecting a replicated work definition, as this can’t be reversed. Only users with a specific privilege WIS_UNLINK_REFERENCED_WORK_DEFINITION can disconnect them.

Add, Edit, and Delete Operations

You can add a new operation only to a newly created version of a work definition. If you try to add an operation to a current version, then an error will be presented. Adding a new operation follows the same process as creating a new operation.

- To add a new operation, click the Operations tab in the right drawer region, and drag and drop the new operation card by Type (In-House or Supplier) into the work definition region. The Add Operation dialog box opens, where you will define the details of the operation. Optionally, you can search for a Standard Operation Code in the Operations tab, then drag and drop the Standard Operation card into the work definition region.

- To copy an existing operation, right-click the operation card in the work definition region, and then from Actions menu, select: Duplicate. The Create Operation dialog box opens. The operation items and operation resources from the existing operation are copied to the new operation.

If you're Editing an existing or new incremental version of a work definition, then only certain attributes in the operation header can be updated, depending on if the operation is based on a Standard Operation.

Attribute	Updatable	Description
Sequence	Yes	The Sequence value can be updated for all Operations but must be unique within the definition. Parallel operation sequences are not supported. The value is generally follow the plant parameters Starting Operating Sequence and Operation Sequence Increment.
Code	No	If the operation is based on a standard operation, then the code can't be updated. Additionally, if the standard operation is referenced, then certain attributes below can't be updated.
Referenced	Yes - Conditional	Only applicable if the operation is based on a standard operation. If selected, a standard operation is referenced, meaning that any future changes to the standard operation are reflected in the maintenance work definition operation. If deselected, then the operation becomes manually defined, no updates to the standard operation are reflected in the operation and additional attributes can be updated below. Note: When you deselect the Referenced check box, you can't select it again.
Operation Type	No	The type can't be updated.
Name	Yes - Conditional	The name of the operation can be updated only for manually defined or non-referenced operations.
Description	Yes - Conditional	The description can be updated only for manually defined or non-referenced operations.
Work Center	Yes - Conditional	The work center can be updated only for manually defined or non-referenced operations.
Start Date	No	The start date of the operation can't be updated. You must create a new version to define an updated future start date.

Attribute	Updatable	Description
End Date	No	The end date of the operation can't be updated. The value is automatically set when future versions of created.
Count Point	Yes - Conditional	The count point check box can be updated only for manually defined or non-referenced operations.
Automatically Transact	Yes - Conditional	The Automatically Transaction checkbox can be updated only for manually defined or non-referenced operations.The Count Point and Automatically Transact attributes are mutually exclusive.
Allow Resequencing	Yes	The Allow Resequencing check box can be updated for all operations that have the Count Point check box selected.
Attachments	Yes	The attachments can be updated for all Operations.

You can delete an operation only for a future dated version of an existing definition or a new incremental version of an existing definition. To delete an operation, right-click the operation card in the work definition region, and then from the Actions menu, select: Delete.

If an operation is effective across multiple work definition versions, then any changes to the operation such as adding or deleting operation items, operation outputs, or operation resources, are applied to the work definition versions where that operation is effective. To differentiate component and resource changes between work definition versions, create a new work definition version, duplicate the operation, and delete the old operation, which sets an end date aligned to the previous version end date. The duplicated or new operation has a start date that aligns with the new work definition version, so you can make component and resource changes starting in that version.

Add a Parts List Item to an Operation

To add a Parts List Item to an operation, click the Parts List tab in the right drawer region. Search for the asset, then drag and drop the asset parts list item card into the work definition region. You can also right-click the asset card and from the Actions menu, select: Assign.

Add , Edit, and Delete Items within an Operation

To add an item to an operation, click the Items vertical tab, search for the item, and drag and drop the item card into the work definition region. You can also right-click the item card and from the Actions menu, select: Assign. The Assign Operation Item dialog box opens. The value for several of the work definition operation item attributes is derived from the item structure. Certain attributes require the Override Item Structure Components in Work Definition privilege to update the value that's derived from the item structure.

The following are the operation item related attributes:

Attribute	Description
Operation	The operation to which the item is assigned.
Sequence	The material sequence of the operation item. The value must be unique in an operation.

Attribute	Description
Item	The name of the item.
Item Description	The description of the item.
Quantity	The quantity of the operation item required in an operation. In a standard item work definition, you can split the quantity of an item structure component to multiple operations. For example, if component A123 has quantity of 10, you can assign quantity of 6 to one operation and the remaining quantity of 4 to another operation. **Note:** You need the Override Item Structure Components in Work Definition privilege to update the total quantity of an operation item to exceed the quantity on the item structure.
UOM	The unit of measure of the operation item. The value is derived from the item structure. **Note:** You need the Override Item Structure Components in Work Definition privilege to update the unit of measure. The UOM drop-down list shows all the units of measure that have the standard UOM conversions and the item specific UOM conversions, including the inter-class and intra-class UOM conversions.
Supply Type	Controls how the materials are supplied to the work orders. The valid values are: Assembly Pull, Operation Pull, Push, Phantom, Bulk, and Supplier. The hierarchy to default the supply type is in the following order: item structure and then item master. If the supply type isn't defined in the item master, then it's set to Push. You can update the default value.
Supply Subinventory	The supply subinventory from which the material is supplied. The hierarchy to default the supply subinventory is in the following order: work center, item structure, item master, and then plant parameter. You can update the default value. **Note:** For a global definition, you won't define the supply subinventory and supply locator. Instead, you will manually define it in each of the replicated copies.
Supply Locator	The supply locator from which the material is supplied from. The hierarchy to default the supply locator is in the following order: work center, item structure, item master, and then plant parameter. You can update the default value. **Note:** For a global definition, you won't define the supply subinventory and supply locator. Instead, you will manually define it in each of the replicated copies.
Start Date	The start date of the component in the item structure. This field is read only and the start date is referenced from the Oracle Fusion Product Information Management.
End Date	The end date of the component in the item structure. This field is read only and the end date is referenced from the Oracle Fusion Product Information Management.

Attribute	Description
Attachments	The attachments in the work definition operation. It can be of file, text, or URL type. **Note:** • When you add an item to an operation, you can choose to add one or more item-level attachments and edit them during future revisions. When a work order is created using the work definition, the attachments can be viewed for each operation item on the Edit Work Order page. • If the work order is created by a maintenance program through merging two or more work definitions, the operations won't have their item-level attachments carried forward into the work order.

To delete an Item, you can right-click the item card in the operation and from the Actions menu, select: Delete. An item can be deleted from any operation.

Add, Edit, and Delete Resources within an Operation

To add resource to an operation, click the Resources vertical tab and drag and drop the resource card into the work definition region. You can also right-click the resource card and from the Actions menu, select: Assign. The Assign Operation Resource dialog box opens. You can edit operation resource attributes if the work definition operation is manually entered or created by removing the reference to a standard operation. You can only view operation resource attributes if the work definition operation is created by referencing a standard operation.

The following the operation resource related attributes:

Attribute	Description
Operation	The operation to which the resource is assigned.
Sequence	The resource sequence of the operation resource.
Resource	The name of the resource.
Resource Code	The code of the resource.
Units Assigned	The assigned units can't exceed the available units for the resource as defined in the resource definition.
Basis	The valid values are: Fixed and Variable. Select Fixed if the resource usage is fixed per sequence in an operation. Select Variable if the resource usage varies per sequence in an operation.
Usage	The usage amount of the operation resource.
UOM	The usage unit of measure as defined in the resource definition.

Attribute	Description
Scheduled	The indicator that the resource is a scheduled resource. A resource can be scheduled if the Usage UOM belongs to the UOM class defined in the profile option RCS_DEFAULT_UOM_SRVICE_DURATION_CLASS.
Principal	The indicator that a resource is the principal resource within a group of simultaneous resources (resources sharing the same resource sequence number).
Charge Type	The valid values are: Automatic and Manual.
Job Profile	The job profile for a labor resource. A job profile comprised of a set of qualifications that are required for an operator to perform a job. When a job profile is specified for an operation resource, then only those labor resource instances that meet the qualifications can perform the operation.
Equipment Profile	The equipment profile for an equipment resource. An equipment profile specifies the set of qualification requirements that an equipment must possess when performing operations in manufacturing. When an equipment profile is specified for an operation resource, then only those equipment resource instances that meet the qualifications can perform the operation. You set up the profile, requirements, and asset qualifications in Oracle Maintenance.
Activity	The predefined values are: Setup, Run, and Tear Down. The lookup can be configured by adding new values.
Costing enabled	The indicator that the resource cost is charged to the maintenance work order.
Inactive On	The date on which the resource becomes inactive.
Attachments	The attachments in the resources. It can be of file, text, or URL type. **Note:** • When you add an resource to an operation, you can choose to add one or more resource-level attachments and edit them during future revisions. When a work order is created using the work definition, the attachments can be viewed for each operation item on the Edit Work Order page. • If the work order is created by a maintenance program through merging two or more work definitions, the operations won't have their resource-level attachments carried forward into the work order.

To delete a resource, you can right-click the resource card in the operation and from the Actions menu, select: Delete. A resource can only be deleted from manually defined or non-referenced operation.

Related Topics

- Maintenance Work Definition Structure
- How You Manage Maintenance Work Definitions in the User Interface
- How You Create a Maintenance Work Definition

How You Manage Maintenance Work Definition Versions

Use the versioning feature and implement and track changes to the maintenance work definitions. A maintenance work definition version defines the dates for which a maintenance process is effective. Every work definition has at least one effective version at any given time, starting with the base version which can be future dated. A work definition always has an effective start date, whereas the effective end date can be null.

Here are the predefined business rules for creation of a new version based on changes in a maintenance work definition.

Changes	Predefined Business Rule
Adding a new operation	A new version is mandatory only if the work definition being edited is currently effective, meaning that the version start date is earlier than or equal to the application date.
Deleting an existing operation	A new version is mandatory only if the work definition being edited is currently effective, meaning that the version start date is earlier than or equal to the application date.
Any other changes	A new version is optional. Changes to an existing version would make them applicable from the effective start date of that version.

Note: For a work definition that's future effective, you can decide on which changes would necessitate a work definition version.

Create a Work Definition Version

Use either of these navigational flows to create a work definition version.

- On the Manage Maintenance Work Definitions page, click the **Versions** icon. The Manage Versions dialog box opens. Click the **Add** icon and a new row with pre-populated data is shown. You can modify this data as per your needs.
- On the Edit Work Definition page, from the **Actions** menu, select **Manage Versions**.

For global definitions, this action is disabled for the replicated copies in the child organizations. In the global organization, creation of a new version is a multi-step process. After defining the new future dated version details, save and close. This saves the new version and runs a scheduled process to replicate it to each of the child organizations. You can monitor and verify that no errors occur during the creation of the new versions. After the process successfully ends, you can edit the new global version. After editing, select **Sync Changes to Assigned Organizations** to persist the edits to the new version to each of the child organizations. A scheduled process is run; you can monitor and verify that no errors occur during sync.

Note: When you create a version, the current application date and time is set as the start date of the work definition version. Ensure you have the correct start date before saving the version. When saved, the start date can't be updated. Also, if the start date of the prior version is a future date, the default start date is null.

Typically, maintenance work definition changes are modeled by creating a future effective work definition version.

Here's a table listing the fields and their corresponding values that you must choose to create a work definition version.

Field	Description
Version	Enter a version number to uniquely identify the work definition version.
Start Date	Date from which the work definition version becomes effective.

Edit a Work Definition Version

After you save a version, you can't edit the version and start date because these attributes are the unique identifiers of the version. However, you can edit the maintenance work definition itself.

Delete a Work Definition Version

Delete a work definition version by clicking the **Versions** icon on the Manage Maintenance Work Definitions page. You can't delete past and current effective work definition versions. You can delete a future effective version if it's not the first version created. To maintain data integrity, you can't delete a future effective version if it's referenced by work orders or used in published cost scenarios

How You Manage Maintenance Work Definition Flexfields

Your Maintenance Work Definition and its child objects are enabled for flexfields, so you can manage additional details of a work definition. Flexfields are defined during the implementation of Oracle Fusion Cloud Maintenance, but can be further defined once deployed and work definitions are created.

The Work Definition Operation objects are shared by Oracle Manufacturing and Maintenance. Therefore, any flexfields that are defined are visible in both applications. This includes defining flexfields for:

- Work definition names
- Work definition operations
- Work definition operation outputs
- Work definition operation materials
- Work definition operation resources

For these, these are the numbers of additional attribute fields available:

- Character: 20
- Number: 10
- Date: 10
- Date and Time: 10

You can manage the flexfields in the Additional Information show/hide region of the Edit Work Definition page and its child object regions. You can view and edit the field values, including conditional fields guided by a context segment. You can also define, view and update the flexfields using the Maintenance Work Definition REST API and File-Based Data Import.

For additional details about flexfields, refer to the Configuring and Extending Applications guide of Oracle Applications Cloud.

Note: When you define flexfields, you can enable them for Business Intelligence. When creating a flexfield segment, select the BI Enabled check box under the Business Intelligence section. When a flexfield is deployed, run the Import Oracle Fusion Data Extensions for Transactional Business Intelligence scheduled process while selecting the CRM parameter check box. This will import the flexfields into Oracle Transactional Business Intelligence (OTBI).

Note: The flexfield capability to default a segment value during object creation isn't supported for work orders created by a maintenance program forecast or using the maintenance work order file-based import. When using the import, flexfield segment values must be passed in the upload file and will not consider any defaulting rules.

How You Manage Work Definitions Using REST API

Define, view, and update maintenance work definitions using REST services.

Use the Work Definition Requests REST API to:

- Create new work definition based on user-defined operations and standard operations.
- Update existing work definitions and operations.

Use the Work Definitions REST API to view an existing work definition and operations

For more details, refer to the REST API for Oracle Supply Chain Management Cloud guide.

How You Import Maintenance Work Definitions

Oracle Maintenance Cloud enables you to create and update work definitions in bulk using a File-Based Data Import and Export process.

The Maintenance Work Definition Import is used to:

- Create and update a work definition header record and its core attributes.
- Create, update, and delete operations, operation materials and operation resources. This includes values for definable flexfields.
- Create a global work definition in a master inventory organization and associate it automatically to all child maintenance organizations.
- Create a global work definition in a master inventory organization only.

Global work definitions can be edited using the import process, but you must verify the update in the Redwood Work Definitions page and manually sync it to all the associated organizations.

Note: For more details, refer to the File-Based Data Import for Oracle Supply Chain Management Cloud and Scheduled Processes for SCM guides.

Purge Batch Data from Maintenance Import Interfaces

The upload or import of data may result in a warning or error status sue to issues with the data. When this occurs, the data can't be further processed from the interface tables. In such a case, the Asset Administrator can run the Purge Maintenance Records from Interface process to delete the asset data from the interface tables from all or just a specific import process. The scheduled process can be run on demand or setup on a schedule as required by your business processes.

Global Work Definitions

Work definitions are defined at the maintenance organization level, as they are based on organization specific work areas, work centers, material items, and resources. If you have definitions that have the same work scope across some or all your maintenance organizations, then you can create and manage them globally.

Global work definitions are supported only in the Redwood enabled Work Definitions page and are defined in a maintenance-enabled master organization. Once created, they are replicated to the selected child maintenance-enabled organizations. This provides the ability to source control them, while maintaining revisions and new versions globally, instead of at each local organization. This reduces the work of creating and managing these common definitions across your maintenance organizations.

Note: Existing work definitions at child organizations can’t be managed globally. You must create new definitions in the maintenance-enabled master organization, then replicate to the child organizations.

Enable the master organization for maintenance and ensure users have the **WIS_PROPAGATE_GLOBAL_WORK_DEFINITIONS_PRIV** privilege to view and manage the list of child organizations across which the global definition are replicated.

Note: You must ensure that the name of the work definition in the global master organization doesn’t exist in any child organizations, else the replication will fail for that organization.

Global definitions still require the unique definition of child objects across each child maintenance organization as a pre-requisite, as these objects are not managed globally. This includes:

- Work areas
- Work centers
- Resources
- Items
- Standard operations

Note: It's recommended to have a common naming strategy of these objects, making setup consistent across organizations. Otherwise, they won't replicate from the global definition to each child organization and will error out.

After maintenance organization replicates are created, you can view and verify them in each child organization. You can locally define and manage these fields in the child replicas:

- Allow out-of-sequence completion checkbox
- Allow return to inventory checkbox
- Completion sub inventory and locator
- Supply sub inventory and locator
- Supplier and supplier site for supplier operations

After a child organization replicate is created, the organization can't be removed from the assigned list of child organizations. You can optionally choose to disconnect the replicate and manage the local copy, including deactivating or even deleting it, per the existing validations. Additionally, you can disconnect the replicate if you want to manage the local copy if the work steps are fundamentally different.

> **CAUTION:** Care should be taken when disconnecting a replicated work definition, as this can't be reversed. Only users with a specific privilege WIS_UNLINK_REFERENCED_WORK_DEFINITION can disconnect them.

Related Topics

- Enable and Set Up Redwood Pages
- Manage Global Work Definitions

9 Work Requests

How You Manage Work Requests for an Asset

Work requests are typically used to report facility and asset related maintenance discrepancies. They contain information about the nature of the discrepancy, asset (if known), and a description of the problem. Work requests are assessed and then assigned for resolution using maintenance work orders. When resolved, the original requester is updated on the outcome of the work request, providing the feedback loop. Oracle Maintenance supports work requests for installed base assets using the Oracle Help Desk offering. The Help Desk supports work requests for only internally-owned assets. For more details about the setup and use of the Help Desk can be found in Oracle B2B Service guides.

Help Desk Setup for Maintenance Users

The help desk offering must be enabled and all the necessary setups completed:

- Enabling the Help Desk offering for Internal Service Requests (ISRs).
- Reviewing the seeded lookup types and optionally define custom values. For maintenance users, these include categories, severities, status values, outcomes, and resolutions. The out of the box values are useful for most customers to begin with.
- Reviewing, adding, and setting profile options.

  For maintenance users, it's critical that you review the documentation in the Help Desk implementation guide to Associate Assets and Work Orders to Help Desk Requests. You must also create and set the profile option (SVC_NG_ENABLE_MAINTENANCE_HELPDESK) to create work orders for an asset within the help desk request pages.
- Review the process for enabling the Maintenance Help Desk Profile Option for REST API. You must perform this step to enable the profile option in the REST API.
- Reviewing how scheduled processes are used and configured.
- Reviewing how to setup assignment objects and assignment rules are used for request queues.
- If you wish to manage work requests for installed base assets, then internally owned assets must be created and enabled for maintenance work orders. This includes optionally defining work definitions in the same organization where your assets operate. You can create, submit, and resolve a work request without an asset. However, if your business process utilizes a maintenance work order to manage the repair of an asset, then either the requester or agent will need to identify the asset prior to work order creation.
- It's also recommended that you enable the advanced installed base asset search for a help desk request. This allows you to perform full-text searches for assets across dozens of related attributes. You can learn more about this search capability in the section How You Use Smart Search to Search For and View Assets in the New Assets UI of the Implementing Manufacturing and Supply Chain Materials Management guide. If you don't enable the smart search, then you can still search for assets using the default search capability in a help desk request.

Note: User licenses are typically required for the Help Desk administrator and agent roles. Licenses are typically not required for Help Desk users who create and submit new requests. Additional details are covered in the Oracle Fusion Cloud Licensing online help guides.

Help Desk Users

The help desk functionality supports these user roles:

- **Employee:** internal user requesting support to resolve their questions and issues about an asset discrepancy.
- **Help Desk Agent:** individual responsible for creating Help Desk tickets on behalf of employees and managing Internal Help Desk tickets
- **Help Desk Manager:** individual responsible for managing a group of Internal Help Desk Agents. They also have responsibility for reviewing and analyzing Internal Help Desk metrics.
- **Help Desk Administrator:** individual responsible for managing setup and configuration for Internal Help Desks.

Create a New Request

Employees can create new requests using My Help and Help Desk Agents can create requests using the Help Desk Requests subject areas. On the he My Help page, employees can create and manage their work requests. Click the **Create Request** button to open the Create Help Desk Request page. Here's what employees can do on this page:

- Define the subject of the request (required)
- Set a severity
- Select a category (used for routing to queues for triage)
- Select an installed base asset
- Define a detailed description
- Add an attachment or URL

When submitted, you can check on your open requests for feedback from the Help Desk Agent using My Help. The status of the request will guide you as the request is assessed and assigned for resolution. You can reject a request if you determine it as an issue that requires resolution

Manage Requests

Help Desk Agents:

- **View and Assess Requests:** After a new request is submitted, the Help Desk Agent can manage the requests using the Help Desk Requests subject area. Agents can use the All Open Internal Service Requests page to view newly created requests. New requests are routed into queues by the category selected on the request. An Agent can then choose to assign the request to themselves for triage and resolution using the **Assign To Me** button.
- **Triage Requests:** The Agent reviews the discrepancy details and may send messages to the employee who submitted the request for additional details. The Agent may also need to select or update the asset identified on the request. When the Agent determines that a maintenance work order is required to resolve the request, they can create a new work order for the asset directly within the Edit Request page.
- **Assign Requests to a Work Order:** Agents can assign the request to an existing work order that's open for the asset. They can also assign additional requests from other employees to the same work order for resolution. Then, the Agent updates the request status from New to In-Progress or similar. The status update provides beneficial feedback to the employee who created the request that it's progressing toward resolution.

Maintenance Manager and Technician: The work order is managed by the Maintenance Manager and reviewed, updated, and then released for execution by a Technician. The work order contains key details about the request on the

References tab on the Edit Work Order details page. This tab lists the Internal Service Request number and provides a snapshot of key details about the request. After the work order is completed, the request is assumed as resolved. The Help Desk Agent can update the request status from In-Progress to Resolved or similar. They may also choose to send a message to the requester to confirm the issue has been resolved.

When resolved, a request is set to closed status by a scheduled process.

Request Status Changes

A help desk agent manually progresses the status of the request over its lifecycle from New > In-Progress > Resolved > Closed. However, if a request is associated with an asset and maintenance work order, then the help desk request status will be automatically progressed based on the associated work order status changes.

Here are the coordinated work order and help desk status update steps:

Work Order Status	Request Status	Description
Not applicable	New	Newly created requests begin at a status of New. At this point in the process, there's no maintenance work order associated.
Unreleased	New > In-Progress	Requests status changes from New to In-Progress when a new maintenance work order is created and associated to the request. The same status update happens if it's assigned to an existing maintenance work order.
On-Hold	In-Progress	If the work order is changed to an On-Hold status, then there's no status update in the request. Also, when the status changed back to Unreleased or set to Released, there's no status update needed as the status of In-Progress is correctly reflecting the request is associated to a work order for resolution.
Released	In-Progress	When the work order is changed to a Released status, then there's no status update in the request.
Completed	In-Progress > Resolved	Requests status changes from In-Progress to Resolved when the last operation of a maintenance work order is completed.
Closed	Resolved or Closed	You can close a work order to prevent any further transactions. You can use the Close action from the Mass Actions menu in Maintenance Work Orders page or run the Mass Close Maintenance Work Orders scheduled process. Regardless of method, there's no change in the request status as the status is already Resolved or Closed.
Completed or Closed	Resolved > Closed	Requests status changes from Resolved to Closed when the request closing scheduled process is run. The work order status isn't validated but should be in either completed or closed status.

To support automatic status updates, there are several profile values. Each profile value will be set to use the default help desk statuses. Therefore, you only need to adjust the profile values if you are using custom help desk status values. Theses profile values are accessed in the Functional Setup Manager > Manage Administrator Profile Values:

Profile option	Description
ORA_MNT_ISR_INPROGRESS_STATUS	Used to progress the internal service request from a status of New to In-Progress during maintenance work order creation or association. The default status uses the predefined status of In-Progress. Optionally, it can be changed to a user-defined status value.
ORA_MNT_ISR_COMPLETE_STATUS	Used to progress the internal service request from a status of In-Progress to Resolved during maintenance work order completion. The default status uses the predefined status of Resolved. Optionally, it can be changed to a user-defined status value.
ORA_MNT_ISR_CANCEL_STATUS	Used to progress the internal service request from a status of In-Progress to New during maintenance work order cancellation or direct closure without work order completion. The default status uses the predefined status of New. Optionally, it can be changed to a user-defined status value.
ORA_MNT_ISR_DEFER_MODE	Profile option that determines if internal service request status updates are process synchronously or asynchronously. If selected, then status updates only happen when the Progress Asset Transactions to Downstream Systems scheduled process is run.

The help desk request status updates are processed synchronously or asynchronously, depending on the method of work order update. By default, most status updates from the user interface or REST API will be processed synchronously by invoking the help desk request REST API. For asynchronous transactions. like file-based import, the status updates are performed by submitting the *Progress Asset Transactions to Downstream Systems* scheduled process on a desired frequency. Additionally, for synchronous transactions, if status updates aren't required in real-time, then you can set a profile option to *defer* the status updates until the scheduled process for asynchronous transactions is submitted.

The profile option is ORA_MNT_ISR_DEFER_MODE:

- The default value = N, meaning that ISR updates are synchronous for user interface or REST API work order updates
- If set = Y, then ISR updates will be completed by running the scheduled process for both synchronous and asynchronous work order status updates

There could be scenarios where multiple actions are taken that don't result in an automatic status update in a help desk request. The help desk agent must always manually monitor the requests in their queue and update their status as needed. The Help Desk also supports the creation and use of configured help desk request status values. If defined, you can optionally reference these custom values by setting several profile values that are used during certain work order transactions.

Asset Transaction Records

During the creation, cancel, completion, and closure of a work order, new transaction history records are captured for each asset in the CSE_TRANSACTIONS and CSE_TRANSACTED_ASSETS tables.

The asset transaction history includes four new transaction codes:

- ORA_CSE_MNT_WO_CREATE (Maintenance Work Order Created)
- ORA_CSE_MNT_WO_CANCEL (Maintenance Work Order Canceled)
- ORA_CSE_MNT_WO_COMPLETE (Maintenance Work Order Completed)

- ORA_CSE_MNT_WO_CLOSE (Maintenance Work Order Closed)

Additionally, during work order creation, a transaction is logged in the History tab for the asset. On the History tab, you can view the high-level details of the transaction. You can then drill into the transaction to view more history details. There's no transaction history for the help desk request, only their associated work orders.

Extensibility and External Integration

The Help Desk pages can be extended using Application Composer and Visual Builder. For more details, refer to the Implementing B2B Service guide.

The Help Desk Internal Service Request is also enabled for REST API. This includes the ability to create, edit, and resolve requests. For more details, refer to the REST API for CX Sales and B2B Service guide.

10 Maintenance Programs

Overview of Maintenance Programs

Maintenance programs are used to define and generate a daily preventative maintenance forecast for one or more affected assets operating in a maintenance-enabled or non-maintenance-enabled organization. The forecast is used as the basis for creating preventative maintenance work orders, thus reducing the workload for maintenance planners, and allowing them to focus on maintenance program auditing, optimization, and exception-based events.

Programs can also be used to model preventative maintenance using asset routes. Asset routes allow you to centrally plan, execute, and record maintenance for a collection of assets using a single work order based on a unique route asset.

The programs are generally based on an OEM (original equipment manufacturer) service manual. This service guidance is translated and adjusted to fit a customer's operational requirements through the creation of work definitions. Then, these definitions are used as the basis for the creation of work requirements, which defines how often they're due. The forecast can be created based on a calendar pattern, day interval, utilization meter.

Go through the **How You Manage Maintenance Programs** section to get a comparison of functionalities between the existing page and the Redwood enabled page featuring Smart Search. To enable the Redwood page, you need to enable an opt-in, indexes, and data security. See the Maintenance chapter of the Implementing Manufacturing and Supply Chain Management guide for more information.

Key Considerations

Along with the program modelling and its work requirements using the available methods, it's important to know the impact of configuring the forecast options:

Option	Recommendations
Enabling programs for assets across organizations	Programs are always created in the context of a specific maintenance-enabled organization. But, before you create any programs, consider if the program manages only the assets operating in the same organization or it also considers assets that are operated across other organizations within the same master organization. Additional details are covered in the section Program Modeling below.
Modeling a single asset vs multiple assets in a single work requirement	An asset can be modeled independently in a work requirement, or together with similar assets. Additional details are covered in the Work Requirement section below.
Suppress and Merge across Work Requirements	While supported across work requirements, we generally recommend only using merge and suppress within a work requirement. Therefore, it's recommended to disable the capability of suppress and merge across work requirements. See the *How You Model the Merging and Suppressing of Work Definitions* topic to learn more.
Initialize assets for day and meter forecasts	The first due date for an asset should be calculated based on the last completion in your prior system when using a day or meter interval. Else, the system won't have an anchor date and interval, if applicable, to calculate the next due.

Option	Recommendations
	It's recommended to initialize your assets by setting a historical last completed date and interval value, if applicable, and a forecast start date. If you're using a meter, it's recommended to include a meter reading in history as of this historical completion date, else the forecast has to calculate back to establish a baseline, which can result in overdue forecast lines in the past. Setting a forecast date of today or a future date also helps to establish the forecast as well, since it's considered instead of the requirement's start date. See the Asset Initialization topic, *How You Create a Work Requirement* section to learn more about both the existing and Redwood pages, and the section How You Manage Maintenance Forecasts.
Consider last completion option for day and meter forecasts	The next due date for a day and meter forecast is recommended to be calculated based on the last completion date. If your business exceeds the next interval, you may want to dynamically push future due dates when the forecast recalculates. See *How You Manage Maintenance Forecasts* to learn more.
Generate forecasts for a work requirement, or an asset within a requirement	When creating or editing a work requirement, it's helpful to generate its forecast to confirm the modeling and asset initialization. Instead of generating the forecast for an entire program, which can be time consuming, it's recommended to only generate it for a work requirement, or an asset within a requirement. The forecast quickly updates, allowing you to verify the results. These actions are only available if you disable the capability of suppress and merge across work requirements. Additional details are covered in the section How You Model the Merging and Suppressing of Work Definitions. **Note:** It is generally only recommended to run the Generate Maintenance Forecast process for a program only on a scheduled basis. Care should be taken manually running this process for an individual program. Additional details are covered in the section How You Manage Maintenance Forecasts.
Generate a forecast preview prior to promoting a work requirement and assets to planning	If the opt-in is enabled, a new status Ready to Forecast becomes available when using the Redwood pages. This status allows you to generate a forecast preview and validate your requirement modeling and asset initialization in the Forecast tab. This gives you the ability to fine tune the settings until you are satisfied with the outcome. Promoting the requirement to planning will release the forecast for viewing in the Manage Forecasts page and allow the due dates to create work orders. Additional details are covered in the section How You Manage Work Requirements in a Maintenance Program, covering the Redwood pages, and the section How You Manage Maintenance Forecasts.
Generate Maintenance Forecasts Processing Time	For large data sets, it's helpful to enable parallel processing and to also set the number of concurrent processing workers. See *How You Manage Maintenance Forecasts* to learn more.

Program Modeling

Programs are always created in the context of a specific maintenance-enabled organization. But, before you create any programs, consider if the program manages only the assets operating in the same organization or it also considers assets that are operated across other organizations within the same master organization. Also consider if these assets remain in the same operating organizations over time, or they may be transferred to another operating organization at some point in the future.

Here is some guidance for modeling maintenance programs:

#	Scenario	Recommendations on Program Modeling
1	If an asset is operated and maintained in the same maintenance organization	Create a maintenance program that considers assets in the same organization only.
2	If an asset is operated in a non-maintenance organization and is maintained by one or more organizations over time	Create a program that is enabled for cross-organization assets. See the last row in this table for more details.
3	If an asset is currently operated in a maintenance organization but may be operated and maintained in different maintenance organizations over time	Create a program that is enabled for cross-organization assets. See the last row in this table for more details. While maintenance organization relationships aren't required to maintain an asset using a maintenance program, if you maintain assets across organizations you need to enable the program. This allows you to optionally update the work order organization in the Manage Forecasts page.
4	If an asset is operated in a maintenance organization, but may be transferred to another operating organization during its lifetime	Create a program that is enabled for cross-organization assets. Organization relationships are helpful if you wish to maintain assets that operate in non-maintenance-enabled organization in a specific maintenance organization. By default, assets in the organizations that are maintained in a program, enabled for assets across organizations, are forecasted and have work orders created in the program's organization. If you want an asset to be maintained always in a single maintenance organization, you can define a support as primary relationship between the non-maintenance-enabled-organization and a maintenance organization. This ensures that the forecast is generated and work orders are created only in this maintenance organization. Additionally, you must ensure that the Asset's base Item is defined for all organizations in which you will forecast and create work orders. See the How You Create Maintenance Programs topic to learn more. **Note:** If you decide to create a cross-organization program, define a single maintenance organization that can be designated as the central planning organization. While you can create cross-organization programs in any maintenance organization, modeling them in a single organization will reduce complexity and improve visibility. **Note:** Avoid modeling preventative maintenance for a unique asset using both methods at the same time, as it can be difficult to manage same asset across programs or organizations.

For item-based work requirements, if the program is enabled for enabled for cross-organization assets, then you can decide if the work requirement will automatically or manually include assets that operate in other organizations. Regardless of the asset inclusion method selected, you can always include or exclude assets from the work requirement using the affected assets page. Therefore, even though a program is enabled for cross-organization assets, you ultimately can control which assets will be forecasted and considered for work order creation over time.

If the opt-in is enabled, you can optionally define a work requirement using mixed assets. This gives you the ability to decide exactly which assets are included, even though they have different items. The rest of the capabilities are the same as an item-based work requirement.

Forecasts are always created based on where an asset is operating at that point in time. For assets operating in a maintenance organization, work orders are expected to be created in the same organization. Assets operating in a non-maintenance organization will be maintained in a different maintenance organization. After a forecast due date is generated, and before a work order is created, you can recommend an alternative due date or work order organization if the program is enabled for cross-organization assets. These requests can be submitted using the Manage Forecasts page or REST API for a specific forecast due date. This capability will help planners adjust to short-term changes in an asset's maintenance availability or short-term assignment to a different organization. Additional details and validations are covered later in the section entitled How You Manage Maintenance Forecasts.

> **Note:** Forecasts created for a program that is enabled for cross-organization assets will use the contextual organization calendar for the forecast. If assets operate in organizations that use different calendars, then they aren't be considered until work order creation. Therefore, the forecast may produce due dates on non-working days for the asset's organization.

Once a program creates its first work order, the option to enable or disable a program for cross-organization assets can't be updated. Therefore, if there is a chance that assets may be maintained in different maintenance organizations over time or asset may transfer organizations, you should enable the program for cross-organization.

Work Requirement

You can create work requirements for each service interval task, or even a group of related service interval tasks for one or more assets. The tasks define how often the service is required, the expected resource and material requirements, and the steps required to complete the task. A work requirement is first created in a status of Draft. Once you have defined the header, forecast method, assets, and work definitions, it moves to a status of Ready to Forecast (if the opt-in is enabled) or Active. You can edit but not delete a work requirement after the first work order is created for the work requirement. Optionally, you can end date a requirement to stop forecasting.

A work requirement can be defined to apply to an asset, item, list of assets, or an asset route. For an item-based requirement, you decide if all or only certain assets will be forecasted. An item-based requirement resolves to an asset level in the forecast, so you can define a common work requirement for one or more assets. This includes assets in the context organization as well as across organizations. A mixed asset-based requirement, only available through opt-in, allows you to manually define a list of assets based on the same or different items, either in the same organization or across organizations.

Here is some guidance for modeling an individual asset within a work requirement:

Advantages	Disadvantages
• You can define modeling options that are unique to the asset. • You can stop, adjust, and restart the forecast, with some limitations.	• For similar assets that are maintained in the same location, maintaining multiple requirements may be time consuming to create and maintain, creating additional overhead. • Visibility for modeling the sequencing of common maintenance across similar assets requires additional effort.

• Modeling meter-based forecasts is easier, as you have increased visibility to the asset's meter history, making initialization easier. • If your current system individually models each asset, then implementation may be simplified.	

Here is some guidance for modeling multiple assets within a single work requirement using an item-based, or if the opt-in is enabled, using mixed assets:

Advantages	Disadvantages
• Modeling common inspections or preventative maintenance for multiple assets in a single requirement will save time, overhead and provide better visibility. • Using an item-based requirement, you can easily control which assets are included or excluded from the requirement. • Using a mixed asset requirement, you can easily model similar assets, based on different items, in the same requirement. • If your current system individually models each asset, then you can take advantage during implementation to simplify your modeling and combine into a single requirement.	• You have limited modeling options that are unique to the asset. • Modeling meter-based forecasts is supported, but you as you have decreased visibility to the asset's meter history, requiring additional effort for initialization and forecast verification.

The requirement's start date is used to define the first date from which a forecasted due date is calculated. Typically, this date is set in the future, but it can also be set in the past to set the sequence of intervals of a cycle-based forecast for some scenarios.

For each work requirement, you will define a forecast method. This can be based on a calendar pattern, day interval, utilization meter. You can even have competing methods, such as Calendar vs Meter or Day Interval vs Meter, using a whichever comes due first rule. A requirement that has only a condition event defined will not be forecasted.

One or more work definitions are then associated to a work requirement. If using a cycle-based forecast, you can define on which intervals each work definition is due. Use the concurrent requirements option to define whether you want to suppress or merge the work requirements on over lapping intervals in a cycle.

The work requirement is used as the basis for generating a forecast for the associated work definitions, allowing you to validate your forecast method, and then it's ready for creating work orders. By design, it's expected that each work requirement creates a unique work order for each due date in the forecast for an asset. This work order could be based on one or more work definitions, as defined in the work requirement, over time. Therefore, it's important to understand how to translate service intervals into a work definition and then further model its frequency in a work requirement.

Asset Route

Asset routes allow you to centrally plan, execute and record maintenance for a collection of assets using a single work order. Asset routes are useful for repetitive or routine maintenance such as inspections or preventative maintenance, eliminating the overhead of creating multiple work orders for the same activity.

Asset Routes aren't recommended in cases where you need to model, forecast, plan and record individual work order accomplishments for each asset in the collection. You won't see any due dates in the Maintenance Forecast page for assets within a route. All service history for the collection of assets in a route is only available via the work order details and OTBI reporting, as the accomplishment of the preventative maintenance is only tracked at the route asset level.

Also, the work performed in an asset route work order should be limited, as any resources or materials are charged for costing purposes against the work order asset, not individually against the assets in the collection. Only through cost reporting, you can add costs at the collection asset level.

For example, here are a few use cases where you can use asset routes:

- Inspect and maintain Fire extinguishers in each floor of a building.
- Maintain hospital beds by room in each ward of a hospital.
- Perform basic preventative maintenance on forklifts in a production facility.

These are some examples where it isn't recommended to use an asset route:

- 5-year refill and recertification of a fire extinguisher.
- Yearly certification of an individual hospital bed by a qualified technician.
- Periodic replacement of hydraulic cylinder in a forklift.

Routes are:

- Defined using a logical hierarchy.
- Forecasted using a maintenance program.
- Managed using the Maintenance Supervision page.
- Recorded for compliance in the My Maintenance Work page.
  For now, routes aren't supported in a manually created work orders.

To get started, model these assets:

- An asset that represents the collection of assets. This can be an asset that represents a physical location such as a plant, building, floor, or a production line. Or it could be a specific asset that is created to manage the collection itself. This asset is forecasted by a preventative maintenance program and is used to create maintenance work orders. Therefore, it's recommended to name it something that represents the collection of assets being maintained by the asset route.
- Assets in the collection of assets. These are maintainable assets that are referenced in the asset route but can also be individually maintained via regular preventative maintenance or adhoc work orders.

After this, create a logical hierarchy. See the *Assets* chapter for more details.

Asset Initialization

For all work requirement types, when introducing a new forecast for an asset, you will need to understand how the first due date will be calculated.

In general, a requirement will start calculating from its Start Date. Setting a date in the past, present, or future will yield different results. It is important to know how you can calculate the first due by providing the last date and interval, if applicable, in which maintenance was performed in your legacy system or to help establish a cadence for a newly introduced asset. Additionally, entering in historical meters readings that relate to these dates are also important to generate the first due date for an asset in a work requirement.

These considerations are covered in the section How You Create a Work Requirement for both the existing and Redwood pages, and the section How You Manage Maintenance Forecasts.

Forecast Preview

If the opt-in is enabled, you can optionally generate a forecast preview to confirm your modeling criteria if the requirement is in the Ready to Forecast status. This status allows you to optionally generate a forecast preview to confirm your modeling criteria. This preview can only be viewed in the requirement and not shown on the Manage Forecasts page as the dates won't be available for work order creation. This capability allows you to finetune your modeling, reforecast as many times as are needed to confirm your criteria. Once you're satisfied, you can release it to planning and it moves to the status of Active, allowing it to be viewed in the Manage Forecasts page be available for work order creation. Additional details are covered in the section, How You Manage Maintenance Forecasts.

Tasks

As part of maintenance program, you can perform these tasks:

- You can create and edit a maintenance program.
- You can create multiple work requirements for a maintenance program.
- You can create a calendar pattern and associate it with multiple work requirements in the same program.
- You can generate the maintenance forecast in the context of a program using a scheduled process.
- You can generate the maintenance forecast in the context of a program for a work requirement or asset in a work requirement, using actions from the program pages. To enable these actions, your administrator must set the **Allow Suppress and Merge across Work Requirements** parameter in a Maintenance Program to No.
- You can view the maintenance forecast in a Gantt chart or calendar. You can also search and restrict information to be displayed on the Gantt chart. This is used to confirm the forecasting methods and intervals are correctly aligned with the preventative maintenance schedule that's desired.
- You can also do the maintenance forecast in the Manage Forecasts page. You confirm the forecasting methods and intervals in a results view. You can optionally request an alternative due date or location for a forecast due date, skip a due date, as well as create or cancel work orders.
- You can further review the forecast by creating a report or analysis using OTBI. For more details, refer to the Reports and Analytics chapter of this guide.
- You can create maintenance work orders in the context of a program using a scheduled process. You can then view the details in the Gantt chart or calendar.
- You can automatically create maintenance work orders based on the forecast using a scheduled process.
- After the forecast is confirmed, the best practice is to automatically create the maintenance forecast and work orders using a scheduled process. This program should be scheduled to run frequently to create work orders for execution.

How You Manage Maintenance Programs

Manage your maintenance programs and work requirements using either the existing page or the Redwood enabled page featuring Smart Search. Click on the Manage Maintenance Programs or Maintenance Programs link on the Tasks pane to open the Maintenance Programs page.

The existing maintenance program functionality can be managed by both pages. When moving to the new page, all your existing programs and work requirements are expected to work as-is. You can then take advantage of the new functionalities through both an improved user experience, as well as new capabilities, when you opt-in to the Redwood page. The page has been reorganized into three tabs, Work Requirements, Programs and Calendar Patterns, helping you to manage these objects more efficiently.

With Redwood, you now have a Data Security Policy (DSP) applied to the Maintenance Program object. DSP governs access to data through the maintenance program REST APIs. Users can view and manage data in the Redwood pages using the program REST APIs based on their DSP privileges. DSP is applicable to integrations and custom pages that use the maintenance program REST APIs. Grant a data security policy (DSP) to your users so that they have all the required privileges to view the pages and search results. See the *Enable and Set Up Redwood Pages* topic in the Maintenance chapter of the Implementing Manufacturing and Supply Chain Management guide for more information.

> **Note:** Always use a Test environment to opt into the Redwood feature before enabling it in your Production environment. Test the feature and then enable it on the production environment. When you enable the opt-in, a new work requirement status, **Ready to Forecast** is available on the Redwood pages. If you switch back to the existing page, you see the Ready to Forecast status but won't be able to change the status of Active work requirements. Therefore, it isn't recommended to switch back to the existing pages after you enable the feature on your Production environment.

Search for Maintenance Programs

Using the existing page, you must always first search for a program, then navigate to its details to manage work requirements. You can perform a basic keyword search for an existing maintenance program, in the contextual maintenance organization, based on the maintenance program name or code. You can narrow the search result by performing an advanced search using the filters. The filters enable you to perform a search based on other attributes of the maintenance program such as maintenance program name, asset, item, work definition, work requirement name, start date and so on.

Using the existing page, you can save the frequently used search criteria, and it's shown in the Search drop-down list. You can also run a search automatically by creating a saved search and setting it as default. When you have a default search criterion, the maintenance programs matching the search criteria are displayed automatically whenever the Maintenance Programs page is opened.

On the Redwood page, use the Programs tab to search, view, and edit only the program header details. The keyword search, filters and results appear based on the selected organization or across all organizations that you have access to. YUse the Work Requirements tab to search, view, and edit the requirements within a program.

Here's a functional comparison between the user experiences, highlighting new capabilities when using the Redwood pages:

Comparison of Maintenance Program Functionalities

Functionality	Existing Page	Redwood Page
Manage Maintenance Programs across Maintenance Organizations	Not available in this page. You can only manage programs for the contextual organization. You must navigate back to the landing page to change the maintenance organization, then return to this page.	Available in this page. When you navigate to the Programs tab, context organization, or your default org You can easily use the filter chip to chan maintenance organizations granted by y Manage the requirements for a program
Export search results	Not available in this page.	Available in this page. You can click the Export action, downloa
Create a new Program	Available in this page.	Available in this page. You will create only the program header work requirements on its dedicated tab.
Edit an existing Program	Available in this page.	Available in this page. You will edit only the program header de requirements on its dedicated tab.
Quick view of Program details	Not available in this page. You must navigate to the Program overview tab to view the details.	Available in this page. You can click the program name hyperlir metrics about the program, including inc and open work orders.
View Forecast Details for one or more programs	Available in this page. You can select one or more programs, then view the forecast details in a Gantt chart.	Not available in this page. This capability is available in the Mainter

Create New Programs

Before you create a maintenance program, ensure these setups and definitions are evaluated, configured, and completed:

- Maintenance organizations have been created and configured. Define organizations for every inventory location where an asset can be maintained.
- Items, meter templates, assets and asset meters have been created in the context organization, as well as every organization where an asset can be maintained.
- Asset Route assets, hierarchy names and hierarchies for the collection of assets can be optionally defined, if enabled via the Asset Routes opt-in.

- Using the Redwood page, you can optionally define Global Calendar Pattern definitions. These can then be used across programs in different organizations.
- Work definitions have been created in the context organization, as well as every organization where an asset can be maintained. Work definitions must have the Code value defined in order to support assets across organizations using a common work requirement.
- Condition event codes have been created (optional).
- Historical accomplishment data is available (optional). It's recommended to record historical meter readings for assets if you wish to initialize their first due using a historical last completed date and interval, if applicable, and you're using a meter-based forecast method. Additional details are covered in the section, How You Create a Work Requirement for Both the Existing and Redwood pages, and the How You Manage Maintenance Forecasts section.
- Evaluate these options in the Manage Asset Maintenance Parameters in the Setup and Maintenance work area:
    - Set the **Consider Organization Relationships When Creating Maintenance Work Orders Program** parameter to No if you don't use Organization relationships for the manual creation of work orders. See the How You Create Maintenance Programs topic to learn more.
    - Set the **Allow Suppress and Merge Across Work Requirements in a Maintenance Program** parameter to No if you don't model forecasts to merge and suppress across work requirements. It is generally recommended to set this value to No, providing these additional benefits:
        - You see improved performance of the Generate Maintenance Forecast process, as it doesn't need to consider merge and suppress across work requirements.
        - You can generate forecasts at the work requirement or asset levels and also for an entire program.
    - Evaluate if you need to enable the Generate Maintenance Forecast and Generate Work Orders actions in the program pages. By default, they're enabled.
        - The parameters that control these actions in the Manage Asset Maintenance Parameters in the Setup and Maintenance work area:
            - Generate Maintenance Forecasts from a Maintenance Program
            - Generate Work Orders from a Maintenance Program
        - To improve performance, disable these options and allow a full refresh to create work orders for a program on running the scheduled process.
        - Additionally, if you disable even the Generate Maintenance Forecasts action on the page, you can still generate forecasts at the work requirement or asset levels. This is possible when the profile option Allow Suppress and Merge across Work Requirements in a Maintenance Program is set to No. Therefore, you can still incrementally update the forecast after creating or editing work requirements, without the unnecessary refresh of the entire forecast for the program.

On the existing page, new programs are defined on the Create Maintenance Program page, you can provide basic information to create a maintenance program. Then, you can edit the maintenance program to include the work requirements.

On the Redwood page, use the Programs tab to create a new program; you navigate to the Work Requirements tab to define new and manage existing requirements for the program.

Manage Existing Programs

You can click the program name to view and edit the program details. You can also create the work requirements for the maintenance program and view the maintenance program in Gantt chart mode and calendar mode.

The existing Maintenance Program page contains the following tabs:

- **Overview tab**: Displays the maintenance program details. You can also edit the maintenance program details.

- **Work Requirements tab**: Enables you to create and edit the work requirements for the maintenance program. Includes navigation to an Affected Assets page.
- **Forecast Gantt Chart View tab**: Displays the maintenance program in Gantt chart mode.
- **Forecast Calendar View tab**: Displays the maintenance program in calendar mode.

Using the Redwood page, you will use the Programs tab to search for a program. The keyword search, filters and results rows will be for the selected organization or across all organizations that you have access to. Clicking the program name will render a read-only drawer with key details, including attachments.

The filters will display all options for filtering on a chip and will not be filtered to display only values in the search results rows. Therefore, when using a filter chip value, you may end up with no matching results rows.

To edit an existing program, select the row, and click the Edit action. This will render a drawer, allowing update of all fields, including attachments. Once edited, you will navigate to the Work Requirements tab to manage the requirements for the program.

How You Create a Maintenance Program

Using the existing page, you can create a maintenance program on the Create Maintenance Program page.

The following are the steps to create a maintenance program:

1. On the Tasks pane, click the Manage Maintenance Programs link.
2. On the Maintenance Programs page, click the Create Program button.
3. On the Create Maintenance Program page, select from or enter values.
4. On the Redwood page, you can create a new program using a drawer on the Programs tab. All the attributes are the same, but they're in a different order from the existing page. Additionally, you can enter values in the Review Details region during create or edit.

Field	Description
Name	The name of the maintenance program. This value does not have to be unique across programs, however it is recommended to use a unique name
Code	The code of the maintenance program. This value must be unique across programs.
Organization	Using the Redwood page, you must select a Maintenance Organization.
Concurrent Requirements	The option to determine how are concurrent work requirements used when creating the forecast and work orders. The valid values are: o Suppress: The work requirement with the highest cycle interval is included when creating the forecast and work order. In other words, the work requirement with a lower cycle interval is suppressed by a work requirement with a higher cycle interval. o Merge: The work requirements are merged when creating the forecast and work order. The Merge and Suppress options will default to each work requirement. Optionally, you can choose to override the option at the requirement level

Field	Description
	Note: It's recommended for an administrator to set the **Allow Suppress and Merge Across Work Requirements in a Maintenance Program** parameter to No on the Manage Asset Maintenance Parameters page located within the Setup and Maintenance work area. Otherwise, certain work requirement definitions for the same asset may consider the option to merge and suppress across work requirements making it difficult to model, manage, and recognize in a forecast. Merge and Suppress is recommended to only be setup within a work requirement.
Start Date	The start date of the maintenance program.
End Date	The end date of the maintenance program.
Program Type	Option used to identify the type of program used to forecast due dates for Maintenance (default) or Subscription assets. This field is for reference only.
Program Subtype	Optional field used to identify the subtype of program. The values are user-defined in the lookup ORA_MNT_MX_PROGRAM_SUB_TYPE.
Allow assets from other organizations	Option that enables assets in other organizations, within the same master organization, to be considered in a work requirement and maintenance forecast. o By default, this option isn't selected. This means that only assets operating in the same maintenance organization as the program are considered. o Select to let a work requirement consider assets from other organizations. **Note:** The option can only be set and updated until the first work order is created for a program. Therefore, existing programs that have work orders already created can't be enabled or disabled from allowing assets from other organizations.
Program Reference	Optional reference for a program. An example could be an OEM repair manual reference or a unique subscription identifier.
Forecast Window in Days	Optional value that represents the number of days into the future the maintenance forecast will be created for all work requirements in the program. If not defined, then either the number of days value at a work requirement or the organization parameter is used. The lowest level of definition takes precedence. It is recommended to define a value at the program header for visibility or if the expected forecast horizon is different than the default number of days value defined in the organization parameters. Set a value that generally considers all or most work requirements in the program, providing a consistent baseline expectation for the forecast horizon of the program. Optionally, you can define different forecast windows at the work requirement level if they require a forecast for a shorter but generally longer horizon.
Work Order Window in Days	Optional value that represents the number of days into the future that work orders will be created for all work requirements in the program. If not defined, then either the number of days value at a work requirement or the organization parameter will be used. The lowest level of definition will take precedence. It is recommended to define a value at the program header for visibility or if the expected work order horizon is different than the default number of days value defined in the organization

Field	Description
	parameters. Set a value that generally considers all or most work requirements in the program, providing a consistent baseline expectation for the work order horizon of the program. Optionally, you can define different work order windows at the work requirement level if they require a forecast for a shorter but generally longer horizon.
Work Order Start Time	Option to set the start time of a work order that is created for a due date: o The date you set is considered when the work order scheduler is created. o If a date is not set, default value of 8:00 AM is used. **Note:** Define a start time if you have shifts that begin before 8:00AM daily. Shift definitions and setup affects the start time of a work order. See Work Order Scheduling in the Using Manufacturing guide.
Work Order Time Zone	Option to set the time zone of a work order that is created for a due date. For newly created programs, the time zone will default from your user preferences but can be edited. For existing programs, the time zone will default to UTC if not defined. It is recommended to set a time zone that matches where the affected assets operate and are maintained. If they are centrally managed or maintained outside of operating organizations, it is recommended to set this value to UTC. Care should be taken before setting this value if you have operations that span time zones for assets within the same program or have users that are viewing due dates across time zones. **Note:** In general, your user preferences determine the time zone to be considered when viewing dates and times in the user interface. Therefore, when viewing forecast and work orders dates and times, the user interface adjusts the values to match your preferences.
Attachments	The attachments in the maintenance program. It can be of file, text, or URL type. These files are only viewable in the program.
Description	The description of the maintenance program.
Program Reviewed By	Optional name of the reviewer performing the maintenance program audit. This can only be defined during create Using the Redwood page.
Review Date	Optional date on which the review is performed. This can only be defined during create Using the Redwood page.
Review Comments	Optional comments added for the review by the reviewer. This can only be defined during create Using the Redwood page.

5. Click the **Save and Continue** button or **Save and Close** button.

Manage Organizational Relationships for Programs

Maintenance organization relationships aren't required to maintain an asset using a maintenance program but can be optionally used in some cases. An asset that operates in a maintenance-enable organization will always be forecasted and have work orders created in its contextual organization, regardless of a program being enabled for assets across organizations or not. Relationships defined for reciprocal maintenance organizations are not considered, nor supported, in a program and will not impact these types of assets.

For assets that operate in a non-maintenance organization, by default they will be forecasted in the program's organization. If you wish for theses assets to always be maintained in different maintenance organization, you will need to define a supports as primary relationship between the non-maintenance-enabled organization and a maintenance organization. This will ensure the forecast is generated and work orders are created only in that maintenance organization. Additionally, you must ensure that the Asset's base Item is defined for all organizations in which you will forecast and create work orders, else work order creation will end in an error.

There is also an asset maintenance parameter, Consider Organization Relationships When Creating Maintenance Work Orders, that is available. This parameter is only considered during manual creation of maintenance work orders, and not for the creation of work orders for maintenance program forecasted dates, as described below:

If the parameter is set to Yes (default):

- If set to Yes, you must define organization relationships to manually create work orders across organizations. This parameter isn't considered by the maintenance program.
- For assets operating in a maintenance-enabled organization, work orders can be created:
  - In its operating organization without defining any relationships (default capability).
  - Only in those maintenance-enabled organizations where a reciprocal relationship is defined.
- For assets operating in a non-maintenance-organization, work orders can be created:
  - Only in those maintenance-enabled organizations where a supports or supports as primary relationship is defined.

If the parameter is set to No (recommended):

- If set to No, you will only need to define organization relationships to support assets that operate in a non-maintenance organization by a maintenance programs.
  - If not defined, the work orders will be created in the program's maintenance organization.
- For assets operating in a maintenance-enabled organization, work orders can be created:
  - In its operating organization without defining any relationships (default capability).
  - In any other maintenance-enabled organization under the same master organization.
- For assets operating in a non-maintenance-organization, work orders can be created:
  - In any other maintenance-enabled organization under the same master organization.
  - Optionally, you can define a supports as primary relationship if you wish for an asset to always be maintained in a specific maintenance organization. If not defined, then these assets can be forecasted and maintained within the program's contextual organization, without the need to define a relationship.

> **Note:** For assets that routinely require maintenance across organizations, set the **Consider Organization Relationships When Creating Maintenance Work Orders Program** parameter to No. If you want only certain organizations to provide maintenance to each other, define organization relationships and leave the parameter value set to Yes.

How You Edit a Maintenance Program

Using the existing page, search for a program, then click its name to edit its details.

On the Redwood page, use the Programs tab to search for a program across all organizations for which you have access. To edit an existing program, select the row, and click the Edit action. This will render a drawer, allowing update of certain fields, including attachments. Clicking the link on the program's name will only render its details in a read only drawer.

Edit Maintenance Program Details

On both existing and Redwood Maintenance Programs pages, you can edit the following attributes:

Attribute	Description
Name	The name of the maintenance program. This value doesn't have to be unique across programs, however it is recommended to use a unique name.
Code	The code of the maintenance program. This value is unique across programs.
Organization	After a program is created, you can't edit its organization.
Concurrent Requirements	The option to determine how are concurrent work requirements used when creating the forecast and work orders. The valid values are: • Suppress: The work requirement with the highest cycle interval is included when creating the forecast and work order. In other words, the work requirement with a lower cycle interval is suppressed by a work requirement with a higher cycle interval. • Merge: The work requirements are merged when creating the forecast and work order. The Merge and Suppress options default to each work requirement. Optionally, you can choose to override the option at the requirement level. **Note:** It is recommended for an administrator to set the parameter, **Allow Suppress and Merge Across Work Requirements in a Maintenance Program** to No on the Manage Asset Maintenance Parameters page located within the Setup and Maintenance work area. Otherwise, certain work requirement definitions for the same asset may consider merge and suppress across work requirements making it difficult to model, manage, and recognize in a forecast. Merge and Suppress is recommended to only be setup within a work requirement.
Start Date	The start date of the maintenance program.
End Date	The end date of the maintenance program.
Program Type	Option used to identify the type of program used to forecast due dates for Maintenance (default) or Subscription assets. This field is for reference only.
Program Subtype	Optional field used to identify the subtype of program. The values are user-defined in the lookup ORA_MNT_MX_PROGRAM_SUB_TYPE.
Allow assets from other organizations	Option that enables assets in other organizations, within the same master organization, to be considered in a work requirement and maintenance forecast. • By default, this option is unselected. This means that only assets operating in the same maintenance organization as the program will be considered.

Attribute	Description
	• If selected, a work requirement will consider assets from other organizations. However, you must define organizational relationships for work orders to be created. **Note:** The option can only be set and updated until the first work order is created for a program. Therefore, existing programs that have work orders already created can't be enabled or disabled from allowing assets from other organizations.
Program Reference	Optional reference for a program. An example could be an OEM repair manual reference or a subscription unique identifier.
Forecast Window in Days	Optional value that represents the number of days into the future the maintenance forecast will be created for all work requirements in the program. If not defined, then either the number of days value at a work requirement or the organization parameter will be used. The lowest level of definition will take precedence. It is recommended to define a value at the program header for visibility, or if the expected forecast horizon is different than the default number of days value defined in the organization parameters. You should set a value that generally considers all or most work requirements in the program, providing a consistent baseline expectation for the forecast horizon of the program. Optionally, you can define different forecast windows at the work requirement level if they require a forecast for a shorter, but generally longer, horizon.
Work Order Window in Days	Optional value that represents the number of days into the future that work orders will be created for all work requirements in the program. If not defined, then either the number of days value at a work requirement or the organization parameter will be used. The lowest level of definition will take precedence. It is recommended to define a value at the program header for visibility, or if the expected work order horizon is different than the default number of days value defined in the organization parameters. You should set a value that generally considers all or most work requirements in the program, providing a consistent baseline expectation for the work order horizon of the program. Optionally, you can define different work order windows at the work requirement level if they require a forecast for a shorter, but generally longer, horizon.
Work Order Start Time	Option to set the start time of a work order that is created for a due date: • The value you set is considered during the creation of work order scheduler. • If you don't set any value, a default value of 8:00 AM is used as the start time. **Note:** Defining a start time may be helpful if you have shifts that begin before 8:00AM daily. Shift definitions and setup affects the start time of a work order. See Work Order Scheduling in the Using Manufacturing guide to learn more.
Work Order Time Zone	Option to set the time zone of a work order that is created for a due date. For newly created programs, the time zone will default from your user preferences but can be edited. For existing programs, the time zone will default to UTC if not defined. It is recommended to set a time zone that matches where the affected assets operate and are maintained. If they are centrally managed or maintained outside of operating organizations, it is recommended to set this value to UTC. Care should be taken before setting this value if you have operations that span time zones for assets within the same program or have users that are viewing due dates across time zones. **Note:** In general, your user preferences will determine which time zone is considered when viewing dates and times in the user interface. Therefore, when viewing forecast and work orders dates and times, the user interface will adjust the values to match your preferences.

Attribute	Description
Attachments	The attachments in the maintenance program. It can be of file, text, or URL type. These files are only viewable in the program.
Description	The description of the maintenance program.
Program Reviewed By	The name of the reviewer performing the maintenance program audit.
Review Date	The date on which the review is performed.
Review Comments	Comments added for the review by the reviewer.

Create and Edit Work Requirements

On the existing Program details page, the Maintenance Program: Work Requirements tab lists the work requirements associated with the maintenance program. On this tab, you can create new work requirements, and edit and delete the existing work requirements for a maintenance program.

On the Redwood page, go to the Work Requirements tab to manage the requirements for a program.

View Gantt Chart View of the Maintenance Program Forecast

On the existing Program Details page, Forecast Gantt Chart View tab, you can view the Gantt chart of the maintenance program forecast. The page renders due dates in the forecast for a period of two weeks into the past and two weeks into the future by default. You can adjust the date range to and from date values and click Apply to refine your search. Additionally, you can further refine the results by using the Search and Filter options in the Gantt Chart header region.

With Search, you can select an attribute to search by in the drop down, enter a value in the search field, and then click the spyglass icon to execute the search. Click the Filter icon to render a dialog box where you can enter values for one or many attributes that can be used to filter the results. When a filter is applied, you can use the Reset action button to clear the filters.

> **Note:** The Gantt Chart only displays a maximum of 500 results from the Maintenance Forecast. So, you may find that some assets or due dates aren't displayed upon rendering. Use the Date Range, Search and Filter options to limit the number of forecast records that are retrieved, which may improve the Gantt chart results. In general, the Gantt Chart is used to confirm the forecast is correctly generating for the assets over time during work requirement modeling. It doesn't provide a comprehensive planning solution for preventative maintenance. If additional forecast details are required, we recommended you use the OTBI Maintenance Subject Area entitled Maintenance Management - Forecast Real Time. You can create an analysis following the example provided in this user guide in this chapter Reports and Analytics > OTBI for Oracle Fusion Cloud Maintenance.

> **Tip:** The Redwood page doesn't have a Gantt chart. Use the Forecast tab to validate the modeling and asset initialization of the forecast line and the Maintenance Forecast page for viewing and managing forecast results, including the additional details about previous and next due dates.

View Calendar View of the Maintenance Program Forecast

On the Maintenance Program: Forecast Calendar View tab, you can view the calendar view of the maintenance program forecast. The calendar view enables you to check the competency of your maintenance program and review the generated workload.

Related Topics

- How You Create a Work Requirement

How You Manage Calendar Patterns

Use calendar patterns to define how often a work requirement forecast is due. Calendar patterns are useful to model recurring maintenances that aren't impacted by when a maintenance is accomplished. For others, a day-based work requirement method is more useful. You can define calendar patterns uniquely for a maintenance program. If you have enabled Redwood opt-in, you can create them globally, allowing their use across all programs. Patterns are selected in a work requirement that's enabled for the calendar work method.

On the existing page, you can only create a new pattern within a work requirement, or directly for a program using REST or File-Based import. You can't edit, disable, or delete a pattern after it's created.

Using the Redwood page, you can manage calendar patterns under the Calendar Patterns tab. When you create a new pattern, you can select if it's global or only associated and usable in a program. You can then define its frequency and create it.

> **Note:** Global patterns can only be created using the Redwood page. Only program-based patterns can be created using REST or File-Based import. However, once created, they can be manage all the patterns under the Calendar Patterns tab.

The filters show all options for filtering on a chip but won't filter by values in the search results. Therefore, when using a filter chip value, you may end up with no matching results rows.

You can edit or delete a pattern:

- If it's created as Global and not referenced in a requirement.
- If it's created for a program and not referenced in a requirement.

> **Note:** You can't edit or delete a pattern that's referenced in a requirement, however, you can disable it. You can re-enable a pattern to associate it afresh with a work requirement.

How You Manage Work Requirements in a Maintenance Program

Overview of Work Requirements

Work requirements are created in the context of a parent program and its contextual organization. You can create work requirements for each service interval task, or even a group of related service interval tasks for one or more assets. The tasks define how often the service is required, the expected resource and material requirements, and the steps required to complete the task.

In the edit mode of the existing Maintenance Program page, you can search and manage work requirements under the Work Requirements tab. Additional details for the existing page are covered in the section, How You Manage Work Requirements in a Maintenance Program.

On the Redwood page, you can directly search, create, and manage requirements right on the first tab for all programs within the organizations you can access. The status of the work requirement determines all the actions you can do on them.

Here's a functional comparison between each page, highlighting differences, as well as new capabilities in the Redwood:

Functionality	Existing Page	Redwood Page
Manage Work Requirements across Programs and Organizations	Not available in this page. You can only view work requirements within each of their associated programs. You can use the limited keyword search or query using the list of search options for searching by Program.	Available in this page. When you land on this page, you see th tab by default, displaying query results organization. Search for your work requirements usir and filters. You can quickly and easily p for assets across attributes using this e You can view the search results in a sor matching records.
View key metrics for a Work Requirement	Not available in this page.	Available in this page. You can easily view key metrics, like the if Work Orders have been created or no row.
Quickly create a Work Requirement	Not available in this page. You can only create work requirements within each of their associated programs.	Available in this page. You can easily create a Work Requirem Program, across organizations, directly
Create a Work Requirement for a collection of assets based on the same or different items	Not available in this page. You can only model an item-based work requirement for one or many assets based on the same item.	Available in this page. You can create a Work Requirement for Assets. This type allows you to manual Assets that are included.
Preview the forecast for a Work Requirement before releasing to Planning	Not available in this page. The only supported status values are Draft, for which no forecast can be generated, or Active. Active forecasts can generate forecasts and are immediately available for use and creation of work orders. Edits to an Active work requirement are immediately considered, there is no ability to preview the changes.	Available in this page. You can manage the creation, modelin a Work Requirement to planning. This preview its forecast prior to releasing it Ready to Forecast. Additionally, you can return an Active W to the Ready to Forecast status so you changes before releasing it back to plan

Functionality	Existing Page	Redwood Page
Manage the introduction of new assets to a work requirement	Not available in this page. You can only include or exclude Assets. Included Assets are immediately considered, there is no ability to preview the introduction.	Available in this page. You can manage the introduction or in to its release to planning. This provides its forecast prior to releasing it. Additionally, you can remove an asset f in the future, and optionally make char before releasing it back to planning.
Generate Forecasts for a Work Requirement	Available in this page. You can Generate the Forecast for a Work Requirement once you have searched for the Program, clicked on the Work Requirements tab, searched for the Requirement, and navigated to its Edit page.	Available in this page. You can easily Generate the Forecast fo directly from a search result row, if it is
Generate Forecasts for an Asset in a Work Requirement	Available in this page. You can Generate the Forecast for an Asset in the Work Requirement once you have searched for the Program, navigate to the Work Requirement search and Edit the Work Requirement. Navigate to the Affected assets page and the action is available for each Asset.	Available in this page. You can easily Generate the Forecast fo Requirement search result row if it is no Navigate to the Assets tab and the acti Asset that is not in Draft status.
Release a requirement to planning	Not available in this page. An Active status requirement is already in planning.	Once you have verified your modeling can optionally release the requirement This updates the requirement status fr Active.
Revert a requirement from planning to ready	Not available in this page. Only an Active status is supported.	If you need to make changes to your m can optionally return the requirement t update the requirement status from Ac

How You Create a Work Requirement

In the edit mode of the existing Maintenance Program page, you can manage the work requirements on the Work Requirements tab. Here you can create, view, edit, and delete the work requirements associated with the maintenance program. Each work requirement row will include a reference to the asset or item that's affected, along with indicators about the forecast methods being used. You can edit, but not delete an existing work requirement after the first work order is created for the work requirement. Optionally, you can also click on certain columns to sort the results rows ascending or descending by value.

The page includes a Query-by-example (QBE) search option. When you click the QBE icon, it reveals a search bar where you can search the list of requirements by certain columns. Optionally, you can also click on certain columns to sort the results rows ascending or descending by value.

The page is divided into these regions:

- Header details are defined in the For Each Asset Region
- Forecast methods are defined in the Generate a Forecast Region
- Forecast method details are defined in the Based on a Recurring Pattern by Date Region
- Work Definitions are defined in the To Perform This Work Region

Additionally, the Affected Assets are managed in a separate page, accessible by clicking the associated icons. Using the Redwood page, the user experience is different. Go through the How You Create a Work Requirement in Redwood section to get a comparison of functionalities between the existing page and the Redwood enabled page featuring Smart Search.

For Each Asset Region

In the For Each Asset region, you can define the work requirement details and related attributes.

Field	Description
Name	Name of the work requirement. The name must be unique across all maintenance programs, regardless of maintenance organization.
Requirement Reference	Optional reference for a work requirement. For example, an OEM repair manual reference or a subscription line unique identifier.
Type	Type of the work requirement. The valid values are: Asset, Item, or Asset Route.
Asset or Item	Name of asset or item that defines the one or many affected assets for the work requirement. By default, the type is set to Asset. Therefore, you can search for and select an asset that's operating in the contextual organization. If you change the type to Item, the field changes from an asset picker to an item picker, allowing you to search for and select an item that's setup for the organization. **Note:** The forecast and resulting preventative maintenance work orders is always for the selected asset and doesn't apply to any parent or child assets in a physical hierarchy
Description	Description of the asset or item that's selected. This is a read-only description of the asset or item that's selected.
Asset Route	Name of the hierarchy that is enabled as an asset route. You can search and select any route-enabled hierarchy that is active.
Asset Route Description	Description of the selected asset route.
Asset Number	Asset referenced in the selected asset route hierarchy. This asset will be used to forecast and create maintenance work orders.

Field	Description
	Note: It's recommended to model a base asset with a name similar to the asset route hierarchy name for better visibility in the forecast, planning, and execution pages.
Description	Description of the base asset to be forecasted.
Include Assets	This drop-down list appears only when the type you select is Item. The options are: • **Automatically include assets** (default): The default option Automatically include assets considers all the assets for the item as included in the forecast. You can then individually exclude them from the forecast in the Affected Assets page. • **Manually include assets**: If you select the option to Manually include assets, then no assets for the item are considered by the forecast. You can then individually include them in the forecast in the Affected Assets page.
Status	Status of the work requirement that's used to indicate if adequate attributes are defined for the work requirement to generate a forecast. The values are: • Draft • Active Upon creation, the status is set to Draft. After you have defined and the header, forecast method, and work definitions, it moves to a status of Active and is ready to be forecasted upon saving. If you provide all the attributes for the work requirement to generate a forecast then it will set directly to Active. **Note:** When the end date of a requirement is reached, it won't be considered by the preventive maintenance forecast scheduled process. However, the status of the work requirement will remain as Active. **Note:** It's recommended to create work requirements using the REST API by passing a complete payload of the required parent and child resources, as shown in the Use Case examples. This practice ensures that the system can validate the necessary definitions required to set the work requirement status to Active, allowing it to be forecasted.
Start Date	Date on which the work requirement becomes active. Forecasted due dates begin on this date and into the future. The Start Date is used to determine when a work requirement is considered by the forecast program and will begin calculating from this date into the future. This date can be in the past, present or in the future and will control the first due date in the forecast, as well as its sequence of due dates into the future within the forecast horizon number of days window. **CAUTION:** If the Start Date is set to a past date, then the forecast is calculated from that point in time based on the forecast method, generating the sequence of forecasted due dates. Care should be taken when defining a past date, as the forecast may include one or more overdue dates, based on the interval. Therefore, it's generally not recommended to set a past date that exceeds the next due interval, but to set the current date as the start date. The Start Date is optionally superseded in the forecast calculations by defining a Historical Start Date, Interval if applicable, and a Forecast Start Date in the Affected Assets page. This allows the forecast program to more accurately calculate the first due date based off asset's maintenance history. For an item-based work requirement, it is recommended that you set a Forecast Start Date at the asset

Field	Description
	level, if the requirement's start date is far into the past, as mentioned above. Else, the system will back calculate multiple due intervals and may produce overdue dates. If set to a date in the future, then the work requirement will not be considered by the forecast program until this date. As of this date, or the next time in the future in which the forecast is regenerated, the due dates will be created within the horizon time frame into the future. During setup and confirmation of your work requirement model, you can adjust the start date and regenerate the forecast. This will provide the ability to confirm the forecast method and most importantly confirm the first due date in the future in which you expect a work order to be created. When the first work order is created based off these dates, if you adjust the start date to another date in the past will not have any impact on your future forecast. The forecast will always stay on its original sequence based of the original Start Date. If you adjust the start date to a future value, then the work requirement will no longer be considered by the forecast. If you are using a cycle of intervals, then intervals that are due from the present to the future will be skipped when the forecast is regenerated. Therefore, it is generally recommended to End Date a requirement and create a new requirement to start again in the future. **Note:** When using a calendar pattern and cycle of intervals, if the Start Date falls on the first iteration in the future of the calendar pattern, then it's considered as interval 1 of the cycle. However, for a day or meter-based forecast, interval 1 is calculated as due from the start date.
End Date	Date on which the work requirement becomes inactive. The work requirement will no longer be considered by the forecast program.
Work Orders Created	Indicator showing whether work orders have been created based on the forecast of the work requirement.
Affected Assets	Clicking the icon navigates you to the Affected Assets page for both an asset and item-based requirement. The page displays the list of assets applicable for the work requirement

Affected Assets Page

This page lists all the assets applicable for the work requirement. For an asset-based requirement, there's a single row. For an item-based requirement, there's a list of every asset based on that item for an organization that's maintainable. The page will include a Query-by-example (QBE) search option. When the QBE icon is clicked, it reveals a search bar where you can search the list of assets by certain columns. Optionally, you can also click on certain columns to sort the results rows ascending or descending by value.

For each asset, this page lists:

- Asset details, including ability to create work orders
- Indicator if work orders have been created by this work requirement
- Work Order Creation option: defaults from the work requirement but you can update it for each asset.
- Historical completion, interval and start date definition fields
- Forecast details, including last completion and next due dates with intervals

For an item-based requirement, if the Include Assets attribute is set to Automatically include assets, then rendering the Affected Assets page shows each asset as implicitly included in the forecast with a status shown as a green check mark. Alternatively, if you select the option Manually include assets, then each asset is displayed with a gray check mark, indicating they are implicitly excluded in the forecast. It's important to set this option during the initial creation of the requirement and before assets are explicitly included or excluded, and before Historical completion, interval, and start

date values are entered for the asset. If you change the option, any explicit exclusion or inclusion of assets ais reversed and you must regenerate the forecast. We recommend you don't change this option after work orders are created.

The Automatically include assets option should be used when you expect most or all the assets for an item to be forecasted in the same work requirement. This also means that any new asset that's created is also implicitly included and considered by the forecast. You can then explicitly exclude only certain assets from the affected list of assets. The Exclude All option is available but should be used with caution. The Include All option is also available and is typically used to reverse all the previously explicitly excluded assets. This means the assets will return to being implicitly included. If you want to exclude all the assets and start from scratch by explicitly including only certain assets, it's a better practice to change the Include Assets option to Manually include assets.

The Manually include assets option should be used if you want to explicitly define which assets are included in the forecast. This means that the work requirement doesn't consider any of the assets based on that item by default, as they're each implicitly excluded. You can see the list of assets on the affected items page and each asset has a status set as a gray check mark, indicating they aren't included in the forecast. You can explicitly include the assets that you want to forecast by selecting one or more rows and clicking the Include action button. The status icon will change to a green check mark, indicating they're considered by the forecast. For assets that were previously included, you can choose to exclude them by clicking the Exclude action button, and their status turns gray again. This means the asset returns to being implicitly excluded. You can also use the Include All and Exclude All action buttons. If you want to include all the assets and start from scratch by explicitly excluding only certain assets, it's a better practice to change the Include Assets option to Automatically include assets.

After you have decided which assets will be forecasted, you can define how the first due date will be calculated for each asset. You can do so for both asset and item-based work requirements and is helpful during initial implementation of a work requirement as well as the introduction of new affected assets in the future.

For each asset row that has a green check mark, these fields are editable if work orders aren't created yet for an asset in this work requirement:

- **Historical Last Completed Date**: You can optionally enter in the last time similar maintenance was accomplished from an external application. This date is considered by the forecast and works in coordination with the Forecast Start Date to calculate the first due for an asset. You can only enter a value that's less than the application date and you must enter a date if the Last Interval is defined. It is recommended for day and meter-based forecasts to initialize the first due for each asset by defining the historical last completed date, as well as enter a corresponding meter reading for the asset on this date.
- **Historical Last Interval**: Only applicable if the work requirement is cycle-based with intervals. This is the interval at which you last completed maintenance as of the Last Completed Date. You must enter an interval if the Last Completed Date is defined for a cycle-based requirement.
- **Forecast Start Date**: You can optionally define a Forecast Start Date that's later than the Start Date of a work requirement. If defined, it supersedes the work requirement start date. Remember that the start date determines when the forecast begins calculating and if the date is in the future, the forecast doesn't have any due dates before that date. If the Start date is defined along with the Last Completed Date, then the Last Completed date takes precedence and is used to anchor the start of the forecast and begin its calculations.

  > **Note:** It's recommended to define a Forecast Start Date for item-based requirements, especially when the date is far into the past. Else, the forecast will back calculate multiple intervals and may generate overdue dates.

When the first forecast is run, you see values in the Forecast Next Due (date) and Interval columns. This helps validate if the forecast method and definition is meeting the expected due date for each asset. You can then adjust the Work Requirement start date, Last Completed Date, Last Interval and Forecast Start (date) values as needed to refine the forecast before the first work order is created for an asset in the work requirement. Once this even occurs, you can no

longer adjust these fields and adjust the forecast of the first due date. In the future, once work orders are completed, you see values in the Forecast Last Completed and Forecast Last interval columns, providing asset level forecast details.

You can also change methods from Automatically include assets to Manually include assets. When changing methods, you're presented a click-through validation message. If you click yes, then any changes you have made in the Affected Assets page is lost and you reset all the included and excluded assets actions and any historical data entry values when you click save. If you click no, or don't save the changes, then the changes aren't committed.

Generate a Forecast Region

In the Generate a Forecast region, you can define a forecast for the work requirement.

Field	Description
Forecast using a cycle	Option to define whether the work requirement is to be forecasted based on the intervals in a cycle, Forecast Start (Date) - you can optionally define a Start Date that's before, equal to or later than the work requirement start date. If defined, it supersedes the work requirement start date. Remember that the start date determines when the forecast begins calculating and if the date is in the future, the forecast won't have any due dates before that date. If the Start date is defined along with the Last Completed Date, then the Last Completed date takes precedence and is used to anchor the start of the forecast and begin its calculations.
Number of Intervals per Cycle	Number of intervals that occur during each cycle. This field is editable only if the Forecast using a cycle check box is selected. You can use intervals to define which work definitions fall on an interval and if they merge or suppress when more than one definition falls on the same interval. You can only set a value greater than 1 to forecast using a cycle of intervals. To have a single repeating interval, deselect the Forecast using a cycle check box.
Next work order only	Check box that controls the behavior of the creation of work orders from the forecast. By default, this check box is deselected. This means that work orders are created for forecasted due dates within the work order creation window that's defined for the organization. When you select the check box, work orders are only created for the next due date in the forecast. When the open work order is completed, a new work order is created for the next forecasted due date. We recommend you schedule the Generate Maintenance Work Orders scheduled process on a daily basis to create new work orders. We recommend that if Day or Meter Intervals are used as the forecast method, you select the Next work order only check box. This includes setting the Method to Calculate Next Due to Last Completion. This allows a dynamic adjustment of future due dates within the forecast horizon based on previous work order completion and meter reading entry. Else, the forecast may not dynamically forecast taking into consideration the last completion of a work order for a maintenance program. If you regularly have work orders that aren't completed before the next forecasted due date, enable the capability to adjust future due dates in the forecast based on either the scheduled or actual completion date of the last open work order in history, along with the latest meter reading. See the How You Manage Maintenance Forecasts section to learn more.
Basis for Next Forecast Due Date	Method for generating a forecast. You can select from these methods: • Calendar pattern: Option to indicate whether a forecast is to be created based on a calendar pattern for both cycle and non-cycle based work requirements. This method doesn't consider a Method to Calculate Next Due option. So, the actual completion date of a work order isn't considered when calculating the next due date of the forecast.

Field	Description
	• Day Interval: Option to indicate whether a forecast is to be created based on a number of days interval for both cycle and non-cycle based work requirements. You'll also define a Method to Calculate Next Due option, either base interval or last completion. • Meter interval: Option to indicate whether a forecast is to be created based on a meter interval for both cycle and non-cycle based work requirements. You'll also define a Method to Calculate Next Due option, either base interval or last completion. • Condition event: Option to indicate if work orders can be created based on a condition event for non-cycle based work requirements. This check box is displayed only if the Forecast using a cycle check box is deselected. Condition event-only work requirements aren't forecasted. **Note:** You can select either a calendar pattern or day interval, but not both options, or you'll get an error.
Forecast Window in Days	Optional value that represents the number of days into the future the maintenance forecast is created for each asset in this work requirement. If not defined, then either the number of days value at the program header or the organization parameter will be used. The lowest level of definition takes precedence. It is generally recommended to only define a number of days value if the work requirement requires a forecast window that is longer in duration than the program header. Optionally, you can define for a shorter forecast window. For example, you may have a program header that is defined to forecast out 90 days, but you have work requirement that is due every 180 days. Therefore, setting a value at the requirement level of at least 180 days is helpful to view the due dates in the forecast for planning visibility.
Work Order Window in Days	Optional value that represents the number of days into the future that work orders for maintenance forecast are created for each asset in this work requirement. If not defined, then either the number of days value at the program header or the organization parameter is used. The lowest level of definition takes precedence. It is generally recommended to only define a number of days value if the work requirement requires a work order window that is longer in duration than the program header. Optionally, you can define for a shorter work order window. For example, you may have a program header that is defined to create work orders out 45 days, but you have work requirement that is due every 180 days. Therefore, setting a value at the requirement level of at least 180 days is helpful to create work orders out into the future to support planning.
Concurrent Requirements	Displays the option defined at program level for forecast to handle the concurrent work requirements. The Merge and Suppress options default to each work requirement. You can choose to override the option at the requirement level. **Note:** For calendar based work requirements, if you don't want to consider merge and suppress option across work requirements, your administrator can set the parameter, **Allow Suppress and Merge Across Work Requirements in a Maintenance Program** to No on the Manage Asset Maintenance Parameters page in the Setup and Maintenance work area.
Override for this requirement	Option to define whether the concurrent requirements option defined at program level is to be overridden and defined only within the work requirement. If selected, the work requirement is forecasted independently of other work requirements. Additionally, the selected suppress or merge option is applied to each work definition, as indicated by the Forecast To column in the To Perform This Work region

Field	Description
	In previous versions, we recommended that you use Override option when using Calendar pattern-only work requirements if the same asset is defined across multiple work requirements in the same maintenance program. This prevents cross-requirement merge suppression of work definitions when their respective intervals intersect. In this version, you can decide if merge and suppress across work definitions is enabled by setting a parameter value. We recommend setting this parameter = no, thereby disabling this capability unless you have an established business requirement and fully understand its capability and limitations. Merge and suppress options, that support multiple work definitions across intervals in a cycle, are best modeled and forecasted within a single work requirement.
Create Work Orders Option	Option that controls if work orders are created Automatically (default) or Manually for a forecasted due date. Work Orders are automatically created for a forecasted due date. However, if you wish to manually create work orders for each due date using the Maintenance Forecast page or REST API, then you can set this option to **Manually**. If set to Manually, the Generate Maintenance Work Orders scheduled process ignores the forecasted due dates and work orders aren't created. **Note:** It is recommended to leave the option at the default value of Automatically unless your business process uses the Maintenance Forecast page or REST API exclusively to create work orders for these due dates.
Work Order Status	Option that controls the status of the work orders created for a due date. You can select from the predefined values: Unreleased (default), Released, or On-hold. You can also select customer-defined values that are created based on these predefined values.
Firm Work Orders	Option that controls if the work orders created for a due date are set as Yes (default) or No for **Firm**, which controls if they're scheduled or not respectively.
Work Order Priority	Optional field that sets the priority of the work orders created for a due date. Valid values are positive whole numbers.

Based on a Recurring Pattern by Date Region

In the Based on a Recurring Pattern by Date region, define the details of method selected for generating a forecast.

When you select Calendar pattern in the Basis for Next Forecast Due Date field, you can select an existing calendar pattern or create a new calendar pattern in this region. When creating a calendar pattern, you can define the frequency based on which the work requirements are scheduled by as:

- Repeat Daily: you can select if a forecast is due every day of the week, 7 days a week. Additionally, if you select the Every Weekday check box, then the application validates if there's shift defined for each day. If there's no shift defined, then the day isn't considered in the forecast and skipped.
- Repeat Weekly: you can select one or more individual days of the week. For example, every Monday or Monday, Wednesday and Friday.
- Repeat Monthly: you can select a specific date of each month, such as the 15th. Or you can select a certain day during each month, such as the First Monday of the month.
- Repeat Yearly: you can select a specific date during a year, such as June 15th. Or you can select a certain day with a specific month, such as the First Monday of June.

The forecast then uses the calendar pattern and the organization's facility schedule to create future due dates. The forecast initially creates due dates even on days in which a facility isn't operating, per is calendar. However, when the forecast is converted to a work order date, the calendar and shifts by resource are taken into consideration, which may pull or push the work order date as required.

Note: The calendar pattern names must be unique within a maintenance program and can't be used across different maintenance programs.

When you select Day interval in the Basis for Next Forecast Due Date field, the Base Interval in Days field and Method to Calculate Next Due drop-down list options are displayed in this region. The value defined in the Base Interval in Days field is used as the interval duration between due dates in the maintenance forecast for this requirement. The forecast calculates the first due date as: Start Date + Base Interval in Days. Then each successive due date is calculated as: Previous Due Date + Base Interval in Days. For example, if the Start Date is on a Monday, then Day 1 is Tuesday, Day 2 is Wednesday, and then Day 7 is on the next Monday. Therefore, with this method you can more easily model intervals that could represent many different periods of time in days. You can then use a cycle of intervals to define when your work definitions are due on each interval in the cycle.

The Day Interval method also supports a Method to Calculate Next Due option, like the Meter Interval. The default value is Base Interval, which keeps the forecast as being due based on the original start date of the work requirement, regardless of when the work order was accomplished. For example, you have a forecast in which each due date is due every 7 days into the future for the next 100 days. If you complete the first work order 1 day early and you have the option set to Base Interval, then the forecast doesn't adjust based on the work order completion. The next due date remains on its original date, which is 8 days after your previous work order accomplishment date. You can still enable the Next Work Order Only check box, however, the forecast doesn't adjust the future due dates based on the last completion.

If the value is set to Last completion, the next due work order can be calculated based on the previous work order's actual completion date. In order to use this option, you must enable the Next Work Order Only check box, else the forecasted next due date doesn't dynamically adjust. For example, you have a forecast in which each due date is due every 7 days into the future for the next 100 days. If you complete the first work order 1 day early and you have the option set to Last completion, then the entire forecast pulls forward by 1 day. The next work order is due in 7 days from the actual completion of the previous work order. If you complete the next work order 1 day later and you have the option set to Last completion, then the entire forecast pushes back by 1 day. The next work order is due in 7 days from the actual completion of the previous work order.

Day Intervals are most useful in that their Start Date, defined at the Work Requirement header or for each asset in the Affected Assets page, gives you the ability to determine exactly when the first due date occurs. The start date can be in the past, present or future. Additionally, the Day Interval allows for intervals that can’t be efficiently modeled using a Calendar Pattern. Examples are every 15 days, every 90 days, etc.

Day Intervals can also be selected to compete with one or more Meter Intervals. In this case, the first due date among each method is the winner. A Day Interval can't be defined against a Calendar Pattern. If both methods are selected, you'll get an error.

When you select Meter interval in the Basis for Next Forecast Due Date field, the meter interval table is displayed in this region. Click the Add button to add a new meter interval for the work requirement. In the newly added row, select from or enter values in the following fields.

Field	Description
Meter Name	Name of the meter to be added for the work requirement. **Note:** Use only the ascending direction meters in a preventative maintenance program, else the forecast dates won't calculate correctly. **Note:** Don't use resettable meters in a preventative maintenance program, else the forecast dates won't calculate correctly.

Field	Description
Description	Description of the meter.
Meter Entry	Displays whether the meter reading entry is mandatory.
History	Icon to display the meter reading history.
Daily Rate	Daily utilization rate for the asset meter.
UOM	Unit of Measure of the meter.
Base Interval	Base utilization interval for calculating the due date for the work requirement.
Estimated Daily Interval	Number of days in which the requirement repeats.
Method to Calculate Next Due	Method to be used by the forecast for calculating the date on which the work requirement is due next in the forecast. The valid values are: • Base Interval • Last Completion **Note:** If Last Completion is selected, it's important to select the Next Work Order only check box as well to allow for dynamic forecasting of future due dates based on the last work order completion. If you regularly have work orders that aren't completed before the next forecasted due date, enable the capability to adjust future due dates in the forecast based on either the scheduled or actual completion date of the last open work order in history, along with the latest meter reading. See the How You Manage Maintenance Forecasts section to learn more.
Disable	Icon to disable or delete the meter. If there are no work orders generated for the work requirement, then you can use the icon to delete the meter from the work requirement. If any work order has already been generated for the work requirement, then you can use the icon to disable the meter for the work requirement.

When you select Condition event in the Basis for Next Forecast Due Date field, the condition event table is displayed in this region. Click the Add button to add a condition event for the work requirement. In the newly added row, search and select the code of the condition event. The name, type, and description are automatically displayed as per the selected code.

To Perform This Work Region

In the To Perform This Work region, you can define work definition for the work requirement. Click the Add button and select from or enter values in the following fields.

Field	Description
Work Definition	Name of the work definition to be added for the work requirement. **Note:** You can add a resequenceable work definition to a work requirement in a maintenance program only if the override option for suppress and merge is enabled.
Description	Description of the work definition.
Due at Cycle Interval	Interval in the cycle at which a work order is created. The default value is 1. This value must be greater or equal to 1 and lesser or equal to the total number of intervals defined within the cycle. This field is editable only if the Forecast using a cycle check box is selected.
Repeats in Cycle	Option to indicate that work definition repeats on each iteration of the cycle interval over the life of the cycle. This field is editable only if the Forecast using a cycle check box is selected.
Forecasted To	Summary that describes at which intervals the work definition is due in the cycle. If more than one work definition is due on the same interval in a cycle, then the selected suppress or merge option is applied. Work definitions always merge for a forecast that doesn't use a cycle.
Disable	Icon to disable or delete the work definition. If there are no work orders generated for the work requirement, you can use the icon to delete the work definition for the work requirement. If any work order has already been generated for the work requirement, you can use the icon to disable the work definition for the work requirement.

How You Edit a Work Requirement

In the edit mode of the existing Maintenance Program page, you can edit the work requirements on the Work Requirements tab. During editing, you must take care to fully understand the impacts on the forecast, as well as outstanding work orders that are due in the future.

In general, you can edit, but not delete an existing work requirement after the first work order is created for the work requirement.

There isn't any page level auditing capability for historical changes to a work requirement on this page. Therefore, if the edits fundamentally change the forecast cadence of the work requirement, it is recommended to end date the requirement to stop forecasting and create a new work requirement with revised modeling and forecast method. Else, a user will not be able to understand the changes to the work requirement and its previous modeling.

Note: If you need to fundamentally change the forecast method or need to re-sequence the cadence of a forecast method for an asset, it is recommended to end date the requirement to stop forecasting and create a new work requirement with revised modeling and forecast method. You can utilize the affected assets functionality to set the historical last due date and interval (if cycle-based), as well as set a future Forecast Start Date for the asset to control the future next due in the new requirement. The new requirement must have a unique name as well.

Note: Using the Redwood page, the user experience is different. Go through the How You Edit Work Requirements in Redwood section to get a comparison of functionalities between the existing page and the Redwood enabled page featuring Smart Search.

For Each Asset Region

In the For Each Asset region, you can define the work requirement details and related attributes. Here are some recommendations:

Field	Description
Name	You can update the name of the work requirement. However, the name must be unique across all maintenance programs, regardless of maintenance organization. **Note:** Historical reporting such as through OTBI will always reflect the most current name.
Requirement Reference	Optional reference for a work requirement. An example could be an OEM repair manual reference or a subscription line unique identifier.
Type	You can update the type at any time. However, it is recommended to only change it prior to the first work order creation for the requirement. Else, there will be inconsistency with the forecast and work orders, both historically and in the future. If updated, then all the affected asset details, such as included or excluded assets, as well as any historical information will be deleted for each asset.
Asset or Item	You can update the Asset or Item at any time. However, it is recommended to only change it prior to the first work order creation for the requirement. Else, there will be inconsistency with the forecast and work orders, both historically and in the future.
Description	Description of the asset or item that's selected. This is a read-only description of the asset or item that's selected. It can't be updated.
Include Assets	This drop-down list is only editable if the type is Item. You can update this option at any time. However, it is recommended to only change it prior to the first work order creation for the requirement. Else, there will be inconsistency with the forecast and work orders, both historically and in the future. When changing the option, you will be presented with a warning in the page entitled "Changing the included assets option will reset the affected assets for this work requirement". If you click Yes and proceed with the update, then all the affected asset details, such as included or excluded assets, as well as any historical information will be deleted for each asset. If you click No, then the update is disregarded.
Status	Status of the work requirement that's used to indicate if adequate attributes are defined for the work requirement to generate a forecast. The values are: Draft and Active. Upon creation, the status is set to Draft. After you define header, forecast method, and work definitions, the status changes to Active and is ready to be forecasted upon saving. If you provide all the attributes for the work requirement to generate a forecast, then the status is directly set to Active. **Note:** After a requirement reaches the end date, it won't be considered by the preventive maintenance forecast scheduled process. However, the status of the work requirement remains as Active.

Field	Description
	Note: It is recommended to create work requirements using the REST API by passing a complete payload of the required parent and child resources, as shown in the Use Case examples. This ensures that the system can validate the necessary definitions required to set the work requirement status to Active, allowing it to be forecasted.
Start Date	The Start Date controls the first due date in the forecast, as well as its sequence of due dates into the future within the forecast horizon number of days window. When the first work order is created based off these dates, if you adjust the start date to another date in the past will not have any impact on your future forecast. The forecast will always stay on its original sequence based of the original Start Date. If you adjust the start date to a future value, then the work requirement will no longer be considered by the forecast. If you are using a cycle of intervals, then intervals that are due from the present to the future will be skipped when the forecast is regenerated. Therefore, it is generally recommended to End Date a requirement and create a new requirement to start again in the future. **Note:** If you wish to fundamentally change a forecast, then you will have to consider adjusting the forecast method or end dating and creating a new requirement. If Start Date adjustments were allowed in the past, then it would be difficult to understand future impacts and forecast history.
End Date	Date on which the work requirement becomes inactive. Once this date equals the application date, it is not recommended to change the date, else there will be inconsistency in the future forecast and its history.
Work Orders Created	Read-only indicator.
Affected Assets	Clicking the icon navigates you to the Affected Assets page for both an asset and item-based requirement. The page displays the list of assets applicable for the work requirement

Affected Assets Page

For each asset, the affected asset details can be updated. During implementation, testing, or introduction of a new work requirement or a new asset, add an asset only when you're ready to generate the first due forecast date that will be used to create a work order. Else the forecast may start generating, resulting in the skipping intervals of past due dates, which may not be desirable. You should consider using the options below to determine when a forecast starts for an asset and how the first due date will be calculated.

Also, if you include an asset, run a future forecast. Don't create work orders for due dates because you may get stale forecast due dates. This can happen during setup and testing prior to implementation or for an asset that isn't in service for a period. It's recommended to exclude an asset so that it doesn’t forecast or end date the work requirement while an asset is idle and not operating. Otherwise due dates that're forecasted generate sequential due dates that impact the future forecast and can’t be deleted. To handle these stale due dates, you can optionally skip their due dates or manually create work orders in the Maintenance Forecast page. However, it may be difficult to re-establish the desired cadence of a work requirement in some scenarios, requiring a new work requirement for the asset. You may have to complete the last work order in the past to re-sequence the next due date in some cases.

Include or Exclude Assets

You can include or exclude an asset at any time until the requirement end date is reached:

- If you exclude a previously included asset, then it will no longer be considered by the forecast. Any future forecast dates, without work orders, will be deleted the next time the forecast is regenerated. However, any existing future work orders and existing maintenance history will be maintained.
- If you include an asset for the first time, then it will be considered by the forecast. If you are using a cycle of intervals, it is recommended to define historical details in order to guide the first due date.
- If you include a previously excluded asset, then it will be considered by the forecast again as of the application date. If the asset has not had any work orders previously created for the requirement, then you can optionally define historical details. Note that during the time of exclusion, the forecast will be skipped, and the asset will most likely pick back up at a future interval. This could cause confusion to users.

For each asset row that has a green check mark, indicating included assets, these fields are editable if work orders haven't yet been created for an asset.

Historical Last Completed Date

- - During introduction of an asset, you can optionally enter in the last date for which similar maintenance was accomplished in the past. This date will be used along with the forecast method, forecast start date, Work Requirement start date, and optional Last Interval value to calculate the forecast sequence of due dates within the forecast window.
  - It is generally recommended to enter a date value that is aligned with the forecast method. Else, any forecast sequenced due dates that are in the past will not be displayed, as only the future sequences of due dates will be created. Therefore, care should be taken on how far back in time a date is defined. Ideally, the date would be before the last completed interval based on your forecast method.
  - For example, if you have a work requirement that is due every week or 7 days, then you would expect a date that is 7 or less days in the past. If you enter a date that is 21 days in the past, then the system will generate the first two due date sequences in the past and only the third due date sequence and later in the future will be created and available for work order creation.
  - If a value isn't entered, the forecast starts either on the consider Forecast start date or Work Requirement start date.

Historical Last Interval

- Only applicable if the work requirement is cycle-based with intervals. This is the interval at which you last completed maintenance as of the Last Completed Date. You must enter an interval if the Last Completed Date is defined for a cycle-based requirement.

Forecast Start (Date)

- You can optionally define a start date that's before, equal to, or later than the work requirement start date. If defined, it supersedes the work requirement start date. Remember that the start date determines when the forecast begins calculating and if the date is in the future, the forecast doesn't have any due dates before that date. If the Start date is defined along with the Last Completed Date, then the Last Completed date takes precedence and is used to anchor the start of the forecast and begin its calculations.

For each asset row that has a green check mark, these fields are editable at any time:

- Create Work Orders Option: By default, work orders are automatically created for a forecasted due date. However, if you wish to manually create work orders for each due date using the Maintenance Forecast page or REST API, you can set this option to Manually. If set to Manually, the scheduled process Generate Maintenance Work Orders won't consider these forecasted due dates and won't create work orders. It is recommended to leave the option at the default value of Automatically.

Generate a Forecast Region

In the Generate a Forecast region, you can edit the forecast method for the work requirement. Note that editing these fields will impact only the future due dates in which work orders are not created. Additionally, editing these fields could fundamentally change the cadence of the forecast, which would cause confusion to users if work orders have already been created in the past.

Field	Description
Forecast using a cycle	You can update this to change to and from a cycle of intervals. If changing from a cycle to a non-cycle forecast, then the work definitions will now merge on every due date. If changing from a non-cycle to a cycle forecast, then the work definitions will now need to be defined on which interval they are due, taking into consideration the merge or suppress options.
Number of Intervals per Cycle	You can adjust the number of intervals that occur during each cycle. This field is editable only if the Forecast using a cycle checkbox is selected. Changes to the intervals must also be reflected in the work definitions. Else, they may not match the updated number of intervals. You can only set a value greater than 1 to forecast using a cycle of intervals. To have a single repeating interval, deselect the Forecast using a cycle checkbox.
Next work order only	You can update this checkbox to control the behavior of the creation of work orders from the forecast. We recommend that if Day or Meter Intervals are used as the forecast method, you select the Next work order only checkbox. This includes setting the Method to Calculate Next Due to Last Completion. This allows a dynamic adjustment of future due dates within the forecast horizon based on previous work order completion and meter reading entry. Else, the forecast may not dynamically forecast taking into consideration the last completion of a work order for a maintenance program.
Basis for Next Forecast Due Date	You can update the forecast method options. However, if work orders have been created, it is not generally recommended unless the full impact of the change is understood. It is recommended to end date and create a new requirement if the forecast method fundamentally changes.
Forecast Window in Days	Optional value that represents the number of days into the future when the maintenance forecast is created for each asset in this work requirement. If not defined, then either the number of days value at the program header or the organization parameter is used. The lowest level of definition takes precedence. It is generally recommended to define a number of days value if the work requirement requires a forecast window that is longer in duration than the program header. Optionally, you can define for a shorter forecast window. For example, you may have a program header that is defined to forecast out 90 days, but you have work requirement that is due every 180 days. In that case, set a value at the requirement level of at least 180 days to view the due dates in the forecast for planning visibility.
Work Order Window in Days	Optional value that represents the number of days into the future when work orders for maintenance forecast is created for each asset due date this work requirement. If not defined, then either the number of days value at the program header or the organization parameter is used. The lowest level of definition takes precedence. It is generally recommended to only define a number of days value if the work requirement requires a work order window that is longer in duration than the program header. Optionally, you can define for a shorter work order window. For example, you may have a program header that is defined to create work orders out 45 days, but you have work requirement that is due every 180 days. Therefore, setting a value at the requirement level of at least 180 days is helpful to create work orders out into the future to support planning.

Field	Description
Concurrent Requirements	Displays the option defined at program level for forecast to handle the concurrent work requirements. The Merge and Suppress options default to each work requirement. Optionally, you can choose to override the option at the requirement level. **Note:** For calendar-based work requirements, if you don't wish to merge and suppress across work requirements, then it is recommended for an administrator to set the parameter, **Allow Suppress and Merge Across Work Requirements in a Maintenance Program** to No, on the Manage Asset Maintenance Parameters page located within the Setup and Maintenance work area.
Override for this requirement	This option lets you decide whether the concurrent requirements option given at the program level should be overridden and defined only within the work requirement. If selected, the work requirement is forecasted independent of other work requirements. Additionally, the selected suppress or merge option is applied to each work definition, as indicated by the Forecast To column in the To Perform This Work region. In previous versions, we recommended that you select the Override checkbox when using Calendar pattern-only work requirements if the same asset is defined across multiple work requirements in the same maintenance program. This prevents cross-requirement merge suppression of work definitions when their respective intervals intersect. In this version, you can decide if merge and suppress across work definitions is enabled by setting a parameter value. We recommend setting this parameter to No, thereby disabling this capability unless you have an established business requirement and fully understand its capability and limitations. Merge and suppress options, that support multiple work definitions across intervals in a cycle, are best modeled and forecasted within a single work requirement.
Create Work Orders Option	Option that controls if work orders are created Automatically (default) or Manually for a forecasted due date. Work Orders are automatically created for a forecasted due date. However, if you wish to manually create work orders for each due date using the Maintenance Forecast page or REST API, then you set this option to Manually. If set to Manually, the scheduled process Generate Maintenance Work Orders won't consider these forecasted due dates and doesn't create work orders. **Note:** It is recommended to leave the option at the default value of Automatically unless your business process will use the Maintenance Forecast page or REST API exclusively to create work orders for these due dates.
Work Order Status	Option that controls the status of the work orders created for a due date. You can select from the pre-defined values of Unreleased (default), Released or On-hold. Additionally, you can select customer-defined values that are created based on these pre-defined values.
Firm Work Orders	Option that controls if the work orders created for a due date are set as Firm = Yes (default) or Firm = No, which controls if they will be scheduled or not.
Work Order Priority	Optional field that sets the priority of the work orders created for a due date. Valid values must be positive whole numbers.

Based on a Recurring Pattern by Date Region

The details for generating the forecast, per the selected method, can be updated in this region. However, it is important to understand the impacts to the forecast:

Forecast Method	Field	Impact of updates
Calendar Pattern	Calendar Pattern	If you update the pattern, it will be used when the forecast is generated after the last work order in the future, if created. Make sure the pattern is update in relation to the forecast horizon in days value.
Day Interval	Base Interval in Days	If you update the number of days, it will be used when the forecast is generated after the last work order in the future, if created. Make sure the value is update in relation to the forecast horizon in days value.
	Method to Calculate Next Due	If you update this method, it will be considered for the last work order completion from the previous forecast before the update. Therefore, this method can only be used to recalculate the next due from this date.
Meter Interval	Meter Name	You can delete or update the attributes on an existing meter. Or you can add a new meter.
Meter Interval	Base Interval	If you update the base interval value, then it will be used when the forecast is generated after the last work order in the future, if available.
Meter Interval	Method to Calculate Next Due	If you update this method, it will be considered for the last work order completion from the previous forecast before the update. Therefore, this method can only be used to recalculate the next due from this date.
Condition Events	Event Code	You can add or delete codes at any time. There will only be impact if you use operation rules or external integrations to automatically create condition-based work orders .

To Perform This Work Region

In the To Perform This Work region, you can define work definition for the work requirement. Updates to the forecast cadence, method and its attributes will be reflected in this region.

If you change methods, then you will need to redefine which work definitions will be required. If you update the cycle or merge/suppress settings, then you will need to understand the impacts to when work definitions are due and if they are merged or suppressed.

Manage Work Requirements in Redwood

How You Create a Work Requirement in Redwood

Using the Redwood page, the work requirement header and its details are managed in different pages. Clicking the Create Requirement action from the Work Requirements tab will render the New Work Requirement page. On this page you will define the required fields for the requirement's header, select its parent program, type, and forecast method(s). Once successfully submitted for creation, you will navigate to the Work Requirement details page.

On the Work Requirement details page, you will further define the forecast method, work definitions, assets, and requirement options on each corresponding tab. This new user experience replaces the single page design of the existing page to improve usability. It is expected that the status of a requirement will remain in Draft until you define the method, work definition and assets. It will then move to a status of Ready to Forecast, allowing you to optionally generate a forecast preview. Finally, you will promote a requirement to an Active status.

Comparison of the Existing and Redwood Pages

User Step	Existing Page	Redwood Page
View and Manage Work Requirements for a Program	Navigate to the Manage Maintenance Programs page: • Search for the Program. • Click the Program link to edit it. • Navigate to the Program Details page. • Click the Work Requirements tab. • Search for the Requirement. • Click the requirement link to navigate to the create/edit page.	Navigate to the Maintenance Programs Work Requirements tab. • Search for the Requirement. • Click the requirement link to navi Requirement details page.
Create a Work Requirement for a Program	Navigate to the Manage Maintenance Programs page: • Search for the Program. • Click the Program link to edit it. • Navigate to the Program Details page. • Click the Work Requirements tab. • Click the Add Requirement. • Navigate to a Create/Edit page, define the minimum details, and click Save. The requirement will be saved in Draft status. You can optionally continue to define details on this page or return to the work Requirement list.	Navigate to the Maintenance Programs Work Requirements tab. • Click the Create Requirements bu • Navigate to a Create/Edit page, d and click Save. The requirement will be saved in Draft navigate to the Edit Details page. You can optionally continue to define return to the Work Requirement search
Define Work Requirement header details	On the Create or Edit Work Requirement page, define the key details for the requirement: • Name, Reference, and Start date. • Select the Type (asset, item, or asset route). • Based on the selected type, select the applicable Asset, Item or Asset Route Hierarchy • Click Save The requirement is saved in the Draft status.	On the Create or Edit Work Requiremer key details for the requirement: • Name, Reference, and Start date. • Define the *Program Details* by sel Organization. • Define the *Modeling Details* by se Type (asset, item, mixed asset, or • Based on the selected type, selec Route Hierarchy (Mixed assets ar process) • Select the Forecast Method(s) (Ca Condition Event) • Click Save The requirement is saved in the Draft s

User Step	Existing Page	Redwood Page
Define Work Requirement Forecast Method(s)	On the Create/Edit Work Requirement page, in the Generate a Forecast region: • Select the Forecast Method(s) (Calendar, Day, Meter and/or Condition Event) Then, for each forecast method, define its details in the *Based on a Recurring Pattern by Date* region: • Day: Set the number of days and next due option. • Calendar: Select the calendar pattern. • Meter: Select the meter, due at value and next due option. • Condition Event: Select one or more condition events.	On the Edit Work Requirement details tab. Keep in mind that you have alread Method(s) when creating the requirem For each selected forecast method, de • Day – set the number of days and • Calendar – select the calendar pa • Meter – select the meter, due at v • Condition Event – select one or m
Define Cycle Option and Work Definitions	On the Create or Edit Work Requirement page, in the Generate a Forecast region: • Define if the forecast will use a cycle of intervals or not and select the forecast methods(s). • Verify and update merge and suppress options. Then, define the work definition(s) in the To Perform This Work region: • Add one or more work definitions. • If cycle-based, set the due at interval and repeats flag option. • Verify the merge and suppress across intervals, if defined.	Click on the Work Definition tab: • Define if the forecast will use a cy select the forecast methods(s). • Verify and update merge and sup Then, define the work definition(s): • Add one or more work definitions • If cycle-based, set the due at inte Click the Preview Work Sequence actio defined: • Verify the merge and suppress ac
Define Asset and Initialization Options	Confirm the assets and initialization options by clicking the Affected Assets icon, navigating you to the Affected Assets page: • For each row, confirm the included assets. • Include or exclude Assets for item-based requirements. Review each asset's initialization options: • Optionally define historical last accomplished date/interval and future start date • Update the work order creation method, automatic or manually. Optionally Generate a Forecast: • Generate for a single asset. • Generate for all included assets in the Work Requirement.	Click on the Asset tab: • For each row, confirm the include • Include or exclude Assets for item Review each asset's initialization optio • Optionally define historical last a and future start date • Update the work order creation m manually. • Update its forecast status to remo planning. Optionally Generate a Forecast: • Generate for a single asset. • Generate for all included assets i
Define Work Requirement Forecast and Work Order details	On the Create or Edit Work Requirement page, in the Generate a Forecast region: • Optionally set forecast options	Click on the Options tab: • Optionally set forecast options • Optionally set work order creatio

User Step	Existing Page	Redwood Page
	• Optionally set work order creation options	
Generate and verify a Forecast preview	Click the Calendar or Gantt chart tabs. Here, you can review the forecast due dates for the requirement and assets, but only for an active forecast. You can optionally update the modeling criteria, re-forecast and view the results.	Click the Forecast tab: Here, you can review the forecast lines the requirement and assets, including forecast dates. You can optionally update the modelin view the results.
Release a requirement to planning	Not available in this page. An Active status requirement is already in planning.	Once you have verified your modeling can optionally release the requirement This will update the requirement status Active.

Work Requirement Header

Use the New Work Requirement page to define the key details to create a new Work Requirement. Once submitted for creation, you will navigate to the requirement details page.

Fields You Select When You Create Work Requirements

Field	Description
Name	Name of the work requirement. The name must be unique across all maintenance programs, regardless of maintenance organization.
Requirement Reference	Optional reference for a work requirement. For example, an OEM repair manual reference or a subscription line unique identifier.
Start Date	Date on which the work requirement becomes active. Forecasted due dates begin on this date and into the future. This value is required. The Start Date is used to determine when a work requirement is considered by the forecast program and will begin calculating from this date into the future. This date can be in the past, present or in the future and will control the first due date in the forecast, as well as its sequence of due dates into the future within the forecast horizon number of days window. Note: Setting the Start Date to the current date will begin forecasting on the next day in most cases. If the Start Date set to a value in the past, then the forecast will be calculated from that point in time based on the forecast method, generating the sequence of forecasted due dates. Care should be taken when defining a past date, as the forecast may include one or more overdue due dates, based on the interval period. Therefore, it is generally not recommended to set a past date that exceeds the next due interval, but to set the current date as the start date.

Field	Description
	The Start Date is optionally superseded in the forecast calculations by defining a Historical Start Date, Interval if applicable, and a Forecast Start Date in the Affected Assets page. This allows the forecast program to more accurately calculate the first due date based off asset's maintenance history. For an item-based work requirement, it is recommended that you set a Forecast Start Date at the asset level, if the requirement's start date is far into the past, as mentioned above. Else, the system will back calculate multiple due intervals and may produce overdue dates. If set to a date in the future, then the work requirement will not be considered by the forecast program until this date. As of this date, or the next time in the future in which the forecast is regenerated, the due dates will be created within the horizon time frame into the future. During setup and confirmation of your work requirement model, you can adjust the start date and regenerate the forecast. This will provide the ability to confirm the forecast method and most importantly confirm the first due date in the future in which you expect a work order to be created. When the first work order is created based off these dates, if you adjust the start date to another date in the past will not have any impact on your future forecast. The forecast will always stay on its original sequence based of the original Start Date. If you adjust the start date to a future value, then the work requirement will no longer be considered by the forecast. If you are using a cycle of intervals, then intervals that are due from the present to the future will be skipped when the forecast is regenerated. Therefore, it is generally recommended to End Date a requirement and create a new requirement to start again in the future. **Note** When using a calendar pattern and cycle of intervals, if the Start Date falls on the first iteration in the future of the calendar pattern, then it's considered as interval 1 of the cycle. However, for a day or meter-based forecast, interval 1 is calculated as due from the start date.
End Date	Date on which the work requirement becomes inactive. The work requirement will no longer be considered by the forecast program as of this date. The date is optional and should only be set to end date a work requirement.
Organization	Maintenance organization of the program in which you will create the requirement. Selecting a value is required and will filter the list of programs. Its value is set to your default organization but can be updated.
Program	Maintenance program name, required. The list is filtered by the selected Organization.
Program Code	Maintenance program code that is defaulted as read-only from the selected Program.
Program Description	Maintenance program description that is defaulted as read-only from the selected Program.
Allow assets from other organizations	Maintenance program option that is defaulted as read-only from the selected Program.
Type	Type of the work requirement, required. The valid values are Asset, Item, Mixed Asset or Asset Route.
Asset	If the selected work requirement type is Asset, you will select the Asset that will be forecasted by the work requirement. The Asset list of values will be governed by the maintenance program's organization and if it is enabled for assets across organizations or not. Note

Field	Description
	The forecast and resulting preventative maintenance work orders is always for the selected asset and doesn't apply to any parent or child assets in a physical hierarchy
Asset Description	Description of the asset that is defaulted as read-only from the selected Asset.
Asset Serial Number	Serial number of the asset that is defaulted as read-only from the selected Asset.
Operating Organization	Operating organization of the asset that is defaulted as read-only from the selected Asset.
Asset Route Name	If the selected work requirement type is Asset Route, this is the name of Asset Logical Hierarchy that is enabled as an Asset Route and is active. **Note:** The forecast and resulting preventative maintenance work orders is always for the selected asset and doesn't apply to any parent or child assets in a physical hierarchy.
Asset Route Description	Description of the asset route that is defaulted as read-only from the selected Asset Route.
Asset	Asset Route Asset that is defaulted as read-only from the selected Asset Route. This is the Asset that will be forecasted by the work requirement.
Asset Description	Description of the asset that is defaulted as read-only from the selected Asset Route.
Asset Serial Number	Serial number of the asset that is defaulted as read-only from the selected Asset Route.
Operating Organization	Operating organization of the asset that is defaulted as read-only from the selected Asset Route.
Item Number	If the selected work requirement type is Item, this is the name of item that will be used to generate the list of affected assets that will be forecasted by the work requirement.
Item Description	Description of the item that is defaulted as read-only from the selected Item.
Include Assets	You must select if the Affected Assets will be Automatically or Manually included. The Default value is Automatically. **Note:** You can only update this value if assets have not been explicitly included or excluded. If you have defined initialization details, changing the method will delete them.
Calendar	Option to indicate whether a forecast is to be created based on a calendar pattern for both cycle and non-cycle based work requirements. If selected, you can optionally also select meter and a condition event; you can't select a day. You must select at least one method to create a work requirement.
Day	Option to indicate whether a forecast is to be created based on a number of days interval for both cycle and non-cycle based work requirements. If selected, you can optionally also select meter and/or condition event. However, you can't select calendar.

Field	Description
Meter	Option to indicate whether a forecast is to be created based on a meter interval for both cycle and non-cycle based work requirements.
Condition Event	Option to indicate if work orders can be created based on a condition event for non-cycle based work requirements. This check box is displayed only if the Forecast using a cycle check box is deselected, as condition event-only work requirements aren't forecasted. **Note:** It is recommended to only select this option if you are using the special action to create condition-based work orders, or you are using Connected Assets.

How You Edit a Work Requirement in Redwood

The Work Requirement header, as well as its details, can only be edited if the requirement is in Draft or Ready to Forecast status. While the requirement is in Active status, you can only edit the affected assets tab in the Work Requirement details.

To edit an existing Work Requirement header that's in Draft or Ready to Forecast status, click its hyperlink from the search results, navigating you to the Work Requirement details page. Then, select the action Edit Header at the top of the page, navigating you to the header page in the edit mode.

On this page, you can edit all the attributes, except the Program.

If you update the type or forecast method, you will need to further update work requirement details. Additionally, any changes will require that you generate a new forecast after the changes.

To edit an existing Work Requirement detail that's in Draft or Ready to Forecast status, click its hyperlink from the search results, navigating you to the Work Requirement details page.

For further editing, change the requirement status from planning in Active status back to Ready to Forecast status. The application automatically regenerates the forecast, so you can view the updated results in the Forecast tab:

- The status of due dates in the past or present isn't updated.
- Due dates in the future are updated from Active to Ready to Forecast status if they don't have a work order or have been skipped.

You should only change the status if you need to make significant changes to its modeling or to resolve a forecasting issue. Here are some considerations:

- If edits are made in a timely manner and the requirement or asset is promoted back to planning before any due dates occur in the past, then there shouldn't be any impact. The application automatically regenerates the forecast, so you can view the results in the Manage Forecasts page.
- If edits aren't made on time, you can't promote the requirement or asset back to planning, then due dates in the past may or may not be generated. This could result in gaps in the forecast, skipping intervals or incorrect due dates calculations.

Note: Care should be taken when editing the Modeling details region, as updating the type, and forecast methods may fundamentally change your requirement context and forecast. After editing, it is recommended to generate the forecast to verify the changes. Once satisfied, promote the requirement to planning.

How You Define and Edit Work Requirement Details in Redwood

After the requirement header is created, you will navigate to the details page. For an existing requirement, clicking the hyperlink on a search result row will also navigate you to this page. On this page, the header lists the key details of the requirement, including its status and parent program

Additionally, you will see these tabs:

- Pattern
- Work Definition
- Asset
- Options

Requirement Status

If a header is defined, you see a requirement status of Draft. Navigate to each tab to further define the forecast method, affected assets, and work definition(s) that are required to forecast the requirement. Once defined, it is expected that the requirement's status will automatically move to Ready to Forecast. At any time, if any of the minimum criteria are deleted, the status may return to Draft.

Promote to Planning

Once you have verified the forecast preview and are ready to promote the requirement to planning, click the Release to Planning action, moving the status from Ready to Forecast to Active. The system will automatically regenerate the forecast, allowing you to view the results in the Forecast Tab, as well as Manage Forecasts page.

It is generally recommended to promote a requirement to planning immediately after confirming the forecast modeling, initialization options and forecast preview. Delay in promoting a requirement may result in due dates being stuck in the past, skipped for promotion, or skipped for work order creation as they would be calculated as being due in the past.

It is only recommended to leave a work requirement or asset in a Ready to Forecast status if:

- The requirement start date is in the future, or the first due dates are far into the future.
- You are still defining or validating the forecast method and initialization options.
- You are waiting on assets to be created and added to the requirement.
- An existing asset is not ready to be maintained yet, with due dates expected in the future.

  Note: Due Dates in the past that are in a Ready to Forecast status won't be promoted to Active status if you don't promote the requirement before their due date.

Revert to Ready to Forecast

A requirement, as well as an affected asset, can be reverted from planning in Active status and returned to Ready to Forecast status. The system will automatically regenerate the forecast, allowing you to view the results in the Forecast Tab:

- Due Dates in the past or present will not have their status updated.

- Due Dates in the future will be updated from Active to a Ready to Forecast status if they do not have a work order or have been skipped.

You should only revert it if you need to make significant changes to its modeling or to resolve a forecasting issue. Here are some considerations:

- If edits are made in a timely manner and the requirement or asset is promoted back to planning before any due dates occur in the past, then there should not be any impact. The system will automatically regenerate the forecast, allowing you to view the results in the Manage Forecasts page.
- If edits aren't made on time, you can't promote the requirement or asset back to planning, then due dates in the past may or may not be generated, which could result in gaps in the forecast, skipping intervals or incorrect due dates calculations.

Pattern Tab

The pattern tab is used to further define the selected forecast methods. You must define at least one method here, based on your selection in the header, in order to generate a forecast:

Method	Action Required	Options
Calendar	You must select a calendar pattern if this method was selected in the header, else you will not see this region. You can choose from a globally defined pattern, or one created specifically for the parent program. Optionally, you can create a new pattern by clicking the Create Pattern action.	If you also select a Meter method, they will compete on ea **Note:** Calendar patterns don't consider a Method to Ca Therefore, the actual completion date of a work order is the next due date of the forecast.
Day	You must enter in number of days between due dates if this method was selected in the header, else you will not see this region.	Select if the Method to Calculate Next Due will be based or Completion. • The default value is Base Interval, which keeps the for original start date of the work requirement, regardles accomplished. • If the value is set to Last completion, the next due wo on the previous work order's actual completion date. forecast for the next due and subsequent due dates i It's generally recommended to use the Last Completion op Work Order Only parameter set to Yes on the Options tab, latest work order is completed and forecast dates are recal work order.
Meter	You must define at least one meter if this method was selected in the header, else you will not see this region.	For an asset or asset-route based requirement, you can ad meters comes from the asset and only those that are activ programs can be selected. For an item or mixed assets requirement, the list of meters active and enabled for maintenance programs.

Method	Action Required	Options
		Select if the Method to Calculate Next Due will be based or Completion. • The default value is Base Interval, which keeps the for original start date of the work requirement, regardles accomplished. • If the value is set to Last completion, the next due wo on the previous work order's actual completion date. forecast for the next due and subsequent due dates i It's generally recommended to use the Last Completion op Work Order Only parameter set to Yes on the Options tab, latest work order is completed and forecast dates are recal work order.
Condition Event	You must define at least one condition event code if this method was selected in the header, else you will not see this region.	Any active condition event code, as of the current date, car Note: It is recommended to only select this option if you ar condition-based work orders, or you are using Connected duplicate rows with the same event code, else multiple wor

Note: You can update forecast methods for a requirement at any time. However, care should be taken, especially if work orders are already created. In this case, it is generally recommended to end date and create a new requirement if the forecast method changes. If work orders have not been created, then after updating an existing or changing to a new method, you must recreate the forecast preview to view the changes, prior to releasing to planning.

Work Definition Tab

The work definition tab is used to define what work and how often it will be performed on a forecasted interval and due date. At least one work definition must be active for a requirement to be forecasted and work orders to be created. If you define a single work definition, it will be used to create a work order on each due date. If you define more than one work definition, they will either merge or suppress on each due date and interval. Additional details about merge and suppress are covered in the section How You Model the Merging and Suppressing of Work Definitions.

Work Definition Options

The top region of the tab will allow you to determine when the forecast will start, how it will use a cycle or intervals or not, and how multiple work definitions will interact with each other on each interval.

Field	Options
Start Date	This is the work requirement start date from the header. You can optionally update the value here, as the forecast will begin from this date. Optionally, for an item or mixed assets requirement, you can define a Forecast Start Date for each Asset using the Asset Tab's Initialize Forecast action. If defined, that date will be used as the start date for forecasting the individual asset. Additional details are covered in the sections for the Asset tab and Manage Forecast.

Field	Options
	Note: Care should be taken when setting a date at the asset level. It is generally recommended for introducing new assets after a requirement is created and forecasted, allowing for the initialization of an individual asset's forecast.
Forecast using a cycle	Option to define whether the work requirement is to be forecasted based on the intervals in a cycle or not. By default, this is set to No. Therefore, the forecast will just repeat based on the forecast method and each work definition will be due. This is the equivalent of repeating on a cycle of one interval. If set to Yes, you must define the number of intervals in a cycle, using a value greater than one. Additionally, you should review the current requirement options of suppress and merge to determine how they interact on overlapping intervals.
Number of Intervals per Cycle	Number of intervals that occur during each cycle. This field is required if the Forecast using a cycle option is set to Yes. You can use intervals to define which work definitions fall on an interval and if they merge or suppress when more than one definition falls on the same interval. Intervals can also be helpful, along with the forecast method, to generate a forecast that falls on certain periods. You can only set a value greater than one1 to forecast using a cycle of intervals. To have a single repeating interval, set the Forecast using a cycle option to No.
Program concurrent Work Requirements	Displays the option defined at program level to handle scenarios where one or more work requirements are due on the same interval.
Override Program setting for concurrent requirements	Option to define whether the concurrent requirements option defined at program level is to be overridden and defined only within the work requirement. By default, a newly created requirement will have this option set to Yes. Merge and suppress options, that support multiple work definitions across intervals in a cycle, are best modeled and forecasted within a single work requirement. If set to Yes, the work requirement is forecasted independently of other work requirements. Additionally, the selected suppress or merge option is applied to each work definition on each interval. If set to No, the work requirement will use the Program level options. Additionally, the merge and suppress across work definitions is enabled globally by setting the asset maintenance parameter, **Allow Suppress and Merge across Work Requirements in a Maintenance Program**. We recommend setting this parameter to No, thereby disabling this capability unless you have an established business requirement and fully understand its capability and limitations. If this parameter set to No, then the override isn't needed, but it will not impact anything if the option is set = Yes in this page.
If Work Definitions are concurrent	This field is required if the Override Program setting for concurrent requirements option is set to Yes. The valid values are Suppress and Merge:

Field	Options
	Suppress: This option is only applicable if you have a cycle of intervals. If set, then the work requirement with the highest cycle interval is included when creating the forecast and work order. In other words, the work requirement with a lower cycle interval is suppressed by a work requirement with a higher cycle interval. **Merge**: This option is available for both cycle options. If there is not a cycle of intervals, then by default all work definitions must merge. However, for a cycle of intervals, you can optionally select this option.

List of Work Definitions

The bottom region is used to include on or more work definitions and which interval they are due, if on a cycle of intervals. The latest version of the work definition is selected when a row is defined. However, when a work order is created, the system will always pick the latest version for the corresponding due date.

> **Note:** Work Definitions must be setup in the contextual Organization of the parent Program. If the Program is enabled for assets across organizations, then you must setup matching Work Definitions, using the same Name, in each Organization where work orders will be created from forecasted due dates.

To add a work definition, click the Add Work Definition button and select from or enter values in the following fields.

Field	Description
Name	Name of the work definition. The latest version as of the current date will be used.
Code	Unique code of the work definition, this value is read only.
Description	Description of the work definition, this value is read only.
Due at Cycle Interval	Interval in the cycle of intervals on which the work definition is due. This field is only displayed and editable if you are using a cycle of intervals. Else, the field is not viewable. This value must be greater or equal to 1 and lesser or equal to the total number of intervals defined within the cycle. If more than one work definition is defined on the same interval in a cycle, then the merge and suppress options will apply from the top region.
Repeats in Cycle	Option to indicate that work definition repeats on each iteration of the cycle interval over the life of the cycle. This field is only displayed and editable if you are using a cycle of intervals. Else, the field is not viewable. If set to Yes, then only ever increment of the interval over the cycle it will be due. For example, if you have a cycle of 12 intervals, here's how this indicator works:

<table>
<tr><th>Field</th><th>Description</th></tr>
<tr><td></td><td>
<table>
<tr><th>Number of Intervals</th><th>Due at Cycle Interval</th><th>Repeats in Cycle</th><th>Outcome</th></tr>
<tr><td>12</td><td>1</td><td>No</td><td>Due only on Interval 1</td></tr>
<tr><td>12</td><td>1</td><td>Yes</td><td>Due on all intervals, 1</td></tr>
<tr><td>12</td><td>3</td><td>No</td><td>Due only on Interval 3</td></tr>
<tr><td>12</td><td>3</td><td>Yes</td><td>Due on intervals 3, 6,</td></tr>
<tr><td>12</td><td>6</td><td>No</td><td>Due only on Interval 6</td></tr>
<tr><td>12</td><td>6</td><td>Yes</td><td>Due on intervals 6 an</td></tr>
<tr><td>12</td><td>12</td><td>Yes or No</td><td>Due only on Interval 1</td></tr>
</table>
</td></tr>
<tr><td>Edit</td><td>Let's you edit a work definition row if it isn't disabled and if the work requirement status is Draft or Ready to Forecast.</td></tr>
<tr><td>Edit</td><td>Let's you delete a work definition row if it isn't disabled, if the work requirement status is Draft or Ready to Forecast, and no work orders have been created. If work orders have been created, you can only Disable a work definition.</td></tr>
<tr><td>Disable</td><td>Let's you disable a work definition row if the work requirement status is Draft or Ready to Forecast, and work orders have been created. Disabling will no longer consider the work definition in future forecast dates.</td></tr>
<tr><td>Enable</td><td>Let's you enable a disabled work definition row if the work requirement status is Draft or Ready to Forecast.</td></tr>
</table>

Work Definition Merge and Suppress Verification Using the Redwood Page

From the Work Definitions tab, you can review if the work requirement uses a cycle of intervals or not, as well as manage the list of applicable work definitions.

If the requirement is enabled for cycles, you may want to understand at which intervals the work definition is due over a cycle. Additionally, if you have more than work definition, you may want to understand at which intervals the work definition is due, as well as the outcome of merge and suppress rules.

Verify the outcome of the merge and suppress options by generating a preview forecast and verify the results in the Forecast tab. The suppressed column in the forecast results tab will indicate if a work definition is suppressed or not, meaning it is due and is merged, on an interval.

Assets Tab

The Asset tab is used to manage the affected asset(s) for the work requirement. For an asset or asset-route based requirement, there's a single row; but for an item-based requirement, there's a list of every asset based on that item for an organization that's maintainable. For a mixed asset requirement, you will add and remove assets from the list.

For each asset, this page lists:

- Asset details, including its description, serial number and operating and maintenance organizations.
- Indication of its ability to create work orders or not, from the asset definition.
- Work Order Creation option that defaults from the work requirement, but you can update it here.
- Indication if work orders have been created by this work requirement or not. This controls if an asset can be initialized in the forecast or not.
- Asset status that tells if it is included or excluded from the affected assets list.
- Forecast status that tells you if the asset will be forecasted or not. This applies only to included assets, as excluded assets are not considered by the forecast. Additional details are covered in the Initialize Forecast section below.
- Indication if an initialization option defined or not, such as a historical last completed date.

Each asset will display both an operating and maintenance organization. If the asset operates in a maintenance organization, as defined in the asset definition, then the forecast for the asset will always be created as due in the same organization. There is not any capability to override and select a different organization in the requirement and organizational relationships between maintenance organizations have no impact. If an asset operates in a non-maintenance organization, such as a manufacturing or other inventory organization, then by default it will be forecasted and have work orders created in the parent program's organization, unless a primary organization relationship is defined.

Item-based Requirement

For an item-based requirement, if the Include Assets attribute is set to Automatically include assets, then rendering the Assets tab shows each asset as implicitly included in the forecast with a status shown Included. Alternatively, if you select the option Manually include assets, then each asset is implicitly excluded in the forecast with a status shown Excluded.

It's important to set the Include Assets option correctly during the initial creation of the requirement header and before assets are explicitly included or excluded, and before Asset initialization options are defined. Else, if you change the option afterwards, any explicit exclusion or inclusion of assets, along with initialization options, are reversed and deleted.

The Automatically include assets option should be used when you expect most or all the assets for an item to be forecasted in the same work requirement. This also means that any new asset that's created is also implicitly Included and considered by the forecast. You can then explicitly Exclude only certain assets from the affected list of assets. The Exclude All option is available but should be used with caution. The Include All option is also available and is typically used to reverse all the previously explicitly excluded assets. This means the assets will return to being implicitly included. If you want to exclude all the assets and start from scratch by explicitly including only certain assets, it's a better practice to change the Include Assets option to Manually include assets.

The Manually include assets option should be used if you want to explicitly define which assets are included in the forecast. This means that the work requirement doesn't consider any of the assets based on that item by default, as they're each implicitly excluded. You can see the list of assets on the affected items page and each asset has a status of Excluded by default. You can explicitly include the assets that you want to forecast by selecting one or more rows and clicking the Include action button, as the status will change to Included. For assets that were previously included, you can choose to exclude them by clicking the Exclude action button, and their status turns gray again. This means the asset returns to being implicitly excluded. You can also use the Include All and Exclude All action buttons. If you want to include all the assets and start from scratch by explicitly excluding only certain assets, it's a better practice to change the Include Assets option to Automatically include assets.

Mixed Assets Requirement

For this option, you must manually include assets by searching and adding them one at the time. Remember, there is not any validation against an item, so you can search, select, and add any asset enabled for work orders and maintenance programs, depending on the parent Program's option for assets across organizations. For a parent program that is not defined for assets across organizations, you will only be able to select active assets in its contextual organization.

You can also remove an Asset by using the Exclude action. This will delete it from the affected assets list, along with any initialization options that may have been defined.

Initialize Forecast for an Asset

You can optionally define how an included asset will be forecasted, and work orders created, by selecting an asset and clicking the action, rendering the Initialize Forecast drawer. The drawer has these options:

- Optionally define how the first due date will be calculated for each asset. It is highly recommended during the initial implementation of a work requirement, as well as the introduction of new affected assets in the future, to initialize an asset's first due date by setting these values. Additional details are covered in the section *How You Manage Maintenance Forecasts*:
  - Historical Last Completed Date: Enter the last date the work definition(s) were accomplished in an external application or legacy system. The date must be before the current date.
  - Historical Last Interval: If the work requirement is cycle-based with intervals, then enter the interval at which you last completed maintenance on the Last Completed Date.
  - Forecast Start Date: You can optionally enter a date if you wish for the forecast to begin on a date in the future. If not set, then the system will use the requirement start date. It is recommended that you only set a date in the future, greater than the current date.
- Optionally update how work orders are created for a forecast due date. By default, assets will inherit the *Work Order Creation* option from the work requirement header. On this drawer, you can optionally update the value:
  - Work Orders are *Automatically* created for a forecasted due date.
  - However, if you wish to manually create work orders for each due date using the Maintenance Forecast page or special action in the REST API, then you can set this option to *Manually*. If set to *Manually*, the Generate Maintenance Work Orders scheduled process ignores the forecasted due dates and work orders aren't created.
- Optionally update an asset's Forecast Status, overriding the requirement status. The values are:
  - Active – asset will be considered in preview and planning forecasts.
  - Ready to Forecast - asset will be considered only in preview forecasts. It is still included in the work requirement but will only be forecasted for preview.
  - Draft – asset will never be forecasted. It is still included in the work requirement but won't be forecasted

Forecast Status

Each result row will display the *Forecast Status*, which is based off both the requirement and asset's individual forecast status. For an asset or asset route-based work requirement, this status is inherited from the work requirement and it not updatable here. For an item or mixed asset-based requirement, the status is inherited from the work requirement, but you can optionally override its value at the asset level.

When generating the forecast for the requirement, the system will first look at the requirement's status:

- Ready to Forecast: All forecast rows will initially be set to a status of Ready to Forecast. These forecast lines can only be viewed on the Forecast tab and will not be seen in the Manage Forecasts page, as the dates will not be available for work order creation. This capability allows you to finetune your modeling, reforecast as many times as are needed to confirm your criteria. Once you are satisfied, you can release the requirement it to planning, regenerate the forecast and the forecast rows will move to the status of Active.

- Active: Forecast rows with a status of Active means they can be viewed not only in the Forecast tab, but also in the Manage Forecasts page and will be available for work order creation

If you initialize the forecast for an asset, then its status may be different that other assets in the forecast rows. This allows you to prohibit an asset from any forecast or keep it in a status of Ready to Forecast until it is ready to Release to Planning. In general, you should only override the requirement's status at the asset level for certain scenarios, as recommended below.

Note: An included asset will be overridden by the forecast status when generating a forecast.

Common scenarios and recommendations to override an asset's forecast status:

Work Requirement Status	Asset Status	Update To	Recomm
Draft	Active, by default	Draft if you don't wish for the asset to be considered in either forecast once the requirement status is promoted. Ready to Forecast if you only want the asset to be considered only in the forecast preview.	It is reco at this p exclude
Ready to Forecast	Active, by default	Draft if you want to remove it from the forecast preview and not consider it in either forecast once the requirement status is promoted. Ready to Forecast if you have verified the forecast preview but are not ready to release the asset to planning.	It is reco unless y planning
Active	Ready to Forecast	Draft if you want to remove it from the forecast preview and not consider it in either forecast once the requirement status is promoted. Active if you wish to promote it to the planning forecast.	You can status if but are planning One pro the fore Forecast page.
Active	Active, by default	Draft if you want to remove it from all forecasting. Ready to Forecast if you wish to remove it from the planning forecast.	It is reco unless y planning they do forecast

Options Tab

The options tab allows you to view and adjust work order and forecast options. For a work order, these fields can be optionally set and edited. For the Generate Work Orders program, give these details:

Field	Description
Create Work Orders Option	Option that controls if work orders are created **Automatically** default or Manually for a forecasted due date. Work Orders are automatically created for a forecasted due date. However, if you wish to manually create work orders for each due date using the Maintenance Forecast page or the special action in the REST API, then you can set this option to Manually. If set to Manually, the Generate Maintenance Work Orders scheduled process ignores the forecasted due dates and work orders aren't created. **Note:** It's recommended to leave the option at the default value of Automatically unless your business process uses the Maintenance Forecast page or REST API exclusively to create work orders for these due dates.
Work Order Status	Option that controls the status of the work orders created for a due date. You can select from the predefined values: **Unreleased** (default), Released, or On-hold. You can also select customer-defined values that are created based on these predefined system status values.
Firm Work Orders	Option that controls if the work orders created for a due date are set as Yes or **No** (default) for Firm, which controls if they're scheduled or not respectively.
Work Order Priority	Optional field that sets the priority of the work orders created for a due date. Valid values are positive whole numbers. No default priority is defined.
Next work order only	Option that controls the behavior of the creation of work orders from the forecast. By default, the value is set to **No**. This means that work orders are created for forecasted due dates within the work order creation window that's defined for the organization. When you set the option to **Yes**, work orders are only created for the next due date in the forecast. When the open work order is completed, a new work order is created for the next forecasted due date. We recommend you schedule the Generate Maintenance Work Orders scheduled process daily to create new work orders. We recommend that if Day or Meter Intervals are used as the forecast method, you select the Next work order option to Yes. This includes setting the Method to Calculate Next Due to **Last Completion**. This allows a dynamic adjustment of future due dates within the forecast horizon based on previous work order completion and meter reading entry. Else, the forecast may not dynamically forecast taking into consideration the last completion of a work order for a maintenance program. If you regularly have work orders that aren't completed before the next forecasted due date, enable the capability to adjust future due dates in the forecast based on either the scheduled or actual completion date of the last open work order in history, along with the latest meter reading. See the How You Manage Maintenance Forecasts section to learn more.

For the forecast, these fields can be optional set and edited. They will be considered by the Generate Forecast program:

Field	Description
Forecast Window in Days	Optional value that represents the number of days into the future the maintenance forecast is created for each asset in this work requirement. If not defined, then either the number of days value at the program header or the organization parameter will be used. The lowest level of definition takes precedence. It is generally recommended to only define a number of days value if the work requirement requires a forecast window that is longer in duration than the program header. Optionally, you can define for a shorter forecast window. For example, you may have a program header that is defined to forecast out 90 days, but you have work requirement that is due every 180 days. Therefore, setting a value at the requirement level of at least 180 days is helpful to view the due dates in the forecast for planning visibility.
Work Order Window in Days	Optional value that represents the number of days into the future that work orders for maintenance forecast are created for each asset in this work requirement. If not defined, then either the number of days value at the program header or the organization parameter is used. The lowest level of definition takes precedence. It is generally recommended to only define a number of days value if the work requirement requires a work order window that is longer in duration than the program header. Optionally, you can define for a shorter work order window. For example, you may have a program header that is defined to create work orders out 45 days, but you have work requirement that is due every 180 days. Therefore, setting a value at the requirement level of at least 180 days is helpful to create work orders out into the future to support planning.

Forecast Tab

The Forecast tab allows you to preview the forecast and validate your forecast method, as well as each asset's initialization options. Prior to promoting the requirement to planning, while in the status of Ready to Forecast, you can generate a forecast preview. Once the requirement is promoted to planning, you can also view the active forecast as well, or a mix of preview and active results rows by asset.

While initially displaying only results for the contextual work requirement, this tab will return results across programs and work requirements, allowing you to perform an impact analysis on existing PMs for the asset. Additional details around validating the forecast are covered in the section How You Manage Maintenance Forecasts.

Search and Filter

Use the keyword search to search by Work Requirement name, Asset Number or Asset Description. Upon entering the tab, the initial results will be rendered for the work requirement in context. These filters are also available to further refine your results:

- Organization
- Forecast Status
- Due Date

- Asset Number
- Asset Description
- Suppressed
- Item Number
- Item Description
- Forecast Location
- Program

Additionally, you can manage which columns are displayed during your session to further enhance visibility.

Results Rows

The results rows are a little different than the Maintenance Forecast page, as they will display details for each individual forecast line for a work definition, when it is due on an interval, and how it interacts with other work definitions, if defined. The results rows show these key columns.

- Work Requirement
- Asset
- Asset Description
- Serial Number
- Forecast Location
- Work Definition
- Version
- Forecast Sequence
- Interval
- Due Date
- Forecast Status
- Suppressed Yes/No
- Last Forecast Date

This level of detail, previously only available in OTBI reporting, allows you to understand the outcome of your modeling, merge and suppress options and work definition repetition more clearly over each interval in the forecast window. You can also export the search results by clicking the export action icon. The downloaded excel file contains all the forecast line details. For each row, scrolling right will display all the additional forecast line details. This includes details about the forecast method, including these fields:

- Calendar Pattern: Used to calculate the due date.
- Day Interval: Number of days between intervals.
- Meter Name: If more than one meter is defined, rows will display for each meter.
- Meter Interval: Base utilization interval for calculating the due date.
- Meter Utilization Rate: Value at the time of forecast creation, used with the Meter Interval for calculating the due date. Will either be the Daily Utilization or Calculated utilization rate defined for the asset meter.
- Forecasted Meter Reading Value: Due at meter reading value as of the calculated due date.
- Program: Parent program of the work requirement.

Each result row will display the Forecast Status, which is based off both the requirement and asset's individual forecast status. For an asset or asset route-based work requirement, this status is inherited from the work requirement and it not updatable here. For an item or mixed asset-based requirement, the status is inherited from the asset, and will default to the work requirement status. You can optionally override it in the asset's tab using the Initialize Forecast options.

How You Search for Work Requirements

Using the existing page, in the edit mode of a maintenance program, you can manage the work requirements on the Work Requirements tab. Here you can create, view, edit, and delete the work requirements associated with the maintenance program.

The page includes a Query-by-example (QBE) search option. When you click the QBE icon, it reveals a search bar where you can search the list of requirements by certain columns. Optionally, you can also click on certain columns to sort the results rows ascending or descending by value.

Using the Redwood page, the Work Requirements tab returns a list of all requirements for programs in organizations for which you have access. By default, the Organization filter will be set to the contextual organization or your user default.

Search Section Using the Redwood Page

Capabilities	Description
Search	On the tab, search for your work requirements using Oracle's smart search and filters. You can quickly and easily perform full-text searches for assets across attributes using this enhanced search function. View the search results in a sortable table based on the matching records. The page includes a keyword search, context, and results filter chips.
Search Results	• Upon entering the page, the results are automatically returned by the default context filter chips, displaying work requirements for the selected Organization. • You can then use the keyword search or results chips to further refine the results. • You can also expand the search by selecting additional Organizations.
Keyword Search Filters	You can use the keyword search to filter the results by: • Work Requirement Name • Work Requirement Reference • Program Name • Program Code • Asset number • Asset description • Asset serial number • Item number • Item description • Work Definition Name • Work Definition Code
Results Chips	Use the results chips to filter the results by: • Organization

Capabilities	Description
	• Program • Asset • Work Definition • Status • Work Requirement • Work Requirement Reference • Work Requirement Type • Asset Description • Item • Item Description • Start Date • End Date
Saved Searches	You can optionally use saved searches to: • Select an existing saved search. • Create a search. • Share a search with others. • Mark a search as their default search, which loads each time the workbench is opened. • Use a system search created by the administrator. Note User default searches override administrator default searches. The administrator must create the saved search index prior to creating new saved searches. Additional details are covered in the Setup Maintenance section of the Implementing Manufacturing and Supply Chain Materials Management guide.
Manage Columns	You can manage the columns in the user session.
Export	You can export the results rows.
Create Work Requirement	Action that will navigate you to the New Work Requirement page. Click Cancel to return to the search results.
Release to Planning	Action that updates the status of a requirement from Ready to Forecast to Active.
Revert to Ready to Forecast	Action that updates the status of a requirement from Active to Ready to Forecast.
Generate Requirement Forecast	Action that allows you to generate the forecast for only the selected work requirement, and not the entire program. This action is only available if the status is Ready to Forecast or Active and the asset maintenance parameter option, Allow Suppress and Merge across Work Requirements is set to No.

Capabilities	Description
	Note: It's recommended to set the parameter option to No, thereby disabling this capability unless you have an established business requirement and fully understand its capability and limitations. Merge and suppress options, that support multiple work definitions across intervals in a cycle, are best modeled and forecasted within a single work requirement.

The list of results is based on each unique work requirement, sorted by its name. In each row, you view key details for a work order.

Results Section on the Redwood Page for Work Requirements

Key Details	Description
Name	Click the hyperlink to go to the Work Requirement details page.
Reference	Optional reference for a work requirement. This is helpful to filter rows within a program.
Type	Type of the work requirement. The valid values are: Asset, Item, Mixed Asset, or Asset Route.
Type Reference	Further describes the type of work requirement: • For an Asset or Asset Route, the Asset Number is displayed. • For an Item-based, the Item Number is displayed. • For mixed assets, no value is displayed.
Affected Assets	Count of the affected assets in a work requirement. **Note**: This number will not calculate for an item-based work requirement, as the number of assets is dynamically calculated during forecasting.
Status	Status of the work requirement.
Program	Name of the maintenance program.
Organization	Name of the maintenance program's organization.
Start Date	Start date of a work requirement.
End Date	Optional End date of a work requirement. When reached, it will stop forecasting.
Forecast Date	Date the forecast was last generated for the requirement.
Work Order	Indicates if work orders have been created or not for the requirement.

Work Requirement Status

Using the existing page, work requirements use the status values of Draft and Active.

Using the Redwood page, you will see a status of Ready to Forecast, along with the existing status values of Draft and Active. This new status is available using the Redwood page, REST API or File-based upload after opt-in.

During bulk creation of new programs and work requirements using the File-based upload, you must decide if the requirement status should be set to Ready to Forecast or Active. It is generally recommended to set to Ready to Forecast so you can generate a preview forecast, validate the method and asset initialization, then manually promote each requirement to planning and a status of Active. Let's compare them:

- **Draft**: the same in both pages:
  - This status is used to represent a Work Requirement that has a header record, but not a full definition of forecast method, assets, and work definitions.
  - A forecast can't be generated while in Draft status, as there is not enough required information.
- **Ready to Forecast**: Only using the Redwood page after opt-in:
  - This status is used to first indicate that a work requirement has the required information of a definition of forecast method, item or asset(s), and work definition(s) and can now be forecasted. Therefore, the requirement will move from Draft to Ready to Forecast status automatically.
  - The requirement can be optionally forecasted, generating a preview version of the forecast dates that is only viewable here in the Forecast tab of the page. It will not be viewable in the Manage Forecasts page, nor are the dates eligible for creating work orders.
  - If the requirement is edited, it could return to Draft status if any of the required information is deleted.
- **Active**: The same in both pages:
  - In the exiting page, a requirement will move from Draft to Active status automatically when it has the required information to generate a forecast.
  - However, using the Redwood page, you must promote it when ready by clicking an action button Release to Planning. At any point in the future, you can also return it to Ready to Forecast status for editing and forecast validation.
  - Once in an Active status, generating a forecast will produce due dates that are viewable in the Manage Forecasts page and eligible for creating work orders.

> **Note:** Care should be taken when returning to the Ready to Forecast status. The Active forecast is deleted after the last work order in history and it stops recalculating. You must quickly make your updates, verify the changes in a forecast preview, release the requirement back to planning and regenerate the Active forecast. If any delays occur in returning it to planning, due dates could be skipped in the Active forecast.

How You Model the Merging and Suppressing of Work Definitions

You can define the merge and suppress options first at the program header and it will default to each new work requirement. The options can be useful to control how multiple work definitions are handled both within a single work requirement and across similar work requirements when creating work orders.

Merge and suppress options are helpful to produce different work scopes on each interval in a cycle. It's recommended that you follow the recommendations on work definition modeling, as covered in the *How You Model Maintenance Work Definitions* topic. Definitions that are merged lose their source identity, producing a generic work order with all the steps in a new sequential order. Additionally, attachments don't persist to the final work order. If work definition identity, and source attachments, are required in the final work order, then you should consider modeling your work requirements

only using the suppress option on each interval in a cycle. Remember that for non-cycle-based requirements, if more than 1 work definition is defined, they always merge.

In general, the default value of suppress is used at the program header but can be updated to merge. Then, you can choose whether this option will apply to each work requirement, or you can choose to override the program header default and select the option to only merge or suppress within the work requirement. In general, if more than one work definition is defined for a work requirement, we recommended you override the program header default the set the value for each work requirement. For examples, refer to the next section, Forecast Using a Cycle and Intervals.

Additionally, if an asset is defined in more than one work requirement and its due dates overlap, then by default the header-level merge and suppress options apply across each of the work requirements. In this case, the application determines the expected work scope to be included in the work order, based on the suppress or merge option selected. The outcome may be a single work order for one or many work requirements, even though they have individual forecasted due dates. This may cause confusion when reviewing a forecast for an asset, as some due dates will be missing. In general, merging and suppressing across work requirements can be difficult to set up and realize the outcome in the maintenance forecast.

In previous versions, we recommended that you select the Override check box in work requirements if the same asset is defined across multiple work requirements in the same maintenance program. This prevents cross-requirement merge suppression of work definitions when their respective intervals intersect, while providing a much better understanding of which work definition will be used across intervals in a cycle or due dates.

In this version, you can decide if merge and suppress across work definitions is enabled globally by setting the asset maintenance parameter, **Allow Suppress and Merge across Work Requirements in a Maintenance Program**. We recommend setting this parameter to No, thereby disabling this capability unless you have an established business requirement and fully understand its capability and limitations. Merge and suppress options, that support multiple work definitions across intervals in a cycle, are best modeled and forecasted within a single work requirement.

How You Forecast Using a Cycle and Intervals

The forecast engine for a work requirement is designed to generate due dates, based on the defined forecast methods, within the forecast horizon. It's generally assumed that a single work order is created for each due date. However, sometimes you may need to model the forecast such that maintenance only occurs on certain intervals in a cycle. Therefore, work orders may or not be created for each due date.

To support these different modeling scenarios, the work requirement can be forecasted based on a cycle of intervals or not based on a cycle, but instead just have one repeating interval. An interval is a duration of time between the forecasted due dates that's based on the base interval or calendar pattern. At each interval, work definitions may also merge or suppress.

Here's the difference between these types of forecasts:

- Cycle-based Forecast: The forecast is created using a cycle that has a length that's based on a number of user-defined intervals. Maintenance occurs on some or all of the intervals, using one or more work definitions.
    - You must define the number of intervals for which the cycle is incremented.
    - The intervals start at one and increment up to the defined number, then start over at one again.
    - A cycle must have more than one interval, else it's not a cycle and an error is presented.
    - Intervals that are repeating increment by the **Due at Cycle Interval** value for each work definition.
    - A work definition can be defined multiple times for a work requirement as long as its **Due at Cycle Interval** values are unique. This allows non-repeating patterns like 1,3,7,12 to be modeled.
    - If more than one work definition falls on an overlapping interval, then merge and suppress rules applies. This information is also displayed in the **Forecasted To** column next to each work definition.
- Non-cycle Forecast: The forecast doesn't have a cycle and just repeats over time using as single interval.
    - If only one interval is required, then deselect the **Forecast using a cycle** check box, as this isn't a cycle-based forecast.
    - The work definitions are due on every due date of the forecast. This means that if more than one work definition is defined, they're automatically merged into a single work order at every due date of the forecast. This information is also displayed to the user in the **Forecasted To** column next to each work definition.

Using a cycle of intervals provides the best opportunities for advanced modeling. This includes supporting the different approaches for work definition modeling as well using the **Due at Cycle Interval** field and **Repeats in Cycle** check box.

Here are some examples to help you understand the functionality:

Example 1: No cycle of intervals and only a single work definition

Work Definition	Due at Cycle Interval Field	Repeats in Cycle Check Box (Y/N)	Merge or Suppress	Outcome
A	Not applicable	Y	Not applicable	Work definition is due every time the forecast repeats.

Example 2: No cycle of intervals and two or more single work definition.

Work Definition	Due at Cycle Interval Field	Repeats in Cycle Check Box (Y/N)	Merge or Suppress	Outcome
A	Not applicable	Y	Will always merge for no cycle	Work definition A is due every time the forecast repeats. Will merge with B.
B	Not applicable	Y	Will always merge for no cycle	Work definition B is due every time the forecast repeats. Will merge with A.

Example 3: Cycle of two intervals with a single work definitions

Work Definition	Due at Cycle Interval Field	Repeats in Cycle Check Box (Y/N)	Merge or Suppress	Outcome
A	1	N	Not applicable	Work definition is due at interval 1 only. It will skip Interval 2 as it doesn't repeat. Therefore, it's due every other time the forecast is due.
A	2	N	Not applicable	Work definition is due at interval 2 only. It will skip Interval 1. Therefore, it's due every other time the forecast is due.
A	1	Y	Not applicable	Work definition is due at interval 1 and 2. This is really a no cycle example if there's only one work definition.
A	2	Y	Not applicable	Work definition is due at interval 2 only. It will skip Interval 1 as it will repeat at Interval 2 only. Therefore, it's due every other time the forecast is due.

Example 4: Cycle of two intervals with two work definitions

Work Definition	Due at Cycle Interval Field	Repeats in Cycle Check Box (Y/N)	Merge or Suppress	Outcome
A	1	N	Not applicable	Work definition A is due at interval 1 only. It will skip Interval 2 as it doesn't repeat. Therefore, it's due every other time the forecast is due.
B	2	N	Not applicable	Work definition B is due at interval 2 only. It will skip Interval 1. Therefore, it's due every other time the forecast is due.

Example 5: Cycle of two intervals with two work definitions that suppress.

Work Definition	Due at Cycle Interval Field	Repeats in Cycle Check Box (Y/N)	Merge or Suppress	Outcome
A	1	Y	Suppress	Work definition A is due at interval 1 and 2. At interval 2, it will suppress and only B is due.
B	2	Y	Suppress	Work definition B is due at interval 2 only. It will skip interval 1 as it will repeat at interval 2 only. Therefore, it's due every other time the forecast is due and will suppress A at interval 2.

Example 6: Cycle of two intervals with two work definitions that merge.

Work Definition	Due at Cycle Interval Field	Repeats in Cycle Check Box (Y/N)	Merge or Suppress	Outcome
A	1	Y	Merge	Work definition A is due at interval 1 and 2. At interval 2, it will merge with B and both are included in a single work order.
B	2	Y	Merge	Work definition B is due at interval 2 only. At interval 2, it will merge with A and both are included in a single work order.

Example 7: Cycle of 12 intervals with two work definitions that suppress. This is helpful for monthly maintenance with unique work definitions.

Work Definition	Due at Cycle Interval Field	Repeats in Cycle Check Box (Y/N)	Merge or Suppress	Outcome
A	1	Y	Suppress	Work definition A is due at every interval 1-12. At intervals 3, 6, 9, and 12, it will suppress and only B is due.
B	3	Y	Suppress	Work definition B is due at intervals 3, 6, 9, and 12 and will suppress A at each of these intervals.

Example 8: Cycle of 12 intervals with two work definitions that merge. This is helpful for monthly maintenance with incremental work definitions.

Work Definition	Due at Cycle Interval Field	Repeats in Cycle Check Box (Y/N)	Merge or Suppress	Outcome
A	1	Y	Merge	Work definition A is due at every interval 1-12. At intervals 3, 6, 9, and 12, it will merge with B.
B	3	Y	Merge	Work definition B is due at intervals 3, 6, 9, and 12 and will merge with A at each of these intervals.

Example 9: Cycle of 12 intervals with 4 work definitions that suppress. This is helpful for monthly maintenance with incremental work definitions that happen to fall at different intervals.

Work Definition	Due at Cycle Interval Field	Repeats in Cycle Check Box (Y/N)	Merge or Suppress	Outcome
A	1	N	Suppress	Work definition A is due at interval 1 and not repeat.
A	3	N	Suppress	Work definition A is due at interval 3 and not repeat.
B	5	N	Suppress	Work definition B is only due at interval 5 and not repeat.
C	6	Y	Suppress	Work definition C is due at interval 6 and 12.
C	9	N	Suppress	Work definition C is only due at interval 9 and not repeat.
D	12	N	Suppress	Work definition B is only due at interval 12. It will suppress C at interval 12.

Example 10: Cycle of 12 intervals with 4 work definitions that merge. This is helpful for monthly maintenance with incremental work definitions that happen to fall at different intervals.

Work Definition	Due at Cycle Interval Field	Repeats in Cycle Check Box (Y/N)	Merge or Suppress	Outcome
A	1	Y	Merge	Work definition A is due at every interval 1-12. At intervals 5, it will merge with B. At intervals 6 and 9 it will merge with C. At interval 12, it will merge with C and D.
B	5	N	Merge	Work definition B is only due at interval 5 and not repeat.
C	6	Y	Merge	Work definition C is due at interval 6 and 12. It will merge with A at each interval.
C	9	N	Merge	Work definition C is only due at interval 9 and not repeat. It will merge with A at this interval.
D	12	N	Merge	Work definition B is only due at interval 12. It will suppress C at interval 12. It will merge with A and C at interval 12.

Example 10: Cycle of 12 intervals with 4 work definitions that merge. This is helpful for monthly maintenance with incremental work definitions that happen to fall at different intervals.

Work Definition	Due at Cycle Interval Field	Repeats in Cycle Check Box (Y/N)	Merge or Suppress	Outcome
A	1	Y	Merge	Work definition A is due at every interval 1-12. At intervals 5, it will merge with B. At intervals 6 and 9 it will merge with C. At interval 12, it will merge with C and D.
B	5	N	Merge	Work definition B is only due at interval 5 and not repeat.

Work Definition	Due at Cycle Interval Field	Repeats in Cycle Check Box (Y/N)	Merge or Suppress	Outcome
C	6	Y	Merge	Work definition C is due at interval 6 and 12. It will merge with A at each interval.
C	9	N	Merge	Work definition C is only due at interval 9 and not repeat. It will merge with A at this interval.
D	12	N	Merge	Work definition B is only due at interval 12. It will suppress C at interval 12. It will merge with A and C at interval 12.

As described above, you can use intervals to determine when the maintenance is due in a cycle and what happens if merge or suppress is applied. The intervals are calculated based on the calendar pattern or meter base interval that's defined as the forecast method. Thus, you can define when maintenance is due and also how often. Additionally, you can set up your intervals using multiples to create even more advanced modeling capabilities. Here's another example:

Example 11: If you need to model maintenance to be due every 5,000 miles, you can easily have a base interval of 5,000 miles a using a repeating non-cycle based forecast using a meter. However, if you want to have some work definitions due every 3,000 miles and some every 5,000 miles, then you must find the least common multiple between these and then leverage the intervals in a cycle to control when they're due. In this case, you must use a cycle of 15 intervals and a base interval of 1,000 to model it.

Work Definition	Due Every	Base Interval	Due at Cycle Interval Field	Repeats in Cycle Check Box (Y/N)	Merge or Suppress	Outcome
A	3,000 miles	1000	3	Y	Suppress	Work definition A is due only at interval 3, which is 3,000 miles.
B	5,000 Miles	1000	5	Y	Suppress	Work definition B is due only at interval 5, which is 5,000 miles.

In the example above, no maintenance is due at intervals 1, 2, 4, 7, 8, 11, 13, and 14. It repeats again after interval 15 is completed and starts the cycle over. In this scenario, the next due is at interval 3 again, which is now really 18,000 miles, then due at interval 5 again, which is 20,000 miles and so on.

Related Topics

- How You Edit a Maintenance Program

Cycle Intervals and Start Date Examples

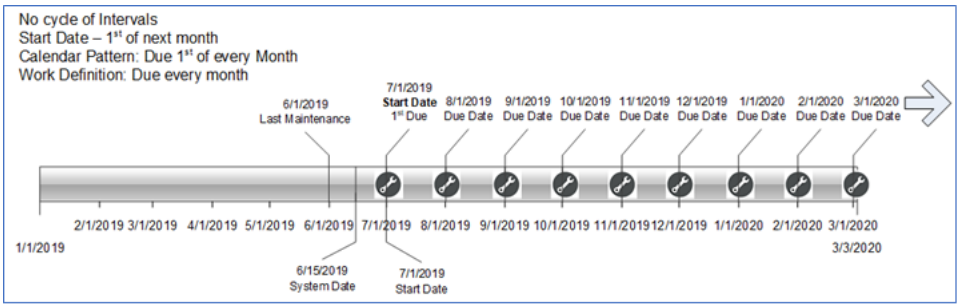
Understand the modeling of cycle of intervals, no cycle of intervals, as their relationship with the start date for an asset. The start date is key to control when the forecast begins. This can be a past, present, or future start date.

Note: It's important to remember that cycles of intervals are only needed if

- Work isn't due on each iteration of a repeating calendar.
- Different work definitions are due at different intervals in the cycle over time.

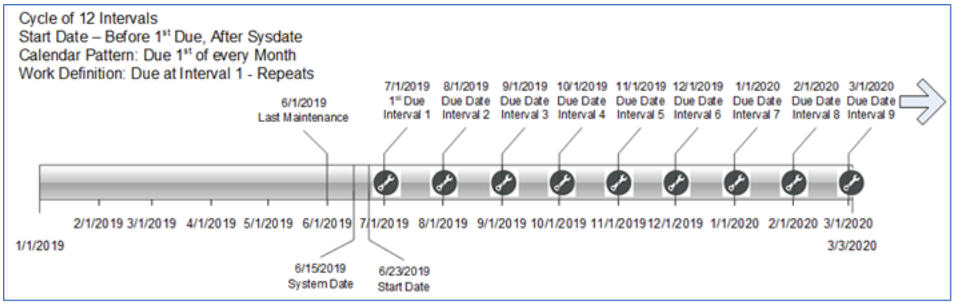
Example 1: Maintenance is due on the first of every month and doesn't have a cycle of intervals. Maintenance was last accomplished for the Asset on Jun 1 (before starting this new program) and is next due on July 1. In this example, the first due begins on the start date and not from a historical last completed maintenance date.

- Setting a start date of Jun 23, before the first of the next month, means the first/next due is July 1 and is then due every month from that point forward.



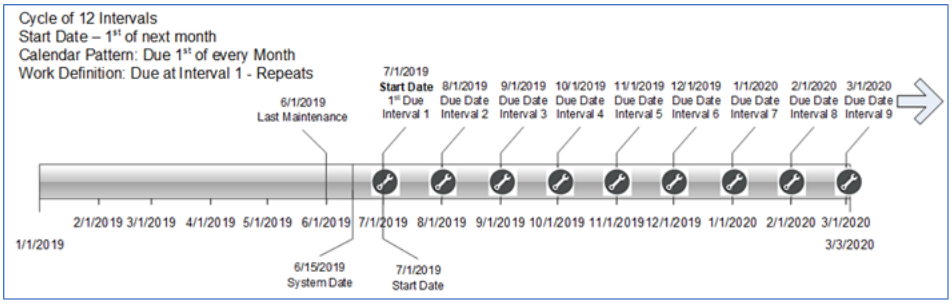
Example 2: Maintenance is due on the first of every month on a cycle of 12 intervals. This is the same as Example 1, it just uses a repeating interval, and the work definitions are due at each interval. Maintenance was last accomplished for the Asset on Jun 1(before starting this new program) and is next due on July 1. In this example, the Intervals begin on the start date and not from a historical last completed maintenance date and interval.

- Setting a start date of Jun 23, before the first of the next month, along with a monthly repeating pattern means the first/next due is July 1 and is then due every month from that point forward.



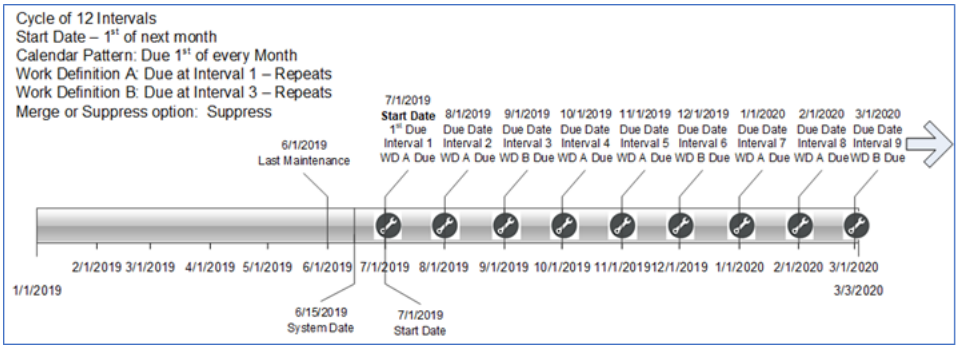
Example 3: Same as Example 2 but set the start date = First Due date and Interval.

- Setting a start date of July 1 along with a monthly repeating pattern means the first/next due is July 1 at Interval 1 and is then due every month from that point forward. This is the same behavior as example 2.



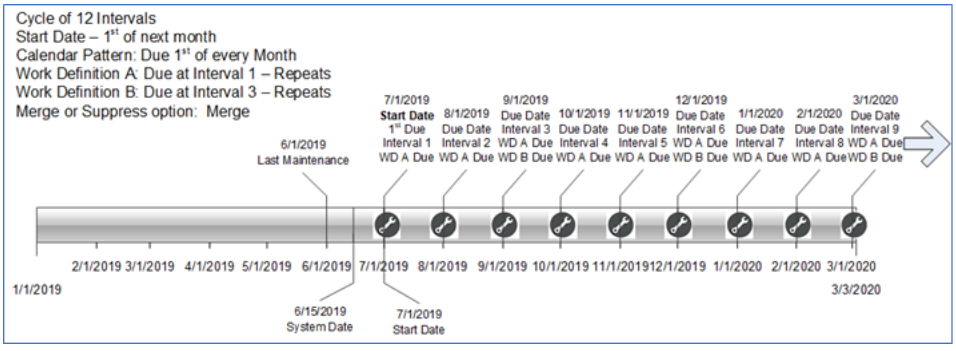
Example 4: Maintenance is due on the first of every month on a cycle of 12 intervals. This is like Example 3 however it has 2 work definitions due at different intervals. When they overlap, the rule is to Suppress the lower interval work definition. Maintenance was last accomplished for the Asset on Jun 1 (before starting this new program) and is next due on July 1. In this example, the Intervals begin on the start date and not from a historical last completed maintenance date and interval.

- Setting a start date of Jun 23, before the first of the next month, along with a monthly repeating pattern means the first/next due is July 1 and is then due every month from that point forward.



Example 5: This is also like example 4; however, it has 2 work definitions due at different intervals. When they overlap, the rule is to Merge all work definitions. Maintenance was last accomplished for the Asset on Jun 1 (before starting this new program) and is next due on July 1. In this example, the intervals begin on the start date and not from a historical last completed maintenance date and interval.

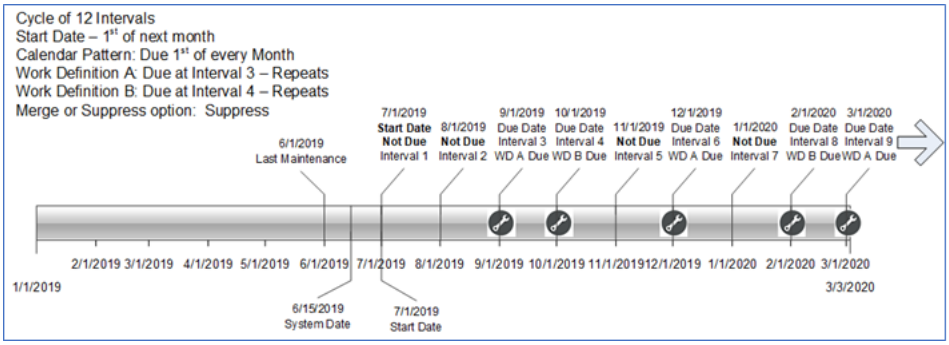
- Setting a start date of Jun 23, before the first of the next month, along with a monthly repeating pattern means the first/next due is July 1 and is then due every month from that point forward.



Example 6: Maintenance is due on some months, on the first, over a cycle of 12 intervals. When it's due, it can be one or the other work definition. When they overlap, the rule is to Suppress the lower interval work definition. Maintenance was

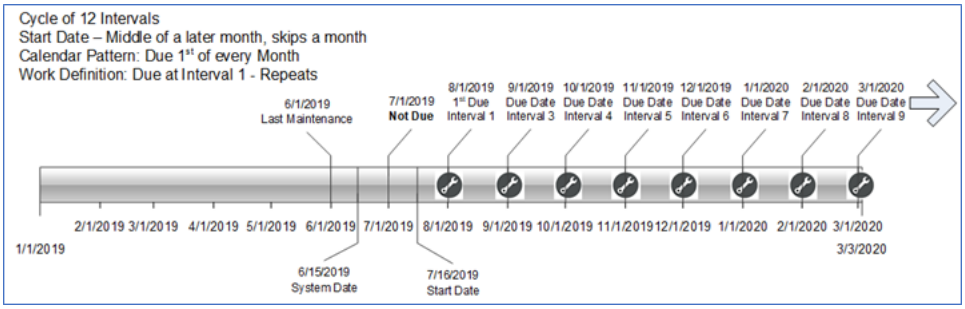
last accomplished for the Asset on Jun 1 (before starting this new program) and is next due on Sept1 at a future interval. In this example, the Intervals begin on the start date and not from a historical last completed maintenance date and interval.

- Setting a start date of Jun 23, before the first of the next month, along with a monthly repeating pattern means the first/next due is Sept 1 on Interval 3 and is then due every interval where a work definition falls due.
- Note that Intervals 1, 2, 5, 7, 10, and 11 are skipped. Interval 12 has Work Definition B suppress A.



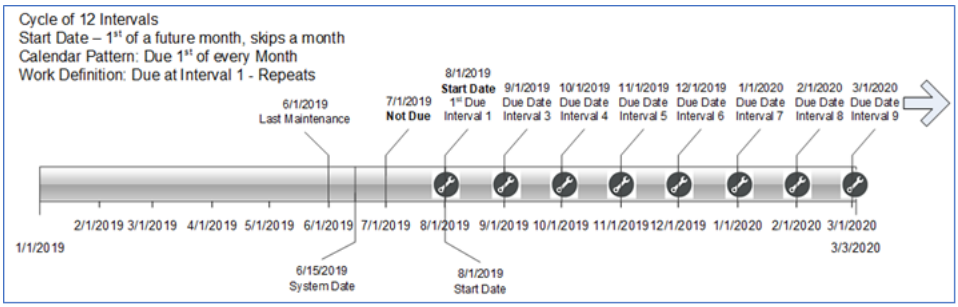
Example 7: Maintenance is due on the first of every month on a cycle of 12 intervals. Maintenance was last accomplished for the Asset on Jun 1 (before starting this new program). However, it is not required to be due again until August 1. In this example, the Intervals begin on the start date after Jul 1 and not from a historical last completed maintenance date and interval. Therefore, a due date in the future on July 1 is being skipped.

- Setting a start date after July 1, but before Aug 1, along with a monthly repeating pattern means the first/next due is Aug 1 and is then due every month from that point forward. July 1 is skipped by design.



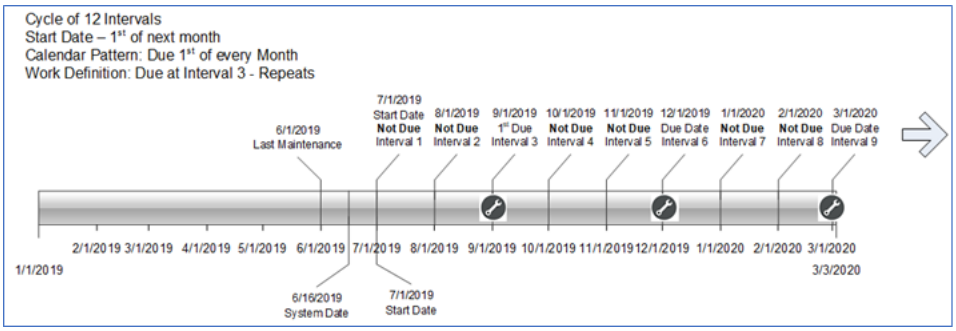
Example 8: Same as Example 3 but set the start date = First Due date and Interval.

- Therefore, setting a start date of Aug 1 and monthly repeating pattern means the first/next due is Aug 1 and is then due every month from that point forward. July 1 is skipped by design. This is the same behavior as example 7.



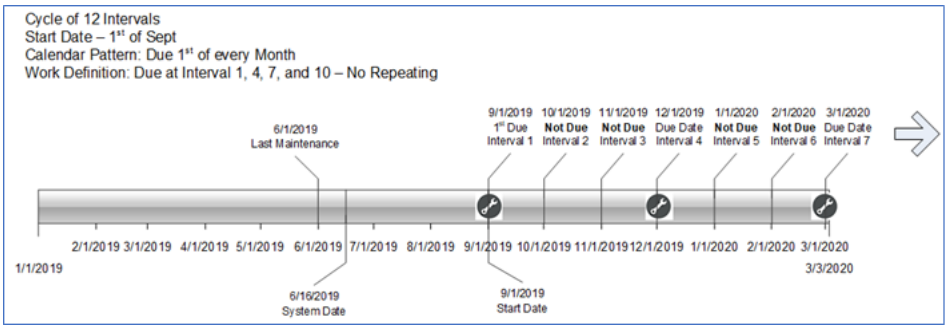
Example 9: Maintenance is due on the first of every 3 months on a cycle of 12 intervals. Maintenance was last accomplished for the Asset on Jun 1 (before starting this new program) and is due again on Sept 1. In this example, the Intervals begin on the start date and not from a historical last completed maintenance date and interval.

- The Start date should be set after the start date, but before or on Jul 1 is when Interval 1 begins calculating. The engine skips intervals 1 and 2, with the first due at Interval 3 on Sept 1.



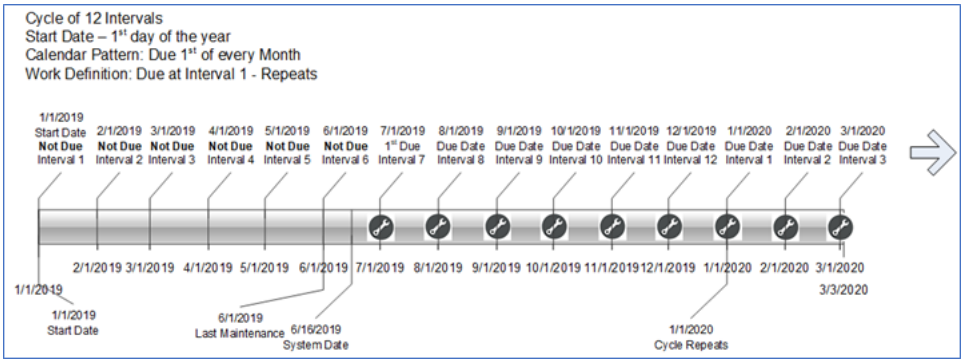
Example 10: Maintenance is due on the first of only certain months on a cycle of 12 intervals. It will be due at intervals 1,4,7, and 10. Maintenance was last accomplished for the Asset on Jun 1 (before starting this new program) and is next due on Sept 1 at Interval 1. This example, the Intervals begin on the start date and not from a historical last completed maintenance date and interval.

- The Start date should be set so that Sept 1 is when Interval 1 begins calculating. Therefore, the start date can be on or between the system date and first due date of Sept 1.



Example 11: Maintenance is due on the 1st of every month on a cycle of 12 intervals. Maintenance was last accomplished for the Asset on 1-Jun (before starting this new program) at Interval # 6. Therefore, it is next due at a specific interval # 7 on 1-Jul. This example does not use the historical last completed maintenance date and interval, but just relies on a past dated start date to sequence the next due date and interval.

- The Start date should be set in the past to replicate the last completion at Interval 6 and initialize the forecast for the next to at Interval 7. Setting a start date of Jan1 allows an Asset to cut in its next due in the middle of a Cycle, since the first/next due will always be >= system date anyway. The Intervals can calculate in the past, but only the first due date will be in the future.
- Note that the cycle repeats on Jan-1-2020 and starts at Interval 1 again.



Example 12: Maintenance is due on the first of every month on a cycle of 12 intervals. Maintenance was last accomplished for the Asset on Jun 1 (before starting this new program) at Interval # 6. Therefore, it is next due at a specific interval # 7 on Jul 1. In this example, the Intervals will begin on the historical last maintenance date and interval of Apr 1 and Interval 4, instead of back at the first of the year. This example will use of the historical last completed date and interval to reach the same outcome as Example 7. For an Item-based requirement, it allows for each asset to have its individual forecast initialized.

- Setting a start date of between or on sysdate and the first Interval 1 on Jul 1, along with a monthly repeating pattern, means the first/next due is July 1 at Interval 7 and is then due every month from that point forward.

Day Interval Forecast Examples

A Day Interval, or Number of Days, forecast method will allow you additional flexibility than the calendar pattern. The calendar pattern is limited on the combinations and can be difficult to start a forecast and sequence intervals that don't easily follow a calendar method. Examples are maintenance every 15 days, 90 days, etc.

The Day Interval method also features some capabilities found in the Meter-Based method, such as the ability to generate the next due date in the forecast based on the previous work order completion date. This will provide an optional for a dynamic forecast. Additionally, you can more easily initialize the first due for an asset based on the historical last accomplishment date using a day interval.

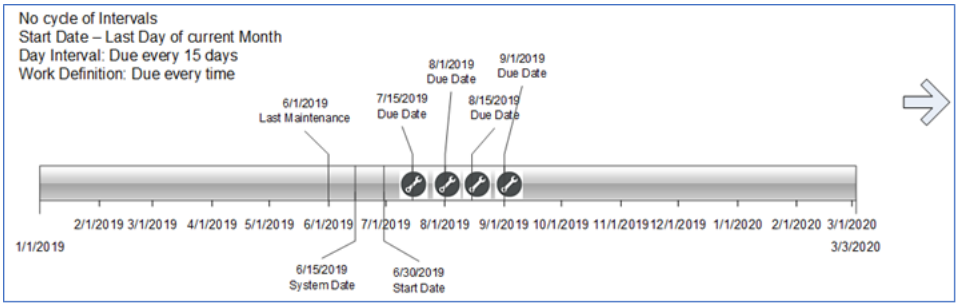
For examples, they will be the same as the meter-based, as the forecast will use the number of days as an interval value to increment the future due dates. The intervals will be calculated from the start date of the Work Requirement for the Asset, then incremented by the number of Days value.

Day Interval Examples:

Example 1: Maintenance is due every 15 days and does not have a cycle of intervals. Maintenance was last accomplished for the Asset on 1-Jun (before starting this new program) and is next due on July 15, then every 15 days after.

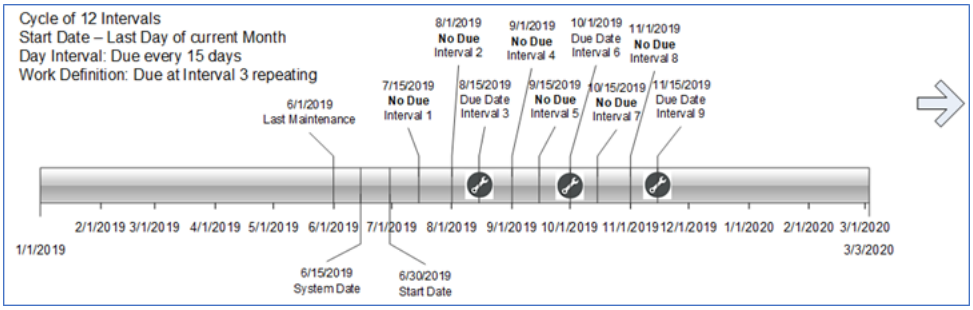
- Setting a start date of Jun 30, which will then calculate the first due = Jul 15. The Day interval starts calculating on the next day after the start date, then increments the 15 days. This is how Excel calculates dates.

- Jul 1 + 15 days = Jul 16
- Jun 30 + 15 days = Jul 15.



Example 2: Maintenance is due on certain intervals of a cycle of 12 intervals. The Day interval is 15 days and is due every 3 intervals (3,6,9,12). Maintenance was last accomplished for the Asset on Jun 1 (before starting this new program) and is next due on Aug 15.

- Setting a start date of Jun 30, which will then calculate the first interval = Jul 15. The Day interval starts calculating on the next day after the start date, then increments the 15 days for each interval.
- Since it is due every 3 intervals, the first dues is Aug 15 at Interval 3.



Related Topics

- How You Edit a Maintenance Program

How You Manage Maintenance Forecasts

Generating a forecast collects all the active work requirements in a program, validates the affected assets, and suggests due dates based on the asset operating organization, maintenance organization, forecast method, concurrent work options, asset initialization options, and accomplishment of the last maintenance work order. A forecast can be generated for a program, specific work requirement in a program, or only a single asset within a work requirement. Care should be taken when manually generating the forecast for a program, as detailed later in the section Generate Maintenance Forecasts.

Forecast Logic and Validations

Each time a forecast is generated, the application validates the affected assets and ensure that they are eligible to be forecasted.

- The first check is to ensure that the asset operates either in the contextual program's maintenance organization or in an organization that's in the same master organization. If the asset is operating in a non-maintenance-enabled organization, it also looks for a primary organization relationship or not.
- Next, if it's item-based, it ensures that it's included in the affected assets list.
- Then, it ensures that the asset is enabled for maintenance programs and to create work orders, per the asset's definition.
- After that, if the opt-in is enabled, it confirms that the asset is eligible to be forecasted, either in the preview and planning forecast.
- Finally, now that the asset is verified as an eligible asset, it proceeds with calculating its forecasted intervals and due dates in the applicable organization.

When generating the maintenance forecast, the application considers the value set for the Forecast Horizon in Days. This value is defined in the maintenance organization plant parameters, program header and work requirement, controlling how far into the future the forecast generates due dates. The number of days value is used based on the lowest level of definition in a program. After a forecast is run, if some due dates aren't displayed, you can review the setup and adjust the horizon window values. For additional details, refer to the *Guidelines to Set Up Maintenance Plant Parameters* topic in the Implementing Manufacturing and Supply Chain Materials Management guide.

By default, an asset that operates in a maintenance-enable organization is forecasted and have work orders created in its contextual organization. This occurs both in a program that's defined in the same maintenance organization, as well as programs that are enabled for assets across organizations. Relationships defined for reciprocal maintenance organizations aren't considered, nor supported, in a program.

For assets that operate in non-maintenance-enabled organization, they are either forecasted in the program's organization, or if you wish for the asset to always be maintained in a single maintenance organization, then you can define a supports as primary relationship between the non-maintenance-enabled-organization and a maintenance organization. This ensures that the forecast is generated and work orders are created only in this maintenance organization. Additionally, you must ensure that the Asset's base Item is defined for all organizations in which you forecast and create work orders.

First Due Date and Asset Initialization

It's important to understand how the first due date is calculated by the Generate Maintenance Forecast program. In general, a requirement starts calculating from its Start Date and only return future due dates after the current date. Setting a date in the past, present, or future yields different results. Some examples are covered in the section Cycle Intervals and Start Date Examples, with a more detailed explanation below.

If you set a Start Date in the past, then the application begins calculating at that point. If due dates are calculated as overdue for intervals in the past, the application decides what to do with them. The results are different depending on the type of work requirement:

- For a calendar or day interval, due dates on intervals in the past are skipped, only returning the first due date after the current date. Setting a past due date for these requirements only affects the first due interval in the future.
- For a meter-based requirement, it takes the meter's start date, reading history, and requirement Start Date into consideration. Due dates on intervals in the past aren't skipped, as the application must assume that this maintenance is required and must be accomplished. Therefore, on the current date or in the future, you

may see all the overdue intervals as being due. This isn't generally a desirable outcome, please see the Asset Initialization section below for more details.

If you set a Start Date in the present or future, then the application begins calculating at that point. Setting the present date may yield different results, as the time of day it's created can interfere with the calculation. Here are first due date examples for calendar and day methods where the present date is 31-Jul:

#	Scenario	Start Date	First Due Date	Outcome
1	Due every Monday using a calendar or every 7 days.	31-Jul	8-Aug	Setting a present Start Date most likely results in next day, as if it was the 1-Aug. Therefore, the firs
2	Due every Monday using a calendar or every 7 days.	1-Aug	8-Aug	Setting a future Start Date is recommended. As e days from the Start Date of 1-Aug.
3	Due every Monday using a calendar or every 7 days. Set a Start Date in the past.	28-Jul	4-Aug	Setting a past Start date results in the applicatior beginning on the 28-Jul, due every 7 days, with t on 4-Aug, as it's after the present date.
4	Due every Monday using a calendar or every 7 days. Set a Start Date in the past, even further back.	21-Jul	4-Aug	Setting a past Start date results in the applicatior beginning on the 21-Jul, due every 7 days. It calculates the first due date on 28-Jul, which is present date. The next due date is calculated on present date, thus is it's the first due date.
5	Due every Monday using a calendar or every 7 days. Move the Start Date further into the future after the present date.	15-Aug	22-Aug	Setting the Start Date further ahead of the prese Date later as well. The application doesn't start calculating the fore expected, it's due every 7 days from the Start Da Aug.

Here are first due date examples using the meter-based method where the present date is 31-Jul:

#	Scenario	Start Date	First Due Date	Outcome
1	Meter, due every 70 hours, based on a daily rate of 10. Therefore, it will be due every 7 days. The asset meter has no Meter Reading history, but a meter start date 1-Aug.	31-Jul	8-Aug	Forecasts for meters always start calculating the using the meter start date on 1-Aug, the applicat 70 on 8-Aug and is due.
2	Meter, due every 70 hours, based on a daily rate of 10. The asset meter has no Meter Reading history, but a meter start date 1-Aug.	1-Aug	8-Aug	Same as scenario 1, even though it starts 1 day la on 1-Aug, the application calculates that it reache

3	Meter, due every 70 hours, based on a daily rate of 10. The asset meter has no Meter Reading history, but a meter start date 1-Aug. Set a Start Date in the past.	21-Jul	8-Aug	Setting a past Start date in this case affects the c start date is 1-Aug, and there is no meter reading assume a value of zero from 21-Jul to 1-Aug. Starting on 1-Aug the first due date is in 7 days la reaches a life-to-date value of 70.
4	Meter, due every 70 hours, based on a daily rate of 10. The asset meter has a reading 120 on its meter start date 1-Aug. Set a Start Date in the past.	21-Jul	31-Jul and 3-Aug	If we take scenario 3 and record a meter reading of 1-Aug at a value of 120. Let's see how the forec The application finds the reading of 120 on 1-Aug that on 21-Jul it would have a meter value of 10. F forward 10 per day and on 27-Jul it would have e is now considered overdue. This shows as being Jul. The application keeps calculating, and 7 days late again on 3-Aug at 140. Therefore, you see 2 due dates, the overdue inter the next due date in the future. We'll discuss later how initializing the asset can p
5	Meter, due every 70 hours, based on a daily rate of 10. The asset meter has a reading 17,500 on its meter start date 1-Aug. Set a Start Date in the past.			If we take scenario 3 and record a meter reading of 1-Aug at a value of 17,500. Let's see how the ap First, the application doesn't know when the asse it goes back into history and calculate due dates scenario 3. For this meter example, you must init below, to prevent overdue dates from being calcu
6	Meter, due every 70 hours, based on a daily rate of 10. The asset meter has no Meter Reading history, but a meter start date 1-Aug. Set a Start Date in the future.	15-Aug	8-Aug and 15-Aug	Setting a Future Start date in this case does affec meter's start date is 1-Aug, the application looks meter reading in history. Since there is no history, the application must rec assumed to have been operating since the 1-Aug 8-Aug it would have expected to have reach 64 a 15-Aug, the asset meter would be calculated to b both due dates on these intervals as being overd 15-Aug. Starting from 15-Aug, the application calculates t later 22-Aug when the meter reaches a value of 1 We'll discuss later how initializing the asset can p

Asset Initialization

As mentioned above, if the application doesn't know the last time maintenance was performed, it can only start calculating from the requirement Start Date, or meter start date, going forward. This can lead to unexpected and undesirable forecast results, including overdue dates.

During implementation, because most assets are existing, they have preventative maintenance history. To correctly calculate the first due date, you must initialize the forecast for each asset by providing the last date and interval for which maintenance was performed. This same process can also be used in some cases for introducing new assets. In the Assets tab, for each asset you can optionally set these values in the Initialize Forecast drawer:

- Historical Last Completed Date: Enter the last date the work definition(s) were accomplished in an external application or legacy application. The date must be before the current date.
- Historical Last Interval: If the work requirement is cycle-based with intervals, then enter the interval at which you last completed maintenance on the Last Completed Date.

For an asset or asset-based requirement, if you are setting a historical last completed date, then you must set the requirement start date either equal to this date, or a date in the future, such as the current date. If you set a requirement start date before the historical last completed date, then the application further calculates back in history, which isn't recommended. The result is overdue dates in the past, which isn't desirable in most cases.

For an item-based or mixed asset requirement, the requirement start date may not be sufficient to initialize each asset. Therefore, it's recommended that you set the Forecast Start Date in the Initialize Forecast drawer:

- Forecast Start Date: This date overrides the requirement start date.
  - If you are setting a historical last completed date, then you must set the requirement start date either equal to this date, or a date in the future, such as the current date.
  - If you aren't setting a historical last completed date, then setting a date as the current date or future date is recommended.
  - If you set a requirement start date before the historical last completed date, then the application further calculates back in history, which isn't recommended. The result is overdue dates in the past, which isn't desirable.

If the asset's maintenance is driven off meter reading history, then recording meter reading history is required to accurately forecast the first due. Here are the recommendations:

- On the meter's start date – it's good practice to enter its current meter reading or even a reading of zero.
  - This provides an anchor point to calculate its current utilization.
  - If the reading isn't zero, then the application doesn't know how to accurately calculate the next due date for maintenance. This is why a historical last accomplished date is helpful, along with a meter reading, to calculate the first due.
- On the historical last completion date – this is the best practice for initializing a meter-based requirement.
  - This reading serves as the anchor point to calculate its forecast and first due date.
  - If a reading isn't entered on this date, the application looks back into history and find the last reading. This may not produce the desired first due date.
  - Additionally, this date and corresponding reading should be less than the duration of one interval into the past, else the application skips or create due dates on intervals that are overdue.

- Other historical readings – historical readings entered after the meter start date may or may not be helpful in calculating the first due date unless they correspond to the historical last completion date:
  - Readings before a historical last completion date are only useful for historical reference and aren't used in the forecast calculation.
  - Readings after the historical last completion date are helpful to calculation the first due, as changes in utilization are reflected in the actual readings recorded. However, if the accrued readings between the last completion date exceed the requirement interval, due dates may be skipped or created as overdue.

Note: If the creation of overdue dates is required or even unavoidable, then you can always manually reschedule or skip the dates using the Manage Forecasts page.

Here are initialization examples are for calendar and day methods where the present date is 31-Jul, and setting a historical last completed date and forecast start date results in a more accurate first due date:

#	Scenario	Start Date	Historical Last Completed Date	Forecast Start Date	First Due Date	Outc
1	Asset or Asset-route based. Due every Monday using a calendar or every 7 days. Set a Historical Last Completed Date before the requirement Start Date, in the past.	1-Aug	28-Jul	N/A for asset or asset-route	4-Aug	Setti few d Due The a 28-Ju date on 4-
2	Asset or Asset-route based. Due every Monday using a calendar or every 7 days. Move the Start Date further into the future.	15-Aug	28-Jul	N/A for asset or asset-route	18-Aug	Setti Histo First The a 28-Ju are c befor due d Aug i

Here are initialization examples using the meter-based method where the present date is 31-Jul, and setting a historical last completed date and forecast start date results in a more accurate first due date:

#	Scenario	Start Date	Historical Last Completed Date	Forecast Start Date	First Due Date	Outc
1	Asset or Asset-route based. Meter, due every 70 hours, based on a daily rate of 10. The asset meter has a start date 28-Jul, before the requirement start date, and a	8-Aug	8-Aug	N/A for asset or asset-route	15-Aug	Using Aug, 120. The f point

	meter reading of 120 on the historical last completed date of 8-Aug. This means the asset is operating on its estimated daily utilization.					Date, due i Beca date appli a valu
2	For scenario 1, if the asset is running below its estimated daily utilization, it may have a meter reading of 90 on the historical last completed date of 8-Aug.	8-Aug	8-Aug	N/A for asset or asset-route	15-Aug	The r 10 pe Howe comp of on expe The f point Date, value Beca date appli a valu
3	For scenario 1, if the asset is running above its estimated daily utilization, it may have a meter reading of 220 on the historical last completed date of 8-Aug.	8-Aug	8-Aug	N/A for asset or asset-route	15-Aug	The r 10 pe Howe comp 220, s The f point Date, value Beca date appli a valu
4	Asset or Asset-route based. Meter, due every 70 hours, based on a daily rate of 10. The asset meter has a start date 28-Jul, before the requirement start date, and a	1-Sep	8-Aug	N/A	Overdue: 8-Aug 15-Aug 22-Aug and 29-Aug. Next due 5-Sep.	If we Date inter The f hittin

	meter reading of 120 on the historical last completed date of 8-Aug. Set a future Forecast Start Date.					Aug, Sep. You c in the You c dates Forec
5	When using an item-based requirement, the Forecast Start Date is available and helpful to override the requirement's Start Date.	8-Aug	8-Aug	1-Sep	15-Aug	If we Date inste

Meter Reading Impacts on Maintenance Forecasts

Once the first due date is established for a meter-based forecast, each future interval and due date are initially calculated as being due based on its pre-defined daily or calculated utilization rate. Then, it's expected that periodic meter readings are recorded over time, ideally between due date intervals, to both record an asset's utilization history and dynamically update its forecast.

If readings aren't entered between intervals, then the forecast doesn't dynamically adjust, and due dates don't push out. If an asset is idle, you must periodically enter in a reading, even if it's the current reading, to adjust the future due dates. Else, the future due dates doesn't adjust, and you may eventually encounter overdue maintenance.

When reporting the completion of preventative maintenance in a work order, it's generally recommended to record the latest sequential reading, ensuring the forecast dynamically updates the next due dates when the forecast is regenerated. If not reported during work order reporting, it may be directly reported on the asset's meter or through an integration such as the meter readings REST APi, file-based import, or the connected asset capability. Regardless, the key requirement is the latest meter reading in history is available for the forecast to dynamically recalculate as of the work order completion date.

> **Note:** Retroactively recording historical meters readings, before the latest active reading, has no effect on the forecast for meter-based forecasts using meters based on absolute meter readings.

If readings aren't recorded during work order reporting, the application looks for the last reading in history before this date, then estimate what the reading would have been on the work order completion date, based on the asset meter's utilization rate. Once the first new reading is entered after the work order completion date, the application begins using it for calculations.

> **Note:** If the Method to Calculate Next Due as Last Completion is set to Base Interval, then the application doesn't generate the next work order based on the actual meter reading.

If your meters are defined as generating a calculated utilization rate based on a number of readings, it's important that you first define a number that produces a representative average utilization rate. Then, it's expected that meter reading entry continues periodically to keep the utilization up to date, otherwise it moves lower and eventually reach zero, which is a problem if you forecast using the meter.

Let's review this example to further understand the effect of meter readings on a forecast:

- A delivery truck operates on average 50 miles per day. it's regularly serviced, changing its oil every 5,000 miles, so it's usually due about every 100 days.
- The last time it was serviced was at 30,000 miles on 1-June. The application forecasts its next due date at 35,000 miles on 9-Sep.
- The truck's last meter reading was entered at 34,500 on 21-Aug, so it adjusted the due date when it reaches 35,000 miles to 31-Aug.
- A work order is created on 31-Aug and a supervisor reschedules it for the following week on the 2-Sep, a few days after its due date.
- During work order reporting, a technician enters a current meter reading for its odometer of 35,125 miles.

When the Technical records the latest meter readings, it's generally expected that new readings follow the expected pre-defined daily or calculated utilization rate over the period between readings. Normal fluctuations in reading history are expected, such as an asset that's idle, or an asset that's reassigned and operates more than usual dynamically adjusts the forecast. However, if a meter reading is recorded that dramatically higher than expected, and not discovered before the forecast is regenerated, there may be significant effect on the forecast.

Let's review the effect of the Technician entering in the meter readings:

- If a meter reading is accurately recorded at 35,125 miles, then the forecast recalculates and be due at 40,125 on 21-Dec.
- If a meter reading isn't recorded at 35,125 miles, then theforecast recalculates using the last reading in history, 34,500 on 21-Aug, and is due 725 miles and three weeks earlier at 39,500 on 29-Nov.
- If a meter reading is under reported by 100 miles at 35,025, then theforecast recalculates and be due 100 miles and 2 days earlier at 40,025 on 19-Dec.
    - A reading that's incorrectly reported between the last reading in history and the true value as of the reporting date draws the due date earlier, leading to early servicing.
- If a meter reading is over reported at 35,215 miles, then theforecast recalculates and be due at 40,215 on 10-Jan, 2 days later than expected.
    - A reading that's reported incorrectly higher than the actual reading, but before the expected next interval of 5,000 miles, pushes the next due date out, causing extended use of the asset past its recommended service date.

- If a meter reading is vastly over reported at 53,125 miles, then the effect is a little different:
  - Scenario 1: Forecast uses an estimated daily utilization rate:
    - The next due is be at 58,215 on 21-Dec.
    - The application skips each of the iterations of maintenance between 32,125 and 58,215.
    - If a cycle of intervals is used, then the work definition(s) due at these intervals are skipped and aren't be planned or accomplished. This could lead to not accomplishing critical maintenance for your assets.
    - Quickly identifying, editing, or disabling and entering the correct reading as soon as possible helps resolve the issue.
  - Scenario 2: Forecast uses a calculated daily utilization rate:
    - The calculated utilization rate dramatically rises, bringing forward future due dates as the application thinks they are now overdue.
    - Quickly identifying, editing, or disabling and entering the correct reading as soon as possible helps resolve the issue.
    - If work orders are created for these dates, you may need to cancel them in the Maintenance Forecasts page and regenerate the forecast. You may also need to manually reschedule work orders to get back on track.

Generate Maintenance Forecasts

Create and regenerate forecasts regularly to provide latest data to your planners. You can create and periodically update the forecast by one of these methods:

- Within a single program, you can verify the forecast methods for a single work requirement or only a specific included asset in the affected assets page. Each of these methods incrementally update the forecast only for a subset of due dates for the program. This method is useful to create or update the forecast for a new or edited work requirement within a program, while eliminating the unnecessary recalculation and recreation of forecast due dates for other work requirements across the program. The improved response time lets you to evaluate the forecast due date results quickly. Some additional considerations are:
  - These actions are only available if you set the asset maintenance parameter Allow Suppress and Merge Across Work Requirements in a Maintenance Program parameter to No. Otherwise, these actions are disabled.
  - In the existing page, you can only generate the forecast once the requirement status is Active. Therefore, the resulting forecast is live and is eligible to be viewed and create work orders.
  - In the Redwood page, you can generate the forecast once the requirement status is Ready to Forecast. This gives you the ability to validate and refine your modeling, prior to releasing it to production and a status of Active.
- Within a single program, you can generate or refresh all the work requirements and assets. Verify the forecast methods for the work requirements by selecting from the Actions drop-down the Generate Forecast button. This runs a scheduled process to create and update the forecast across all work requirements and assets in the program for forecast window in days. If you have large programs, don't run this process more than once in a day. Some additional considerations are:
  - You can disable this option from the pages by setting an asset maintenance parameter, allowing you to only run the program as a scheduled process during a low activity time in a day. You can then use the options above to generate the forecast only at the requirement level, if enabled.
- After a program is validated, set up the forecast to periodically run using a scheduled process. The job can be accessed from the Tasks pane on the Maintenance Management landing page by clicking the Generate Maintenance Forecast link. For additional details about this scheduled process, refer to the Scheduled Processes for SCM guide.

When the Generate Maintenance Forecast scheduled process is submitted, it locks all the unique Maintenance Programs covered by the program parameters. When it completes, it unlocks the program so that its forecast can be generated again by resubmitting the scheduled process. In the rare case where a scheduled process ends in error or when a process is manually stopped by user intervention, there's a chance the program is still locked. This prevents further updates of its forecast using the scheduled process. If this occurs, you can unlock the program by this method.

- Create a small program with 1 work requirement in the same organization.
- Ensure the scheduled process isn't running for the organization or program.
- For the small program, run the Generate Forecast in-session, this should unlock all the programs in the organization.
- Then try running the Scheduled Process again, perhaps for one program at the time until the issue is resolved and confirmed. You should also coordinate efforts with Oracle Support if you have any questions or concerns.

Note: it's recommended to have a coordinated effort for creating and updating the forecast of individual programs as well as programs across each organization. If individual updates are performed that aren't coordinated across users on a regular basis, it can be difficult to maintain consistency in updating the forecasts. Scheduled processes should be used to consistently update the forecast on a routine interval that's known by your planners.

Adjust Future Due Dates Based on Last Completion

We recommend that if Day or Meter Intervals are used as the forecast method, you select the Next work order only checkbox and set the Method to Calculate Next Due as Last Completion. This allows a dynamic adjustment of future due dates within the forecast horizon based on previous work order completion and meter reading entry. Otherwise, the forecast may not dynamically forecast taking into consideration the last completion of a work order for a maintenance program. Remember, if the Method to Calculate Next Due as Last Completion is set to Base Interval, then the application doesn't generate the next work order based on the actual meter reading.

However, if you have business scenarios where work orders aren't completed before the next forecasted due date, the forecast is unable to dynamically adjust and push out future due dates. You may encounter issues with forecast sequences getting skipped over and not available to be re-forecasted and pushed out dynamically. The only way to handle these dates is to manually skip or create work orders using the Maintenance Forecast page.

To solve this issue, we recommended setting an asset parameter option that enables the capability to adjust future due dates in the forecast based on either the scheduled or actual completion date of the last open work order in history, along with the latest meter reading.

The parameter is entitled Allow Maintenance Forecast to Adjust Future Due Dates When Using the Last Completion Option and can be set by an administrator in the Manage Asset Maintenance Parameters in the Setup and Maintenance work area.

- When set to **No (default)**, the application doesn't adjust the next due dates based on the last work order in history based on the scheduled completion date and it doesn't adjust for work orders completed after the next due date in the forecast.
- When set to **Yes (recommended)**, the application adjusts the next due dates based on the last active work order, either scheduled or actual completion date, in the forecast sequence. For this option to work, you should either use the next work order option = Yes or have a forecast window that allows only one active work order at the time.
    - Prior to work order completion, if the work order scheduled completion date is updated, then the next refresh of the forecast pushes or pulls the next due dates within the forecast window of the next forecast sequences in order and per the forecast method.

- After work order completion, the application adjusts the future forecast, based on the actual completion date, while maintaining the forecast sequence over the forecast window. This may include deleting or recreating forecast sequences to recreate the correct sequence after the completion of the work order's due date in the forecast.

If you are modeling a forecast using meter readings, it's expected that readings are routinely entered applicationatically, manually or during work order completion. The application uses these readings to forecast the next due date sequences. If you adjust a scheduled completion date, the application calculates what the expected reading is as of that date, and use this value to project the future due dates.

Generate Maintenance Forecasts Processing Time

If the process finds large numbers of work requirements and affected assets, the application can now deploy additional child workers to improve processing time. By default, the application deploys a single worker, but if more than 2000 work requirement and asset combinations are detected in a program a second worker is automatically deployed.

If you are still experiencing long processing times, due to a large number of work requirements and of assets within a program, you may see improve processing time by having an Administrator increase the number of child workers that can be deployed.

An administrator can set the number of workers using the Manage Administrator Profile Values task for this profile option:

- Profile Option Name: ORA_MNT_PROGRAM_NUM_WORKERS
- Profile Option Description: Number of Enterprise Scheduler Service Workers to be spawned for the Maintenance Program Jobs.

We recommend increasing the number of workers between 3 and a maximum value of 10. You should start at a value of 3, then increment one worker at the time, verifying improvement or not in the processing time.

Validate a Maintenance Forecast

In the existing page, after a forecast is generated, you can view and confirm a forecast within the program using the Gantt or Calendar tabs, by searching for an asset and/or the work requirement on the Maintenance Forecasts page or reviewing an OBTI analysis or report. Depending on the size and complexity of a forecast, you can pick the appropriate method.

In the Redwood page, you can also validate the forecast preview in the Forecasts Tab while the requirement status is Ready to Forecast. Once promoted to Active, the planning forecast can also be reviewed in this tab.

Within the program, you can confirm that a forecast has been successfully created or updated. There are 2 key indicators located on the Overview tab of each program and tell you when it was last updated and forecasted.

You can then validate the forecast modeling outcome of each asset using the Gannt Chart or Calendar tabs within the program, or by searching the Maintenance Forecasts page. For most modeling solutions, you can easily verify the cadence and expected due dates match your forecast modeling. This includes viewing additional details about a due date, such as the source of the forecast, interval, and work definitions that are included.

During the creation of new work requirement for an asset, you may need an iterative approach where you generate and review the forecast, make small modifications, then regenerate the forecast to verify the outcome. However, once a forecast has been established and work orders have been created, care should be taken when modifying the forecast methods of the source work requirement. Additional details and consideration around updating a work requirement is covered in the next section.

it's also recommended to have an OTBI analysis or report available to verify the latest updates to a program using the Maintenance Program and Work Requirement subject areas. These updates can then be validated against the

corresponding OTBI report for the Forecast Line subject area, allowing you to confirm if the latest programs updates are reflected in the forecast or not. This comparison provides you the ability to understand the resulting cadence and due dates in the forecast and help guide any future updates to the modeling methods. Additional details on using OTBI are covered in this user guide in the section entitled Reports and Analytics.

Here are the key fields in an OTBI report for the Maintenance Program and Work Requirement definition subject areas that can be used to validate against the Forecast Lines subject area:

- **Maintenance Program - Header**
  - **Creation Date**: Shows the date when a program was created. This is the baseline date for the creation and editing of work requirement details.
  - **Last Updated Date**: Shows the date when the header attributes were updated last time. This date doesn't reflect work requirement updates.
  - **Last Forecasted On Date**: This is helps you know when the last forecast successfully completed, either in-session or using the scheduled process for this program. This is also tracked at the Work Requirement and Forecast line level.
- **Work Requirement - Header**
  - **Creation Date**: Shows the date when the requirement was created.
  - **Last Updated Date**: Shows the last time when header attributes were updated.
    - You can compare the historical forecast cadence against the latest modeling method to understand if any changes were made over time.
  - **Last Forecast Date**: Shows the last forecast date for each requirement. Compare it with the Program Last Forecast Date to know if the requirement was in an active status when the last time a program was updated.
    - Comparing the Creation and Last Updated dates on the requirement with that of the Last Forecast Date confirms if the latest version of the requirement was considered in the forecast.
    - Also, you can compare the requirement's Last Forecasted Date with the Last Forecasted Date in each resulting Forecast Line to know if the latest or an earlier version was used to create the line and its due date.
  - **Start Date**: The start date is important to determine the first due date. However, after the first work order is created, the start date shouldn't be updated, because it won't re-sequence the due dates. However, if any user changed the start date, you can verify it against the historical forecast by Last Forecast Dates.
- **Work Requirement - Work Definitions**
  - **Creation Date**: Shows the date when work definition was added to the requirement.
  - **Last Updated Date**: Shows the last time the definition was updated.
    - You can compare a Work Definitions Last Updated Date with the requirement's Last Updated Date and Forecast Last Date to verify if the current Work Definition details are considered in the forecast.
    - Though you can delete a work definition, add a work definition, or edit its interval value, along with merge or suppress option between or across different forecast updates, this can cause a confusion in forecast and issues in understanding the intended modeling and cadence.
    - Also, if a forecast isn't refreshed since the last work definition or requirement update, the future forecast won't be in sync per the modeling.
  - **Repeats At Interval**: This value can be updated over time. Use this to compare with the past forecast history to understand the changes made.
- **Work Requirement - Affected Assets**
  - **Creation Date**: Use this date to verify when the asset explicitly defined for the requirement.
  - **Last Updated Date**: Shows the last time an asset was updated. You can compare it with the requirement's Last Updated Date and Forecast Last Date.

- **Historical Details**: Are updated before the first work order is created. So, it's easy to compare with the forecast to verify any changes in the modeling and the affected asset details.

Use an OTBI report for the Forecast Lines subject area to compare against the latest updates to the Maintenance Program and Work Requirement definition subject areas. As covered in the Reports and Analytics section of this guide, the topic OTBI for Oracle Maintenance provides guidance on all the subject areas, including an example of an OTBI analysis for the Forecast Lines. Here are some key fields from the analysis example to review:

- Forecast Lines for a program should be sorted by Work Requirement, Asset, Forecast Sequence, Due at Cycle Interval, and Forecast Due Date respectively. This provides a logical order of forecast history to compare against the modeling methods.
- **Forecast Line ID**: A Forecast Line is deleted and recreated by each forecast update until a work order is created, resulting in a new unique Line ID. Therefore, you can compare these values over a time to confirm from a previous forecast to a later forecast if the lines were recreated.
- **Last Forecast Date**: You see the last date when a forecast was updated for a line with a work order. After a work order is created, the forecast line is frozen. This date can be compared against the corresponding dates in the work requirement to verify if the latest updates are reflected in the forecast lines.
- **Forecast Sequence and Due Date**: The Forecast Sequence starts as of the Start Date at a value of 1 and is calculated forward for the forecast horizon number of days. If the Start date is in the past, the sequence is calculated from that date, but it only produces due dates from the application date forward. Therefore, it may be common to see a forecast sequence for a cycle of intervals starting in the forecast at a value other than 1.
  - The cadence of a requirement for an asset over time is analyzed by comparing the Start Date, Cycle, and Intervals (if used), Work Definition Due Intervals (if cycle-based) against the Forecast Lines. This verifies if the current modeling is correctly applied for all future due dates without a work order.
  - Additionally, if the forecast method is using a last completion option, then forecasted next due is recalculated accurately only after the next work order is completed.
- **Forecast Meter Reading**: If utilization meters for an asset are used to calculate the due dates, this value reflects where the forecast anticipates the reading of the asset each future due date. This value is calculated using the base interval value and meter utilization rates. The due dates are then updated based on the actual meter reading history when a forecast is updated.

Update a Work Requirement

As you are validating a forecast, you may identify due dates aren't falling on the correct sequence for one or more assets. For a newly created work requirement, you may need an iterative approach where you generate and review the forecast, make small modifications, then regenerate the forecast to verify the outcome. This is an important step in validating the forecast modeling for an asset's preventative maintenance during its initial definition.

In the Redwood page, you can generate a forecast preview while the requirement is in Ready to Forecast status. Thus, you can verify your modeling and asset initialization before the due dates are viewable in the Manage Forecasts page and eligible for work order creation.

However, for an existing forecast, you may wish to manage small changes in the Maintenance Forecasts page before considering any changes to its source work requirement. Care should always be taken when modifying the forecast methods of the source work requirement once work orders are created. Once a cadence is established using the work requirement start date, it may be difficult to adjust it depending on the modeling methods.

In the Redwood page, you can only edit a requirement after the forecast has been created in planning by reverting the status from Active to Ready to Forecast. You can then view the existing forecast on the Forecast tab, adjust your modeling or asset initialization, and regenerate the forecast to verify the changes.

Note: it's also essential that you verify all your forecast modeling methods prior to creating the first work order for an asset in a work requirement. Otherwise, you're limited to the adjustments you can make to future due dates.

When editing a work requirement, it's important to understand the effect to the existing forecast, future forecast, and in general its history.

- Forecasts are always created and recreated from the date of the scheduled process into the future, per the forecast horizon in days. If you generate a forecast in the page, it uses the present date.
- Existing forecast due dates, without work orders, are deleted and recreated. Past dates are preserved and not updated.
- If a forecast due date has been manually set to be skipped, or a requested due date or organization is defined, then the forecast preserves the due date and it won't be deleted and recreated. Additionally, all previous due dates before this date are also preserved, which means the forecast won't delete or recreate them. This is necessary to maintain history of the manual edits and allow the forecasted due dates to be later edited as required.
- If a forecast due date is manually reset to not be skipped, have a requested due date or organization defined, then the forecast due dates are reconsidered for deletion and recreation. This includes the individual due dates and all due dates before it in history that aren't preserved due to manual edits.
- Work Orders are created only for due dates and times in the future. Therefore, it's possible that due dates in the past are skipped and not considered for work order creation if that scheduled process isn't scheduled to run on a routine basis. You can use the Manage Forecasts page or REST API to manually create these work orders, as required.
- Changes to the work requirement forecast method or parameters may fundamentally change the future forecast cadence. It becomes difficult to verify the original or last modeling in the past. Therefore, it may be advisable to create new work requirements when a significant change in cadence is required.
- If you use a Day or Meter interval, you must choose a method to calculate the next due dates as either using the base interval or the last completion. Once work orders are created for a forecast, changing this method could result in dramatic changes to a future forecast. Therefore, care should be taken when updating the method.
- Once you have verified the changes in the Redwood page, it's important to promote the requirement to planning asap.

Manage the Forecast Using the Maintenance Forecast Page

You can also view and update the forecast using the Maintenance Forecasts page or REST API. For an asset's due date, you can view key details about the asset and forecast method. Additionally, you can:

- Define and update a requested work order start date if a work order isn't created yet. By default, a work order start date is always based on the forecasted due date. This is helpful to manually define when a work order is created, instead of its due date, by the work order creation scheduled process. The requested start date can only be set to a value between the last and next due date in the forecast. After the start is set, you can edit or deleted the requested start date only until a work order is created.

  Note: The start date column only reflects the original value equal to the forecasted due date or the manually requested work order start date. This column doesn't update to the planned or actual start date of the work order.

- Define and update a requested maintenance organization where the work order is created. If the due date is forecasted by a program that's enabled for cross-organizations, then you can request the work order to be created in another maintenance-enabled organization, instead of its forecasted organization. This requested organization must have the same work definitions in order to be defined.

- Skip a due date for an asset. In case you don't want to create a work order for a due date, set the skipped indicator to Yes. This won't consider the due date for work order creation using the work order creation scheduled process. You can also un-skip a due date, which allows the due date to be reconsidered by the next run of the schedule process if the due date is in the present or future. Else, you can manually create a work order.
- Manually create a work order for a due date. For a due date without an active work order, you can create a work order based off the forecasted due date and location, or by using the requested start date and location, if defined. This action launches a scheduled process request to create the work order for the due date. This action is useful for due dates with a status of Planned, Unplanned, Skipped or Canceled.
- Manually cancel a work order for a due date. You can cancel the work order if no transactions have been created in execution. Even after canceling, you can still view the work order reference, but it's set to a status of Canceled and isn't available for execution. The work order and due date is considered by the forecast scheduled process to generate future due dates. Additionally, for a Canceled work order on a due date, you can manually create a new work order in the same or requested location.

Note: If a work requirement is defined to create only the next work order, you can't manually create any future work orders unless the last work order in history is in a status of completed or canceled.

Note: Care should be taken when you manually update a forecasted due date in the Manage Forecast UI or using the REST API. These updates fundamentally change the behavior of the forecast scheduled process. If you update a forecast due date with a requested due date or organization, or skip the due date, it won't be deleted and recreated by the forecast scheduled process. Additionally, all previous due dates before this date is also preserved, which means the forecast won't delete or recreate them. Therefore, if you have a forecast method that relies on the last completion of a work order to recalculate the drive the next due date, you won't see an updated forecast due date if the date is preserved due to manual editing.

Keyword-Based Searches

Here are some tips you can follow when you do keyword-based searches:

- Searches are case insensitive. Both capitalized and non-capitalized keyword terms match when searching by work order or asset details.
- You can search using a full-text search, such as a work order or asset number. This narrows your search results.
- You can also use a partial-text search, such as the first few numbers of a work order or text in an asset description. Use **starts with** or **contains** for an effective search.
- If you search using text that's hyphenated, such as Lot-Based, the terms are searched using an OR condition. that's, the search engine searches using Lot or Based as separate text values.
    - With hyphenated text, you can also search by only a partial value text, such as Lot or Based. This broadens your search results.
    - If you don't find your results or you get too many results, try searching for an exact phrase by adding quotation marks around the text such as, "Lot-Based" . This tells the search to only return results that contain the exact words in the same order.
- If you search using a word that has an underscore, such as Lot_Based, the engine considers this as a one word.
    - Don't use word with underscore for a partial keyword search.
    - Special characters, such as asterisks aren't supported.

How You Generate Maintenance Work Orders Based on a Forecast

When you have verified the Forecast for a Maintenance Program, then you are ready to create work orders for the future forecasted due dates.

You can create work orders from the forecast by one of two methods:

- Within a single program, once you have verified the forecast methods for the work requirements, you can manually create Work Orders by selecting from the Actions drop-down the Generate Work Orders button. This launches a scheduled process, returning a process id for monitoring until completion.
- After a program is validated, you must set up the work orders to periodically create using a scheduled process. The job can be accessed from the tasks pane on the Maintenance Management landing page by clicking the Generate Maintenance Work Orders link. For additional details about this scheduled process, see the Scheduled Processes for SCM guide.

Note:

- It's recommended to generate work orders using a scheduled process and not manually from within the program. You must evaluate your planning, scheduling and execution process to determine the best frequency in which to create them. Generally, daily, or weekly scheduling of the process is recommended to ensure that a contract creation of work orders into the future occurs on a known frequency. Else, it is possible that work orders will not be created for past due dates.
- During implementation, testing, or introduction of a new work requirement or a new asset, it's recommended that you wait to run the forecast until you are ready to generate the first due forecasted date that won't be used to create a work order. Else, the forecast may start generating, resulting in the skipping intervals of past due dates, which may not be desirable. Additionally, if you run a future forecast, and then don't create work orders for due dates over a period of time, you end up with stale forecast due dates that won't be considered for work order creation.

The work orders are generated based on the forecast, next work order option and the concurrent requirement rules defined in the maintenance programs are applied. The work orders are created with status as Unreleased, priority set to 1, and start time set to 8:00 AM unless different options are defined in the work requirement. The work order type and sub type are derived from the asset. The work orders are generated with type as Preventive and sub type as Planned. The work order description is defaulted from the work definition description, based on these rules:

- If the maintenance programs use a single work definition or concurrent requirements option is set to suppress, the work order description is defaulted from the work definition description.
- If the work order is created from merged work definitions within a single maintenance program's work requirement, the work order description is defaulted with the work requirement name.
- If the work order is created from merged work definitions across multiple work requirements within a maintenance program, the work order description is defaulted with the maintenance program name. As mentioned in this user guide, it is not recommended to define preventative maintenance that will merge across work requirements.

Note: Work Orders that're created through the merging of one or more work definitions won't have a reference to a work definition within the work order or operations. You can find these details in the source maintenance forecast and forecast lines for the due date in the Maintenance Forecast page or by using an OTBI report.

Work Orders won't be created in some cases, based on user setup or validation issues. For validation issues, it's recommended to verify the output logs from the scheduled processes that are used to create work orders to identify due dates that didn't create work orders successfully.

- If the due date is in the past, then work orders won't be created. This can occur if the scheduled process isn't scheduled to run on a routine basis. Work Orders can be manually created in the Maintenance Forecast page or using the REST API for past due dates.
- If a work requirement has the Create Work Orders Option set to Manually, then the scheduled process won't consider these due dates. Work Orders are expected to be manually created in the Maintenance Forecast page or using the REST API for past due dates.
- If a work requirement status is Draft, then it won’t be considered by the scheduled process.
- If an asset has the indicators, Allow maintenance programs or Allow work orders set to No, then it won’t be considered by the scheduled process.
- If work definitions aren't defined or active in work order or requested work order organization. For a work definition in a work requirement, the same work definition by Code must be defined in every organization for which an asset included in a work requirement may be forecasted and create work orders.
- If any other validation from the Import Work Orders program are encountered, they are captured in the output log.

Note: Your maintenance programs may reference work definitions that have a Default Work Order Type and Subtype values defined. These aren't considered during work order creation since one or more work definitions could be merged into a single work order.

Note: When the application generates work orders based on the maintenance forecast, it considers the value set for Generate Work Orders Horizon in Days. This value is defined in the maintenance organization plant parameters program header or work requirement. This controls how far into the future the forecast process generates work orders. After a program is run, if work orders for forecasted due dates aren't displayed in the calendar or Gantt chart, you can review the setup and adjust the horizon window value. For more details, see the *Guidelines to Set Up Maintenance Plant Parameters* topic in the book Implementing Manufacturing and Supply Chain Materials Management.

How You Manage Maintenance Programs Using REST API

Define, view, and update maintenance programs using REST services.

Use the Maintenance Program REST API to:

- Create, view, and update the maintenance program header.
- Create, view, and update calendar patterns.

- Create, view, and update work requirements.
- Create, view, and update condition codes defined in a work requirement.
- Create, view, and update meters defined in a work requirement.
- Create, view, and update work definitions defined in a work requirement.
- View and update affected assets for an item-based work requirement.

Note: If a work requirement is created via REST API, then it's expected that all the minimum attributes at the parent and child resource levels will be passed in the payload to ensure it is created in Active status. If incomplete data is passed, then the status is set to Draft. To resolve this issue, you must define all the missing minimum attributes. If missing or incomplete data is passed at the child resource level, then the status may not be change from Draft to Active due to a limitation of the service. To resolve the status, an update must be made at the work requirement parent resource level, allowing the system to validate if the minimum attributes have been defined across the parent and child resource levels. If partial or incremental creation of a work requirement is required, then it is advisable to use the UI or a File-Based import process.

For more details, refer to the REST API for Oracle Supply Chain Management Cloud guide. Included are use case examples for modeling and using Maintenance Programs.

How You Manage Condition Event Codes

Condition event codes are optionally defined for use across maintenance task flows:

- Codes can be defined for a maintenance program work requirement for condition-based maintenance. The codes can be optionally referenced in Operational rules for connected assets.
- Codes can be used to create of maintenance work orders by using a special action in the maintenance work orders REST API.This special action is generally used for external integrations, such as connected assets or external IoT systems for triggering condition-based maintenance.
- Codes can be defined within a standard operation for use in supplier warranty claims and entitlements.
- Codes can be defined for supplier warranty coverages and contracts.
- Codes can be validated for creating work orders by the result of a quality inspection.
- Codes are used to define the failure, cause, and resolution in work order failure capture.

The Manage Condition Event Codes page enables you to search for, create, and edit the condition event codes. In the Maintenance work area, from the Tasks pane, click the Manage Condition Event Codes link to open the Manage Condition Event Codes page.

Note: To use the Manage Condition Event Codes page designed in Redwood, set the ORA_CSE_CONDITION_EVENT_REDWOOD_ENABLED profile option to Yes. The profile option is available in the Manage Administrator Profiles Values task.

You can perform a basic keyword search to look for one or more condition event codes. To create a condition event code, click the Add icon. A new row is added in the table in which you can select from or enter the details. The Code is the only required field. Optionally, you can select the type and inactive date, and enter the name and description for the new condition event code.

You can edit a condition event code by selecting a row and clicking the Edit icon. All fields except the Code are editable.

The Manage Condition Event Codes page displays a table with the following columns that also act as input fields:

Field	Description
Type	The type of the condition event code. The valid values are: • Diagnostic code • Failure code • Cause code • Resolution code • Transaction Code • Reason for return code • Work accomplished code
Code	A unique identifier of the condition event code. Once the condition event code is created, the code can't be updated.
Name	The name of the condition event code.
Description	The description of the condition event code.
Inactive Date	The date on which the condition event code becomes inactive. **Note:** You can only set an inactive date if the code is not referenced in a maintenance program, supplier warranty coverage, failure set, or fault capture event. Else an error is presented.

Note: Condition event codes can also be managed via REST API.

Related Topics

- How do I update existing setup data?

11 Manage Maintenance Work

Overview of Maintenance Work Management

Oracle Maintenance lets you create and manage work orders. The work orders help you initiate and manage the maintenance and repair work for assets. You can manage work orders using the Manage Maintenance Work Orders page or the Maintenance Supervision workbench.

Go through the *Key Capabilities of Maintenance Supervision* topic to get a comparison of functionalities between the Manage Maintenance Work Orders page and Maintenance Supervision. Carefully evaluate before you decide which one of them suits your business need to create and edit work orders as a well as schedule and manage resource assignments.

The Manage Maintenance Work Orders Page

You can create and change the details related to work orders, operations, materials, and resources. Work definitions and standard operations can help speed up the process of creating work orders. You can search for work orders that meet specific criteria and review their details and progress. Additionally, you can see the supplier warranty contract details for each asset that's being maintained or repaired. In a work order, you can also create and manage asset failure events.

The mass actions enable you to change the priority, status, and material reservations of multiple work orders at the same time. You can additionally use a scheduled process to mass close the completed work orders. The scheduled process can be run on demand or scheduled to run at specific time. You can view and manage the work order exceptions. You can also view the costs associated with the work orders. The costing information is based on the material and resources transactions.

After creating the work orders, you release the work orders for execution. Work orders ready for execution are available in the Maintenance Dispatch List or My Maintenance Work pages. Analyze your business processes before choosing pages you want to use for work order reporting and completion. See the *Execute Maintenance Work* chapter in this user guide to know how to use the Maintenance Dispatch List and My Maintenance Work pages.

To summarize, the Manage Maintenance Work Orders page enables you to perform the following tasks:

- Manage maintenance work orders in user interface. You can search for, create, and edit the maintenance work orders.
- Use mass actions to change priority and status of multiple work orders at the same time.
- Create asset failure events.
- View supplier warranty contract details and initiate warranty repairs.
- Perform mass close action on the completed work orders using the scheduled process.
- View and manage the work order exceptions.
- View the costs associated with the work orders.
- Create and update work orders using REST API or File-based import.
- Generate and print work order details report and material requirements report.

Note: If your organization is project-tracked, you can perform project-specific maintenance work by creating project-specific work orders.

Create and Update Work Orders Using REST API or FBDI

You can also create and update work orders using REST API or File-based import. The import feature enables you to create and update the work orders in bulk and import the work orders from other sources into your application. You can generate and print reports with the work order details and material requirements. These reports can be used for sharing and offline reviews.

Planning, Scheduling, Assignments, and Advanced Scheduling

It's important to understand the process and capabilities for planning and scheduling of existing and upcoming maintenance activity. Planning and scheduling begins before work orders are created based on historical unplanned demand, as well as planned preventative maintenance. It then continues after work order creation, both before and after release to execution, as well as during the execution of work order backlog. Assignments are optional but should be considered as part of the scheduling process in the near-term.

Historical Unplanned Demand

Unscheduled or ad hoc work orders are created to address unplanned maintenance activity on assets. It's important to consider this activity in your planning, from both a resource capacity, as well as a material availability perspective. Resource capacity is important to ensure you can cover your preventative maintenance, as well as your ad hoc maintenance. Supply chain planning is critical to ensure you have the right parts available for your preventative maintenance, as well as your forecasted unplanned demand. Ultimately, you must balance inventory carrying costs and resource payroll costs against the cost of asset downtime.

Forecast Planning and Scheduling

If you use maintenance programs to create work orders for preventative maintenance work, then planning begins with the generation of the forward-looking maintenance forecast. You should review upcoming forecast due dates for your locations to get a better idea of you near-term planned maintenance, while understanding that mid-term and long-term demand will most likely continue to dynamically adjust over time, due to meter updates and actual completion of previous due dates. This can help with understanding your upcoming workload, including resource demand.

The Forecast page provides limited options for helping to smooth demand in the near-term, such as allowing you to set an alternative work order start date. For example, to shift work forward or back during peak demand periods, shutdowns, and holidays. This is helpful, but time a consuming process that doesn’t scale. You also need to understand that setting an alternative start date stops the forecast for that due date, preventing dynamic recalculation until its work order is completed.

Optionally, you can create informative OTBI analysis and reports to provide a summary as well.

For additional details, see the *How You Manage Maintenance Forecasts* and *OTBI for Oracle Maintenance* topics.

Work Order Scheduling

Work orders are automatically scheduled after creation using the unconstrained scheduling engine. This provides general scheduling functionality to push or pull the start dates around based on the organization schedule, facility calendars and shifts, and number of resources per work center. It doesn't provide scheduling based on the actual availability of individual people or material demand but provides basic forward and backward scheduling based off the

requested start or completion dates. After creation, you can then manually adjust work order start dates based on your available capacity.

Additionally, work orders created for preventative maintenance are created all at the same time on each due date, by default 8 AM. You can optionally adjust this time in the work requirement definition, but typically you will see an overload of these types of work orders all starting at the same time on each due date. This requires manual rescheduling to smooth the demand during peak periods.

For aditional details, see the *How Maintenance Work Orders are Scheduled by Default* topic.

Production Scheduling

During work order initial scheduling, the unconstrained engine calculates start times and end times based on the work order start or completion date, while accounting only for the duration of each operation resource's required usage. However, it assumes that your resources have unlimited capacity, usually resulting in multiple work orders being created and scheduled simultaneously on the same date and times. It also doesn't consider material availability.

Using Oracle Production Scheduling, you can programmatically generate a feasible and executable schedule by considering resource capacity, as well as material availability. This can help to smooth your maintenance schedule in the near-term horizon, avoiding peaks and valleys, and helping you absorb unplanned maintenance while producing a rough-cut schedule. Otherwise, you must use manual rescheduling to smooth the demand during peak periods.

Production can be used directly in the application, or you can also invoke it from Maintenance using a scheduled process, as covered in the *Enable Work Orders Scheduling and Resources Assignment* topic of the *Implementing Manufacturing and Supply Chain Materials Management* guide.

Additional details about production scheduling are covered in the *Using Production Scheduling* guide.

Work Order Assignments

After you schedule work orders over a near-term horizon, you can optionally manually assign resources. With this, you can divide the work order demand across your technicians, so they can prioritize their work in the My Maintenance Work page.

Assignments are managed in the Maintenance Supervision page, using the Schedule and Assignment tabs, to efficiently find and assign resources to work orders. This is a manual process, for each work order, operation, and unique resource that doesn't scale for larger numbers of work orders.

Additional details are covered in the Maintenance Supervision chapter in this guide.

Automated Work Order Assignments

The assignments process been traditionally very time consuming, requiring you to edit each work order and assign resource instances at the individual operation resource level on a work order. To programmatically create bulk assignments, consider using the Schedule and Assign Resources to Maintenance Work Orders scheduled process.

The process is run by each organization, for a future horizon by number of days, allowing you to create new assignments, refresh existing assignments, or remove the existing assignments. When creating new assignments, the application evaluates each work order in the schedule window, identifies resources that don't have assignments, and finds available resources. Resources must have a resource instance defined for the resource and must not already be assigned during the same day and time.

It's important to note that this assignment capability doesn't consider a user's work schedule or unavailable time, nor skills beyond resource definition, but does provide a basic automatic assignment capability. Additionally, they must not exceed the daily scheduled percentage asset maintenance parameter, which is defaulted to 80%, but can be adjusted.

If you use Production Scheduling, then you can use the same scheduled process to first schedule the work orders, then consider assignments.

Additional details are covered in the *Enable Work Orders Scheduling and Resources Assignment* topic of the *Implementing Manufacturing and Supply Chain Materials Management* guide.

Advanced Scheduling and Assignment

If you require a constrained work order scheduling process, based on person-level availability, use advanced scheduling for an organization. Advanced scheduling leverages Fusion Field Service to assign and schedule work orders based off actual resource availability in the near-term scheduling window, up to 30 days into the future. Only work orders in organizations enabled for advanced scheduling can utilize this solution.

You'll continue to model your standard operations, work definitions and work orders with resources and resource instances. Maintenance resources and resource instances (at a person level), who are granted the Dispatch List privilege will be synced to Oracle Field Service as Maintenance Resources. You will then configure each person with their actual work calendar, including days on/off, daily shifts, lunch, and unavailable time per day. After they have their schedule set, they are available for scheduling and assignment.

After work orders are created and initial scheduled by the unconstrained engine, you can release and schedule them for assignment over an upcoming window of time in days for each organization. The application schedules each person down to the operation resource level, updating the operation and work order dates. You can view the results in the Maintenance Supervision and My Maintenance Work pages.

Additional details are covered in the *Advanced Scheduling and Assignment* topic in this guide and the *Enable Work Orders Scheduling and Resources Assignment* topic of the *Implementing Manufacturing and Supply Chain Materials Management* guide.

Maintenance Work Orders

A maintenance work order is a document that authorizes you to do a maintenance or a repair work on an asset. It has details that get you started on a maintenance work for an asset in an organization. The work order provides information related to the asset being maintained, priority of the work, and relevant dates for the maintenance work. It also specifies the work definition details, operations, components, and resources required for the maintenance work.

Maintenance work orders are of two types:

- **Preventive**: A preventive maintenance work order is a type of maintenance work order that's created to initiate the planned maintenance process for an asset. You can create a preventive maintenance work order with or without referring to a maintenance work definition.
- **Corrective**: A corrective maintenance work order is a type of maintenance work order that's created to initiate the on-demand repair process for an asset. You can create a corrective maintenance work order with or without referring to a maintenance work definition and also for condition-based maintenance

A work order consists of:

- Work order header
- Operations
- Operation items
- Resources
- Exceptions

- Document references
- History

Let's see each one in detail:

Work Order Header

The work order header contains important details about the maintenance work order. It uniquely identifies the work order and describes the nature of the work being carried out. The work order header also includes information about the specific asset being maintained, the priority of the work order, and the start and completion dates of the work order. On the header page, you can indicate if a work order is for Warranty Repair, if applicable. You can also note the Primary Reason for Repair to assist with reporting. If the work order asset has associated warranty contracts, you can view their details on a separate work order tab.

When you are repairing multiple assets on the same work order, the work order header will be adjusted to show the item being repaired and the quantity of assets of the same item being repaired. In this scenario, a separate tab is available for listing the assets being repaired.

When one or more assets are being repaired, if you are issuing and returning an asset to inventory after repair, you have the option to set an indicator at the work order header. Additionally, you need to define the completion sub inventory location. If it is locator controlled, you also need to specify a return locator.

In a project-tracked organization, the header displays project details. You can associate a project to a maintenance work order, but association isn't mandatory.

Work Order Operations

Work order operations define the components and resources needed, as well as the sequence of steps required to maintain the assets. A maintenance work order must include at least one count point operation, and the last operation of a maintenance work order must also be a count point operation. When creating a maintenance work order, you can use operations inherited from the work definition, use standard operations, or manually enter operations.

Count point operations are required to be reported and completed in-sequence. Using the Dispatch List, you can manually re-sequence operations between count points in some cases. Optionally, you can also choose to complete operations them out-of-sequence by setting an indicator at the work order header. However, this option requires that you use the My Maintenance Work page.

Work Order Operation Items

Work order operation items define the material requirements for operations. they're also referred as materials or components. In a maintenance work order, you can use the materials inherited from the work definition or the standard operations, or manually enter the materials for the operations.

Work Order Resources

Work order operations resources define the resource requirements for the work order operations. The pool of resources available comes from the work center assigned to the operation. In a maintenance work order, you can use the resources inherited from the work definition or the standard operations, or manually enter the resources for the operations.

Pre-defined resources on an operation are optional but can be helpful to automatically transact time for standard repairs without further reporting, provide guidance for the expected time of repair, and guide manual reporting of actual usage. Additionally, pre-defined resources will allow for the use of resource assignments, for both labor and equipment, to identify the resource instances that will be used to maintain or repair an asset. While assignments are optional, they are useful to enable users to manage their work in a queue, as well as track instance-level resource utilization.

Note: To enable self-assignment of work orders and operations in the My Maintenance Work page, you must pre-define resources in each applicable operation, and ensure resource instances are available for each user.

Work Order Assets

A work order can be defined for an asset or an item. If a work order is defined for an Item, then one or more serial-controlled assets can be associated to a work order. For each asset, you can select if the asset is under warranty repair or not.

Supplier Warranty

Supplier Warranty details are shown for a work order's assets. This includes a list of warranty contracts for both the contextual work order asset, as well as any child assets in their physical hierarchy. The warranty contracts can then be considered during work completion as the basis for creating warranty claims.

If you are repairing assets under warranty, you can use the warranty repair and transaction repair coding indicators to consider the work order for a warranty claim.

Failure Tracking

If you are tracking asset failure information, from the work order header you can create an asset failure event. On the failure event, you can indicate if the asset is down, and record the details of the failure, its cause, and resolution. Additionally, you can note if a child asset is the cause of the failure and specify which operation was executed to address the failure.

Work Order Exceptions

Work order exceptions provides details about problems you may encounter during the execution of the maintenance activity such as component shortage and resource unavailability. You can report exceptions directly in the dispatch list or on the Manage Maintenance Exceptions page and then viewed in the Edit Work Order page on the Exceptions tab.

Work Order Document References

Work order document references provide details about the source that created the work order using the REST API. The references contain the details about document type, document number, and end date of the source object as well as providing specific details from the source system. The references are typically used to reference a help desk ticket, service request, sales order, and return material authorization (RMA). To view the details of some source objects, you may need additional privileges and data access. For more information, refer to the Maintenance chapter of the Implementing Manufacturing and Supply Chain Materials Management guide.

Work Order History

Work order history provides details about work order status over the lifecycle of a work order.

Work Order Groups

You can optionally group work orders under a common identifier to manage maintenance initiatives such as OEM part replacements, plant shutdowns, or fleet-wide campaigns. Groups provide a lightweight structure to organize, monitor, and analyze work across multiple independent work orders without creating scheduling dependencies. After associated, you can search for work orders by their associated group.

The Manage Groups page is used to create and manage groups of maintenance work orders. On this page, you can:

- View, search and manage existing work order groups.
- Create a new group by defining a Group Name, Group Code, Description, Status, and Date range
- Add and manage maintenance work orders. A work order scan only be associated to one group at the time.

- End date an existing group, not allowing it to be referenced in a work order.
- Delete an existing group after you have removed all the work orders.

After a group is created, you can use it across maintenance pages such as

- Search for the group on the Maintenance Supervision and My Maintenance Work pages. Matching work orders are filtered in the results.
- Optionally select a work order group, when you create a new work order using the Maintenance Supervision page.
- On the view or edit work order details page, you can view and manage group details in the General Information section.

Users that are creating or managing groups, creating, and editing work orders using groups, and searching by group reference require the Manage Maintenance Work Order Groups privilege (MNT_MANAGE_WORK_ORDER_GROUPS_PRIV). Without this privilege, users will not see the fields nor be able to search by them on the Maintenance Supervision or Work Order details pages.

Additionally, technicians need the View Maintenance Work Order Groups (MNT_VIEW_WORK_ORDER_GROUPS_PRIV) privilege to search for and view work orders group details in the My Maintenance Technician page.

How You Manage Maintenance Work Orders in the User Interface

The Maintenance Work Orders page is the starting page where you can manage the work orders and perform various actions related to the work orders. You can open the page from the Tasks pane by clicking the Manage Maintenance Work Orders link under Work Management.

You can also open the page from the Asset Information Management page. Select an asset row in the results table and choose the Manage Maintenance Work Orders menu option from the More Actions button.

On the Maintenance Work Orders page, you can perform a basic keyword search by using common work order values such as the asset number, serial number, or work order number. You can then further refine narrow the search result by performing an advanced search using the filters.

> **Note:** The keyword search will look across work order records using a **contains** search criteria. For example, if you were searching for all work orders for assets that would be included an asset number range of Truck_ModelB_Version1 to Truck_ModelB_Version10, you can search by ModelB, Version, or Truck. However, if you have an extremely large volume of work orders, then you may find the time required to search to be inefficient and perhaps even timeout in the page. Therefore, you can optionally change the search to use a **starts with** method to improve performance. If set, the same search would require you to search by Truck or Truck_ModelB. The search method is set by a system administrator by changing the profile option ORA_MNT_ALLOW_CONTAINS_OP_IN_KEYWORD_SEARCH from Yes to No.

Optionally, you can begin your search in the filters region by building your own combination of search criteria. Provide at least a work order number, start date, status, or asset to search for matching orders. You can combine these criteria with the additional default filters, or you can add additional filters to the criteria. Click the Search button in the filters region to see the matching results. You can save the frequently used search criteria and reuse it. You can also run a search automatically by creating a saved search and setting it as default. If set, the default search criteria is automatically run whenever the Maintenance Work Orders page is opened.

On the search results region, you can view the progress of the work orders that show whether the execution has started or has been completed. The start and completion dates of the work order appear with a red indicator when they're past due. The work orders appear with a red icon when there are maintenance exceptions logged against the work orders that require attention.

On the Maintenance Work Orders page, you can perform the following tasks:

- Search and view the maintenance work orders.
- Create maintenance work orders.
- Edit maintenance work orders.
- Release work orders for execution.
- Complete work order operations.
- Perform mass actions on maintenance work orders.
- Review costing for maintenance work orders.
- Generate and print reports for work order details and material list.

Note: You can use deep links to open asset pages without navigating through the menu structure. This helps you edit asset details by clicking a deep link that's embedded on an OTBI analysis, Application Composer-enabled page, or a custom page. For more details on deep Refer to the Maintenance chapter of the Implementing Manufacturing and Supply Chain Materials Management guide.

How You Create a Maintenance Work Order

You can create maintenance work orders using any of the modes such as the Asset Information Management user interface page, a maintenance program, a REST API, or a File-Based Data Import. When you manually create from the UI using the Maintenance Work Orders page, you can use a copy of an existing work order as a starting point or create an entirely new work order.

Create a New Maintenance Work Order

Create a maintenance work order in the Create Maintenance Work Order dialog box by providing the minimal information. Here's how:

- Set the context of the work order as a single asset (default) or an item:
  - **Asset**: Select the asset number that will be maintained. The work order type and subtype are defaulted from the asset if they're defined.
  - **Item**: Select an asset-tracked item to maintain one or many assets.

Note: Enable a feature opt-in to use item-based work orders. To execute these work orders, enable and use the My Maintenance Work page. You can't execute them from the Maintenance Dispatch List page.

- When you enter maintenance work definition, the work order description, work order type, work order subtype, operations, materials, and resources are derived from the work definition.

  > **Note:** If the work definition has a work order type and subtype defined, then it will overwrite the default values from the asset definition. You can always manually update the values for the work order type and subtype.

- If neither the asset nor the work definition has a default had the work order type and subtype defined, then you must manually select the values for each type.
- If you don't use a maintenance work definition, then you can create a work order header only by providing only the asset, type, and subtype. You can then edit the work order to add operations, materials, and resources.
- The status will be defaulted to Unreleased. If you define a work definition, then you can optionally set this value to Released or an equivalent user-defined status value. If you don't define a work definition, then you can leave at Unreleased or set to On-Hold. The status can be updated after creation and further editing of the work order details.

On Maintenance Work Orders page, click the Add icon to open the Create Maintenance Work Order dialog box.

The Maintenance Work Orders page has the following attributes:

Attributes	Description
Asset or Item	Set the context of the work order to an asset or a list of assets by a common item. By default, the asset is selected. If you change the context to item, the asset entry is changed to an item and quantity.
Work Order	The work order number uniquely identifies the maintenance work order in an organization. You can manually enter the work order number. If not entered, the work order number is automatically generated based on the numbering scheme defined per the plant parameters (Work Order Prefix, Work Order Starting Number). Once a work order is created, the work order number can't be updated.
Description	The description of the maintenance work order. Defaulted from the work definition description, but you can edit it during work order creation and update prior to Release. If the work order is created by merging one or many work definitions through a maintenance program, then the description will be populated by the work requirement or maintenance program name.
Asset	The asset associated with the maintenance work order. You can choose an asset operating in the contextual organization or its related organizations. **Note:** To create a work order for an asset that's operating in another operating organization, the contextual organization must be enabled for the asset's source item in Product Information Management.
Asset Description	The description of the asset associated with the maintenance work order.
Item	You see this field when you change the context of the work order to item-based. Search and select an asset-tracked item that is common to each asset you will maintain.
Quantity	You see this field when you change the context of the work order to item-based. Enter the number of assets to be repaired in this work order.
Status	Represents the status of the maintenance work order during its life cycle. The valid values are: Unreleased, Released, On Hold, Completed, Closed and Canceled. Optionally, you can create user-defined statuses for each seeded status value. The Default status is Unreleased. Things to remember:

Attributes	Description
	• For a work order without work definition, the status can be Unreleased or On Hold at the time of creation. • For a work order with work definition, the status can be Unreleased, Released or On Hold at the time of creation. • You can define work order statuses when you create work orders using maintenance programs. If you don't define any specific status, the work orders are created in the Unreleased status by default. • A work order can only be updated to a status of Released if a work definition is selected or at least one operation is manually defined. • User-defined statuses can be used in the UI and using the REST API only. The values are not supported using File-Based Data Import.
Start Date	The start date and time of the maintenance work order. The work order start date is by default the current date and time, but you can update it. If the work order is created by specifying the start date, the application automatically performs a forward scheduling to calculate the rest of the dates. **Note:** Either the Start or Completion date is required to create and Release a work order. Once released, the value will be the same for each date.
Completion Date	The completion date and time of the maintenance work order. By default, it will be null. If you enter the completion date of the work order, the start date of the work order is erased. When the work order is saved, the application performs a backward scheduling from the completion date to calculate the rest of the dates.
Type	The type of the maintenance work order. The valid values are Corrective and Preventive.
Subtype	The subtype of the maintenance work order. The valid values are Condition based, Emergency, Planned, Reactive, Safety, and Under warranty.
Priority	The execution priority of the maintenance work order.
Allow completion to inventory	Optional. You can define a work order to issue and return the repaired assets to a sub inventory location. If enabled, you can define a sub inventory location and locator. The subinventory and location values you define appear during the work order completion in the Completion page of the My Maintenance Work Orders.
Allow out of sequence completion	Optional. You can define a work order to have its count point operations be completed out-of-sequence. If enabled, you can complete count point operations in any order in the Report Work page of the My Maintenance Work Orders
Work Definition Name	Shows the name of the work definition, which is used to define the work order details. The work definition name can't be updated after the work order is released. The work definition is exploded to determine the operation, resource and material requirements in the work order.
Work Definition Date	Work definition date represents the effective date used to derive the work definition version. By default, this value is null, therefore it's assumed that the latest version will be used.
Work Definition Version	Represents the version of the work definition. The version is derived and displayed based on the work definition name and date specified.

Create Maintenance Work Orders by Copying an Existing Work Order

You can create a maintenance work order by copying an existing work order. On the Maintenance Work Orders page, search for and select the work order you want to copy and click the copy icon to create a new work order. The new work order opens in the Edit Work Order page where you can edit the unreleased work orders.

Create Maintenance Work Orders from the Asset Information Management Page

You can now create and manage maintenance work orders from the Asset Information Management page. Here's how:

1. Navigate to **Supply Chain Execution** > **Asset Information Management**.
2. On the Asset Information Management page, Actions column, click More Actions (three dots) and select **Create Maintenance Work Order**.
3. Enter these work order details:

Fields You Fill to Create Maintenance Work Order

Field	Description
Generate maintenance work order from a condition event	If you select this check box, enter a condition event.
Condition Event	Enter a condition event from which a maintenance work order is generated. One or more work orders are created in the asset organization from this condition event. If no work definitions are associated with the condition event for the asset, a work order header is created. If the asset organization isn't a maintenance organization, the work order is created in the primary related maintenance.
Organization	Maintenance organization where the work order is created.
Work Definition	Work definition of the asset being maintained. The work definition can't be updated after the work order is released. The work definition is explored to determine the operation, resource and material requirements in the work order.
Work Order Description	The description of the maintenance work order. Defaulted from the work definition description, but you can edit it during work order creation and update prior to release.
Type	Shows the type of work order.
Subtype	Shows the subtype of work order.
Priority	Is the execution priority of the maintenance work order.
Start Date	Shows current date and time, by default. You can change it, if you prefer. When you create a work order on a specific start date, the application automatically calculates the rest of the dates.

4. Click **Save**.

Create Maintenance Work Orders from Other Oracle Applications

Work orders can be created or associated from other Oracle applications such as the Engagement Cloud, SCM Cloud or functionality such as Service Logistics or Depot Repair. Typically, this is accomplished through services, such as

the Maintenance Work Order and Install Base Asset REST APIs. For a work order, they can also use the Document References child resource to associate the source document type and number. For example, for a service request, they may associate the service request number to the work order using this resource. You can then use this information to link the source object to a work order across applications.

How Maintenance Work Orders are Scheduled by Default

Oracle Maintenance uses unconstrained scheduling engine in the background to schedule work orders during creation and certain update actions. Newly created work orders have the scheduling method option set to Default Scheduling. If you've enabled Advanced Scheduling and Assignment option for an organization, then after a work order is successfully scheduled for assignments, the scheduling method option is automatically set to User or external system.

> **Note:** The scheduling engine adjusts the work order dates to minimize or eliminate any time gaps within the work order. However, this may not always be suitable for your business needs. Therefore, you might want to manually create and update work dates without the scheduling engine automatically adjusting them. For example, you may need to schedule work orders with time gaps between operations and resources or define overlapping operation and resource time durations. To do this, you can change the Scheduling Method in the work order header from the Default scheduling option to User or external system. This allows you to manually schedule work order dates, enabling you to have gaps or overlaps between operations or resources.

The scheduling engine uses the information provided at the resource definition, work order operation resource level and the resource's calendar to determine the resource's start date and completion date for in-house operations. While scheduling work orders, resources are assumed to have infinite capacity and the scheduling engine disregards loads on the resources from other work orders. It rolls up the resource dates to determine the start and completion dates of each in-house operation. For supplier operations, the scheduling engine uses the lead time information specified at the operation level to calculate the start and completion date of the operation. Eventually the operation dates are rolled up to determine the work order dates. The required date of the operation items are updated to the start date of its operation. The following types of scheduling methods are supported by the scheduling engine:

- Forward Scheduling
- Backward Scheduling
- Midpoint Scheduling

Forward Scheduling: When a work order is forward scheduled, the scheduling engine uses the start date of the work order as an input to determine the start and completion dates for each scheduled resource (for in-house operations), the start and completion dates for each operation and eventually the completion date of the work order. The application automatically performs forward scheduling when the start date of a work order is provided. Forward scheduling is also used by the lead time calculation program to determine the manufacturing lead time of the product.

Backward Scheduling: When a work order is backward scheduled, the scheduling engine uses the completion date of the work order as an input to determine the start and completion dates for each scheduled resource (for in-house operations), the start and completion dates for each operation and eventually the start date of the work order. The application automatically performs backward scheduling when the completion date of a work order is provided.

Midpoint Scheduling: When a work order is midpoint scheduled, the user selects an operation to perform midpoint scheduling by specifying either the operation start date or the operation completion date. If Midpoint scheduling is performed from the operation start date, all the prior operations are backward scheduled while the selected operation and succeeding operations are forward scheduled. If Midpoint scheduling is performed from the operation completion

date, all resources of the prior operations and the selected operation are backward scheduled while the succeeding operations are forward scheduled.

The following actions trigger scheduling or rescheduling of work orders:

- **Create Work Orders:** When work definition is specified, application automatically performs either forward or backward scheduling depending on whether start date or completion date is provided.
- **Update Work Order - Start Date or Completion Date:** Updating one of these date nulls out the other and application automatically performs either forward or backward scheduling.
- **Update Work Order - Work Definition name or Work Definition Date or Work Order Quantity:** Updating any of these fields on the work order triggers the application to prompt forward scheduling or backward scheduling method to reschedule the work order.

The following attributes influence the scheduling behavior:

- **Work Order Start Date or Completion Date:** Serves as the anchor point to perform forward or backward scheduling.
- **Work Order Operation Start Date or Completion Date:** Serves as the anchor point to perform midpoint scheduling.
- **Work Order Operation Resources Sequence Number:** Resources which have unique sequence numbers within an operation are scheduled sequentially in the ascending order. Resources which share a common sequence number within an operation are considered as simultaneous resources and are scheduled in parallel. However, in the case of released work orders with resequenceable operations, the execution sequence will be considered instead of the operation sequence.
- **Work Order Operation Resources Name:** Used by the scheduling engine to determine the work center resource calendar to schedule the resources.
- **Work Order Operation Resources - Required Usage:** Used by the scheduling engine to schedule the resource duration.
- **Work Order Operation Resources - UOM:** Used by the scheduling engine to schedule the resource duration. The resource usage is converted from the specified unit of measure to the scheduling unit of measure using the profile Hour Unit of Measure. The UOM set in this profile must belong to the UOM class specified in the other profile SCM Common: Default Service Duration Class (RCS_DEFAULT_UOM_CLASS_CODE_FOR_SVC_DURATION). For any scheduled resource, it's recommended that this profile be set to a UOM class that represents units of measure for Time.
- **Work Order Operation Resources - Scheduled Indicator:** Resources which have Scheduled = Yes are considered by the scheduling engine to compute the duration of the resource. The resources which have Scheduled = No aren't scheduled and assumed to have the zero duration, such as start date = completion date.
- **Work Order Operation Resources - Assigned Units:** The required usage of the resource is divided by the assigned units to compute the scheduled duration of the resource.
- **Work Center Resources - Available 24 Hours Indicator:** Resources which have this indicator set to **No** are scheduled within the shifts associated with it. Resources which have this indicator set to **Yes**, are assumed to be available 24 hours.
- **Work Center Resources - Efficiency and Utilization Percentages:** The scheduling engine inflates the required usage of a resource if its efficiency and, or utilization percentages are less than 100%.
- **Work Center Resources - Shift Assignments:** Scheduling engine considers the availability of resources based on the shifts assigned to the work center resource.
- **Work Center Resource Availability:** Scheduling engine considers the shift exceptions and work center resource exceptions to determine the availability of resources within shifts assigned to it.

- **Supplier Operation Lead Time Attributes:** For supplier operations the scheduling engine uses the Fixed Lead Time, Variable Lead Time, and Lead Time UOM information provided at the operation level to calculate the start and completion dates of the operation.

Example of Work Order Default Scheduling

Work order scheduling behavior using the unconstrained scheduling engine for in-house operations and the various scheduling methods are explained using the following example. A plant works continuously in a single 9 hour shift from 8:00 a.m. to 5:00 p.m. on all days of a week. This shift time is interpreted in the plant time zone.

The following table explains a scenario where different resources are available in the plant to manufacture a product **A** and lists the efficiency percentage, utilization percentage and availability of each resource:

Work Center	Resource Name	Efficiency Percentage	Utilization Percentage	Available 24 Hours
Machine Shop	CNC Milling Technician QA Inspector	100% 100% 100%	50% 100% 100%	No No No
Assembly Line	Operator Conveyor Line	100% 100%	100%	No
Packing Line	Auto Packer	50%	100%	Yes

All the **Conveyor Line** resources belonging to **Assembly Line** work center are unavailable on day 2 from 9:00 am to 11:00 am due to the monthly preventive maintenance schedule. To reflect this in the application, the supervisor defines a work center resource exception.

To manufacture a quantity of **8** each of a product **A**, the following operations of a work order are used:

Work Order123, with **Operation** 10: Machining, and **Work Center** Machine Shop.

The following table lists the details of three different resources:

Sequence	Resource Name	Required Usage	UOM	Assigned Units	Scheduled
10	CNC Milling	2	Hours	1	Yes
20	Technician	2	Hours	2	Yes
30	QA Inspector	1	Hours	1	No

Work Order 123, with **Operation** 20: Assembly, and **Work Center** Assembly Line.

The following table lists the details of two different resources:

Sequence	Resource Name	Required Usage	UOM	Assigned Units	Scheduled
10	Operator	4	Hours	1	Yes
10	Conveyor Line	4	Hours	2	Yes

Work Order123, with **Operation** 30: Packing, and **Work Center** Packing Line.

The following table lists the details of one resource:

Sequence	Resource Name	Required Usage	UOM	Assigned Units	Scheduled
10	Auto Packer	1	Hours	1	Yes

1. During the scheduling process, the application computes the duration of a resource in the following manner:

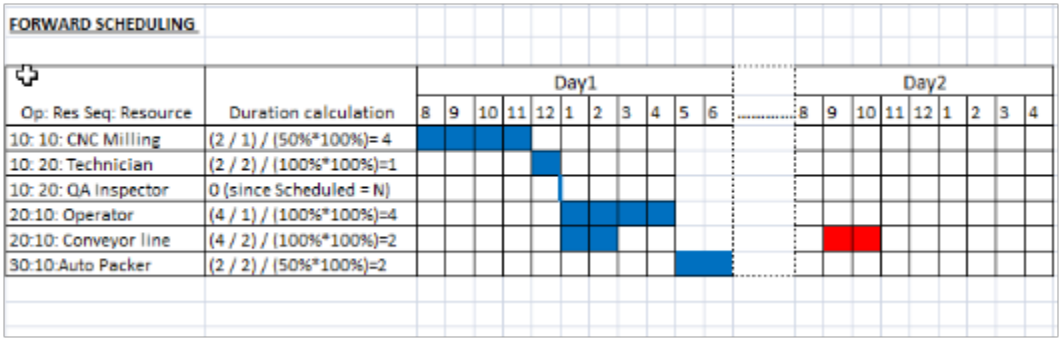
$$\text{Resource duration} = \frac{\text{(Required usage / Assigned units)}}{\text{(Resource Efficiency \% * Resource Utilization \%)}}$$

2. In operation 10, the resource **CNC Milling** has a utilization of 50%. This has an effect of extending the usage of this resource by twice its required usage.
3. In operation 10, since the resource sequence number of the resources is different, the resources are scheduled sequentially. In operation 20, since the resources share the same resource sequence number, the resources are scheduled in parallel.
4. The **Conveyor** resource used in operation 20 is unavailable for 2 hours on day two, and so the application doesn't schedule this resource during that period.
5. In operation 30, the resource **Auto Packer** has an efficiency of 50%. This has an effect of extending the usage of this resource by twice its required usage.
6. The resource **Auto Packer** is available 24 hours and so its resource usage is done even if isn't outside the plant shift duration.

Forward Scheduling

If the work order is created using the start date of day 1 at 8:00 a.m., the application forward schedules the work order and computes the completion date as day 1 at 7:00 p.m. The resource duration is displayed in the following chart:

The following figure shows Forward Scheduling with six resources:



If the work order is created using the start date of day 1 at 8:00 a.m., the application forward schedules the work order and computes the completion date as day 1 at 7:00 p.m.

The following table presents the information that has been explained diagrammatically for Forward Scheduling:

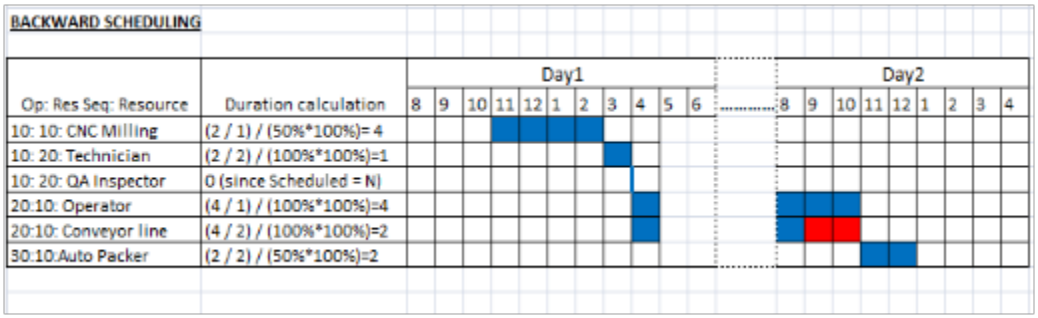
Operation Sequence	Resource Sequence	Resource Name	Resource Duration	Scheduled Dates With Explanation
10	10	CNC Milling	(2/1)/ (50% *100%) = 4 hours	Forward Scheduling logic is applied from the first resource of the first operation. The first operation is the Machining operation. Since the work order is being requested to start at 8:00 a.m., the first resource required for this operation is CNC Milling with required resource duration of 4 hours. The CNC Milling resource is scheduled from 8:00 a.m. to 12:00 noon.
10	20	Technician	(2/2)/ (100% *100%) = 1 hour	The Technician performing the task after CNC Milling resource is scheduled from 12:00 noon to 1:00 p.m.
10	20	QA Inspector	(0 hours (Since Scheduled= N)	The QA Inspector has no duration but shares the same resource sequence as the Technician, so the scheduled start and end time is 1:00 p.m.
20	10	Operator	(4/1) / (100%*100%) = 4 hours	The next operation is the Assembly operation. The Operator takes 4 hours to complete the task and is scheduled from 1:00 p.m. to 5:00 p.m.

Operation Sequence	Resource Sequence	Resource Name	Resource Duration	Scheduled Dates With Explanation
20	10	Conveyor Line	(4/2) / (100%*100%) = 2 hours	The Conveyor Line resource is used in Assembly operation and is scheduled to start in parallel with the Operator. So the conveyor line operation starts at 1:00 p.m. and ends at 3:00 p.m.
30	10	Auto Packer	(2/2) / (50%*100%) = 2 hours	The Packing operation starts after Assembly operation at 5:00 p.m. and ends at 7:00 p.m. With this, the work order is completed.

Backward Scheduling

If the work order is created using the completion date of day 2 at 1:00 p.m., the application backward schedules the work order and computes the start date as day 1 at 9:00 a.m. The resource duration is displayed in the following chart:

The following figure shows Backward Scheduling with six resources:



If the work order is created using the completion date of day 2 at 1:00 p.m., the application backward schedules the work order and computes the start date as day at 11:00 a.m.

The following table presents the information that has been explained diagrammatically for Backward Scheduling:

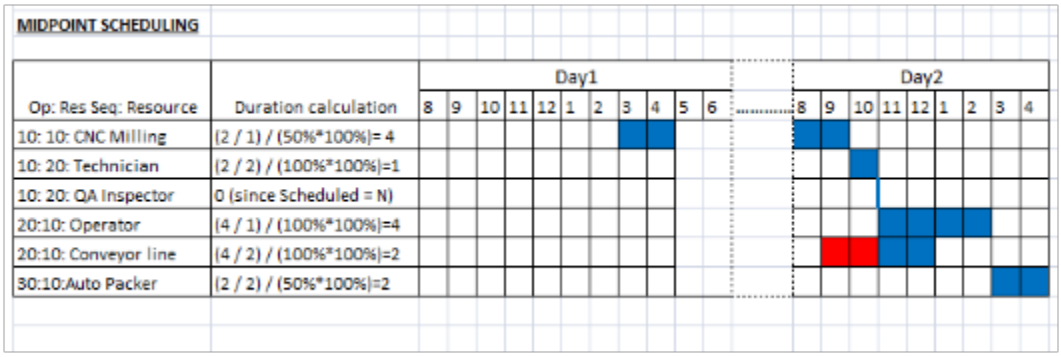
Operation Sequence	Resource Sequence	Resource Name	Resource Duration	Scheduled Dates With Explanation
30	10	Auto Packer	(2/2) / (50%*100%) = 2 hours	Backward Scheduling logic is applied and we start with the last resource of the last operation and compute the start date by scheduling operations in a reverse sequence of forward scheduling. Since the work order is being requested to be completed on day 2 1:00 p.m., and the Auto Packer

Operation Sequence	Resource Sequence	Resource Name	Resource Duration	Scheduled Dates With Explanation
				resource requires 2 hours, Packing operation starts on day 2 at 11:00 a.m. and ends at 1:00 p.m.
20	10	Conveyor Line	(4/2) / (100%*100%) = 2 hours	Next the prior operation Assembly is scheduled. The Conveyor Line resource used in this operation is unavailable for 2 hours on day 2 from 9:00 a.m. to 11:00 a.m., and so the application doesn't schedule this resource during that period. The Conveyor Line resource is used in Assembly operation and is scheduled from 8:00 a.m to 9:00 a.m. on day 2, and 4:00 p.m. to 5:00 p.m. on day 1.
20	10	Operator	(4/1) / (100%*100%) = 4 hours	The Operator working in the Assembly operation takes 4 hours to complete the task and is scheduled from 8:00 a.m. to 11:00 a.m. on day 2, and 4:00 p.m. to 5:00 p.m. on day 1.
10	20	QA Inspector	(0 hours (Since Scheduled= N)	The QA Inspector has no duration but shares the same resource sequence as the Technician, so the scheduled start and end times is 4:00 p.m. on day 1.
10	20	Technician	(2/2)/ (100% *100%) = 1 hour	The Technician performing the Machining operation is scheduled from 3:00 p.m. to 4:00 p.m. on day 1.
10	10	CNC Milling	(2/1)/ (50% *100%) = 4 hours	CNC Milling requires 4 hours and is scheduled from 11:00 a.m. to 3:00 p.m. on Day 1 based on Backward Scheduling. So, the work order starts on day 1 at 11:00 a.m.

Midpoint Scheduling

If the work order is updated by invoking midpoint scheduling of work order operation 20 such that the operation 20 starts on day 2 at 11:00 am, the application performs midpoint scheduling as displayed in the following chart, such that the work order's start date is day 1 at 3:00 p.m. and completion date is day 2 at 5:00 p.m.

The following figure shows Midpoint Scheduling with six resources:



If the work order is updated by invoking midpoint scheduling of work order operation 20 such that the operation 20 starts on day 2 at 11:00 am, the application performs midpoint scheduling as displayed in the following chart, such that the work order's start date is day 1 at 3:00 p.m. and completion date is day 2 at 5:00 p.m.

The following table presents the information that has been explained diagrammatically for Midpoint Scheduling:

Operation Sequence	Resource Sequence	Resource Name	Resource Duration	Scheduled Dates With Explanation
20	10	Operator	(4/1) / (100%*100%) = 4 hours	Invoking Midpoint Scheduling of work order operation 20, such that operation 20 starts on day 2 at 11:00 a.m. The Operator takes 4 hours to complete the task and is scheduled from 11:00 a.m. to 3:00 p.m. on day 2.
20	10	Conveyor Line	(4/2) / (100%*100%) = 2 hours	All downstream operations are scheduled using Forward Scheduling logic. So, the Conveyor Line resource is used in Assembly operation from 11:00 a.m. to 1:00 p.m. on day 2.
30	10	Auto Packer	(2/2) / (50%*100%) = 2 hours	The Packing operation starts on day 2 at 3:00 p.m. and ends at 5:00 p.m. With this the work order is completed.
10	20	QA Inspector	(0 hours (Since Scheduled= N)	All upstream operations are scheduled using Backward Scheduling logic. So, the QA Inspector has no duration but shares the

Operation Sequence	Resource Sequence	Resource Name	Resource Duration	Scheduled Dates With Explanation
				same resource sequence as the Technician, so the scheduled start and end times is 11:00 a.m. on day 2.
10	20	Technician	(2/2)/ (100% *100%) = 1 hour	Invoking Backward Scheduling, the Technician performing the Machining operation is scheduled from 10:00 a.m. to 11:00 a.m. on day 2.
10	10	CNC Milling	(2/1)/ (50% *100%) = 4 hours	The Technician shift time ends at 11:00 a.m. on day 2. The resource duration required is 4 hours. The CNC Milling resource shift is scheduled from 8:00 a.m. to 10:00 a.m. on day 2 and from 3:00 p.m. to 5:00 p.m. on day 1. This determines the work order start day as day 1 at 3:00 p.m.

Select the work order scheduling method

The scheduling method is displayed at the work order header for work orders. You can select one of the following two values:

- Default Scheduling

  This scheduling method is the default option when a work order is created through the user interface.
- User or External Scheduling

  When you select this scheduling method, you can schedule or reschedule the work order manually by updating the work order dates, operation dates, and resources dates. Also, the firm check box is automatically selected, and you can optionally deselect the firm flag.

Schedule work orders manually

- Manual update of work order attributes

  If you update the work order quantity, then the work order isn't rescheduled. However, the material and resource requirements are recalculated.

  If you update the work definition name or date, then the scheduling method is automatically updated as default scheduling and the work order is automatically scheduled. The work order is re-exploded with the details of the new work definition.

- Manual update of work order start and completion dates

  You can use this scheduling method only in the user interface. However, the FBDI and REST services continue to work with the default scheduling method.

- Manual update of work order operation start and completion dates

  You can manually update the start and completion dates of the work order operations. The unconstrained scheduling won't be invoked if your scheduling method is **User or External Scheduling**. However, the work order start and completion dates gets synchronized with the earliest operation start date and the latest completion date, if they are outside the work order start and completion date.

- Manual update of work order resource start and completion dates

  You can manually update the start and completion dates of the work order resources. The unconstrained scheduling won't be invoked if your scheduling method is **User or External Scheduling**. However, the work order operation start and completion dates and the work order start and completion dates gets synchronized with the earliest resource start date and the latest resource completion date, if they are outside the work order or operation dates.

During work order execution, if you resequence the operation, then the work order wouldn't be automatically scheduled if the scheduling method is **User or External Scheduling**.

Oracle Fusion Cloud Supply Planning, including Production Scheduling will consider manually scheduled work orders during scheduling. If Oracle Supply Planning, including Production Scheduling update the work order dates, Oracle Fusion Cloud Manufacturing will honor the recommendations.

Advanced Scheduling and Assignment

Oracle Maintenance leverages Fusion Field Service to deliver a seamless advanced scheduling and assignment solution. You to can plan, schedule, and assign qualified people to work orders considering their actual resource availability in the near-term scheduling window, up to 30 days into the future. You can view and manage their assignments in the Maintenance Supervision page, and technicians can use the My Maintenance Work page for view reporting of their qualified and assigned work orders.

To use this solution, you must license Fusion Field Service by enabling the offering and provisioning at least one administrative user. Additional details are covered in the *Enable Work Orders Scheduling and Resources Assignment* topic of the *Implementing Manufacturing and Supply Chain Materials Management* guide.

After that, enable maintenance-only organizations for advanced scheduling.

Scheduling Overview

To schedule work orders based on resource availability, define resource requirements for all work order count-point operations. The resources can be predefined in standard operations or work definitions, or manually defined directly in the work order. A resource not only identifies the job category or skill set required to accomplish a sequence step within an operation, but also the step's expected duration and number of people required. The sum of the total duration of each resource sequence step rolls up to the operation level to define its total duration. Each operation then rolls up to the work order to define the total duration. Therefore, resource definitions within a work order ultimately drive the planning and scheduling of a work order using a bottom-up scheduling method, based on the assignment of available resources.

It's generally expected that an organization must have enough resources defined and available for scheduling to reasonably meet demand over the scheduling horizon. It's also expected that initial planning and scheduling smoothes out peaks and valleys in demand. Otherwise, work is either pushed into the future or isn't scheduled in the requested horizon in days. Manual scheduling and assignment may be required when demand exceeds available resources to schedule and assign to upcoming work.

Note: Only count-point operations are considered for assignment. Automatic or optional operations, which aren't generally recommended for maintenance, aren't considered for assignment.

Note: Operations without resources have zero duration and aren't considered for scheduling. If they fall between other operations that are scheduled, then they are adjusted accordingly when the work order is rescheduled, but they are never considered for assignment.

Resource and User Setup

Resources must be defined for each maintenance organization and work center to represent the job category or skill set required to accomplish a sequence step within an operation. Within the resource definition, you must also have one or more resource instances (users) defined to support scheduling and assignment.

Each user must also be assigned the Maintenance Technician role to be considered by the solution. After you have provisioned and setup the Fusion Field Service application by following the instructions in the *Implementing Manufacturing and Supply Chain Materials Management guide*, all users who have this privilege are automatically synchronized as a maintenance resource. When a user is visible as maintenance resource, an Administrator and Manager role in Fusion Field Service can ensure that they have the correct work schedule, shift definition and lunch periods (if defined). Then, they are available for scheduling and assignment to maintenance work orders.

HCM Skills aren't considered by advanced scheduling. A user is considered qualified if they have a resource instance defined and are available for scheduling.

Operation Resource Modeling

As mentioned earlier, resource requirements are required for count-point operations for scheduling and assignment. They are also required for an operation to be assigned and completed in the My Maintenance Work page. If count-point operations aren't defined with a resource, then a user can’t be assigned to the operations or complete them. This is a core requirement of using advanced scheduling.

One or more resources requirements can also be defined in an operation, for the same resource or different resources, using unique sequences. Thus, an operation can be subdivided into individual steps by different jobs categories or skills. Advanced scheduling considers each resource sequence within an operation for scheduling and assignment. If more than one sequence is found, this could restrict the ability for the scheduling to split the assignment into more than one block, push an operation to another shift or day, etc. Therefore, it may be more beneficial from a scheduling opportunity perspective to model operations with a single resource sequence only to improve assignment.

Additionally, you may define the need for more than 1 assigned unit (person) per resource sequence. The scheduler looks to assign the sequence to different users, which requires all of them to be available during the same block of time. Therefore, careful consider should be taken when assigning more than 1 unit in a resource sequence as this could limit the scheduling opportunities.

Request Scheduling by Organization

For each organization, you can submit the Request Maintenance Work Orders Advanced Scheduling and Assignments scheduled process for with a time horizon number of days (including the current day). The number of days window consider the planned start and end dates of the work orders, but also any additional days in which work could be pushed into the future. Too narrow of a window could result in work orders not getting scheduled, while too large of a window could push work orders too far into the future. The process is also limited to a 30-day window.

> **Note:** It's generally recommended to schedule the process for each organization before work begins today or at the end of the workday before the next day's shifts begin. If the process is run during an active shift, before some or all the work order reporting is completed, it could result in-progress work getting rescheduled until later today or days in the future.

After the scheduling process ends, you can view the results in the Maintenance Supervision page.

How it Works

The process gathers all asset-based work orders of type preventative or corrective, that are in Released status, have at least one count point operation with a resource requirement, and a planned start date before or within the scheduling window. It excludes any work orders that are scheduled as firmed or firmed with existing assignments, as well as excluding operations that have started reporting in execution.

Only single asset work orders can be considered for advanced scheduling. Work orders that support multiple assets aren't considered.

> **Note:**

Each work order is evaluated for existing or new assignments, based on the resource requirements, number of requested people, and duration, and these prioritization criteria:

Criteria used in advanced scheduling

Crietria	How it's used
Work Order Priority	If a priority is defined, then it's weighed accordingly: • 1 is the highest and is considered first • 99 as the lowest and is considered last If no priority is defined, or a value less than 99 is defined, it's considered as if 99 were defined.
Planned Start Date	The application tries to schedule the work order first on this date, otherwise it pushes it into the future. It doesn't schedule before this date, thereby it doesn't allow pulling of work forward, because it only pushes work into the future.
Planned Completion Date	The application tries not to partially schedule a work order, if possible, in the scheduling window. If the planned completion date falls outside of the window, then the application may skip a work order instead of recommending partial assignment. You may need to extend the scheduling window number of days to increase assignment success based on work order duration, volume of work, and available resource capacity.

Crietria	How it's used
Preventative Maintenance Due Date	If defined, the application tries not to exceed this date during scheduling.
Multiple Operations with the same resource in a work order	The application tries to schedule the same user or users to the same work order to both optimize their schedule and ensure continuous execution for the same work order.
Multiple work orders for the same asset	During the scheduling window, the application tries to schedule work for a common asset on the same date and even the same user, if possible.
Operations that have started	Operations that have a user actively clocked in, having reported time, or completed are considered started and not considered for scheduling and assignment. These operations indicate an actual start date and time in the Operations tab.
Existing Assignments	Existing assignments for a user are considered and weighed compared the other criteria above. The application may also calculate a better scheduling outcome by reassigning a user or unassigning and assigning them to another operation or work order to improve scheduling. This may also be true when a higher priority work order is found during a future scheduling run.
Lunch or other unavailable time	The application respects unavailable time periods for users during scheduling. It may split an operation into one or more segments, creating unique time block assignments for one or more users to maximize their scheduling and assignment availability. For example, if an operation resource spans for 6 hours, a user may be assigned 4 hours before lunch and 2 after lunch, representing 1 assignment with 2 time blocks.

Each user is considered for scheduling and assignment evaluation first based on their work schedule of shifts, existing assignments, and any unavailable time periods. The solution uses a set of proprietary scheduling algorithms to distribute the work efficiently and effectively across each user, trying to maximize their scheduling opportunities while weighing the scheduling criteria listed above. When the application has achieved the best overall scheduling outcome, it returns a list of scheduling recommendations. This includes recommendations for new assignments, reassigning existing assignments to different users, as well as unassigning users from existing assignments. The outcome may also not return any recommendations for a work order, leaving it at its current assignment status.

The recommendations are used to update each work order from the bottom up. This includes creating, updating, or deleting assignments at the resource sequence level, while also rescheduling it. After each resource sequence is updated, the operation is also rescheduled accordingly. After each operation sequence is updated, the work order is also rescheduled accordingly. Thus, after all the assignment recommendations are considered for a work order, its rescheduling and assignment is complete.

If all the resources in a work order were assigned, its assignment status is set as Assigned. Otherwise, its status is set as Partially Assigned or Unassigned. This is helpful for viewing and sorting work orders page. Additionally, a scheduled and assigned work order gets its scheduling method option automatically set to User or external system. This prevents the unconstrained scheduled from considering it. Additionally details for viewing or managing assignments are covered later in this section.

If the demand for resources exceeds the available capacity during the scheduling horizon, then work orders aren't be assigned and existing work orders could even become unassigned. This is an expected outcome, based on the scheduling criteria listed above. If you find work orders aren't assigned over several runs of the scheduling process, you should consider giving them a priority value, or raising their existing priority to elevate their likelihood of being schedule and assigned. Additionally, if you're firming the schedule and assignment options on work orders with no or a low priority, you constrain the available pool of resources to assign. Therefore, careful consideration of setting these options is required, given that they lock in any existing assignments and prevent reassignment or unassignment.

User Experience

View and manage assignments in the Maintenance Supervision page. You can view assignment status, as well as the details on each user who was assigned by the scheduling process. You can manually adjust the assigned users as required. Additionally, there are several administrative functions for managing the reporting of work.

Technicians use the My Maintenance Work page for view reporting of their qualified and assigned work orders. They can optionally clock in and clock out of work order operations to provide real-time execution and reporting.

Additional details are covered in the Maintenance Supervision and Execute My Maintenance Work chapters in this guide.

Edit Maintenance Work Orders

How You Edit a Maintenance Work Order

You can view and edit the maintenance work order details on the Edit Work Order page. You can open the page by clicking the work order link in the search results table on the Maintenance Work Orders page.

You can do these tasks on work orders:

- Edit the work order information
- Add or edit assets under repair
- Add and edit operations
- Add and edit operation items
- Add purchased items
- Review purchased item details
- Review document reference details
- Add and edit the operation resources
- Update the status to release the work order for execution
- Review supplier warranty information
- Review warranty repair indicators
- Review warranty coding for operations, items, resources, and equipment

How You Edit Work Order Information

You can view and update the maintenance work order information about the General Information tab of the Edit Work Order page. The work order information can be updated depending on the work order status. If the work order is in Unreleased status, then all the information can be edited including the asset number. When the work order is Released, certain attributes (such as asset, work definition, and so on) can't be edited. When the work order is closed, none of the information can be edited.

The following are the attributes of the maintenance work order header:

Attribute	Description
Work Order Number	Unique identifier of a work order. During creation of the work order, a unique number is automatically assigned from the numbering scheme defined in the plant parameters (Work Order Prefix, Work Order Starting Number). You can also manually enter a work order number during creation. Once a work order is created, the work order number can't be updated
Status	Represents the status of the maintenance work order during its life cycle. The valid values are: Unreleased, Released, On Hold, Completed, Closed, and Canceled. Optionally, you can define custom status values based on the seeded status values above. **Note:** You can update a work order to the Released status only if a work definition is selected or at least one operation is manually defined.
Start Date	The start date and time of the maintenance work order. You can update this date to reschedule the work order prior to release. **Note:** Either the Start or Completion date is required to Release a work order. Once released, the value will be the same for each date, but the times may be different after the work order is scheduled.
Completion Date	The completion date and time of the maintenance work order.
Description	The description of the maintenance work order. The value may be defaulted from the work definition or a maintenance program, but you can edit it.
Priority	The execution priority of the maintenance work order.
Asset	The asset associated with the maintenance work order. You can edit an asset for an asset-based work order until the status is changed to Released.
Asset Description	The description of the asset associated with the maintenance work order.
Warranty Repair	Work Orders will be automatically indicated as a Warranty Repair or not during creation if there are one or more active warranty contracts for the asset or its related assets. This indicates that the repair should be considered covered by warranty and evaluated for warranty claims and entitlements. Unchecking this box means the work order will be disregarded and not considered for warranty.
Match Transaction Codes	If the Warranty Repair checkbox is set to yes, then the Match Transaction Codes checkbox will also be set yes if there are active warranty contracts that have repair transaction codes defined in their base coverages. This indicates that warranty claim entitlements should be created only if there is a matching warranty contract found for an operation transaction for items, resources, or equipment by repair transaction code. Unchecking this box means the code matching will be disregarded and the first expiring warranty contract will be considered for warranty claim entitlements.

Attribute	Description
Primary Reason for Repair	Optionally used to define the reason for the repair of an asset.
Item	The item associated with the asset being maintained. In case of an item-based work order, this field shows the common item for each asset. But you can't change the item after the work order creation.
Serial Number	The serial number of the item associated with the asset being maintained.
Item Description	For an item-based work order, it shows the description of the associated item.
Quantity and Unit of Measure	For an item-based work order, it shows the quantity and unit of measure of assets being maintained.
Work Definition Name	The name of the work definition that must be performed for the work order. It can't be updated after the work order is released. The work definition is exploded to determine the operation, resource, and material requirements in the work order.
Work Definition Date	The work definition date represents the effective date used to derive the work definition version. The date can be updated to a past date, allowing for previous versions of a work definition to be used in work order.
Work Definition Version	Represents the version of the work definition. The version is derived and displayed based on the work definition name and date specified.
Maintenance Program	The maintenance program name used as the basis for generating the work order. Contextual information about the program is marked with an orange triangle. Hover over the triangle and click on the icon that appears to view details about the maintenance program forecast used to create the work order. These details include the source work requirement, work definitions included, forecast method details, and work definition merge or suppress results
Suggested Start Date	Represents the maintenance program forecast due date.
Type	The type of the maintenance work order. The valid values are Corrective and Preventive.
Subtype	The subtype of the maintenance work order. The valid values are Condition based, Emergency, Planned, Reactive, Safety, and Under warranty.
Work Method	The work method is unique for maintenance work orders and isn't displayed.
Closed Date	The date when the work order is closed.
Default Supply Type	Controls how the materials are supplied to the work orders. The valid values are: Based on Work Definition, Push, Assembly Pull, Operation Pull, Bulk, and Supplier. If the work order is created based on a work definition, the supply type is defaulted to Based on Work Definition parameter, which means the supply type for each item is derived from the operation item's definition. All items manually added to an operation will be defaulted to the supply type from the item setup as defined in Product Information Management. If not defined in the item setup, the supply type is defaulted to Push. It can then be manually updated to another value. The default supply type will then be used default the supply type for items manually added to an operation.

Attribute	Description
Released Date	The date on which the work order is released.
Scheduling Method	Used to determine the method of work order scheduling. The values are: • Default Scheduler (default): This uses an unconstrained scheduling engine in the background to schedule work orders during create and certain update actions. The engine compresses any of the corresponding work order dates through forward, mid-point, or backward scheduling. • User or external scheduling: This doesn't use the scheduling engine, allowing a user or external source to schedule work order, operation and resource start and stop dates, including support for gaps and overlaps between operations and resources.
Firm	Manually updated indicator that can be used for work order planning. When checked, you must not schedule the work order.
Contract manufacturing	Indicates a contract manufacturing work order. This attribute is read-only.
Attachments	The attachments in the maintenance work order. It can be of file, text, or URL type.
Project Number	The number of the project. This is applicable only for project-specific work orders.
Task Number	The number of the task. This is applicable only for project-specific work orders.
Expenditure Item Date	The date of the expenditure item. This is applicable only for project-specific work orders.
Expenditure Type	A classification of cost that you assign to each expenditure item. Expenditure types are grouped into cost groups and revenue groups. This is applicable only for project-specific work orders.
Contract Number	The number of the contract/award used to fund the sponsored project. This is applicable only for project-specific work orders.
Funding Source	The number of the funding source associated to the combination of award and sponsored project. This is applicable only for project-specific work orders.
Additional Information	You can manage the flexfields for the work order header in the Additional Information show/hide region.

How You Manage Operations in a Work Order

The Operations tab provides a list view of all operations with its component and resource requirements. Here's how you can manage your operations on this tab:

- View the summary of the operations, operation items, operation resources, purchased items, and operation outputs of the work order along with operation attachments
- View the details of execution progress for the operations, operation items, and operation resources.
- Add, Edit, and Delete Operations

- Edit Operation Items
- Edit Operation Resources
- Reschedule an operation using midpoint scheduling
- View and update repair coding

You can use the actions in the list view to add or edit or delete operations. The **Work Order Operations** consists of information about the list of operations that are performed in a work order. Work order operations are either inherited by explosion of work definition or are manually added. You can use the **Edit Operation** action to do the following:

- Add Operations
- Edit Operation Details
- Delete Operations

The following actions are displayed if the operation type is Supplier:

- Midpoint Reschedule
- Review Supplier Operation Details

Note: Midpoint Reschedule action is displayed subject to at least one of the lead times specified for the operation being greater than 0.

The following table lists the different attributes of a work order operation:

Attribute	Description
Sequence	The sequence of operation based on which the operations are executed.
Code	The maintenance standard operation code for referencing or copying the maintenance standard operation.
Operation Type	The type of the operation. The valid values are In-house and Supplier.
Name	The name of the operation.
Work Center	The work center that's associated with the operation.
Start Date	The start date of the operation. The operation start date can't be earlier than the work order start date.
Completion Date	The completion date of the operation. The operation completion date can't be later than the work order completion date.
Count Point	Indicates that the operation completion must be explicitly reported. The last operation in a work order has to be a count point operation. The Count Point and Automatically Transact attributes are mutually exclusive.
Automatically Transact	Indicates that the operation is automatically completed, the pull components are backflushed, and the resources are automatically charged when the next count point operation is completed. The Count Point and Automatically Transact attributes are mutually exclusive.

Attribute	Description
Allow Resequencing	Indicates that the operation can be resequenced during work execution. Only count point operations can be defined as resequenceable operations. Resequenceable operations can't be the first and last operations of a work order.
Description	The description of the operation.
Reason for Repair Code	Describes the reason why the asset is being repaired. This code is defined using a condition code type of Reason for repair code. Examples may include codes for Breakdown, Preventative Maintenance or Warranty repairs.
Repair Transaction Code	Describes the system, assembly, and component being repaired on an asset. This code is defined using a condition code type of Transaction code. Examples may include standard industry coding such as *Vehicle Maintenance Reporting Standards* (VMRS) or similar taxonomies.
Work to Be Accomplished Code	Describes the activity that was used to repair the asset. Define using a condition code type of Work accomplished code. Examples may include Clean, Repair, or Replace.
Attachments	The attachments in the operation. It can be of file, text, or URL type.
Additional Information	You can manage the flexfields for the work order operation header in the additional information show or hide region.

A work order must have at least one count point operation in it. Additionally, the last operation of a work order must be a count point operation.

If the operation type is Supplier, then the operation is always a Count Point operation. An operation with the operation type Supplier can't be deleted if the operation is associated to any purchasing document, or the creation of purchasing documents is in process (which is treated as a pending transaction) or any transaction has been made against the operation. Resources can't be added to an operation with operation type Supplier. Supplier operations can't be defined as resequenceable operations in a work order

The following table lists the values you must select for the different attributes of a supplier operation, in the Supplier Operation Details section:

Attribute	Description
Outside Processing Item	An item that represents the value added service being performed on the assembly in outside processing. The item is defined in Oracle Fusion Product Information Management. If the finished goods item is a dual units of measure item, which means the Tracking Unit of Measure is set to primary and secondary, then the outside processing item should be defined as a dual units of measure item as well. For more information about setting up items for outside processing, refer to the Implementing Outside Processing chapter in the Oracle Supply Chain Management Cloud Implementing Manufacturing and Supply Chain Materials Management Guide.

Attribute	Description
	Note: You can update the outside processing attributes of the supplier operation only if the Work Order Status is Unreleased, or On Hold (without release date). **Note:** You can't add an outside processing item as a component to an operation.
Item Description	The description of the outside processing item.
Supplier	The recommended supplier used in creating the requisition. The field becomes required if the prior operation is also a supplier operation.
Supplier Site	The recommended supplier site. The field becomes required if the prior operation is also a supplier operation.
Generate Shipment	This is used to indicate if shipment needs to be created to print the shipping documents for the outside processing item. The default value is based on the Outside Processing Item's shippable attribute. It's unchecked if the prior operation is a Supplier Operation (consecutive outside processing) or if the supplier operation is the first operation in sequence.
Lead Time UOM	The unit of measure for the lead time of a supplier operation.
Fixed Lead Time	The fixed lead time for the operation independent of the order quantity.
Variable Lead Time	The variable lead time for the operation dependent on the order quantity.

How You Define Resequenceable Operations in a Work Order

You can define a work order with operations that can be resequenced in work execution. You can define an operation as a resequenceable operation by selecting the Count Point and Allow resequencing options in the Create or Edit Operations dialog.

You can define a work order with resequenceable operations either by inheriting it from its work definition or by manually adding it in an unreleased work order. However, the first and last operations of a work order can’t be defined as resequenceable operations. A set of resequenceable operations must be preceded and succeeded by count point operations. You must complete the first count point operation before you can execute a set of resequenceable operations. Also, you must execute all resequenceable operations before executing the succeeding count point operation.

You can’t define automatically transact or optional operations next to a resequenceable operation. You can have any number of resequenceable operations within a set and any number of such sets within a work order.

When a work order with operations that can be resequenced is released, the execution sequences are stamped in all the operations in the same order as the operation sequences. You can see these stamped operations in the Operations tab of a work order. Execution sequences are not stamped at operation level if the work order doesn’t have any resequenceable operations. You can’t add resequenceable operations or modify the Allow Resequencing option after the work order has been released.

During work execution, you can execute the operations in a different order because of which the execution sequences are altered. If a released work order is rescheduled, the operation dates are scheduled based on the order of execution sequences.

How You Add Operations to Work Orders in Released Status

You can add one or more count point and automatically transact operations to a work order in released status. You can't add a new operation prior to a completed operation and can't add a new operation as the last operation either if there

are any completions or reversals at the last operation. However, if you can reverse the completions at an operation, you can add operations prior to the previously completed operation. You can't add resequenceable operations for a released work order.

For a serial-tracked work order, the newly added operations prior to the serial start operation won't be serial tracked and the newly added operations after the serial start operation will always be serial tracked.

You can add supplier operation as the first or last operation, intermediate operation, or as a consecutive supplier operation. You can't add any operation in between consecutive supplier operations.

You can reschedule the work order manually using midpoint rescheduling after adding new operations. The existing validation of the last operation being a count point operation is enforced. Also, when you add new operations ensure that the existing validations are fulfilled.

Note: The ability to add operations for released work orders is supported in UI and REST only.

How You Add and Edit Operation Items

You can add and edit operation items in the Edit Operation Items dialog box. To open the Edit Operation Items dialog box, click the Items link of the operation on the Operations tab of the Edit Work Order page. Alternately, select the operation and then from the Edit icon menu, select: Edit Operation Items.

In the Edit Operation Items dialog box, in the Operation field, you can select the operation for which you're adding or editing the operation items.

When adding an item, you can decide if the item comes from the item repository or an asset parts list. Clicking the icon that allows the search and selection of an item from an asset parts list opens the Search Parts List for Asset dialog. Optionally, you can set a profile option that displays all the items from the work order asset's parts list. The ORA_CSE_AUTO_QUERY_PARTS_LIST profile can be set to support this automatic return of the parts list items.

The following are the operation item attributes:

Attribute	Description
Sequence	The material sequence of the operation item. The value must be unique in an operation.
Item	The name of the item.
Description	The description of the item.
Required Quantity	The quantity of the operation item required in an operation.
UOM	The unit of measure of the operation item.
Required Date	The date and time on the material is required.
Supply Type	Controls how the materials are supplied to the work orders. The valid values are: Assembly Pull, Operation Pull, Push, Phantom, Bulk, and Supplier.

Attribute	Description
	If the work order is created based on a work definition, then the supply type is defaulted to Based on Work Definition. This means the supply type for each item will come from the operation item's definition. All items manually added to an operation will be defaulted to the supply type from the item setup as defined in the Product Information Management. If not defined in the item setup, then the supply type is defaulted to Push. If the work order isn't created based on a Work Definition, then the supply type is defaulted to Push. It can then be manually updated to another value. The default supply type will then be used default the supply type for items manually added to an operation. You can define and update the supply type value prior to release: • Assembly pull: The material is backflushed when the product is completed into inventory. This is primarily used for manufacturing. • Operation pull: The material is backflushed when a subsequent count point operation is completed. This is primarily used formMaintenance when a known or expected quantity of material will be consumed in an operation step. Therefore, manual reporting is not required, and these materials will not be displayed in the material transactions page accessible from an operation in the Dispatch List. For non-serialized items and non-lot-controlled items, you can optionally use the Quick Complete option to report the material transactions based off the pre-defined item quantity. Alternatively, for serialized items or anytime the expected quantity needs to be updated, you can use the Complete with Details flow to report the material transactions. • Push: The material is manually issued and must be manually reported. This is primarily used for maintenance when an unknown quantity of material that may be optionally consumed in an operation step. If consumed, then these materials require manual reporting in the material transactions page that is accessible from an operation in the Dispatch List. These materials will not be displayed in the Complete with Details flow and wouldn't be considered by the Quick Complete flow. • Bulk: Bulk materials requirement can be viewed. These materials aren't automatically backflushed or defaulted while manually issuing the materials. • Supplier: Represents the materials supplied by supplier. These materials aren't automatically backflushed or defaulted while manually issuing the materials. These are typically used for Outside Processing.
Supply Subinventory	The supply subinventory from which the material is supplied. The hierarchy to default the supply subinventory is in the following order: work definition, item definition, plant parameter. You can update the default value.
Supply Locator	The supply locator from which the material is supplied. The hierarchy to default the supply locator is in the following order: work definition, item definition, plant parameter. You can update the default value.
Attachments	The attachments in the operation item. It can be of file, text, or URL type.
Repair Transaction Code	Describes the system, assembly and component being repaired on an asset. This code is defined using a condition code type of Transaction code. Examples may include standard industry coding such as *Vehicle Maintenance Reporting Standards* (VMRS) or similar taxonomies.
Additional Information	You can manage the flexfields for the operation item in the additional information show/hide region.

How You Add Purchased Items

You can raise a purchase requisition directly from the Edit Work Order page, then receive the purchase items directly to the work order. To create a purchase requisition, click the Review Purchased Item Details button on the Edit Work Order page to open the Purchased Item Details page. On the Purchased Item Details page, click the Create Requisition button to open the Create Requisition dialog box. Specify the operation sequence and deliver-to location to open the Self Service Procurement page.

You can use the Self-Service Procurement page to create requisitions for items, manage requisitions, and view the shopping list. On the Edit Requisition page, in the Requisition Lines section, the values you saved for your purchase requisition are defaulted for you, but you can update them. Click Submit.

How You Review Purchased Item Details

View the requested items or purchased items for a work order in the Purchased Item Details page. You can also track the requisition, purchase order, and receipt details of purchased items on the Purchased Item Details page. The following table lists all the details that you can review and track on the Purchased Item Details page:

Operation Sequence	The specific operation that you selected on the Operations tab on the Edit Work Order page.
Item	The unique number of an item that has been purchased for the work order operation. You can click on the icon beside the item for more details.
Item Description	The description of the item as defined in the item-organization setup.
Requisitioned Quantity or Amount	Total requested quantity in all approved purchase requisitions and in pending approval status for the item. Requisition quantities in incomplete, rejected, withdrawn, canceled, and returned statuses aren't considered.
Ordered Quantity or Amount	Total ordered quantity in all approved purchase order lines for the item. Only approved orders in open and closed statuses are considered.
Received Quantity or Amount	Total quantity delivered against all purchase order lines for the item. This also takes into account the quantity that's returned to supplier and to receiving.
Details	You can click on the Details icon to drill down into the purchasing and receiving details.

You can select the Details icon beside any purchased item for a work order operation to further drill down into the details of requisitions, purchase orders and receipts. While reviewing the Purchasing Details, you can also click on any purchase order line and review the receipt details for that line. You can correct each receipt for quantity or amount. You can also choose to return the received quantity to receipt or to supplier.

You can view further details of requisition, purchase order or purchase receipt, by clicking their respective links.

How You Review Document Reference Details

You can view the document references on a new References tab on the Edit Work Order page. The tab displays a simple results region showing the document type, document number, and end date. For most work orders there's only a single source object if created from a consuming application. Clicking on a references row populates the panel to the right, displaying key details from the source object. These details provide you additional context about the source object and help with the resolution of the work order operations. To view these details, ensure that have the correct security access for each consuming application object defined in your user roles.

Here's a list of the setup required to view the details for a document reference.

Resource Type	Overview	Security Access
Service Request	Displays service request details such as the title, status code, severity, category, critical attribute, channel type code, create and last update date/time, and problem description.	If you've been assigned a job role your enterprise uses for maintenance manager work, you must have this privilege to view service request details: View Service Request (SVC_VIEW_SR_USING_REST_PRIV)
Help Desk: Internal Service Requests	Displays ticket title, status, severity, category, primary contact, assigned agent, critical attribute, creation and last update date/time, and problem description.	If you license the Help Desk and want to view Internal Service request details, you have to create your own role and assign it to each maintenance execution user: • Define your role name • Add this functional security policy: View Internal Service Request (SVC_VIEW_ISR_SR_PRIV) • Create this data security policy: o Define a unique policy name o Select the Data Resource: Service Request Header o Select the Data Set: Select by instance set o Select the Condition: Access the service request header for table SVC_SERVICE_REQUESTS for all internal help desk service requests o Set the Privilege Actions: Read; View Service Request Header
Sales Order and RMAs	Displays the order number, line number, sales order line type, created and last updated date/time.	If you license Order Management and want to view the details, here's what you must do:

Resource Type	Overview	Security Access
		• If you have users responsible for the maintenance manager role, you must define business unit-level access explicitly: o Use the Setup and Maintenance work area. o Select the setup for Manufacturing and Supply Chain Materials Management. o Select the Users and Security functional area. o Select All Tasks under the task listing. o Select the Manage Data Access for Users task. o Select the Users with Data Access option. o For each user name, create individual access rows with these details: - User Name - Role, such as maintenance manager - Security Context: Business unit - Security Context Value: The business unit • Create your own configured role and assign it to each maintenance execution user: o Define your role name. o Add this functional security policy: Get Sales Orders Using REST Services (FOM_SALES_ORDER_REST_GET_PRIV). o Assign to each user. o Confirm individual business unit access as detailed above. **Note:** • Enabling business unit access for this privilege triggers a licensing requirement for Order Management, if not already licensed. • Defining individual business unit access affects any user that has the order entry role. During sales order creation, the business unit attribute displays all values for which the user is granted access.

How You Add and Edit Operation Resources

You can add and edit operation resources in the Edit Operation Resources dialog box. To open the Edit Operation Resources dialog box, click the Resources link of the operation on the Operations tab of the Edit Work Order page. Alternately, select the operation, then from the Edit icon menu, select: Edit Operation Resources.

In the Edit Operation Resources dialog box, in the Operation field, you can select the operation for which you're adding or editing the operation resources.

These are the operation resource attributes:

Attribute	Description
Sequence	The resource sequence of the operation resource.
Name	The name of the resource.
Basis	The valid values are: Fixed and Variable.
Usage Rate	The usage amount of the operation resource.
Required Usage	The resource usage required for the work order quantity. The required usage is calculated and populated by default from the Usage rate depending on the Basis type. The calculation is done as follows: • If Basis is equal to Fixed, then the Required Usage is equal to Usage Rate. • If Basis is equal to Variable, then the Required Usage is equal to Usage Rate multiplied by Work Order Quantity. **Note:** The work order quantity is always 1.
UOM Name	The usage unit of measure as defined in the resource definition.
Scheduled	The indicator that the resource is a scheduled resource. A resource can be scheduled if the Usage UOM belongs to the UOM class defined in the profile option RCS_DEFAULT_UOM_SRVICE_DURATION_CLASS.
Charge Type	Indicates whether the resources are charged manually or automatically when completing the operation. The valid values are: Automatic and Manual.
Job Profile	The job profile for a labor resource. A job profile comprised of a set of qualifications that are required for an operator to perform a job. When a job profile is specified for an operation resource, then only those labor resource instances that meet the qualifications can perform the operation. If a job profile is defined for an operation resource, then the My Maintenance Work page will consider it during the validations for qualification and assignment of the logged-in user. Only users having HCM

Attribute	Description
	qualifications that meet the job profile defined in the operation resources across the work order will be considered as HCM qualified.
Equipment Profile	The equipment profile for an equipment resource. An equipment profile specifies the set of qualification requirements that an equipment must possess when performing operations in manufacturing. When an equipment profile is specified for an operation resource, then only those equipment resource instances that meet the qualifications can perform the operation. You set up the profile, requirements, and asset qualifications in Oracle Maintenance.
Description	The description of the resource.
Code	The code of the resource.
Inverse	The inverse of the usage rate. This attribute is applicable when the resource usage rate is fractional but its inverse is an integer.
Assigned Units	The number of resource units assigned to perform the operation.
Principal	The indicator that a resource is the principal resource within a group of simultaneous resources (resources sharing the same resource sequence number).
Resource Instances	Icon to open the Resource Instances dialog box in which you can add or edit the resource instances for the specific resource. • For Equipment type of resource, the Resource Instances dialog box contains the following fields: Name, Identifier, Asset Description, Asset Number, Actual Usage, and Additional Information. • For Labor type of resource, the Resource Instances dialog box contains the following fields: Name, Identifier, Person Type, Person Name, Actual Usage, and Additional Information. **Note:** You can predefine labor resource instances for assignment or self-assign in the My Maintenance Work or Report Work pages. The logged in user must have a resource instance defined to support pre-assignment or self-assignment.
Start Date	The start date of the resource and also referred as scheduled start date. The resource start date is generally calculated by the scheduling engine. The resource start date must be encompassed within the operation start and completion date.
Completion Date	The completion date of the resource and also referred as scheduled completion date. The resource completion date is generally calculated by the scheduling engine. The resource completion date must be encompassed within the operation start and completion date.
Activity	The predefined values are: Setup, Run, and Tear Down. The lookup can be configured by adding new values.
Actual Resource Usage	The net actual usage of the assigned resource.
Attachments	The attachments in the resources. It can be of file, text, or URL type.

How You Update Work Order Status

You can use status of a work order to manage the work order through its entire lifecycle. Work orders are generally created in the Unreleased status. After editing the work order details, you can update the status to Released, or a user-defined equivalent status value. This will transition the work order from a scheduling to execution. Once Released, Maintenance Technicians can use the maintenance dispatch list to review the work order operations and report various transactions.

Once released, you can also update the work order status to On Hold or Canceled. Upon executing the work order, when the last operation is completed, the work order is automatically updated to a Completed status. You then update the status of the work order to Closed.

> **Note:** For more information on how a work order is closed, refer to the topic How You Close a Maintenance Work Order.

This table lists the valid status transitions allowed for a work order. These rules also apply to user-defined equivalent status values.

From Status	To Status Unreleased	To Status Released	To Status On Hold	To Status Completed	To Status Closed	To Status Canceled
From Status Unreleased	Not applicable	Allowed	Allowed	Not allowed	Allowed	Allowed
From Status Released	Conditionally allowed Updating the work order status from Released to Unreleased isn't allowed when transactions or pending transactions against the work order exist.	Not applicable	Allowed	Allowed only by application	Conditionally allowed Updating the work order status from Released to Closed isn't allowed when pending transactions against the work order exist.	Allowed
From Status On Hold	Conditionally allowed Updating the work order status from On Hold to Unreleased isn't allowed when transactions or pending transactions against the work order exist.	Allowed	Not applicable	Not allowed	Conditionally allowed Updating the work order status from Released to Closed isn't allowed when pending transactions against the work order exist.	Allowed

From Status	To Status Unreleased	To Status Released	To Status On Hold	To Status Completed	To Status Closed	To Status Canceled
From Status Completed	Not allowed	Allowed only by application	Not allowed	Not applicable	Allowed	Not allowed
From Status Closed	Conditionally allowed Updating the work order status from Closed to Unreleased is only allowed when any of the Released, Completed, or Canceled dates weren't available on the work order.	Conditionally allowed Updating the work order status from Closed status to Released is only allowed if there is a Released Date but no Completion or Canceled date on the work order.	Not allowed	Conditionally allowed Updating the work order status from Closed to Completed status isn't allowed when the completion date isn't available on the work order.	Not applicable	Conditionally allowed Updating the work order status from Closed to Canceled isn't allowed when the canceled date isn't available on the work order.
From Status Canceled	Conditionally allowed Updating the work order status from Canceled to Unreleased isn't allowed when transactions or pending transactions against the work order exist.	Allowed	Allowed	Not allowed	Conditionally allowed Updating the work order status from Canceled to Closed isn't allowed if any pending transactions against work order exist.	Not applicable

The following table summarizes the work order status change rules specific to supplier operations:

From Status	To Status Unreleased	To Status Released	To Status On Hold	To Status Completed	To Status Closed	To Status Canceled
From Status Unreleased	Not applicable	Purchase requisition creation initiated, if eligible.	Not applicable	Not applicable	Not applicable	Not applicable
From Status Released	Not applicable	Not applicable	Not applicable	Not applicable	Change Management Action: Attempt canceling the associated purchasing documents as appropriate. If not successful, report a work order exception.	Change Management Action: Attempt canceling the associated purchasing documents as appropriate. If not successful, report a work order exception.
From Status On Hold	Not applicable	Creation of purchase	Not applicable	Not applicable	Change Management	Change Management

From Status	To Status Unreleased	To Status Released	To Status On Hold	To Status Completed	To Status Closed	To Status Canceled
		requisition is initiated, if eligible.			Action: Attempt canceling the associated purchasing documents if open. If not successful, report a work order exception.	Action: Attempt canceling the associated purchasing documents as appropriate.If not successful, report a work order exception.
From Status Completed	Not applicable	Not applicable	Not applicable	Not applicable	Change Management Action: Attempt canceling the associated purchasing documents as appropriate. If not successful, report a work order exception.	Not applicable
From Status Closed	Not applicable	Purchase requisition creation initiated for eligible quantity, if applicable.	Not applicable	Purchase requisition creation initiated for eligible quantity, if applicable.	Not applicable	Not applicable
From Status Canceled	Not applicable	Purchase requisition creation initiated, if applicable.	Purchase requisition creation initiated for eligible quantity, if applicable.	Not applicable	Not applicable	Not applicable

Overview of Electronic Signatures and Electronic Records for Work Order Approval

Oracle Electronic Records and Electronic Signatures is a framework you can configure for securely capturing, storing, retrieving, and printing electronic records and signatures. Using this framework, you can review electronic records for work orders and capture electronic signatures.

The Electronic Records and Electronic Signatures process for work order is initiated when the work order is put in **Released** status (or a custom status associated to **Released** status) for the first time through the user interface.

The approval process is initiated in deferred mode. Note that when the work order is put in **Pending Approval** status, and you can't edit it. The work order will be in view only mode.

After the approval flow is complete, and if the E-Record is approved, the work order is put in **Released** status (or the custom status). If the E-Record was rejected, the work order is put in the original status (this could be Unreleased or on hold or any custom status associated with these statuses).

If the E-Record was rejected, you can edit the work order and resubmit for approval to initiate a fresh Electronic Records and Electronic Signatures process. All the status changes are captured in status history.

To capture electronic signatures and generate electronic records for work order approval in an organization, you need to set up the following:

- Enable Maintenance Work Order Approval for the Organization. Follow these steps:
    a. In the Setup and Maintenance work area, go to the following:
        - Offering: Manufacturing and Supply Chain Materials Management
        - Functional Area: Facilities
        - Task: Configure Electronic Signature Preferences
    b. Enable the Maintenance Work Order Approval transaction.

    Note: You can't disable E-Signatures for work order release when one or more work orders exist in pending approval status.

- Configure the Business Process Rules to Determine the Approvers for Work Order Approval. Follow these steps:
    a. In the Setup and Maintenance work area, go to the following:
        - Offering: Manufacturing and Supply Chain Materials Management
        - Functional Area: Facilities
        - Task: Manage Task Configurations for Supply Chain Management
    b. Define approval rules for Work Order Approval.

Note: For more information about implementing E-Signatures and generating E-Records, refer to the Implementing E-Signatures and E-Records chapter of the Oracle SCM Cloud Implementing Manufacturing and Supply Chain Materials Management guide.

Related Topics

- Overview of Electronic Signatures and Electronic Records for Standard Operation Management
- How You Capture E-Signatures and Generate E-Records for Standard Operation Management

How You Capture E-Records and E-Signatures for Maintenance Work Order Approval in Deferred Mode

You can enable the ability to capture electronic signatures and generate electronic records for work order creation, and work order update.

The Electronic Records and Electronic Signatures process for work order is initiated when the work order is put in **Released** status (or a custom status associated to **Released** status) for the first time through the user interface.

The approval process is initiated in deferred mode. Note that when the work order is put in **Pending Approval** status, and you can't edit it. The work order will be in view only mode.

After the approval flow is complete, and if the E-Record is approved, the work order is put in **Released** status (or the custom status). If the E-Record was rejected, the work order is put in the original status (this could be Unreleased or on hold or any custom status associated with these statuses).

The maintenance work order e-record contains the following information as applicable in the work order:

- Work order header and details
- Transactional item attributes if it is a configured product
- Preassigned product lot and serial details
- Project details
- Operation details, including operation items, operation outputs, operation resources, and documents
- Material reservations
- Production exceptions
- Attachment details

You can search and retrieve electronic records in the electronic records work area using multiple search criteria like the contents of the report title, the transaction type, organization, signed date, and status. The electronic records are stored in secured document repository and cannot be modified or deleted. Oracle E-Signatures and E-Records store both the approved and rejected records.

Using a deferred approval process with notifications, the work order is held in a Pending Approval status until the approvals are obtained. Depending upon the outcome of the approval, the work order is saved in the Approved status or rolled back to the previous status. The status change history captures the change from and to Pending approval status.

Here are a few considerations for you when you capture E-Records and E-Signatures for a maintenance work order release in deferred mode:

- You can configure different approval rules based on the work method.
- You can submit a work order for approval when the initially changing to a user-defined status that is associated with the system status of Released.
- You can't update a work order in Pending Approval status through the UI, File Based Data Import (FBDI), or REST. You must wait for the approval process to complete as approved or rejected before making further changes.
- You can't create work orders in the Released status through the UI if e-records and e-signatures are enabled for the organization. However, you can create work orders in the Released status through FBDI and REST.
- You can't submit a work order that has been previously released for e-record and e-signature approval again. Instead, you can enable audit trail to track work order changes.
- You can't release and pick a work order in a single action when e-records and e-signatures is enabled. Instead, you can release a work order and submit it for approval before picking materials.
- You can't release a work order for e-record and e-signature approval through FBDI, REST, the Material Availability Assignments page, and the Edit Maintenance Exception page.
- You can't prevent changes to material reservations for work orders in Pending Approval status. However, you can manually coordinate when material reservation changes in Inventory need to be implemented for the affected work order before initiating the e-record and e-signature approval process.
- You can't configure the suppression of the e-signature approval based on specific conditions. However, you can configure an automatic, conditional approval based on approval rules.

Note: For more information about capturing E-Signatures and generating E-Records, refer to the Oracle SCM Cloud Using E-Signatures and E-Records guide.

How You Manage Maintenance Work Order Flexfields

Your Order object is enabled for flexfields, so you can manage additional details of a work definition. Flexfields are defined during the implementation of Oracle Maintenance, but can be further defined once deployed and work orders are created.

The Order object is shared by Oracle Manufacturing and Maintenance. Therefore, any flexfields that are defined are visible in both applications. This includes flexfields for:

- Work order header
- Work order operation
- Work order operation item
- Work order operation resource

- Work order operation output
- Work order operation resource instance
- Work order operation transactions
- Work order resource transactions

For these, these are the numbers of additional attribute fields available:

- Character: 20
- Number: 10
- Date: 10
- Date and Time: 10

You can manage the flexfields in the Additional Information show/hide region of the Edit Work Order page. You can view and edit the field values, including conditional fields guided by a context segment. You can also define, view and update the flexfields using the Maintenance Work Order REST API and File-Based Data Import.

For additional details about flexfields, refer to the Configuring and Extending Applications guide of Oracle Applications Cloud.

> **Note:** When you define flexfields, you can enable them for Business Intelligence. When creating a flexfield segment, select the BI Enabled check box under the Business Intelligence section. When a flexfield is deployed, run the Import Oracle Fusion Data Extensions for Transactional Business Intelligence scheduled process while selecting the CRM parameter check box. This will import the flexfields into Oracle Transactional Business Intelligence (OTBI).

Transform Assets Using a Maintenance Work Order

Complete asset transformation jobs using maintenance work orders. Create a maintenance work order and use it to transform one or more assets. After completion of the work order, update the asset's associated item to reflect the transformed asset's new form or function.

Asset transformation is a process of changing the form or function of an asset to increase its value, utility, and efficiency. For example, a car can be transformed into a hybrid or electric vehicle to reduce carbon emissions and maintenance costs.

Let's see how to create transform work orders for a single asset and multiple assets and then return the assets to inventory.

Create a Transform Work Order for a Single Asset and Return to Inventory

Do this on the Create Maintenance Work Order window:

1. Select the **Asset** radio option and select an asset.
2. Select a work order type and subtype.
3. Assign a start date.
4. Select a **Target Item** into which the asset's current associated item needs to change upon completion of the work order.
5. Select the **Allow completion to inventory** checkbox.
   This tracks return of the asset to inventory after it's transformed so that the transformed asset is available for planning and reservations.

6. Save the work order.

Create a Transform Work Order for Multiple Assets and Return to Inventory

Do this on the Create Maintenance Work Order window:

1. Select the **Item** radio option and select an item.
2. Enter the quantity of assets to be transformed.
3. Select work order type and subtype.
4. Assign a start date.
5. Select a **Target Item** into which the asset's current associated item needs to change upon completion of the work order.
   Ensure that the target item has the same unit of measure as the asset's pre-transformation item and belongs to the same work order organization as the asset's current (pre-transformation) item.
6. Save the work order.
   After you save, the Edit Work Order page appears.
7. On the Edit Work Order page, Assets tab, click **Add** to add the assets that you want to transform to a different item number.
8. Next, under the General Information tab, Completion Information header, select the **Allow completion to inventory** checkbox.
   This check box determines the serial generation policy of the target item. Also, selecting this checkbox tracks the return of the assets to inventory after their transformation so that the transformed assets are available for planning and reservations.
9. Save your changes.

Here are some points related to single or multiple asset transformation:

- The File-Based Data Import (FBDI) file, **Maintenance Work Order Import**, supports the creation of a transform work order.
- After the assets are transformed, associate them to an asset-tracked and serial-controlled item.
- If an asset is IoT-enabled prior to transformation, it can't be synced with IoT after transformation.
- Update any existing forecasts after the asset is transformed.
- Other work orders for the same asset can't be released while a transform work order is in progress.
- You can only reverse the latest transform work order.
- Two transform work orders on the same asset can't be in progress simultaneously.
- Asset transformation is optional at the time of completion, even for a transform work order.
- The serial number used during transformation needs to be valid for its uniqueness and status.

How You Perform Mass Actions on Maintenance Work Orders

On the Maintenance Work Orders page, you can perform mass actions on the maintenance work orders such as update statuses and change priorities.

The following mass actions are supported for the maintenance work orders:

Mass Action	Description
Release	The selected maintenance work orders are set to Released status.
Unrelease	The selected maintenance work orders are set to Unreleased status.
On Hold	The selected maintenance work orders are set to On Hold status.
Cancel	The selected maintenance work orders are set to Canceled status. You must provide the reason for cancellation when performing the Cancel action.
Close	The selected maintenance work orders are set to Closed status.
Change Priority	The selected maintenance work orders are updated with the new priority. You must provide the new priority.

When a mass action is successfully processed, a confirmation message is displayed with the count of maintenance work orders that were successfully updated. If there are errors processing certain maintenance work orders, the maintenance work orders and their corresponding error details are displayed. You may choose to cancel or proceed with mass action. If you proceed with the mass action, the successfully processed maintenance work orders are updated and the maintenance work orders with errors are discarded from the mass action.

Production Calendars and Work Center Resource Calendars

How You Manage Production Calendars

A production calendar represents the schedule associated with a maintenance organization using the Manage Plant Parameters page. You can use the Setup and Maintenance work area to define the shifts, workday patterns, and schedules. Oracle Maintenance only supports shifts that are of type Time and shift detail that are of type Punch or None. The production calendar indicates the operational time of a plant as determined by its schedule definition. You can define shift exceptions to make modifications to the shift duration. The shifts and shift exceptions displayed in the production calendar are interpreted in the plant time zone as defined in Manage Inventory Organization Parameters.

The shifts and shift exceptions in a production calendar are applicable for all the resources in the plant. However, a specific shift or a shift exception can be overridden for a resource by specifying the available resource units in the work center resource calendar. This cumulatively determines the resource availability for calculation of lead times and scheduling of work order dates.

Manage Shift Exceptions

A shift exception is a change in the shift assigned to a specific maintenance organization. This exception affects the availability of all shift based work center resources defined within the plant. You can identify shift exceptions and standard shifts on the production calendar. The shift exceptions are also color-coded to for you to analyze with ease.

You use the **Manage Production Calendar** page from the Maintenance Management Overview page to perform the following tasks:

- Creating a shift exception
- Editing a shift exception
- Deleting a shift exception

Creating a Shift Exception:

You can create a shift exception to add a new shift or make changes to an existing shift for a day or a period of time. The start time and end time displayed, or the start time entered on this page is assumed to be in the plant time zone.

Editing a Shift Exception:

You can only edit a future shift exception. However, you can edit the end date of a current shift exception.

To edit a shift exception, perform the following steps:

1. On the **Manage Production Calendar** page, click the shift exception in the calendar that you want to edit. Then, from the right-click menu or the **Actions** menu, select *Edit Shift Exception*.
2. On the **Manage Production Calendar: Edit Shift Exception** page, edit the fields that you want to change.
3. Click the **Save and Close** button.

Deleting a Shift Exception:

You can only delete a future shift exception. To delete a shift exception, on the **Manage Production Calendar** page, click the shift exception in the calendar that you want to edit. Then, from the right-click menu or the **Actions** menu, select *Delete Shift Exception*.

Related Topics

- How You Manage Work Center Resource Calendars
- Create a Shift Exception
- Create a Resource Exception

Create a Shift Exception

You can create four types of shift exceptions in a production calendar: They are Add Shift, Change Shift, Remove Shift, and Split Shift. The following examples illustrate the steps to create each of these shift types.

> **Note:** You can extend a shift by creating a shift exception for the shift. In the **Manage Production Calendar** page, select a shift and right-click on it to create a shift exception

Add Shift

Add Shift exception type is used when the organization needs an additional shift for any reason such as addressing the backlog or seasonal loads. To add a shift, perform the following steps:

1. On the **Manage Production Calendar** page, in the calendar, click a specific date for which you want to create the shift exception. Ensure that you click outside the existing shift time. Then, from the **Actions** menu, select: **Create Shift Exception**.
2. On the **Manage Production Calendar page: Create Shift Exception** page, enter a name for the shift exception.
3. In the **Reason** field, enter the reason for adding the shift exception. This is an optional field.
4. In the **Repeats Until** field, enter the end date of the new exception. This is the date until which the exception is created. You can add a shift exception for only a day by leaving this field blank.
5. In the **Start Time** field, enter the start time of the new shift in the organization time zone.
6. In the **Duration** field, enter the duration of the new shift.
7. Click the **Save and Close** button.

Change Shift

Change shift exception type is used when the organization needs to have a different start time or end time or both for an existing shift for one or more workdays. To change a shift, perform the following steps:

1. On the **Manage Production Calendar** page, in the calendar, click a specific date for which you want to create the shift exception. Ensure that you click inside the shift time that you want to change. Then, from the right-click menu or the **Actions** menu, select: **Create Shift Exception**.
2. On the **Manage Production Calendar page: Create Shift Exception** page, enter a name for the shift exception.
3. In the **Reason** field, enter the reason for adding the shift exception. This is an optional field.
4. In the **Repeats Until** field, enter the end date of the new exception. This is the date until which the exception is created. You can add a shift exception for only a day by leaving this field blank.
5. From the **Exception Type** list, select **Change Shift**.
6. In the **Start Time** field, enter a new time in the organization time zone if you want to change the start time of the shift.
7. In the **Duration** field, enter a new duration if you want to change the duration of the shift.
8. Click the **Save and Close** button.

Remove Shift

Remove Shift exception type is used when the organization does not need a shift for one or more workdays. To remove a shift, perform the following steps:

1. On the **Manage Production Calendar** page, in the calendar, click a specific date for which you want to create the shift exception. Ensure that you click inside the shift time that you want to change. Then, from the right-click menu or the **Actions** menu, select: **Create Shift Exception**.
2. On the **Manage Production Calendar page: Create Shift Exception** page, enter a name for the shift exception.
3. In the **Reason** field, enter the reason for adding the shift exception. This is an optional field.
4. In the **Repeats Until** field, enter the end date of the new exception. This is the date until which the exception is created. You can add a shift exception for only a day by leaving this field blank.
5. From the **Exception Type** list, select **Remove Shift**.
6. Click the **Save and Close** button.

Split Shift

Split Shift exception type is used when a break is required within an existing shift for one or more workdays. To split a shift, perform the following steps:

1. On the **Manage Production Calendar** page, in the calendar, click a specific date for which you want to create the shift exception. Ensure that you click inside the shift time that you want to change. Then, from the right-click menu or the **Actions** menu, select: **Create Shift Exception**.

2. On the **Manage Production Calendar page: Create Shift Exception** page, enter a name for the shift exception.
3. In the **Reason** field, enter the reason for adding the shift exception. This is an optional field.
4. In the **Repeats Until** field, enter the end date of the new exception. This is the date until which the exception is created. You can add a shift exception for only a day by leaving this field blank.
5. From the **Exception Type** list, select **Split Shift**.
6. In the **Start Time** field, enter a time in the organization time zone at which you want to start the break in the shift. This time cannot be the start time of the shift.
7. In the **Duration** field, enter the duration of the break. This is a required field.

   You must ensure that the break time does not overlap with the start and end time of the shift
8. Click the **Save and Close** button.

Related Topics

- How You Manage Production Calendars
- How You Manage Work Center Resource Calendars
- Create a Resource Exception

How You Manage Work Center Resource Calendars

AA resource exception is a change in the availability of units of a resource belonging to a work center. The exception is applicable to the specific work center resource only and doesn't affect the whole organization. You can't define resource exceptions for the resources that are 24 hours available. The exceptions created in the work center resource calendar overrides the shift exceptions created in the production calendar. The shifts and exceptions displayed in the work center resource calendar are interpreted in the organization time zone as defined in Manage Inventory Organization Parameters.

Manage Resource Exceptions

A resource exception is a collection of changes to one or more resources. The exception is applicable to one or many resources of the work center and doesn't affect the whole organization.

Example scenarios for such exception are:

- A few workers coming to work on a weekend to address a backlog.
- A few workers leaving the work on a workday to attend a mandatory training.

You use the **Manage Work Center Resource Calendar** page to perform the following tasks:

- Creating a resource exception
- Editing a resource exception
- Deleting a resource exception

The **Manage Work Center Resource Calendar** page can be accessed from the **Work Execution Overview** page and the **Edit Work Center** page.

Creating a Resource Exception:

You can create a resource exception to do the following:

- Add a new shift for one or more resources.

- Change the start time or duration of an existing shift for one or more resources. The start time entered on this page is assumed to be in the organization time zone.
- Change the resource availability in an existing shift.

Refer the Create a Resource Exception: Worked Example topic for instruction on creating the resource exceptions to achieve different results.

Editing a Resource Exception:

You can only edit a future resource exception. However, you can edit the end date of a current resource exception.

To edit a resource exception, perform the following steps:

1. On the **Manage Work Center Resource Calendar** page, click the resource exception in the calendar that you want to edit. Then, from the right-click menu or the **Actions** menu, select *Edit Resource Exception*.
2. On the **Manage Work Center Resource Calendar: Edit Work Center Resource Availability** page, edit the fields that you want to change.
3. Click the **Save and Close** button.

Deleting a Resource Exception

You can delete a future resource exception only. To delete a resource exception, on the **Manage Work Center Resource Calendar** page, click the resource exception in the calendar that you want to edit. Then, from the right-click menu or the **Actions** menu, select *Delete Resource Exception*.

Related Topics

- How You Manage Production Calendars
- Create a Resource Exception
- Create a Shift Exception

Create a Resource Exception

You can create a resource exception in the work center resource calendar to fulfill the following requirements:

- Make a work center resource available
- Make few or all the units of a work center resource unavailable

The following examples illustrate steps to create a resource exception with respect to each of these two scenarios.

Make a Work Center Resource Available

When you want a work center resource to be available during a nonworking time such as duration outside a regular shift, you can create a resource exception. To create a resource exception for making a work center resource available, perform the following steps:

1. On the **Manage Work Center Resource Calendar** page, in the calendar, click a specific date for which you want to create the resource exception. Ensure that you click outside the existing shift time. Then, from the **Actions** menu, select Create Resource Exception.
2. On the **Manage Work Center Resource Calendar: Create Work Center Resource Availability** page, in the **Repeats Until** field, enter the end date of the new exception. This is the date until which the exception is created. You can add a work center resource exception for only a day by leaving this field blank.

3. In the **Start Time** field, enter the start time from which the resource availability is required to be changed. Ensure that the start time is a nonworking time for the resource and is defined in the organization time zone.
4. In the **Duration** field, enter the duration for the resource availability change. Ensure that the duration is such that the computed end time is also a nonworking time for the resource.
5. In the **Resource Availability and Overrides** region, the **Default Availability** column shows zero. In the **Availability Override** column, against the specific resource, enter the quantity of the resource units that you want to assign to the duration.
6. Click the **Save and Close** button.

Make Few or All the Units of a Work Center Resource Unavailable

When you want a work center resource to be either completely unavailable or some units of the resource to be unavailable during a working time such as a duration within a regular shift, you can create a resource exception. To make few or all the units of a work center resource unavailable, perform the following steps:

1. On the **Manage Work Center Resource Calendar** page, in the calendar, click a specific date for which you want to create the resource exception. Ensure that you click inside the shift time that you want to change. Then, from the right-click menu or the **Actions** menu, select Create Resource Exception.
2. On the **Manage Work Center Resource Calendar: Create Work Center Resource Availability** page, in the **Repeats Until** field, enter the end date of the new exception. This is the date until which the exception is created. You can add a work center resource exception for only a day by leaving this field blank.
3. In the **Start Time** field, enter the start time from which the resource availability is required to be changed. Ensure that the start time is a working time for the resource and is defined in the organization time zone.
4. In the **Duration** field, enter the duration for the resource availability change. Ensure that the duration is such that the computed end time is also a working time for the resource.
5. In the **Resource Availability and Overrides** region, the **Default Availability** column shows the number of resource units that are available for that specific shift. In the **Availability Override** column, against the specific resource, enter either zero to make the resource completely unavailable or a lesser number than the current number of resources available as displayed to make few units of the resource unavailable for the duration.
6. Click the **Save and Close** button.

Related Topics

- How You Manage Work Center Resource Calendars
- How You Manage Production Calendars
- Create a Shift Exception

Overview of Work Order Material Availability

As a maintenance manager, you can ensure all materials are available for a work order prior to its release to the shop floor. As priorities change, you can execute work orders of lower priority that now have become a high priority. When materials are scarce, you can decide which work orders you can release, and which work orders you must place on hold until materials become available.

To gain visibility into material availability for work orders, you can:

- Recommend a list of work orders for material prioritization to be released, based on a combination of various attributes such as item and date criteria.
- Reassign available materials to work orders with higher priority when shortages exist.
- Release or hold work orders based on material availability and shortages to minimize shop floor disruptions.

You can define material availability rules that are used by the application to create an initial recommendation based on which work orders should be released when materials are scarce. The set of rules can be defined at an organization level to list work orders for material prioritization based on the these sorting and filtering criteria:

- List work orders in the order of material assignment priority based on critical items and work order start date.
- Include work orders within a specified time fence and having specific statuses, types, and subtypes.
- Include work orders with specific materials, or materials based on attributes such as make versus buy, and supply type.
- Exclude work orders from material de-prioritization based on specific attributes of the item, and work order.

Once rules are created, use the Manage Availability Assignments workbench to:

- Review the prioritized list of work orders and the material assigned to the work orders to identify the material availability and shortages as calculated by the material availability rules.
- Review materials with shortages and affected work orders and expected supplies to address the material shortages.
- This helps you to decide whether to release a work order or to unrelease a released work order.
- Adjust material assignments for work order prioritization and preview the force assigned and unassigned work orders.
- Adjust material assignments for work order prioritization and preview the force assigned and unassigned work orders.

To start using the workbench, you click Calculate Material Availability to initiate the background process, at the completion of which the workbench will refresh. Then, you can view and assess the assignment priority sequence for each result row by work order and item. Next, you can view the material availability details, including the expected supplies. You can then change the priority of work orders by clicking the icon under the Change Assignment column. Clicking the force assigning or force unassigning icon will change the materials based on expected supplies. Finally, you can release or hold work orders after you're satisfied with your changes.

For more details on material availability, see the Work Order Material Availability section in the Using Manufacturing guide.

Direct Procurement of Materials for Maintenance Work Orders

Overview of Direct Procurement of Materials

You can procure materials directly for work order operations. You can do the following:

- Initiate the creation of a purchase requisition against a work order operation to manually procure items that are required to execute a specific work order operation.

  This capability is also supported for project-specific work orders. The project and task on the work order are defaulted onto the requisition line and you are required to enter other project costing attributes such as expenditure type and expenditure item date. It's important to note that the project/task on the requisition line must match with project and task on the associated work order.
- View the list of items procured for work order operations in a work order and the purchasing document details.

- Initiate corrective actions required to manage the purchased items, such as returning materials to suppliers or receiving and correcting receipt or return quantities. These actions can be initiated from the work order itself.
- Display purchased items for work orders in production reports and transaction history.
- Analyze purchased items for work orders in Oracle Transactional Business Intelligence (OTBI) which displays the analysis of purchased items for work orders.

How You Create Purchase Requisitions

Create purchase requisitions for your work orders if your organization is set up as a maintenance organization in the Manage Plant Parameters page in the Setup and Maintenance work area. Here's how:

1. Go to the Purchased Item Details page by clicking the Review Purchased Item Details button on the Edit Work order page.
2. On the Purchased Item Details page, click the Create Requisition button to open the Create Requisition dialog box. Here are the attributes on the Create Requisition dialog box:

Attribute	Description
Work Order	The context work order for which you create a purchase requisition. You can't edit this field.
Operation Sequence	Operation number for the context work order. Select an operation number for your purchase requisition.
Deliver-to Location	The location where the requisition is delivered. The default value is the work order organization, but you can update this value. All locations associated to the maintenance organization are displayed in the drop-down list. These locations are defined using Setup and Maintenance task Manage Locations.

3. Click OK to open the Self-Service Procurement page. On this page, you'll get these values defaulted from the context work order:
    - Business unit
    - Deliver-to location
    - Work order number
    - Operation sequence
    - Destination type

    You can update these values.
4. Click Save and Close to create the requisition. Your purchase requisition is displayed on the Edit Purchased Requisition page. On this page, you can view the details of your requisition lines also. The values you saved for your purchase requisition are defaulted for your requisition lines, but you can update them.
5. Click Save on the Edit Requisition page to go back to the Purchased Item Details page, where you can review your purchased item details.

How You Review Purchased Item Details

In your organization, there might be a scenario where you need to ensure that you cam make certain unplanned parts or items that are required for work order completion. Select the work order using the Manage Work Orders task, and in the **Edit Work Order** page, you can view the details of the purchased items for each operation. You can also click the **Review Purchased Item Details** action to navigate to the page to review the purchasing and receipt details of items that are procured for the work order.

If your organization is set up as a maintenance organization in the Manage Plant Parameters page in the Setup and Maintenance work area, you can also select the **Create Requisitions** action and navigate to the self-service page in Procurement to shop and create requisitions for items that you want to directly purchase for a work order. You can track the requisition, purchase order, and receipt details of items procured for your maintenance or manufacturing work orders on the Purchased Item Details page.

> **Note:** In your organization, if the **Allow Direct Purchases for Work Orders** parameter is set up, you will be able to create requisitions for items that you want to directly purchase for a work order. For a maintenance organization, this parameter is enabled by default, and for a manufacturing organization, it's disabled by default.

The following table lists all the details that you can review and track on the Purchased Item Details page.

Attribute	Description
Operation Sequence	The specific operation that you selected on the Operations tab on the Edit Work Order page.
Item	The unique number of an item that has been purchased for the work order operation. You can click on the icon beside the item for more details.
Item Description	The description of the item as defined in the item-organization setup.
Requisitioned Quantity or Amount	Total requested quantity in all approved purchase requisitions and in pending approval status for the item. Requisition quantities in incomplete, rejected, withdrawn, canceled, and returned statuses aren't considered.
Ordered Quantity or Amount	Total ordered quantity in all approved purchase order lines for the item. Only approved orders in open and closed statuses are considered.
Received Quantity or Amount	Total quantity delivered against all purchase order lines for the item. This also takes into account the quantity that's returned to supplier and to receiving.
Details	You can click on the Details icon to drill down into the purchasing and receiving details.

Note: Dual units of measure is supported in item procurement. To support dual units of measure tracking of items that are procured directly for work orders, the Purchasing and Receiving Details regions of the Review Purchased Item Details page have been enhanced to display the secondary quantity and secondary unit of measure for requisitions, purchase orders, and receipts. In addition, users can now enter secondary quantity while performing receipt corrections and returns.

How You Track Purchasing Details of Procured Items in Maintenance

Review and track the items for which your organization has created requisitions on the Purchased Item Details page. You can select the Details icon beside any of the purchased item for a work order operation to further drill down into the details of purchase order lines and receipt lines.

In case there is a disparity in the requisitioned, ordered, and received quantities, you can view the Purchasing Details section to analyze the details and decide if you want to return the item to the supplier or return the item to receiving. You can take corrective actions to correct the quantity and amount if the data has been be wrongly entered.

The following table lists all the details that you can review in the Purchasing Details section:

Attribute	Description
Requisition Number	You can click on the specific requisition identification number to view the requisition document.
Requisition Line	The number of the requisition line for the purchased item.
Requisition Quantity or Amount	The quantity or amount of item that was specified in the requisition.
Requisition Requested Date	Date on which your organization requested for purchase of items, as specified in the requisition document.
Requisition Status	Status of a receipt line for a purchased item. The status can be approved or pending.
Purchase Order Number	You can click on the specific purchase order identification number to view the purchase order document.
Purchase Order Line	The number of the purchase order line for the purchased item.
Purchase Order Schedule	Number assigned by the application to track multiple schedules for the purchase order line
Purchase Order Quantity or Amount	Quantity or amount of item that was specified for the single line in the purchase order.
Purchase Order Requested Date	Date as specified on the purchase order on which the items were requested from the supplier.
Purchase Order Promised Date	Date as specified on the purchase order on which the items were promised by the supplier.

Attribute	Description
Purchase Order Status	Status of a purchase order line for the requisitioned item. The status can be closed, or open.
Received Quantity or Amount	Quantity of the purchased item that's finally delivered to you.
Supplier	Name of the supplier as specified in the purchase order, who supplies the item that has been requisitioned.
Supplier Site	Name of the supplier site as specified in the purchase order, from where the requisitioned item is supplied.

How You Track Receiving Details of Procured Items in Maintenance

Review and track the items for which your organization has created requisitions on the Purchased Item Details page. You can select the Details icon beside any of the purchased item for a work order operation to further drill down into the details of purchase order lines and receipt lines. While reviewing the Purchasing Details, you can also click on any purchase order line and review the receipt details for that line.

The following table lists all the details that you can view in the Receiving Details section for a particular purchase order line that you have selected.

Attribute	Description
Receipt	You can click on the specific receipt identification number to view the document and track the received quantities of the purchased item.
Line Status	Status of a specific receipt line for the purchase order.
Quantity	Quantity of purchased item that has been delivered and received by your organization against the purchase order.
Transaction Date	Date on which the delivery transaction was carried out.
Transacted By	Name of the person who completed the delivery transaction.

If you're not satisfied with the delivered items, you can return the items. You can also take the following actions:

- Correct: You can correct clerical errors in delivered quantity or in returns to receiving and return to suppliers. This will correct the receipt quantity if the status is Deliver, or it will correct the returned quantity if the line status is Return to Supplier or Return to Receiving.

- Return to Supplier: You can initiate a return of the purchased item to directly to the supplier from whom you procured the item. This can be done if the receipt line status is Deliver.
- Return to Receiving: You can initiate a return of the purchased item to directly to the receiving department. This can be done if the receipt line status is Deliver.

Note: For amount-based purchase orders, you can only correct the amount. You can't return the item to supplier or receiving.

How You Manage Maintenance Work Orders Using REST API

Define, view, and update maintenance work orders for an asset using REST services.

Use the Maintenance Work Order REST API to:

- Create, view, and update maintenance work orders for an asset or item (multiple assets).
- Create maintenance work orders that support return to inventory and out of sequence operation completion. Create, view, and update maintenance work orders for an asset.
- Create, view, and update document references for a work order.
- Create, view, and update flexfields for project details for a work order.
- Create, view, and update flexfields for a work order.
- Create, view, update, and delete operations.
- Create, view, and update flexfields for an operation.
- Create, view, update, and delete materials for an operation.
- Create, view, and update flexfields for materials for an operation.
- Create, view, update, and delete resources for an operation.
- Create, view, and update flexfields for resources for an operation.
- Create, view, update, and delete resources instances for a resource for an operation.
- Create, view, and update flexfields for resources instances for a resource for an operation.

How You Import Maintenance Work Orders

Oracle Maintenance enables you to create and update maintenance work orders in bulk using the File-Based Data Import process.

The Maintenance Work Order Import is used to:

- Create and update a work order header record and its core attributes, including the associated asset, item (multiple assets), return to inventory, and out-of-sequence operation completion options.
- Create, update, and delete operations, operation materials and operation resources. This includes values for definable flexfields.

Note: For more details, refer to the File-Based Data Import for Oracle Supply Chain Management Cloud and Scheduled Processes for SCM guides.

Purge Batch Data from Maintenance Import Interfaces

The upload or import of data may result in a warning or error status sue to issues with the data. When this occurs, the data can't be further processed from the interface tables. In such a case, the Asset Administrator can run the Purge Maintenance Records from Interface process to delete the asset data from the interface tables from all or just a specific import process. The scheduled process can be run on demand or setup on a schedule as required by your business processes.

How You Close a Maintenance Work Order

After performing all the activities on a maintenance work order, you must close the work order so as to prevent any further updates to it. The costing and variants of the work order are also posted upon closing of the work order. You can use the Close action from the Mass Actions menu in Maintenance Work Orders page to close the work orders. Apart from that, you can use the Mass Close Maintenance Work Orders scheduled process to mass close the completed maintenance work orders.

You can run the scheduled process on the Mass Close Maintenance Work Orders page. The page is accessible from the Tasks pane by clicking the Close Maintenance Work Orders link in Work Management.

The Mass Close Maintenance Work Orders page provides the following parameters that you can select from or enter to run the scheduled process.

Parameter	Description
From Work Order Number	The first work order number in the range of work orders that you want to close.
To Work Order Number	The last work order number in the range of work orders that you want to close.
From Work Order Start Date	The first date in the range of start dates for the work orders that you want to close.
To Work Order Start Date	The last date in the range of start dates for the work orders that you want to close.
From Work Order Released Date	The first date in the range of release dates for the work orders that you want to close.
To Work Order Released Date	The last date in the range of release dates for the work orders that you want to close.
From Work Order Completed Date	The first date in the range of completion dates for the work orders that you want to close.
To Work Order Completed Date	The last date in the range of completion dates for the work orders that you want to close.
Work Order Asset	The asset associated with the maintenance work orders.

Parameter	Description
Work Order Status	You can select from the following work order statuses: • Unreleased • Released • On Hold • Canceled • Completed • Closed The default is blank.

You can run the scheduled process on demand or schedule it to run at a specific interval of time. To run the scheduled process at a specific schedule or time, click the Advanced button and then in the Schedule tab, select Using a schedule from the Run option. Now, you can select the frequency and enter a start date for the scheduled process to run.

Overview of Maintenance Work Order Exceptions

Oracle Maintenance provides the feature of reporting and managing the exceptions for maintenance work orders. There could be incidences of problem during the maintenance activity, such as component shortage, resource unavailability, and so on. Such problems can lead to an exception for the work order.

Use the existing Report Maintenance Exceptions and Manage Exceptions pages, or the Redwood enabled Exceptions page to report exceptions for these problems. You can then associate the work order operations that are impacted by the exception.

A maintenance work order exception can be reported against any of the following:

- Work Area
- Work Center
- Resources
- Components
- Miscellaneous

When an exception is reported against an operation, all the users with the relevant roles are automatically notified. If you're responsible for maintenance manager tasks, you can review the exception and take specific actions to resolve the problems and close the exception.

You can also create, update, and view exceptions using the Quality Issues REST API.

How You Review Maintenance Work Order Exceptions

You can review the maintenance work order exceptions on the Maintenance Exceptions or Redwood enabled Exceptions page. The pages let you to report, update, and close the maintenance work order exceptions. You can open the

Maintenance Exceptions page by clicking the Manage Maintenance Exceptions link in the Work Management in the Tasks pane.

Viewing the Exceptions

Use the existing Maintenance Exceptions page to search for the unresolved exceptions in the following infotiles:

- Open Exceptions: This infotile displays the total number of open exceptions that you can act upon.
- Exception Type: This infotile displays the number of open exceptions grouped by the exception type, such as component shortage, resource problems and so on. The exception type is depicted in the form of a pie chart.
- Reported On: This infotile displays the open exceptions grouped by the various shifts during which they were reported.
- Severity: This infotile displays the number of open exceptions grouped by the level of criticality such as critical, high, medium, and low.

You can click any one of these infotiles to drill down further into the problem and get more information regarding the exception and associated work orders.

Use the Redwood Exceptions page to create, update, edit, and close exceptions from a single page. Click the Report Exceptions action to create a new exception by type, type reference, and criticality. You can also optionally add attachments. After you create, you can associate the related operations and exit the creation process.

Searching for the Exceptions

On the existing Maintenance Exception page you can use the basic and advance search features to search for specific work order exceptions. The filters in advanced search enable you to search based on exception number, exception status, severity, exception type, work area, work center, component, resource, supplier, work order, reported on, and reported by. If your organization is project-tracked, you can use the project number and task number filters. You can save the frequently used search criteria and use them later from the Search drop-down list. If you set a saved search as default, the search is run whenever you open the Maintenance Exceptions page.

The Redwood Exceptions page shows a list of open exceptions for the contextual aintenance organization. You can further refine the results by using the keyword search and status filter chip. The keyword search allows you to search by the exception number, exception description, item number, resource name, work area name, work center name, or resource instance name. You can also use the toggle to sort the results by severity, date reported, type, and exception number. The results rows show the key details of the exception.

Reporting the Exceptions

You can report the work order exceptions on the existing Report Production Exception page. Open the Report Production Exception page by clicking the Add icon on the existing Maintenance Exceptions page. Alternately, you can open the existing Report Production Exception page by clicking the Report Maintenance Exception link in Work Execution in the Tasks pane. If your organization is project-tracked, you can also view the associated project number and task number for the exceptions.

Using the Redwood Exceptions page, you can create new exceptions by clicking the Report Exception action at the top of the page. There will not be a direct navigation task in Redwood.

Updating the Exceptions

Use the existing Maintenance Exception page to update the exception on the Exception tab of the Edit Maintenance Work Order page. You can update the status of the exception and add new information for the work order exception.

On the Redwood Exceptions page, you can update an existing exception from the search results/ Select the eye icon on the row to go to the Exception Details page. On the details page, you can add or update the affected operations, update the work order status. or close the exception. You can also select the Edit action to update the exception header details. You can also navigate to this page from the Redwood Edit Work Order details page, for an operation, item, or resource that has an open exception.

Closing the Exceptions

After assessing the open exceptions, you can close the exceptions that have been resolved. You can close the entire exception or close the exception for one or a few work order operations associated with the exception.

To close an exception, select the exception from the list on the existing Maintenance Exceptions page and click the Close Exception button. The exception status of the exception gets updated to Pending Closure and a notification is sent to the approver. The approver can drill down to view the exception detail and then review the notification contents by selecting the electronic record link. Then, the approver may approve or reject the exception closure.

You can view the exception list by drilling down from the infotiles or performing a search on the existing Manage Exceptions page. You can also close an exception on the Exceptions tab of the Edit Maintenance Work Order page.

On the Redwood Exceptions page, you can close an open exception from the search results. Select the eye icon on the row to go the Exception details page. On the details page, you can select the close exception action. You can also navigate to this page from the Redwood Edit Work Order details page, for an operation, item, or resource that has an open exception.

How You View Work Order History

When you create and execute the work order, updates to the work order status are displayed on the History tab.

This table provides details about work order status history.

Parameter	Description
Data	Date when the work order status is changed.
From Status	Work order status (includes predefined and user-defined) before the change.
To Status	Work order status (includes predefined and user-defined) after the change.
Status Change Date	The actual date if specified by the user when the work order status is changed.
Reason	User-specified reason when the work order is canceled.
User	User who updated the status.

How You Review Maintenance Work Order Cost

Oracle Maintenance enables you to view the total cost for the maintenance work orders. The Maintenance Work Order Costs page displays the total cost for the work orders. The total cost is then broken down as cost for resources and materials. Materials include transacted operation items and received purchased items. The cost is calculated based on the maintenance transactions transferred to costing.

You can open the Maintenance Work Order Costs page by clicking the icon in Costs column against each work order on the Maintenance Work Orders page. Alternatively, you can also open the Maintenance Work Order Costs page by clicking the View Cost button on the Edit Maintenance Work Order page.

Maintenance Work Orders for Assets Across Organizations

How You Create Maintenance Work Orders for Assets Across Organizations

Set up the **Consider Organization Relationships When Creating Maintenance Work Orders** parameter to create maintenance work orders across organizations with or without considering organization relationships.

Set Up the Consider Organization Relationships When Creating Maintenance Work Orders Parameter

1. Go to the Manage Asset Maintenance Parameters task in the Setup and Maintenance work area.
2. On the Manage Asset Maintenance Parameters page, click the Additional Parameters tab.

   The tab shows the **Consider Organization Relationships When Creating Maintenance Work Orders** parameter. By default, this parameter is set to **Yes**. When it's set to Yes, you create maintenance work orders across organizations with the organization relationship defined.
3. To create maintenance work orders across organizations without relationships, change the value of the parameter to **No**.
4. Save your changes.

Let's see the scenarios of creating maintenance work orders for organizations based on the value of the parameter:

- Scenario 1: You have set the parameter to No to create maintenance work orders across organizations without relationships.
- Scenario 2: You have set the parameter to Yes to create maintenance work orders across Organizations with the organization relationship defined.

Scenario 1: Create Maintenance Work Orders Across Organizations Without Relationships

You set the parameter value to No to create maintenance work orders across organizations. To create work orders:

1. Navigate to **Supply Chain Execution** > **Maintenance Management**.
2. On the Maintenance Management landing page, click the taskbar and select **Manage Maintenance Work Orders**.
3. On the Maintenance Work Orders page, click the plus icon.
   The Create Maintenance Work Order popup appears.
4. On the Create Maintenance Work Order popup, click the asset picker icon.
   The Search and Select: Asset popup appears.
5. Search for the asset you created for an asset item. The asset you added isn't associated to any operating organization.
6. On the Create Maintenance Work Order popup, add the other details such as work definition, type, subtype, start date, priority, and set a value for the Allow out of sequence completion check box.
7. Save your changes.
   Your maintenance work order is created for an asset that's across organizations irrespective of organization relationships.

Scenario 2: Create Maintenance Work Orders Across Organizations with Organization Relationship Defined

To create maintenance work orders across organization with organization relationship defined, you set the parameter value to Yes. In addition to that, you need a reciprocal or operating organization to add as a related organization to your maintenance organization. Here's how you assign an operating or reciprocal organization to a maintenance organization:

- Create two organizations so that you assign one of them as a reciprocal organization to the other one. See the Set up a maintenance organization topic to know more about how to create an organization.
- Associate an asset item to the newly created maintenance organizations. See the *Creating Single Items* topic in the Using Product Data Management guide.
- Using the Manage Maintenance Organization Relationships task of the Setup and Maintenance work area, search for one of the maintenance organizations you created and add the other one as a reciprocal organization to this one.

After that, create maintenance work orders:

1. Navigate to **Supply Chain Execution** > **Maintenance Management**.
2. On the Maintenance Management landing page, click the taskbar and select **Manage Maintenance Work Order**.
3. Click the plus icon.
   The Create Maintenance Work Order popup appears.
4. Click the asset picker icon.
   The Search and Select Asset popup appears.
5. Search for the asset you created on asset item that's associated with both the maintenance organizations.
   In the Operating Organization column, you see the reciprocal organization you assigned to the maintenance organization.

6. On the Create Maintenance Work Order popup, add the other details such as work definition, type, subtype, start date, priority, and set a value for the Allow out of sequence completion check box.
7. Save your changes.

   Your maintenance work order is created for an asset across organizations with the organization relationship defined.

Smart Operations

Use Operational Rules to Automatically Create Maintenance Work Orders

You can leverage condition events and operational parameter values from connected assets to automatically generate condition-based maintenance work orders. When a connected asset fails or produces an error, you no longer need to manually create a maintenance work order.

Condition-based alerts using machine events and operational parameter values include these:

- **Event Ingestion:** Connected assets can send fault events or operational parameter events. These events contain the asset number, the time of the event, the fault type, and and either fault type and the fault code, or operational parameters. You can configure fault codes in Maintenance as condition codes. Condition codes can be created for failure and diagnosis. Operational parameters can be configured using the respective task list item.
- **Evaluation Criteria:** Use operational rules to evaluate incoming fault events and operational parameter values. When you configure an operational rule, it applies to either all connected assets, or specific item or item category. Operational rules can also be restricted to certain operating or location organizations.
- **Outcome:** The outcome for an operational rule describes the actions that are executed when the evaluation criteria is met. In case of fault code events, if the fault code has been configured as a failure condition code, then the created work order contains a failure event. If the fault code has been configured as a diagnostic condition code, then the created work order uses the maintenance program corresponding to the diagnostic condition code. In case of operational parameters a specific condition code can be configured as an outcome parameter.

To automatically create Maintenance work orders:

- Ensure that operational rules have been set up for equipment fault codes to capture and evaluate events from connected assets.
- Use maintenance programs that include fault event codes for which condition codes are set up in Maintenance. The maintenance programs can have work requirements defined for an asset or group of assets, can use one or more condition codes, and contain one or more work definitions.

Related Topics

- Set Up Operational Rules for Connected Assets

12 Maintenance Supervision

Overview of Maintenance Supervision

The Maintenance Supervision workbench provides you an enhanced user experience for managing maintenance work orders. Like the Manage Maintenance Work Orders page, you can search, view, edit, and create new work orders. In addition to that, you can evaluate the work schedule, prioritize it based on resource and material availability, view scheduling, and resolve bottlenecks in resource allocation, and efficiently manage resource assignments.

Your administrator *enables Maintenance Supervision*, after which, you can open it as a task from the task menu of the Maintenance Management landing page.

Tabs of the Maintenance Supervision Workbench

Tabs	How You Use Them
Work Order	Search, view, edit, and create maintenance work orders. You can view and manage user assignments. If the organization is enabled for advanced scheduling, you can filter the results by assignment status.
Scheduling	Manage work orders and resources using a Gantt chart. There are two views, schedule by work order and a list of resources and existing assignments. You can view and manage user assignments. If the organization is enabled for advanced scheduling, you can manage a person's unavailable time and find work for assignment.
Assignments	Create and manage resource assignments to work order operations. **Note:** This page isn't available for organizations that are enabled for advanced scheduling and assignment.
Service History	Search and review the repair history of similar items and assets.

Key Capabilities of Maintenance Supervision

Here's a comparison of capabilities and functionalities in the workbench and the Manage Maintenance Work Orders page. This gives you a fair idea of what you can do on the workbench and the existing Manage Maintenance Work Orders page.

Comparison of Work Order Functionalities of Maintenance Supervision and Manage Maintenance Work Orders Page

Functionality	Maintenance Supervision	Manage Maintenance Work Orders
Manage work orders for all maintenance organizations	Available in this page. You can easily use the drop-down action to change organizations without having to navigate back to the landing page.	Not available in this page. You can only manage orders for the context organization. Navigate back to the landing page to change the organization and return to this page.
Repair a single asset in a work order	Available in this page.	Available in this page.
Repair multiple assets in a single item-based work order	Available in this page. Enable the My Maintenance Work page to execute multiple asset work orders.	Available in this page. Enable the My Maintenance Work page to execute multiple asset work orders.
Create and release an asset route work order	Available in this page. Enable the My Maintenance Work page to execute asset route work orders.	Not available in this page.
Transform a single asset in a work order	Available in this page. Enable the My Maintenance Work page to execute transform asset work orders.	Available in this page. Enable the My Maintenance Work page to execute transform asset work orders.
Transform an asset in a single item-based work order	Available in this page. Enable the My Maintenance Work page to execute transform asset work orders.	Available in this page. Enable the My Maintenance Work page to execute transform asset work orders.
Issue and return repaired or scrap assets to inventory	Available in this page. Enable the My Maintenance Work page to execute return to supply work orders.	Available in this page. Enable the My Maintenance Work page to execute return to supply work orders.
Manage project-based work orders in project-enabled organizations	Available in this page.	Available in this page.
Copy existing work order	Available in this page.	Available in this page.
Work order costing	Available in this page.	From this page, you can open the Work Order Cost page.
Outside Processing (OSP) operations	Available in this page.	Available in this page.
Material item reservations	Available in this page.	Available in this page.
Manage work order exceptions	Not available in this page. You can use the Redwood Exceptions page.	Available in this page.
Manage work order approvals using Oracle Electronic Records and Electronic Signatures (ERES)	Available in this page for organizations enabled for ERES.	Available in this page.
Manage work orders using groups	Available in this page if you have the appropriate privilege.	Not available in the page.

Functionality	Maintenance Supervision	Manage Maintenance Work Orders
Schedule and assign resources using advanced scheduling	Available in this page for organizations enabled for advanced scheduling.	Not available in the page.

Comparison of Capabilities of Maintenance Supervision and The Manage Maintenance Work Orders Page

Functionality	Maintenance Supervision	Manage Maintenance
Smart search enabled page	Available in this page. When you land on this page, you see query results by default. Search for your work orders using Oracle's smart search and filters. You can quickly and easily perform full-text searches for assets across attributes using this enhanced search function. You can view the search results in a sortable table based on matching records.	Not available in this page. You can use the limited keyword search or query using the list of search options.
Use AI Maintenance Advisor for repair suggestions	Available in this page. You can enable the Maintenance Advisor using the guided journey.	Not available in this page.
Use Business Rules to configure pages	Available in this page.	Not available in this page.
Scorecard Metrics	Available in this page. Key metrics such as open, unreleased, and past due work orders.	Not available in this page.
Additional Metrics or Data Visualizations	Available in this page. With the necessary privilege, you can add additional KPI metrics or data visualizations using OTBI.	Not available in this page.
Keyword search	Use smart search to allow searching across multiple attributes, including attributes such as Work Order Number, Description, Asset Number, Asset Description, Serial Number, and Item Number.	Limited keyword search using attributes such as Work Order Number, Asset Number.
Search filters	Filter chips provide an easy method to further refine your results. Each filter displays the list of applicable rows, including the aggregated number of rows in the current results. Filters can be easily combined and removed from the search, refreshing the rows.	List of value (LOV) based filters provide general filtering but can result in conflicting or no result. Direct entry filters require a user to know the data to filter using these attributes.
Search by Preventative Maintenance Program	Available in this page. You can search by Program Name or Code.	Available in this page.
Saved searches	Available in this page.	Available in this page.

Functionality	Maintenance Supervision	Manage Maintenance
Sort by	Let's you organize your work order list results by priority or planned start date.	Sort features are available for the work order attributes by clicking on a column.
Work Order Actions	These are available on the page for all organizations: • Edit Status • Edit Priority • Release and Pick Materials • Reserve Materials Automatically • Reserve Materials Manually • Print Material List • Print Work Order Details These are available on the page for organizations enabled for advanced scheduling: • Firm Schedule • Undo Firm Schedule • Firm Assignments • Undo Firm Assignments These are available for a selected row: • Copy Work order • View Long Description	These are available on the page: • Copy Work Order • Release • Release and Pick materials • Status Update • Print Work Order Details • Print Material Lists • Close Work Order
Perform Mass Actions	Not currently available on the page.	Available on this page: • Reserve materials automatically • Status updates • Priority update • Printing work order details • Printing material lists
Work Order indicators	Not currently available on the page.	Available on this page: • Reserve Materials Manually • Progress • Costing • Warranty
Work Order Costing	A navigation to the Work Order Cost page is available from the Edit Work Order page. Additionally, you can use the Redwood Work Order Costs page.	A navigation to the Work Order Cost page is available from this page.
Context Driven Results Rows	Available in this page. The metrics in the scorecard provide the context filter chip options, allowing you to view work orders that are:	Not available in this page. Use the filter options of status and date range to derive similar results.

Functionality	Maintenance Supervision	Manage Maintenance
	• Open: The number of work orders in status unreleased, released or on-hold that need to be completed as of the current date. The orders have a planned start date before or during the current date. • Unreleased: The number of unreleased work orders that need to be completed as of the current date. The orders have a planned start date before or during the current date. • Past Due: The number of work orders in status unreleased, released or on-hold that a planned completion date before the current date. • Completed: The number of work orders completed today, available for review and closure.	
View assignment status of person resources for each order	Available in this page. For organizations not enabled for advanced scheduling, you can view status values of assigned or unassigned, but can't filter the results. For organizations enabled for advanced scheduling, you see a status of assigned, partially assigned, or unassigned and filter the results rows.	Not available in this page.
Create new Work Order header only	Available in this page.	Available in this page.
Create new Work Order using a Work Definition	Available in this page.	Available in this page.
Create new Work Order using a Condition Event Code	Available in this page. You must setup condition event codes and map them to maintenance programs for each asset.	Not available in this page.
Create new Work Order referencing a Work Order Group	Available in this page if you have the appropriate privilege.	Not available in this page.
Create new Work Order using one or more Standard Operations	Available in this page.	Not available in this page.
Create new Work Order using one or manually defined Standard Operations	Available in this page.	Not available in this page.
View and Edit work order details	You can view and edit key details of the work order, including: • Work Order header details, including attachments, project details, group, and document references. • Asset details, including meters • Operations • Materials • Purchased items • Resources • Failures • Notes	You can navigate into the work order to view additional details about the work order, operations, items, and materials.

Functionality	Maintenance Supervision	Manage Maintenance
Create turnover notes with attachments	You can create turnover notes to record key details about the repair or maintenance of the asset. Optionally, you can add attachments to the notes.	Not available in this page.
View Supplier Warranty Contracts	Available in this page.	Available in this page.
Manage Work Order Exceptions	Use the Redwood Exceptions page.	Available in this page.
View Document References	Available in this page.	Available in this page.
Review purchase item details	Available in this page.	Available in this page.
Review work orders costs	A navigation to the Work Order Cost page is available from the Edit Work Order page. Additionally, you can use the Redwood Work Order Costs page.	Available in this page.
Review transaction history	Available in the Redwood Transactions page.	Available in this page.
Capture Failures	Available in this page for a single asset work order only. Additionally, technicians can capture failures only in the Report Work page.	Available in this page.
Assign or unassign resource instances (persons)	Assignment for organizations not enabled for advanced scheduling is available on the Schedule and Assignment tabs in the Maintenance Supervision. Assignment for organizations enabled for advanced scheduling is available in the Work Orders Details page, Resource tab. Also available on the Schedule tab in the Maintenance Supervision, both the work order and resource views. Assignment is optional but is useful to manage a queue of assigned work.	Available in this page, but it's very time consuming to navigate to each operation resource and select a resource instance.
Assign or unassign resource instances (equipment)	For organizations not enabled for advanced scheduling, you can't manage assignments in the Resources tab. You can use the Scheduling or Assignments in-app navigation tabs. For organizations enabled for advanced scheduling, you can manage assignments in the Resources tab.	Available in this page, but it's very time consuming to navigate to each operation resource and select a resource instance.

Comparison of Functionalities of The Maintenance Supervision Schedule Tab and Manage Maintenance Work Orders Page

Functionality	Maintenance Supervision	Manage Maintenance
View the work order schedule using a Gantt chart	Available in this page.	Not available in this page.

Functionality	Maintenance Supervision	Manage Maintenance
	View work orders on an interactive Gantt chart. You can optionally reschedule a work order by updating its start date.	
View resource assignments using a Gantt chart using the Schedule view	Available in this page. For organizations not enabled for advanced scheduling, you can viewthe work breakdown structure of each order, including operation resource assignments on an interactive Gantt chart. You can optionally view or edit the assigned resource instances or users to an operation resource. For organizations enabled for advanced scheduling, you can view not only the work breakdown structure of each order, but also operation resource assignments with time blocks for each person, on an interactive Gantt chart.	Not available in this page.
Assign or unassign resource instances (persons) to an operation resource using the Schedule view	Available in this page For organizations not enabled for advanced scheduling, the quick assignment and unassign capability are just a few action clicks. For organizations enabled for advanced scheduling, you can assign a new person who's available during the operation resource duration. Additionally, you can also unassign a person if they have not clocked in, transacted time, or completed the operation.	Available in this page, but it's very time consuming to navigate to each operation resource and select a resource instance.
View resource assignments using a Gantt chart using the Resource view	Available in this page. For organizations enabled for advanced scheduling, you can view a complete calendar for each person. This includes their shift on and off time by day, unavailable exception time blocks during a shift, as well as any work order assignments, all on an interactive Gantt chart. You can manage existing assignments by unassigning a person if they have not clocked in, transacted time, or completed the operation. You can also search for and assign available work for a person during the open time on their shift.	Not available in this page.
Assign or unassign resource instances (persons) to an operation resource using the Resource view	Available in this page. For organizations not enabled for advanced scheduling, the quick assignment, unassign and reassign capabilities are just a few action clicks. For organizations enabled for advanced scheduling, you can assign a person who's available during the operation resource duration. Additionally, you can also unassign a	Not available in this page.

Functionality	Maintenance Supervision	Manage Maintenance
	person if they have not clocked in, transacted time, or completed the operation.	

Comparison of Functionalities of The Maintenance Supervision Assignments tab and Manage Maintenance Work Orders Page

Functionality	Maintenance Supervision	Manage Maintenance
Search for work order resources and view assignment status	Available in this page. You can search by work order or resource for example in a work center. **Note:** This tab isn't available for organizations enabled for advanced scheduling	Not available in this page.
Assign or unassign resource instances (persons) to an operation resource	Available in this page. The quick assignment and unassign capability are just a few action clicks.	Available in this page, but it's very time consuming to navigate to each operation resource and select a resource instance.
View conflicting assignment details prior to assignment	Available in this page. You can view if a user is already assigned, when their next or last assignment ends.	Not available in this page.
Pre-qualify resources prior to assignment	Available in this page. The list of users that match the operation resource indicate if they will pass a required HCM qualification requirement. HCM qualification is optionally defined for an operation resource by the Job Profile attribute based on a standard operation, work definition, or manual definition in a work order.	Not available in this page until you select and assign a resource, resulting in an error.

Work Orders

The Work Order tab shows key metrics and a list of currently open work orders that are in the backlog of your organization as of the current shift. It includes a keyword search, context and filter chips, sort by option, and saved search. You can refine the search results, view, edit, and create new work orders. You can also edit the page layout to include new metrics or data visualizations using OTBI.

If advanced scheduling is enabled for an organization, the search experience is similar. There are a few differences on the default filter chips, advanced filter chips, actions, and row details. Additional details are covered throughout this section.

The Work Orders Tab

On this tab, the context organization is defaulted at the top of the page. Use the drop down to change to other maintenance organizations that you have access. When you change the organization, the page metrics and results are refreshed based on your selection.

Metrics Section

Metrics	Description
Current	The number of work orders in status unreleased, released, or on-hold that need to be completed as of the current date. The orders have a planned start date before or during the current date.
Unreleased	The number of unreleased work orders that need to be completed as of the current date. The orders have a planned start date before or during the current date.
Past Due	The number of work orders in status unreleased, released, or on-hold that a planned completion date before the current date.
Completed	The number of work orders completed today, available for review, and closure.
Future	The number of open work orders in status unreleased, released, or on-hold with a planned start date greater than the current date. The default period is set to 30 days, but an administrator can change the period using a profile option.
All	The total number of work orders. Click this metric to search across all work orders in the organization.

The scorecard metrics provides a count of the matching work orders. Also, filter work orders by clicking a metric to see fresh results. Based on the assigned privileges, you can edit the page layout and add or remove additional metrics or data visualizations created from OTBI analysis. Additional details about creating and exposing OTBI analysis in the metrics region is covered in the Setup Maintenance section of the Implementing Manufacturing and Supply Chain Materials Management guide.

Search Section

Capabilities	Description
Search	On the page, search for your work orders using Oracle's smart search and filters. You can quickly and easily perform full-text searches for assets across attributes using this enhanced search function. View the search results in a sortable table based on the matching records. The page includes a keyword search, context, and results filter chips.
Search Results	If advanced scheduling is enabled for an organization, the search experience is similar. There are a few differences on the default filter chips, advanced filter chips, actions, and row details. Additional details are covered throughout this section. • Upon entering the page, the results are automatically returned by the default context filter chips, displaying orders that are open and due by the current shift. This results in a list of orders that are expected to be completed today by the end of the current shift. • You can then use the keyword search or results chips to further refine the results.

Capabilities	Description
	• You can also expand the search to view upcoming work orders by removing the context chips and use the planned start and end date chips to define a date range, such as the upcoming week. **Note:** The defaulted metric card called Current prevents future work orders from being displayed. The purpose is to focus the results on orders that are due by today. The results are also further filtered automatically by the Shift filter chip set to the current shift. For organizations enabled for advanced scheduling: • Upon entering the page, the results are automatically returned by the defaulted metric card called Current, displaying orders that are open and are expected to be completed today by the end of the current day. There are no other filter chips automatically applied. • You can then use the keyword search or results chips to further refine the results, including chips that are only available for advanced scheduling. .
Keyword Search Filters	You can use the keyword search to filter the results by: • Work order number • Work order description • Asset number • Asset description • Asset serial number • Asset lot number • Item number • Item description • Organization • Maintenance Program Code • Maintenance Program Name • Operation Name • Operation Description • Warranty Repair checkbox
Context Chips	You can use these context chips to filter the results: • Shift: Options are Past, Current, Next, or Today, based on the shift setups defined by the default calendar selected in the organization's plant parameters. **Note:** The Shift chip isn't used for organizations enabled for advanced scheduling.
Results Chips	Use the results chips to filter the results by: • Work Center • Priority • Planned Start Date • Planned Completion Date • Status • Resource

Capabilities	Description
	• Resource Instance • Asset Work Center • Work Order Type • Work Order Subtype • Work Order Groups • Actual Start Date • Actual Completion Date • Project Number • Task Number • Warranty Repair Additionally, for organizations enabled for advanced scheduling: • Assignment Status • Schedule Firm • Assignments Firm
Saved Searches	You can optionally use saved searches to: • Select an existing saved search. • Create a search. • Share a search with others. • Mark a search as their default search, which loads each time the workbench is opened. • Use a system search created by the administrator. **Note:** User default searches override administrator default searches. The administrator must create the saved search index prior to creating new saved searches. Additional details are covered in the Setup Maintenance section of the Implementing Manufacturing and Supply Chain Materials Management guide.
Sort By	You can also use the Sort By option to further sort the list of results by: • Priority High to Low • Priority Low to High • Planned Start Date New to Old (default) • Planned Start Date Old to New

The list of results is based on each unique work order for an asset or item, sorted by the newest to the oldest by the planned start dates. In each row, you view key details for a work order.

Results Section

Key Details	Description
Resource Assignment status	For organizations not enabled for advanced scheduling:

Key Details	Description
	• Assigned, unassigned, or null (no resources). • There's no filter chip to refine the results. For organizations that are enabled for advanced scheduling: • Assigned, partially assigned, or unassigned (no resources). • There's a filter chip to further refine the results.
Work Order Number	Click the hyperlink to go to the Edit Work Order page.
Description	Description of the work order.
Asset or Item Number	Asset or item number associated with the work order.
Asset or Item Description	For item-based orders, view the list of assets to be repaired or serviced in the Work Order Details page.
Start Date	Start date of a work order.
End Date	End date of a work order.
Priority	Priority of the work order.
Status	Status of the work order is displayed using a badge.
Project Number	The number for the project, if referenced in the work order.
Task Number	The task number for the project, if referenced in the work order.
Schedule Firm	Indicates if the work order schedule is firmed or not. • If firmed, the work order isn't rescheduled to another day by advanced scheduling • If not firmed, the work order is available for scheduling. Additionally, if firmed and also it is set to Assignment Firm, then the work order isno't scheduled and also disregarded for assignments by advanced scheduling.
Actual Start Date	The actual start date of a work order. This date is first set by the release of the order, then it may be updated after the first transactions on an operation.
Actual End Date	The actual end date of a work order when it's completed.

When you select a result row, these actions are available to all organizations in the collection area header:

- Edit Status
- Edit Priority
- Release and Pick Materials
- Reserve Materials Automatically
- Reserve Materials Manually
- Print Material List

- Print Work Order Details

These actions are available only for organizations enabled for advanced scheduling in the collection area header:

- Firm Schedule
- Undo Firm Schedule
- Firm Assignments
- Undo Firm Assignments

These actions are available to all organizations at each row level:

- Copy Work order
- View Long Description

Create a Work Order

To create a work order, click the **Create Work Order** button. On the drawer, define the options to create a new order in the context organization for an asset or list of assets by a common item. You can create:

- Only a work order header without any operations.
- Work order based on a matching condition event code for an asset.
- Work order using a work definition.
- Work order using selected standard or manually defined operations.

After adding the details, click **Submit** or **Submit and Edit** actions to create a work order. The **Submit and Edit** action takes you to the newly created work order in the Edit Work Order page.

Give these details when you create a work order:

Fields You Select When You Create Work Orders

Attribute	Required	Options
Asset or Item	Yes	Set the context of the work order to an asset or a list of assets by a common item. By default, the asset is selected. If you change the context to item, the asset entry is changed to an item and quantity. For item-based work orders, you need to define the applicable assets in the edit work order page.
Work Order number	No	The work order number uniquely identifies the maintenance work order in an organization. You can manually enter the work order number. If not entered, the work order number is automatically generated based on the numbering scheme defined per the plant parameters (Work Order Prefix, Work Order Starting Number). After a work order is created, the work order number can't be updated. **Note:** It's generally recommended not to manually define work order numbers, especially if you have a defined sequence and prefix for an organization.
Asset	Conditional	The asset associated with the maintenance work order. You can choose an asset operating in the contextual organization or its related organizations. To consider assets across organizations, your administrator must define organization relationships.

Attribute	Required	Options
		Note: To create a work order for an asset that's operating in another operating organization, the contextual organization must be enabled for the asset's source item in Product Information Management.
Serial Number	Conditional	Read-only serial number for an asset, if defined.
Asset Description	No	The description of the asset associated with the maintenance work order.
Item	Conditional	You see this field when you change the context of the work order to item-based. Search and select an asset-tracked item that is common to each asset you maintain. You can search and view the list of results by item number or description.
Item Description	No	The description of the item associated with the maintenance work order.
Quantity	Conditional	You see this field when you change the context of the work order to item-based. Enter the number of assets to be repaired in this work order.
Generate maintenance work orders from a condition event	No	Enabled only for an asset-based work order. If selected, you must select a condition event code. The application looks for a matching condition-event work requirement that is applicable for the selected asset and use its work definition as the basis for the work order.
Condition Event	Conditional	Code that's required if the checkbox is selected.
Condition Event Name	Conditional	Read-only event name.
Organization	No	The context organization in which the work order will be created.
Work Definition	No	You can optionally select a work definition.
Work Definition Version	Conditional	Read-only version number, based on the start date.
Version Start Date	Conditional	If a work definition is selected, the most current active version's start date is defaulted. You can optionally select an earlier version by changing the start date.
Type	Yes	The type of the maintenance work order. The valid values are Corrective (default) and Preventive.
Subtype	Yes	The subtype of the maintenance work order. The valid values are Condition based, Emergency, Planned, Reactive, Safety (default), and Under warranty.
Status	Yes	Represents the status of the maintenance work order during its life cycle. The valid values are: Unreleased, Released, On Hold, Completed, Closed, and Canceled. Optionally, you can create user-defined statuses for each seeded status value. The Default status is Unreleased. Things to remember: • For a work order without work definition, the status can be Unreleased or On Hold at the time of creation. • For a work order with work definition, the status can be Unreleased, Released or On Hold at the time of creation. • A work order can only be updated to a status of Released if a work definition is selected or at least one operation is manually defined. • User-defined statuses can be used in the UI and using the REST API only. The values aren't supported using File-Based Data Import.
Priority	No	The execution priority of the maintenance work order.
Start Date	Yes	The start date and time of the maintenance work order. The work order start date is by default the current date and time, but you can update it. If the work order is created by specifying the

Attribute	Required	Options
		start date, the application automatically performs a forward scheduling to calculate the rest of the dates. **Note:** Either the Start Date or Completion Date is required to create and release a work order. After it's released, the value is the same for each date.
Completion Date	Yes	The completion date and time of the maintenance work order. By default, it's null. If you enter the completion date of the work order, the start date of the work order is erased. When the work order is saved, the application performs a backward scheduling from the completion date to calculate the rest of the dates.
Allow completion to inventory	No	Optional. You can define a work order to issue and return the repaired assets to a sub inventory location. If enabled, you can define a sub inventory location and locator. The subinventory and location values you define appear during the work order completion in the Completion page of the My Maintenance Work Orders.
Allow out of sequence completion	No	Optional. You can define a work order to have its count point operations be completed out-of-sequence. If enabled, you can complete count point operations in any order in the Report Work page of the My Maintenance Work Orders.
Work Order Groups	No	Optionally used to select an active work order group.
Primary Reason for Repair	No	Optionally used to define the reason for the repair of an asset.
Description	No	The description of the maintenance work order. Defaulted from the work definition description, but you can edit it during work order creation and update prior to Release. If the work order is created by merging one or many work definitions through a maintenance program, then the description is populated by the work requirement or maintenance program name.
Add Operation	No	Optional. Define one or more operations if the work order isn't based on a condition event or work definition.
Add from Standard Operations	No	Select the checkbox to define the operation based on a standard operation.
Sequence	Yes	Defaults to values defined in the plant parameters for the organization. This increments when each new operation is added.
Operation Type	Yes	Has two values: In-house (default) and Supplier.
Work Center	Yes	Indicates the place where the work will be executed. The value defaults from a selected standard operation.
Standard Operation	Conditional	Optional. Select a standard operation.
Operation Name	Yes	Name of the operation. The value defaults from a selected standard operation.
Operation Description	No	Description of the operation. The value defaults from a selected standard operation.

Edit Work Order

You can view and edit work orders by clicking the work order number link in the search results or by creating a new work order and selecting save and edit. The Edit Work Order page has these tabs:

- Details
- Assets
- Asset Route

- Operations
- Materials
- Purchased Items
- Resources
- Failures
- Notes and Attachments

Details

The Details tab provides an overview of the work order. The page is divided into these sections:

- **General information**: Work order header details. You can edit this section to update key attributes and update its status. Here is where you can release a work order to execution.
- **Work definition**: A work order is based off a work definition, then its details are in this section. You can update the work definition until its release. However, care should be taken as all the operations, items and resources will be deleted. Additionally, work orders created from Maintenance Programs shouldn't have their work definitions updated.
- **Schedule and Completion**: Additional work order header details and options. Use this region to enable additional work order capabilities, view additional details or cancel a work order. These capabilities may required additional Opt-ins and setup.
- **Project details**: Project and task details for a work order in a project-enabled organization.
- **Additional Information**: If you have enabled definable flexfields (DFFs) for the work order object then you can view and update their values in this section.
- **Status History**: Displays updates to the work order's status over time.
- **Document references**: The document type, document number, and end date. For most work orders there's only a single source object if created from a consuming application or referencing another object.
- **Supplier Warranty**: You can view active warranty contracts for the work order or its related assets.
- **Attachments**: You can view attachments defined in the source work definition, edit or add additional attachments to the work order header.

Assets

See a list of the work order assets on this page. For a single asset work order, you see one record. For an item-based work order, you come here to search and add one or more assets to be repaired or serviced.

If an asset has supplier warranty, then select the **Warranty repair** and **Match transactions** checkboxes. You can optionally edit these values, including the primary reason for repair field.

If an asset has active meters, you can view them by expanding the result row. Each result row includes the meter name, last reading date/time, meter code, displayed reading, life-to-date reading, and an indicator of required reporting. Expanding the row will display additional details about the meter.

Meter readings can be recorded or not based on the meters Record Meters at Work Order Completion option:

- Null (no value defined): You can optionally record new readings.
- Do not allow: You don't allow to record new readings. The Edit action for a meter row is disabled.
- Mandatory: You must record a new reading to compete the work order. These meters is indicated by a Required badge.

You can expand a meter row to show the following details:

- Meter Type
- Reading Type
- Reading Direction
- Rollover indicator
- Reset indicator

Select Edit from the Actions menu for a meter row to record a new reading. The row refreshes to show a meter reading entry region, which lets you enter the following information:

- Reading Date and Time: Defaults to the current date and time. You can update the date if it follows the last meter reading in history validations.
- New Reading: Enter a reading value that follows the last meter reading in history validations. For example, you must enter a value for an absolute reading that is greater than or equal in value to the last reading in history based on the date and time entered.
- Comments: Optional. Lets you record a text comment about the reading.
- Work Order: The work order reference is automatically recorded for each reading and not displayed to you in the edit region.

Clicking the Save action submits the meter reading update. If there are any errors, they are shown in the edit region. You can correct the reading or date values and save again to resolve any data entry mistakes. You can also click the Cancel action to disregard the meter reading details and refresh the meters results list.

You can select the action View Meter History for a meter row to view a recent history of meter readings recorded for the meter.

Asset Route

If the work order is for an asset route, then this tab appears. The tab will list each affected asset from the asset route's logical hierarchy as of work order creation. Each asset has a reporting status. Initially set to Pending, you can optionally set it to skipped, if the asset isn't available for reporting. You can update the status only until a work order status is set to released.

Operations

Add or edit operations on this page. If the work order is based on a work definition or standard operation, you see the pre-defined list of operations. You can optionally add or edit them. Operations can only added or edited while the work order status is unreleased, released or on-hold.

Fields You Select When You Create Operations

Attribute	Required	Options
Add from Standard Operations	N	If this checkbox is set to Y, then you must select a Standard Operation.
Sequence	Y	The sequence on which the operations are executed. New operations are defaulted to a new sequence based on the last operation sequence. Examples are 10,20,30.
Standard Operation	Conditional	Required if Add from Standard Operations = Y. Else the field is disabled.

Attribute	Required	Options
Operation Type	Y	The type of the operation. The valid values are In-house (default) and Supplier.
Work Center	Y	The work center where the operation will be performed.
Operation Name	Y	The name of the operation.
Operation Description	N	The description of the operation.
Automatically Transact	Conditional	Indicates that the operation is automatically completed, the pull components are backflushed, and the resources are automatically charged when the next count point operation is completed. The Count Point and Automatically Transact attributes are mutually exclusive.
Count Point	Conditional	Indicates that the operation completion must be explicitly reported. The last operation in a work order must be a count point operation. Count point is the default option. The Count Point and Automatically Transact attributes are mutually exclusive.
Start date	Y	The start date of the operation. The value will default to the current date/time. The operation start date can't be earlier than the work order start date.
Completion date	Y	The completion date of the operation. The value will default to the current date/time. The operation completion date can't be later than the work order completion date.
Reason for Repair Code	N	Describes the reason why the asset is being repaired. This code is defined using a condition code type of Reason for repair code. Examples may include codes for Breakdown, Preventative Maintenance or Warranty repairs.
Repair Transaction Code	N	Describes the system, assembly, and component being repaired on an asset. This code is defined using a condition code type of Transaction code. Examples may include standard industry coding such as Vehicle Maintenance Reporting Standards (VMRS) or similar taxonomies.
Work to Be Accomplished Code	N	Describes the activity that's used to repair the asset. Define using a condition code type of Work accomplished code. Examples may include Clean, Repair, or Replace.

Attribute	Required	Options
Additional Information		You can manage the flexfields for the work order operation header in the additional information region.
Attachments		You can view and manage operation attachments. You can see them in the My Maintenance Work page upon work order release.

Additionally, you can add or view notes for an operation. Once created, the notes are visible by selecting an operation row or navigating to the Notes tab.

Purchased Items

During planning or execution, you may require materials that are either currently out-of-stock in inventory or are considered non-stock material. From the materials tab, you can create a purchase requisition for an operation using the Self-Service Procurement page. Once a requisition is created for an item, it will display on the Purchased Items tab. Each item row will contain key details about the request:

- Operation sequence and name.
- Requested item and description.
- Requested quantity.
- Quantity ordered on purchase order.
- Quantity received for the purchase order.

Optionally, click the View Details action to review the purchasing and receiving details for the item. The page include links to the original requisition, purchase order and receiving transactions. Use the navigation link at the top of the page to return to the work order.

Materials

Add or edit operation material items and their DFFs on this page. If the work order is based of a work definition, you may see the pre-defined list of operation materials. You can optionally add or edit them while the work order status is unreleased, released or on-hold.

Fields You Select When You Create Material Items

Attribute	Required	Options
Operation Sequence	Y	The operation for which you are defining an item. Select from the drop down list.
Operation Name	Y	Read only name of the selected operation by sequence.
Material Sequence	Y	The sequence on which the materials within an operation are executed. If more than one item is defined in an option, each must have a unique sequence. Examples are 10,20,30.
Item	Y	The material item. You can search and view the list of results by item number or description.

Attribute	Required	Options
Item Description	Y	Read only description of the item.
Basis	Y	Values are variable (default) and fixed. • Variable is used when the quantity is defined per asset. This is generally recommended for single and multiple asset work orders. • Fixed is used when the total quantity across all assets is defined.
Quantity per Product	Y	The quantity of the operation item required in an operation.
Required Quantity	Y	Ready only value calculated and defaulted from the Quantity Per Product depending on the Basis type as follows: • If Basis is Variable, the Required Quantity is Quantity Per Product multiplied by Work Order Quantity. • If Basis is equal to Fixed, the Required Quantity is equal to Quantity Per Product.
UOM	Y	The unit of measure of the operation item. Defaults based off the selected item.
Required Date	N	The date and time on the material is required. If not defined, it will default to the operation start date and time.
Supply Type	Y	Controls how the materials are supplied to the work orders. The valid values: Assembly Pull, Operation Pull, Push (default), Phantom, Bulk, and Supplier. If the work order is created based on a work definition, then the supply type is defaulted to Based on Work Definition. This means the supply type for each item will come from the operation item's definition. All items manually added to an operation will be defaulted to the supply type from the item setup as defined in the Product Information Management. If not defined in the item setup, then the supply type is defaulted to Push. If the work order isn't created based on a Work Definition, then the supply type is defaulted to Push. It can then be manually updated to another value. The default supply type will then be used default the supply type for items manually added to an operation. You can define and update the supply type value prior to release: • Assembly pull: The material is backflushed when the product is completed into inventory. This is primarily used for manufacturing for non-lot or non-serial controlled items. Pull material will be noted as requiring reporting to complete an operation and work order if lot or serial details are not known. • Operation pull: This is primarily used for Maintenance when a known or expected quantity of material will be required and therefore must be explicitly reported as consumed in an operation step using the My Maintenance Workbench. Pull material will be noted as requiring reporting to complete an operation and work order.

Attribute	Required	Options
		• Push: The material is manually issued and must be manually reported. This is primarily used for maintenance when an unknown quantity of material that may be optionally consumed in an operation step. If consumed, then these materials require manual reporting in the material transactions page that is accessible from an operation in the Dispatch List. These materials will not be displayed in the Complete with Details flow and wouldn't be considered by the Quick Complete flow. • Bulk: Bulk materials requirement can be viewed. These materials aren't automatically backflushed or defaulted while manually issuing the materials. • Supplier: Represents the materials supplied by supplier. These materials aren't automatically backflushed or defaulted while manually issuing the materials. These are typically used for Outside Processing (OSP).
Subinventory	Y	The supply subinventory from which the material is supplied. The hierarchy to default the supply subinventory is in the following order: work definition, item definition, plant parameter. You can update the default value.
Supply Locator	Conditional	The supply locator from which the material is supplied. The hierarchy to default the supply locator is in the following order: work definition, item definition, plant parameter. You can update the default value.
Include in planning	N	Indicates whether this operation item requirement must be considered by planning run for planning its supply. Default is Y. If set to N, then the item will won't considered for planning.
Repair Transaction Code	N	Describes the system, assembly and component being repaired on an asset. This code is defined using a condition code type of Transaction code. Examples may include standard industry coding such as Vehicle Maintenance Reporting Standards (VMRS) or similar taxonomies.
Additional Information		You can manage the flexfields for the work order operation item in the additional information region.

The Create Requisition button allows you to request an item not available in inventory. Clicking the action will render a drawer, requiring you to specify the operation sequence for you wish to requisition an item. Clicking submit will render a new browser tab for the Self Service Procurement page. Additional details are covered in a further section.

Resources

Add or edit operation resources and their flexfields. If the work order is based on a work definition or standard operation, you may see the pre-defined list of operation materials. You can optionally add or edit them while the work order status is unreleased, released or on-hold.

In an organization enabled for Fusion Field Service, you can expand the row to view any existing assignments to qualified people. Each row indicates an assignment and its time block duration. You can also perform these actions:

- Assign new people to an operation resource if they're available for the for its entire duration. A person is considered available if:
  - They're not currently assigned to an operation resource for any of the duration.
  - The assignment falls during a person's working day and shift, and doesn't conflict with any unavailable time periods, such as lunch.
- Delete an existing assignment if they haven't clocked in, transacted time, or completed the operation.
- Administratively manage assigned persons on the parent operation, in case they are unable to clock out or complete an operation themselves:
  - Clock an assigned person out of an operation.
  - Clock an assigned person out of an operation with details (requires a user privilege MNT_ALLOW_OTHERS_OP_CLOCKOUT).
  - Complete an operation.
  - Complete an operation with details (requires a user privilege MNT_ALLOW_OP_DETAIL_COMPLETE_FOR_OTHERS).

Fields You Select When You Create Resources

Attribute	Required	Options
Operation Sequence	Y	The operation for which you are defining an item. Select from the drop down list.
Operation Name	Y	Read only name of the selected operation by sequence.
Work Center	Y	Read only work center where the operation will be performed.
Resource Sequence	Y	The sequence on which the resources within an operation are executed. If more than one resource is defined in an option, each must have a unique sequence, or one must be indicated as a Principal resource. Examples are 10, 20, 30.
Resource Name	Y	The name of the resource, based on the work center.
Resource Code	Y	Read only code of the resource.
Description	N	Read only description of the resource.
Type	Y	Read only type of the resource. Values are Labor or Equipment.
Basis	Y	Values are variable (default) and fixed. • Variable is used when the quantity is defined per asset. This is generally recommended for single and multiple asset work orders. • Fixed is used when the total quantity across all assets is defined.

Attribute	Required	Options
Usage Rate	Y	The usage amount of the operation resource. Defaults to a value of 1.
Required Usage	Y	Ready only resource usage required for the work order quantity. The required usage is calculated and populated by default from the Usage rate depending on the Basis type. The calculation is done as follows: • If Basis is equal to Fixed, then the Required Usage is equal to Usage Rate. • If Basis is equal to Variable, then the Required Usage is equal to Usage Rate multiplied by Work Order Quantity.
Scheduled	Y	The indicator that the resource is a scheduled resource. It is recommended to set the value to Y. A resource can be scheduled if the Usage UOM belongs to the UOM class defined in the profile option RCS_DEFAULT_UOM_SRVICE_DURATION_CLASS.
Charge Type	Y	Indicates whether the resources are charged manually or automatically when completing the operation. The valid values are: • Automatic (default) – no manual reporting is required • Manual – you must manually report usage
Principal	N	The indicator that a resource is the principal resource within a group of simultaneous resources (resources sharing the same resource sequence number). Default is No.
Start Date	N	The start date of the resource, referred to as the scheduled start date. The default value will come from the selected operation's start date. The resource start date is generally calculated by the scheduling engine. The resource start date must be encompassed within the operation start and completion date.
Completion Date	Y	The completion date of the resource, referred to as the scheduled completion date. The default value will come from the selected operation's completion date. The resource completion date is generally calculated by the scheduling engine. The resource completion date must be encompassed within the operation start and completion date.
Assigned Units	Y	The number of resource units assigned to perform the operation. The default value is 1.
Reason for Repair Code	N	Describes the reason why the asset is being repaired.

Attribute	Required	Options
		This code is defined using a condition code type of Reason for repair code. Examples may include codes for Breakdown, Preventative Maintenance or Warranty repairs.
Repair Transaction Code	N	Describes the system, assembly, and component being repaired on an asset. This code is defined using a condition code type of Transaction code. Examples may include standard industry coding such as Vehicle Maintenance Reporting Standards (VMRS) or similar taxonomies.
Work to Be Accomplished Code	N	Describes the activity that's used to repair the asset. Define using a condition code type of Work accomplished code. Examples may include Clean, Repair, or Replace.
Additional Information		You can manage the flexfields for the work order operation resource in the additional information region.

Failures

You can record a failure event and one or more failure instances. This tab is only enabled for a single asset work order and is an optional capability. Failure events can be created or viewed here or in the My Maintenance Work page for a work order.

To create a new failure, click Add Failure Event. Provide the following information:

- Failure Date: Defaults to the current date and time, but can be updated.
- Failure Set Name: Read only value based on the failure set definitions.
- Asset Down indicator: Lets you indicate if the failure event has led to an asset down time

Click Save to create the event, or Cancel to cancel creating the failure event.

To create a failure instance, click Add Failure under the Failures section that appears below the Failure Event. Enter the details related to the failure:

- Failure: Select a failure code.
- Cause: Select a cause code. The values are filtered based on the selected failure code.
- Resolution: Select a resolution code. The values are filtered based on the selected cause code.
- Asset Number: Optional. You can select a related asset as the source of the failure.
- Failed Component: Optional. You can select a failed component as the source of the failure.
- Operation: Optional. You can select an operation reference where the failure is detected.
- Failure Comments: Optional. You can optionally add other details, as comments.

Click Save to add the failure. You can use the Add Failures button to add more failures. You can also edit the failure events and failures after they are created.

Note: Mandatory failure entry is tracked and displayed on a card on the Complete page. A card status of Pending means that failure reporting requires creating an event to complete the work order. The card status changes from Pending to Complete once the mandatory failure event is created.

Notes

This tab is used to add and view work order and operation notes. Notes are found in the Maintenance Supervision and My Maintenance Work pages and are valuable as general or turnover notes during planning and job execution by a technician. Additionally, a repair summary note or may be a recording by a technician, can provide an overview of the work history.

Keyword-Based Searches

Here are some tips you can follow when you do keyword-based searches:

- Searches are case insensitive. Both capitalized and non-capitalized keyword terms match when searching by work order or asset details.
- You can search using a full-text search, such as a work order or asset number. This narrows your search results.
- You can also use a partial-text search, such as the first few numbers of a work order or text in an asset description. Use **starts with** or **contains** for an effective search.
- If you search using text that is hyphenated, such as Lot-Based, the terms are searched using an OR condition. That is, the search engine searches using Lot or Based as separate text values.
    - With hyphenated text, you can also search by only a partial value text, such as Lot or Based. This broadens your search results.
    - If you don't find your results or you get too many results, try searching for an exact phrase by adding quotation marks around the text such as, "Lot-Based". This tells the search to only return results that contain the exact words in the same order.
- If you search using a word that has an underscore, such as Lot_Based, the engine considers this as a one word.
    - Don't use word with underscore for a partial keyword search.
    - Special characters, such as asterisks aren't supported.

Scheduling

The Scheduling tab helps you view upcoming work orders, identify resource requirements, and assign technicians to work orders more efficiently. The page includes two views: Work Orders and Resources. You can toggle between the two views using the **view by** search chip. The search and the search results are based on the selected organization, which can be updated using the option at the top of the page.

Work Order View

This view provides a list of work orders on the left side, while displaying their details and duration in the Gantt chart region to the right. The results are initially viewed using a Start Date set to the current day, while being sorted by the work order number. You can use the page toggle to change the period from Day, Week (7 days) or Month (31 days) time periods, from the Start Date. Additionally, within the chart, you can also use the + and – icons to adjust the timeline to zoom in and out.

The keyword search can be used to filter the results by Work Order number or description, or by Asset number or description. You can then use these filter chips to further refine the results:

- Start Date (required)
- Work Center
- Resource
- Status
- Priority
- Work Order type
- Work Order subtype
- Asset work center

The chart provides a good overview of the resource load and work order operations by day and hour. You can select a work order row on the left side results and drill into its details, revealing the operation sequences and resource names required over the selected period. You can also hover over the colored lines in the chart to provide additional details. The line colors represent resource assignment status. White lines represent either no resources defined or not all are assigned, while dark shaded lines represent that all resources have assignments.

For an organization that's not enabled for advanced scheduling, you can manage a work orders schedule and assignments for the entire work order. When hovering over a work order line, you right-click to reschedule a work order. This renders the Reschedule Work Order drawer. The drawer allows you to optionally select a new Start Time (and Date) for the work order. After you submit, the work order and all operations are rescheduled, and the Gantt chart refreshes.

When hovering over a resource line, you can right-click to assign a technician (resource instance) or view current assignments. This renders an Assignment drawer. The drawer shows matching technicians for the selected resource and work center. You can click a technician and assign or unassign from all operations in the work order, not just the operation-level resource. No restriction on number of technicians you can assign.

For an organization that's enabled for advanced scheduling, you can only manage assignments for a resource. When hovering over a resource sequence line, you can right-click to assign a person (resource instance), rendering a drawer of available people for the entire resource sequence duration. When a person is selected, the resource sequence line refreshes, showing individual rows for each person assigned and their time block durations. It's possible that a resource sequence could be assigned to one or more people over multiple time blocks. For an existing assignment row, you can right-click to unassign them if they haven't clocked in, transacted time, or completed the operation.

Resources View

This view provides a list of technicians (resource instances) on the left side of the screen, while displaying their details and duration in the Gantt chart region to the right. The list of technicians is for the contextual organization, regardless of any assignments to an operation resource. You can view their assignment duration on the chart for the selected period. This provides a good overview of the resource load and work order operations by day and hour. If a technician is double booked, or has overlapping work, you can check other technicians' availability.

For an organization that's not enabled for advanced scheduling, you can manage a work orders schedule and assignments for the entire work order. When hovering over a resource assignment line, you can right-click to view the assignment details. This renders an Assignment drawer. The drawer shows technicians that match skill set for the selected resource and work center and their assignment status. You can click and assign or unassign a technician from all operations in the work order, not just the operation-level resource. This allows you to quickly reassign work to another available technician. After all technicians are unassigned from a work order, it no longer appears in the results region. Return to the Schedule view, search for the work order, and assign resources there as needed for the work order.

If you need to perform assignments for multiple work orders, use the Assignments tab.

For an organization that's enabled for advanced scheduling, you can see a more detailed view of each person's work schedule by day and hour. Existing assignments are displayed, as well as any unavailable time during their shifts, such as a schedule lunch, training, meeting, or an out-of-office block of time.

> **Note:** It's generally expected that all people in an organization are on the same time zone. Else, it could be difficult to view and manage people on the resources view.

For each person, you can manage their schedule by right-clicking on the person's name, then you can choose from two options:

- **Add Unavailable Time**: this option allows you to define periods of time as unavailable work. This is useful to block a person's schedule for training, meeting, or an out-of-office block of time. Both the advanced scheduling process and manual assignment respect this time and don't allow assignment.
- **Assign Work**: this option returns a list of work order operation resource sequences that don't currently have an active assignment. Upon rendering the drawer, the list queries the current date and time plus 1 hour. You can then adjust the date and time to find work to fill out a user's schedule. This can also be used to unassign one person, then search and assign the work to a new person.

You can also manage assignments each person's existing assignments. When hovering over a resource sequence line, you can right-click to unassign them if they have not clocked in, transacted time, or completed the operation.

Additionally, the Assignments tab isn't available for organizations enabled for advanced scheduling.

Resource Assignment Scheduled Process

After you schedule work orders over a near-term horizon, you can optionally assign resource. This process has been traditionally very time consuming, requiring you to edit each work order and assign resource instances at the individual operation resource level. Using the Schedule tab, you can more efficiently find and assign resources to work orders. However, this can still be a time-consuming process for large organizations or numbers of work orders. To help with the assignment of resources you can optionally use a scheduled process, as described in the *Enable Work Orders Scheduling and Resources Assignment* topic of the implementation guide, to automatically assign resources to your work orders.

> **Note:** This process isn't available for organizations enabled for advanced scheduling.

Assignments

On the Assignments tab, you can quickly search, identify, and assign technicians to work order operations. Here, you can complete bulk assignments of resources for an upcoming week.

On this page, you use the search in the context of a maintenance organization. The search results are by the selected organization. You can change the organization using the drop down at the top of the page.

Work Order Search and Results

Use the keyword search, if you're searching for a specific work order or asset. For bulk assignments, use the search filters: start date, end date, and selected resource. You can also sort the results using the toggle. Optionally, you can save your search as a saved search.

The results are by work order and unique resource. You see these key details after your search:

- Start time of the resource.
- Work order number and status.
- Resource name, description, and duration required. If the same resource is defined across more than one operation, or all the operations, then a single row is presented with the cumulative total time.
- Asset number being repaired or serviced.
- Status: Assigned, Partially Assigned, or Unassigned.

If you expand the row, you'll see these additional details:

- Asset description
- Start Date and time
- End Date and time
- Work Center
- Profile Name (if you're using HCM Qualification Profiles)
- Priority

Assignments

Review the work order and resource results rows for Pending or Unassigned statuses.

When you click a work order row, the right-side region is refreshed and shows the matching resource instances for a selected resource and work center. You can click a resource instance and assign or unassign it from the operation. This allows you to quickly re-assign work to another available resource.

Service History

The Service History page lets you search and review the repair history of similar assets. From the My Maintenance Work page, click **Service History** under the **Actions** menu for the work order row that you wish to preview.

The item and organization filters use default values based on the work order asset. A list of recent repairs that have been completed for similar assets is displayed. The result rows include key work order details, including the repair summary that is optionally defined during work order completion.

You can use filters for asset item number, asset number, organization, and work order type to narrow down your result set. Additional filter criteria include the operation work center, asset work center, work order subtype, work order status, and actual start date. You can also use keyword-based search to refine the results.

13 Execute Maintenance Work

Overview of Maintenance Work Execution

Oracle Fusion Cloud Maintenance allows you to execute work orders in the Maintenance Dispatch List or My Maintenance Work pages. In general, work orders can only be executed after they are created, edited, and released for execution. Each page provides different capabilities; therefore, you must analyze your business process before choosing which page you want to use for work order reporting and completion.

Additionally, you can choose to enable the My Maintenance Work by organization, allowing you to plan a phased roll out of the page. This allows both pages to be used simultaneously until you are ready to switch over all organizations to the My Maintenance Work page.

> **Note:** Opting into some new features and capabilities on the My Maintenance Work page require all organizations to be executed and reported using the My Maintenance Work page. After you enable, you can't revert to the Dispatch List page. This includes multiple asset work orders, return to inventory capability, and the ability to complete all work order operations out-of-sequence.

See the Execute Maintenance Work chapter in this user guide to learn about the capabilities and use of the Maintenance Dispatch List page. The Execute My Maintenance Work chapter focuses on the capabilities, differences, and use of the My Maintenance Work page.

Maintenance Dispatch List

You can execute work orders in Maintenance Dispatch List by each operation step that is designated as a count point. As part of the operation completion, you can also report the following transactions: material issue or return, resource consumption or reversal, as well as meter readings.

You can report these:

- Material and resource usages automatically or manually. The material and resource transactions can be reported based on the requirements specified in the maintenance work order operation step or manually by the actual usage, depending on the item or resource setup. You can also use the scanning devices for easy reporting.
- You can report quality results as well as capture asset failure details for future analysis and trending. Quality can be captured at an operation or work order level, while failure capture is performed at any level of a work order before or after release.
- Maintenance work order exceptions for the problems that arise during maintenance activity, such as material shortage, resource unavailability, and so on. You can also review all the maintenance transactions that are reported on the shop floor. You can run the scheduled process to transfer the maintenance transactions to costing. The maintenance execution transaction details and maintenance work order status updates are transferred to costing for accurate costing of the maintenance work orders.

To summarize, the Maintenance Dispatch List page lets you perform these tasks:

- Review maintenance work order details for each operation and report execution transactions.
- Report operation completion, material, and resource transactions.

- Report exceptions for the maintenance work order operations.
- Report the latest asset meter readings (if mandatory readings are required for the asset).
- Transfer the transactions from maintenance to costing (using a scheduled process).

My Maintenance Work

The My Maintenance Work page provides a mobile-friendly user experience to review and execute maintenance work orders. See the Execute My Maintenance Work chapter of this user guide for additional details and capabilities matrix. Here are the capabilities available only in My Maintenance Work page and not in the Maintenance Dispatch List page:

- Item-based work orders (multiple asset)
- The ability to return assets to inventory and transform an asset item
- Completing each operation out of sequence

> **Note:** You can complete issues and returns on the My Maintenance Work page itself. You won't need the Issue and Return Materials from Inventory task flow and that's why, the task flow is disabled after your administrator has set the profile option to enable My Maintenance Work.

Related Topics

- How You Review a Maintenance Dispatch List
- How You Report an Operation Transaction
- How You Report a Material Transaction
- How You Report a Resource Transaction

The Maintenance Execution Landing Page

You can use the Maintenance Execution landing page to obtain a comprehensive view of all your maintenance execution activities, highlighting work orders that require immediate attention and enabling quick actions to navigate to additional maintenance activities.

- **Focused Task Management**: The landing page is customized to show current and future assignments to technicians to ensure they can prioritize and focus on maintenance tasks. The page also shows the number of work orders that the technician is qualified to perform but isn't assigned yet.
- **Performance Insights with Metrics**: The page provides a summary of key metrics to allow technicians to track their progress and review upcoming maintenance work orders that they're qualified to perform.
- **Maintenance Work Order Search**: Find maintenance orders using a powerful index-based search engine and navigate quickly to the relevant work order details page for viewing or editing.
- **Navigation for Maintenance Activities**: Use the Quick Actions links to navigate to commonly used and all actions related to functional areas for maintenance and execution. Enhance your user experience by pinning frequently used actions beyond the default actions, making them accessible at the top of your action list.

Actions

The Maintenance Execution landing page provides an actions menu to access the different setup, management, and execution tasks. Click the **View all actions** link on the page to see a list of all available actions in a drawer. You can pin your most frequently used actions and they appear on the landing page itself.

Section	Action	Description
Maintenance Asset Definition	Asset Information Management	Use Smart Search to search for and view assets Create and edit installed base assets for enterprise and customer assets across each organization for which you have data access. This action is available only if the **Use Smart Search to Search For and View Assets in the New Assets UI** opt-in is enabled.
	Maintenance Assets	Create, edit, view, and search installed base assets for enterprise and customer assets across each organization for which you have data access.
	Hierarchy Navigator	Logical hierarchies help you group assets that operate in the same or different inventory organizations. You can use your hierarchies to model a plant, production line, vehicle fleet, customer, or location. When created, you can easily search for, interact with, and manage your related assets.
	Logical Hierarchy	Logical hierarchies help you group assets that operate in the same or even across different inventory organizations. You can use your hierarchies to model a plant, production line, vehicle fleet, customer, or location. When created, you can easily search for, interact with, and manage your related assets.
	Asset Groups	Create, edit, view, and search asset groups. You can create, view, and edit the rules for a group.
	Asset Group Rules	Setup used to define asset group rules, asset groups, and associate assets to groups. This action is available only if the **Redwood Page for Manage Asset Group Rules Enabled** profile is set to Yes.
	Meter Templates	Create, edit, view, and search meter templates. You can also define meter template item applicability for automatic association during asset creation.
	Service Mappings	Create, edit, view, and search relationships between services, sources, entities, and attributes.

Section	Action	Description
	Service Mapping Algorithms	Write Groovy Scripts used to execute service mappings.
	Correct Sales Order to Asset Data	Correct issues with service mapping data that were identified in the process error logs.
	Warranty Coverages	Create, edit, view, and search supplier warranty coverages.
	Warranty Contracts	Create, edit, view, and search supplier warranty contracts.
	Warranty Claims	Create, edit, view, and search supplier warranty claims.
	Warranty Labor Reimbursement Rates	Create, edit, view, and search supplier warranty labor reimbursement rates. This action is available only if the **Manage Supplier Warranty Claim Labor Rates** opt-in is enabled.
	Warranty Standard Repair Times	Create, edit, view, and search supplier warranty standard repair times. This action is available only if the **Manage Supplier Warranty Standard Repair Times** opt-in is enabled.
Maintenance Work Definition	Work Definitions	Create, edit, view, and search maintenance work definitions.
	Print Maintenance Work Definition Report	Run a scheduled process to generate a maintenance work definition report with the work requirement details. When complete, you can view the report in the job output log in PDF format.
	Work Areas	Create and maintain work areas to represent specific regions where maintenance activities are executed. Work areas are created in the context of a maintenance organization. This action is available only if the **Redwood Work Areas Enabled** profile option is set to Yes.
	Work Centers	Create and maintain work centers to represent specific location where maintenance work is performed and is comprised of resources having similar capabilities. Work centers are created in the context of a work area. This action is available only if the **Redwood Work Centers Enabled** profile is set to Yes.
	Resources	Create and maintain resources to model the labor or equipment used in a maintenance work center and operation and to track usages during maintenance execution. Resources are created in the context of a maintenance organization. They're then further defined for each work center, detailing their quantity, availability, and shifts.

Section	Action	Description
		This action is available only if the **Redwood Production Resources Enabled** profile option is set to Yes.
	Standard Operations	You can create operation templates by defining the operation details and its resources. These can then be referenced in one or more work definitions or manually selected when a work order is created in the user interface, REST API or file-based upload of maintenance work orders. This action is available only if the **Redwood Standard Operations Enabled** profile is set to Yes.
	Download Standard Operations to Spreadsheet	You can create and update the standard operations and resources by using the Oracle Application Development Framework Desktop Integration (ADFdi).
	Qualification Requirements	Setup related to managing qualification requirements.
	Qualification Profiles	Define qualification profiles
	Condition Event Codes	The setup used to define condition codes for a condition-based maintenance program, supplier warranty, and failure capture and analysis. This action is available only if the **Redwood Page for Manage Condition Event Codes Enabled** profile is set to Yes.
	Failure Sets	Manage failure sets for failure analysis during work order execution.
	Work Order Statuses	Setup used to create user-defined work order status values. These values are based on the predefined status values codes. This action is available only if the **Redwood Work Order Statuses Enabled** profile is set to Yes.
	Maintenance Programs	Create, edit, view, and search maintenance programs in the context of a specific maintenance organization.
	Maintenance Forecasts	Search, view, and update forecasted asset due dates from maintenance programs.
	Operational Rules	Define operational rules for external integrations with connected assets.
	Generate Maintenance Forecast	Run a scheduled process to generate and refresh the maintenance forecast for an organization and one or more maintenance programs. The forecast window parameter of number of days is referenced. This job is typically setup on a scheduled basis in your production environment.

Section	Action	Description
	Generate Maintenance Work Orders	Run a scheduled process to create work orders based off the maintenance forecast for an organization and one or more maintenance programs. The work order window parameter of number of days is referenced. This job is typically set up on a scheduled basis in your production environment.
Manage Maintenance	Work Orders	Create, edit, view, and search maintenance work orders in the context of a specific maintenance organization. Additionally, you can: • Release or put work orders on hold. • Use mass actions to change priority and status of multiple work orders at the same time. • Perform mass close action on the completed work orders using the scheduled process. • View and manage the work order exceptions. • View the costs associated with the work orders. • Generate and print work order details report and material requirements report.
	Maintenance Supervision	Create, edit, view, and search maintenance work orders in the context of a specific maintenance organization. This action is available only if the **Redwood page for Maintenance Supervision Enabled** profile is set to Yes.
	Material Availability Rules	Create, edit, view, and search material availability rules in the context of a specific maintenance organization. Rules are used by the application to create an initial recommendation based on which work orders should be released when materials are scarce.
	Material Availability Assignments	Workbench that's used to ensure all materials are available for a work order prior to its release to the shop floor. As priorities change, you can execute work orders of lower priority that become a high priority. When materials are scarce, you can decide which work orders you can release, and which work orders you must place on hold until materials become available.
	Exceptions	Create, edit, view, and search material exceptions rules in the context of a specific maintenance organization.
	Print Material List	Run the scheduled process to generate a maintenance work order material report for one or more work orders of a specific maintenance organization. When complete, you can view the report in the job output log in PDF format.

Section	Action	Description
	Print Work Order Details	Run the scheduled process to generate maintenance work order operation details for one or more work orders of a specific maintenance organization. When complete, you can view the report in the job output log in PDF format.
	Maintenance Transaction History	Search and view work order transaction history for assets over time.
	Close Maintenance Work Orders	After performing all the activities on a maintenance work order, you must close the work order to prevent any further updates to it. The costing and variants of the work order are also posted upon closing of the work order. Run a scheduled process to mass close one or more work orders of a specific maintenance organization. When complete, you can view the output log.
	Transfer Transactions from Maintenance to Costing	Run a scheduled process to transfer transactions from Oracle Maintenance to Oracle Costing of a specific maintenance organization. This includes maintenance work orders that are in a closed status only. When complete, you can view the output log.
Execute Maintenance	Dispatch List	Search, view and execute maintenance work order operations in the context of a specific maintenance organization. The maintenance dispatch list displays the maintenance work order operations that are actionable, that's the operations with ready, complete, or in process status. This action is available only if the following profile is set to No: Redwood page for Maintenance Dispatch List Enabled
	My Maintenance Work	Search, view and execute maintenance work order operations in the context of the logged in user. My maintenance work lists the maintenance work orders that are actionable by the user. Report transactions, issue and return materials, capture quality data and failure events. This action is available only if the **Redwood page for Maintenance Dispatch List Enabled** profile is set to Yes.
	Pick Materials for Work Orders	Pick materials for work orders that are in released status.
	Report Exception	Report and review maintenance exceptions.
Maintenance Import	Load Interface File For Import	Run a scheduled process to upload file-based import files for processing.

Section	Action	Description
	Import Assets	Run a scheduled process to import installed base assets for a unique batch code. You must have first uploaded the file into the interface tables using the Load Interface File for Import scheduled process. When complete, you can view the output log.
	Import Meter Readings	Run a scheduled process to import maintenance asset meter readings for a unique batch code. You must have first uploaded the file into the interface tables using the Load Interface File for Import scheduled process. When complete, you can view the output log.
	Import Warranty Coverages	Run a scheduled process to process warranty coverages using file-based import.
	Import Maintenance Work Definitions	Run a scheduled process to import maintenance work definitions for a unique batch code. You must have first uploaded the file into the interface tables using the Load Interface File for Import scheduled process. When complete, you can view the output log.
	Import Maintenance Programs	Run a scheduled process to import maintenance program and work requirement definitions for a unique batch code. You must have first uploaded the file into the interface tables using the Load Interface File for Import scheduled process.
	Import Maintenance Work Orders	Run a scheduled process to import maintenance work orders for a unique batch code. You must have first uploaded the file into the interface tables using the Load Interface File for Import scheduled process. When complete, you can view the output log.
	Purge Records from Maintenance Interface	Run a scheduled process to purge records that were uploaded during the file-based import process

Predefined KPIs

TheMaintenance Execution landing page shows these pre-defined KPIs:

- **My current assignments**: This is the number of work order assets for the selected organization context that have a planned start date on or before today that are assigned to the logged in user. Today's date is determined by the user's timezone specified in their regional preference. Work orders included in this metric have system statuses that are not Canceled, Closed, or Completed.
- **My future assignments**: This is the number of work order assets for the selected organization context that are assigned to the logged in user and have a planned start date after today, within the number of days specified by the profile option, **Future Maintenance Work Orders Range in Days**

(ORA_MNT_LANDING_PAGE_FUTURE_WO_METRICS_HORIZON). The default value for this profile option is 30 days and can be set at either a site or user level. Today's date is determined by the user's timezone specified in their regional preference. Work orders included in this metric have system statuses that are not Canceled, Closed, or Completed. You can use business rules to hide this KPI on the page.

- **Qualified work**: This is the number of work order assets for the selected organization context that the user is qualified for but is not assigned to and have planned start dates that begin after today and fall within the number of days specified by the profile option, **Future Maintenance Work Orders Range in Days** ORA_MNT_LANDING_PAGE_FUTURE_WO_METRICS_HORIZON after the user's current date. The default value for this profile option is 30 days and can be set at either a site or user level. Work orders included in this metric have system statuses that are not Canceled, Closed, or Completed. You can use business rules to hide this KPI on the page.

Create KPI and Visualization and Add to The Landing Page

You can define OTBI-based KPI and visualization using the Visualization Configurations tool. You must first create an analysis in OTBI. To create a KPI for the OTBI analysis, specify metric card as the visualization type. To create a visualization, specify the visualization type such as a bar chart, pie chart, or tabular chart. The Visualization Configurations tool can be accessed using the following URL:

https://<servername>/fscmUI/redwood/cx-analytics/application/container/dvconfig.

You need these privileges:

- View Service Manager Dashboard (SVC_VIEW_SERVICE_MANAGER_DASHBOARD_PRIV)
- View Service Representative Dashboard (SVC_VIEW_SERVICE_REPRESENTATIVE_DASHBOARD_PRIV)

Note: Both of these privileges should be assigned to users that define and view these metrics in the page. If a user is only viewing the metrics as a consumer, then assign them only the View Service Representative Dashboard privilege.

Configure Maintenance Execution Landing Page

You can't remove seeded KPIs in Edit Page Layout. However, you can configure them (hide, show, reorder) in Visual Builder Studio. After creating OTBI-based KPI and visualization using the Visualization Configurations tool, you can add these to the Maintenance Execution landing page. You can also enable guided journey, which can be set up to guide the users to tasks that include AI Agent support.

You need these privileges:

- Review Maintenance Dispatch List (MNT_REVIEW_MAINTENANCE_DISPATCH_LIST_PRIV)
- Edit Page Layout of the Maintenance Execution Page (MNT_EDIT_MAINTENANCE_EXECUTION_LANDING_PAGE_LAYOUT)

Guided Journeys:

- Manage Guided Journeys (ORA_PER_MANAGE_GUIDED_JOURNEYS)
- Use REST Service - Guided Journeys Read only (ORA_PER_REST_SERVICE_ACCESS_GUIDED_JOURNEYS_RO)
- Use REST Service - Guided Journey Responses(ORA_PER_REST_SERVICE_ACCESS_GUIDED_JOURNEY_RESPONSES)

Saved Searches on the Maintenance Execution Landing Page

After you select a pre-defined KPI on the landing page, the results table shows a set of relevant work order assets. You can further reduce the result set using the filters or keyword search.

You can save frequently used criteria and filter settings for quick access. You can create both personal and shared search configurations and set a default saved context or select a saved context for future searches.

Searches are saved in the context of the KPI that is being filtered. Each pre-defined KPI has its own set of saved searches that you can add to and choose from.

How You Track Receiving Details of Procured Items in Maintenance

Review and track the items for which your organization has created requisitions on the Purchased Item Details page. You can select the Details icon beside any of the purchased item for a work order operation to further drill down into the details of purchase order lines and receipt lines. While reviewing the Purchasing Details, you can also click on any purchase order line and review the receipt details for that line.

The following table lists all the details that you can view in the Receiving Details section for a particular purchase order line that you have selected.

Attribute	Description
Receipt	You can click on the specific receipt identification number to view the document and track the received quantities of the purchased item.
Line Status	Status of a specific receipt line for the purchase order.
Quantity	Quantity of purchased item that has been delivered and received by your organization against the purchase order.
Transaction Date	Date on which the delivery transaction was carried out.
Transacted By	Name of the person who completed the delivery transaction.

If you're not satisfied with the delivered items, you can return the items. You can also take the following actions:

- Correct: You can correct clerical errors in delivered quantity or in returns to receiving and return to suppliers. This will correct the receipt quantity if the status is Deliver, or it will correct the returned quantity if the line status is Return to Supplier or Return to Receiving.
- Return to Supplier: You can initiate a return of the purchased item to directly to the supplier from whom you procured the item. This can be done if the receipt line status is Deliver.
- Return to Receiving: You can initiate a return of the purchased item to directly to the receiving department. This can be done if the receipt line status is Deliver.

Note: For amount-based purchase orders, you can only correct the amount. You can't return the item to supplier or receiving.

How You Review a Maintenance Dispatch List

The Maintenance Dispatch List page is accessed from the Maintenance Management landing page in the Work Execution section of the task pane.

The page displays the maintenance work order operations that are actionable, meaning they are in ready, complete, or in-process status, including both in-house and supplier operations. In general, supplier operations have the status as in-process till the operation is received by the supplier. The maintenance dispatch list is oriented by the work center, displaying work order operations by date and status in a tabular format.

On the Maintenance Dispatch List page, you can perform the following tasks:

- Search for the work order operations by using the most commonly used search attributes such as asset, work order, status, start date, work area, work center, resource, and completion date. If your organization is project-tracked, you can use the project number and task number filters to search for project-specific work order operations. You can also create and use a personalized saved search. You can configure the search to run automatically every time the maintenance dispatch list is opened.
- Review the results rows for each count point operation. You click the operation step link to further view the operation's details.
- Review any optional or required actions for the operation, as indicated by visual cues in the results row's columns. An icon may be displayed in the material, resource, or quality inspection columns, indicating that additional review and possibly action is required prior to operation completion. You can only report certain transactions for materials and resources using these icons. Additional reporting may be required in the Complete with Details flow.
- Complete the operation using the Quick Complete or Complete with Details actions. For a count point operation, you may need to report the operation material transactions by quantity or serial number using the Complete with Details.
- Record meter readings for those asset meters that are setup for mandatory reporting at work order completion. The meter readings will be recorded on the Complete with Details action for the last operation in a work order.
- Report the maintenance work order exceptions. From the Actions menu, select: Report Maintenance Exception. The Report Maintenance Exception dialog box opens where you can report the maintenance work order exceptions.
- Generate and print the maintenance work order details report. From the Actions menu, select: Print Work Order Details. This generates the maintenance work order details report which you can save.

The maintenance dispatch list displays the following columns for the work order operation:

Column	Description
Work Order	Indicates the concatenation of maintenance work order number and operation sequence.
Status	Indicates the dispatch status of the work order operations. The valid dispatch statuses are Ready, Completed, and In Process.

Column	Description
	Note: For supplier operations, the status is always In Process, till the operation is received the supplier.
Asset	Indicates the asset associated with the maintenance work order.
Item	Indicates the item associated with the asset.
Work Center	Indicates the work center in which the work order operation is being performed.
Resequence	The resequence icon is conditionally displayed beside the work order operation for resequencing operations. The following information is presented to you in a separate dialog when you click the Resequence icon: • Select • Sequence • Operation Name • Work Center Operations that are eligible for resequencing are displayed. You can select an operation that you want to execute next.
Execution Sequence	Represents the sequence of execution of the operation for work orders having resequenceable operations. You can modify the execution sequence by performing the resequence action. For work orders that don't have resequenceable operations, the execution sequence is not stamped.
Exceptions	The Exceptions icon is conditionally displayed beside the work order operation. The following information is presented to you in a separate tab when you click the Exceptions icon: • Exception Type • Exception Status • Exception Number • Severity • Operation Sequence • Description • Reported On • Reported By You can close an exception by selecting a row. You can also click on a specific exception number to drill into that exception and edit the exception.
Completion Date	The scheduled completion date of the work order operation.
Report Material Transactions icon	Provides option to navigate to the Report Material Transactions page to manually report the materials used in the work order operation. By default, the column will display a circle region without an icon, meaning no action is required. If action is required, then one or two icons will be displayed in the circle.

Column	Description
	The behavior of this feature is further explained below in the How You Report a Material Transaction section. **Note:** This page doesn't provide a complete list of all operation items. A complete list is found on the items tab of the work order details page for the operation.
Report Resource Transactions icon	Provides option to navigate to the Report Resource Transactions page to manually report the resources used in the work order operation. By default, the column will display a circle region without an icon. Hovering over this circle will indicate Manual reporting not required. This means there are not any resources with a Charge Type of Manual, which requires manual reporting if they are to be charged by the operation. Clicking the circle will navigate to the Report Resource Transactions page, where you can optionally add one or more resources to be charged in the operation. You will not see in this page any resources which have a Charge Type of Automatic, as they can only be viewed in the Complete with Details flow. If the circle contains an icon, then reporting is required. If hovering over the icon indicates Manual reporting required, then Manual resources have been defined. You can optionally report any consumed resources by clicking the icon and updating the applicable resource rows in the Report Resource Transactions page. Additionally, if you are using a two-step issue and install or remove and return process, then the icon indicating items are pending installation. **Note:** This page doesn't provide a complete list of all operation resources. A complete list is found on the items tab of the work order details page for the operation.
Supplier	Indicates the supplier associated with the work order operation.
Supplier Site	Indicates the location of the supplier associated with the work order operation.
Review Supplier Operation Details icon	Provides option to navigate to the Review Supplier Operation Details page.
Project Number	The number of the project. This is applicable only for project-specific work orders.
Task Number	The number of the task. This is applicable only for project-specific work orders.
Default Subinventory for Material Review Board	Shows the subinventory your administrator assigned in the Maintenance tab of the Manage Plan Parameters task for material returns. If your administrator didn't assign any subinventory there, this field shows the default subinventory that's defined in the Plant Details tab of the Manage Plan Parameters task.
Default Locator for Material Review Board	Shows the locator your administrator assigned in the Maintenance tab of the Manage Plan Parameters task for material returns. If your administrator didn't assign any locator there, you see the default locator that's defined in the Plant Details tab of the Manage Plan Parameters task.

Related Topics

- How You Manage Supplier Operations in Maintenance
- How You Review Supplier Operation Details in Maintenance

How You Restrict Lot Numbers LOV to Issued Lot Numbers on the Maintenance Dispatch List Page

Prior to this update, you could restrict the component lot numbers that can be selected for a return transaction using the Report Material Transactions page. If the restriction is configured for a maintenance organization, you can return only lot numbers and quantities previously issued using the same maintenance work order operation.

However, from now on, you can leverage and extend the same functionality to the following user interfaces also.

- Maintenance Dispatch List page
  - Manual Reporting Complete
  - Complete with Details
- Issue and Return Material from Inventory

After the component issue, any components not consumed during maintenance activity may be returned. If the restriction is configured, the Component Lot Number attribute allows you to search and select only previously issued lot-controlled components in the work order operation. You can't return quantities higher than the quantities issued.

If the restriction is configured for a maintenance organization, then by default, all users encounter the validations. However, you can select to give certain users the WIP_ALLOW_UNTRANSACTED_LOT_RETURN privilege. When assigned to a user, the privilege relaxes the validation on the Component Lot Number attribute, thus enabling the user to return any previously issued component lot number outside of the context of the current work order operation.

This feature helps you enforce a specific validation for lot number control during return transactions and gives some users access to returning these components across maintenance work order operations.

How You Resequence a Maintenance Work Order Operation

As a maintenance manager, you can resequence a subsequent operation to be executed next to avoid waiting for availability of resources or materials for an operation. The resequencing of operations enables you to avoid any time delays in executing work order while continuing to make progress.

Let’s take an example of a work order with 5 operations, 10,20, 30, 40, and 50. Now, you define the operations 20, 30, and 40 as resequenceable operations because these can be executed in any sequence. Operations 10 and 50 are count point operations.

As a maintenance manager, when you report completion of operation 10, all the resequenceable operations 20, 30, and 40 are available in the dispatch list for execution. Let’s assume that materials required to perform operation 20 are unavailable and resources required to perform operation 30 are unavailable. Hence you would like to perform operation 40 next to continue to make progress. To do this, you must invoke the resequence action.

To resequence an operation, follow these steps:

1. On the Review Dispatch List page, search for the work order that has resequenceable operations. All resequenceable operations are identified with a visual indicator in the dispatch list.

2. Select the work order operation that you want to resequence. For example, operation 20.
3. Click the**Resequence** icon besides the work order operation 20. A dialog opens for you to resequence the operation.
4. Choose an operation that you want the operation to be resequenced as next operation, that's operation 40.
5. Click**Save and Close**.

On the Review Dispatch List page, the operation 40 is now resequenced as a next operation with execution sequence **2** . Also, the operations are rescheduled automatically in the background so that the operation start, and completion dates are now realigned with the execution sequences.

You can reject, or scrap and also perform inspections on a resequenceable operation like you do to a count point operation.

Note: You can't use FBDI to perform resequence action while transacting operations.

How You Search for Work Order Operations by Resource Instance and Work Order Description in the Maintenance Dispatch List

In maintenance work execution, maintenance technicians use the Review Maintenance Dispatch List page to review work order operations and report transactions, such as operation completion, material issue or, return, and resource consumption or reversal. To access their assigned work at the Review Maintenance Dispatch List, maintenance technicians manually search for their assigned work using search attributes such as asset, work order, status, start date, work area, work center, resource, and completion date.

As maintenance technicians, you might also want to find the assigned work by resource instance, and work order description, which prior to this update were not available as search options. Therefore, the Maintenance Dispatch List user interface has been enhanced to make it possible to search by these two new attributes:

- Resource Instance
- Work Order Description

You can add these two additional filter attributes to the search via the Add tab at the bottom of the search page. These two new search attributes are designed with a free-text design pattern which allows the user to perform partial keyword searches.

In addition to searching by work description, you can also see the work description as a column in the search results table view. Resource instance isn't available to be displayed in the search results table view.

How You Manage Supplier Operations in Maintenance

Use the Maintenance Dispatch List page to manage and execute supplier operations in outside processing. It lists the quantities at supplier operations (with operation type Supplier) by the dispatch statuses in a tabular format. This format has several visual cues highlighting the records that require attention.

The Maintenance Dispatch List page helps you perform these tasks:

- Report operation transactions by quantity or serial number associated with the work orders at a supplier.
- Report component usage at a supplier operation by quantity or serial number.
- Review work order details.
- Print work order traveler and product labels.
- Review supplier operation details.
- Review supplier operation exceptions.
- Report production exception at a supplier operation.

Using the search feature in the Manage Supplier Operations page, you can do the following:

- You can search for the supplier operations by using the most commonly used search attributes such as work order, status, start date, completion date, item, serial, purchase order, purchase order line, purchase order schedule, receipt number, and outside processing item.
- You can use the application default search that retrieves the supplier operations which have quantities in In Process and Ready status. By default the records are sorted by the earliest completion date.
- You can also create and use a personalized saved search.
- You can configure the search to run automatically every time you sign into the application.

Note: When querying for supplier operations based on start date or completion date, shift times are interpreted by the application in the work center time zone. However, named dates such as Today, Yesterday, and so on are interpreted in the user time zone.

Related Topics

- How You Review a Maintenance Dispatch List
- How You Review Supplier Operation Details in Maintenance

How You Review Supplier Operation Details in Maintenance

Review related details for a supplier operation on the Review Supplier Operation Details page.

You can access the Review Supplier Operation Details page by clicking any of these:

- Supplier Operation Details action for a supplier operation on the Maintenance Work Order Operations tab.
- Review Supplier Operation Details functional icon on the Maintenance Dispatch List page.
- Supplier Operation link of a supplier operation in the Exception tab.

Note: You can access the Review Supplier Operation Details page only if the role assigned to you has these privileges:

- Review Supplier Operation Details (WIP_REVIEW_SUPPLIER_OPERATION_DETAILS)
- Manage Supplier Operations (WIP_MANAGE_SUPPLIER_OPERATIONS)

The Review Supplier Operation Details page does the following:

- Displays purchasing (such as requisitions and POs), shipping and receiving details related to a supplier operation.
- Provides links to review additional details of purchase orders, shipments, and receipts.

You can also use the Review Supplier Operation Details page to manage supply side exceptions in outside processing. These actions are conditionally enabled and allow you to do the following:

- Create Purchase Requisition: Using this action, you can reinitiate purchase requisition creation to create supply for the deficit quantity in case of supply failures (such as requisition creation failures, PO cancellation, and PO quantity reduction).
- Correct, Correct Overreceipt, Return to Supplier, and Return to Receiving: Using these actions you can handle issues related to the quality and the quantity of the goods that are delivered to, or returned from manufacturing.

Related Topics

- How You Review a Maintenance Dispatch List
- How You Manage Supplier Operations in Maintenance

How You Manage Demand and Supply Side Changes in Outside Processing for Maintenance

Demand side changes in outside processing refer to changes to a work order with supplier operations, or as a result of reporting transactions at a count point operation before the supplier operation which impacts the associated purchasing and shipping documents.

This table details the demand side change events and the corresponding actions that are automatically initiated or performed by users to handle such changes:

Event	Actions
Work order status change	**Work order release:** When a work order is updated to Released status for the first time or if the work order is directly created in Released status, purchase requisitions are automatically created for the work order quantity based on the Purchase Requisition Trigger plant parameter setting. This is done by automatically requesting Supply Chain Orchestration. • If the Purchase Requisition Trigger plant parameter is set to Work order release, then purchase requisitions are created for the work order quantity for all the supplier operations of the work order. • If the Purchase Requisition Trigger plant parameter is set to Prior operation completion, and if the first count point operation of the work order is a supplier operation, then a purchase requisition is created for the work order quantity only for the first supplier operation. When a work order in Canceled or Closed status is subsequently updated to Released status, purchase requisitions are automatically triggered only for the eligible 'not executed' quantity. In all the above cases, if a requisition creation fails, the failed record can be viewed and resubmitted from Supply Order Orchestration. **Work order unrelease:**

	A work order is allowed to be updated to Unreleased status from Released status or On Hold status (when Released date is populated) or Closed status or Canceled status only if there is no purchase requisition or purchase order, or any pending purchase requisition creation requests for any of the supplier operations on the work order. **Work order cancellation:** When work order is updated to Canceled status, a warning message is displayed if any open purchase requisition or purchase order or any pending purchase requisition creation requests exist for any of the supplier operations on the work order. If the user decides to proceed with the status change, then a request is automatically sent to Supply Chain Orchestration to cancel the purchase requisitions or purchase orders or any open shipments created for the supplier operations on the work order. If the change propagation fails, a supplier operation exception is logged. **Work order closure:** When work order is updated to Closed status, a warning message is displayed if any open purchase requisition or purchase order or any pending purchase requisition creation requests exist for any of the supplier operations on the work order. If the user decides to proceed with the status change, then a request is automatically sent to Supply Chain Orchestration to cancel the purchase requisitions or purchase orders or any open shipments created for the supplier operations on the work order. If the change propagation fails, a supplier operation exception is logged.
Work order supplier operation date changes	When the supplier operation completion date is either moved in or moved out, then a request is automatically sent to Supply Chain Orchestration to propagate the changes in the associated purchasing documents in cases where purchase request has been initiated but the requested quantity hasn't yet been fully received, that's, receipt quantity is less than purchase order requested quantity. If the change propagation fails, a supplier operation exception is logged. **Requested delivery date calculation logic:** The requested delivery date for supplier operations is calculated while creating and updating the associated purchasing document using the following logic: • If the supplier operation is the either the first or an intermediate operation of the work order, then the requested delivery date is determined by subtracting the postprocessing purchase lead time (in days) of the outside processing item from the next operation's start date. • If the supplier operation is the last operation of the work order, then the requested delivery date is determined by subtracting the postprocessing purchase lead time (in days) of the outside processing item from the completion date of the supplier operation. • During the above scenarios, if the calculated need-by-date is less than the current date, then the need-by-date is passed as the current date.
Reversal of completion at prior count point operation	When a completed quantity is reversed to ready at a count operation immediately prior to a supplier operation, the following is applicable: If the Purchase Requisition Trigger plant parameter is set to Prior operation completion, then a request is automatically sent to Supply Chain Orchestration to decrease the quantity on existing purchase order for the supplier operation by an amount equivalent to the completed quantity that's reversed to ready. Subsequent supplier operations for which the supply creation isn't yet initiated won't be impacted. If the change propagation fails, a supplier operation exception is logged.

Supply side changes in outside processing refer to the changes to an outside processing purchase order in Oracle Fusion Cloud Purchasing. These also include supply issues related to quality and quantity of goods in outside processing that are received from or returned to the supplier.

The following table details the supply side change events and the corresponding actions that are automatically initiated or performed by users to handle such changes:

Event	Actions
Requisition creation failure	Whenever there is failure during requisition creation, SCO notifies Oracle Maintenance and a new maintenance exception is automatically created indicating what needs to be done to resolve the purchase requisition creation issues. A maintenance manager reviews the details of the exception and collaborates with a Supply Chain Application Administrator who has access to the Supply Orchestration work area to further review the details in the Supply Chain Orchestration pages. Based on the reasons of failure, users can fix the issues, and resubmit to reprocess the failed supply request or supply order line marked in exception. Alternatively, the supply request or the supply order line can be canceled requiring re-initiation of the requisition creation from the Review Supplier Operation Details page.
Purchase order quantity change	When the quantity on an outside processing purchase order is reduced due to supplier's inability to supply the requested quantity, Supply Chain Orchestration listens to the change event and communicates the details to Maintenance. A supplier operation exception is automatically logged. A maintenance manager reviews the supplier operation exception, navigates to the Review Supplier Operations page and triggers creation of a purchase requisition for the deficit quantity by clicking on the 'Create Purchase Requisition' action and specifying the required quantity, suggested supplier, and supplier site.
Purchase order status change	When an outside processing purchase order is canceled due to supplier's inability to supply the requested quantity, Supply Chain Orchestration listens to the change event and communicates the details to Maintenance. A supplier operation exception is automatically logged. A maintenance manager reviews the supplier operation exception, navigates to the Review Supplier Operations page and triggers creation of a purchase requisition for the deficit quantity by clicking on the Create Purchase Requisition action and specifying the required quantity, suggested supplier, and supplier site.
Purchase order requested delivery date change	When the need-by-date of an outside processing purchase order is moved out due to supplier's inability to supply on the requested date, Supply Chain Orchestration listens to the change event and communicates the details to Maintenance. A supplier operation exception is automatically logged. A maintenance manager reviews the supplier operation exception and takes appropriate action such as rescheduling the supplier operation to complete at a later date, or cancel the existing purchase order and create a new purchase requisition and a purchase order on a different supplier.
Overreceipt	In cases where the quantity received is more than the quantity requested or shipped on an outside processing purchase order, a maintenance technician can use the Correct Overreceipt action in the Review Supplier Operations Details page to correct the overreceipt quantity. You need to select the desired receipt in the Receiving Details region in the Review Supplier Operations Details page for the supplier operation and click on the Correct Overreceipt button and enter the quantity to correct. The overreceipt quantity at a supplier operation is automatically reduced by an equivalent amount if you do either of the following: • Report completion at the count operation that immediately precedes a supplier operation. • Confirm the shipment (if applicable) at the supplier operation.

Return to supplier	In cases where quantities need to be returned to the supplier for reasons such as bad quality, a maintenance manager can use the Return to Supplier action in the Review Supplier Operations Details page to return the quantities to the supplier. You need to select the desired receipt in the Receiving Details region in the Review Supplier Operations Details page for the supplier operation and click on the Return to Supplier button and enter the quantity to return.
Return to receiving	In cases where quantities need to be returned to the receiving for reasons such as bad quality, a maintenance manager can use the Return to Receiving action in the Review Supplier Operations Details page to return the quantities to the supplier. You need to select the desired receipt in the Receiving Details region in the Review Supplier Operations Details page for the supplier operation and click on the Return to Receiving button and enter the quantity to return.
Receipt and return corrections	In cases where quantities that were received or returned need to be corrected for reasons such as wrong data entry, a maintenance manager can use the Correct action in the Review Supplier Operations Details page to return the quantities to the supplier. You need to select the desired receipt or return transaction in the Receiving Details region in the Review Supplier Operations Details page for the supplier operation and click on the Correct button and enter the quantity to correct.

How You Manage Inspections for Maintenance Work Orders

Inspections are integral to any maintenance activity. You can create, view, and edit inspection details for your work order operations.

Create Inspection Results

Enter inspection details to create inspection results for your work order in the Create Inspections Results dialog box. To open the Create Inspections Results dialog box, you can use either of these two methods:

- From the Tasks pane by clicking the Create Inspection Results link under Work Execution.
- On the Maintenance Dispatch List page, select a work order and click the **Create Inspections Results** button. Alternatively, you can click the **Inspections** icons in the **Inspection Plan** column for the work order

> **Note:** Inspections for a work order operation can be mandatory or optional. The **Inspection Plan** column on the Maintenance Dispatch List page displays the **Inspection Required** and **Inspection is Optional** icons.

The Create Inspections Results dialog box displays these details for the inspection:

Attribute	Description
Organization	Work order organization. This is a read-only attribute.
Type	The inspection type. This is a read-only attribute, and is set to Work in process.
Work Order	The work order for which the inspection is created. This is a read-only attribute.
Operation	The work order operation for which the inspection is created. This is a read-only attribute.

Attribute	Description
Item	The work order asset item for which the inspection is created. This is a read-only attribute.
Inspection Quantity	The work order operation quantity. This is a read-only attribute.
Inspection Date	Displays the system date with time. This is an editable attribute.
Inspection Plan	Drop-down list that shows all the applicable inspection plans for the work order operation. The list won't show any inspection plans if inspection for the selected work order is optional.

View Inspection Results

View and edit inspection details for your work orders on the Inspections page. In the Tasks pane, click the Manage Inspections link in Work Execution to open the Inspections page. You can edit inspection results for the characteristics on the Enter Inspection Details page for the selected inspection, and save them.

How You Report an Operation Transaction

The report operation transactions feature enables you to report the progress at the maintenance work order operation level. An operation transaction is an execution transaction that moves the dispatch status from one to another in a count point operation, including operations that can be resequenced, in the work order operations. The operation transactions are generated when the work order progresses from one operation to another.

You can report the operation transactions on the Maintenance Dispatch List Page.

Operation Transaction Types

Two types of operation transaction exist: complete transaction and reverse transactions. You can perform the complete transactions to complete the respective activities. The complete transaction for the last operation must be performed from the ready dispatch status. You can correct any errors by performing the reverse transactions. The reverse transaction reverses the status of the operation transacted earlier. The reverse transactions are performed from the complete dispatch status. The complete and reverse transactions are recorded as separate transactions.

The operation transactions must be reported at the count point operations only. The operation for the automatically transact operations are automatically reported when an operation transaction for the next count point operation is reported. Similarly, for the reverse transactions, the status is automatically reversed at the automatically transact operation if the status is manually reversed at the previous count point operation.

Note: The operation transactions aren't supported for the optional operations.

Modes of Reporting Operation Transactions

The following are the two modes for reporting the operation transactions manually:

- Quick Complete: You can use the quick complete mode to create the operation transactions in just two clicks. This mode can be used only if the maintenance work order has all the necessary data for the transaction and the transaction doesn't require any additional inputs. You can use the quick complete mode to create multiple operation transactions in one transaction cycle.

  The quick complete action isn't allowed for those operations that has at least one resource with a job profile or equipment profile whose charge type is Automatic. For more information, refer to the Reporting Operation Transactions Using Quick Complete: Explained topic.
- Complete with Details: You can use the complete with details mode when the transaction requires you to review and update the transaction data, such as materials consumed, resources charged, and so on. You can also use this mode to provide the additional details for the transaction, such as lot and serial information for the components, supply subinventories for the components, and so on. This mode requires navigation through multiple pages but provides the flexibility to update the transaction data that's derived from the work order. For more information, refer to the Reporting Operation Transactions Using Complete with Details: Explained topic.

Related Topics

- How You Review a Maintenance Dispatch List
- How You Report an Operation Transaction Using Quick Complete
- How You Report an Operation Transaction Using Complete with Details

How You Report an Operation Transaction Using Quick Complete

The Quick Complete method enables you to easily complete an operation step directly from the Maintenance Dispatch List results rows. Once completed, this method will automatically report any applicable operation transactions for materials and resources.

The quick complete mode enables you to quickly create one or more operation transactions from the maintenance dispatch list. This mode can only be used for the operation transactions that don't require any additional inputs. The quick complete mode is available only if there's no lot or serial controlled operation pull component in the work order operation. The Quick Complete button is disabled if the work order button is disabled for work orders with a mandatory inspection plan until you enter inspection results for the work orders.

An operation transaction is only eligible for Quick Complete if:

- Materials have a supply type of Operation pull or Assembly pull, but don't require additional inputs such as lot or serial number
- Materials have a supply type of Operation pull or Assembly pull, and the default supply subinventories are predefined in the operation items or by the Default Supply Subinventory plant parameter
- Resources have a charge type of Automatic and do not require additional inputs
- There are of multiple transactions and all transactions pass the above validations
- There is not a mandatory Quality Inspection Plan

On successful completion of the operation transaction, a confirmation message is displayed on the Maintenance Dispatch List page showing the transaction details. In case of error, a message with error details is displayed on the Maintenance Dispatch List page.

Related Topics

- How You Review a Maintenance Dispatch List
- How You Report an Operation Transaction
- How You Report an Operation Transaction Using Complete with Details

How You Report an Operation Transaction Using Complete with Details

The complete with details mode enables you to complete an operation step directly from the Maintenance Dispatch List results rows.

You can review and edit the materials and resources for the operation transaction.

When reporting an operation transaction using the complete with details option, the flow consists of the following three train stops:

- Asset train stop
- Materials train stop
- Resources train stop
- Report Meters train stop

In a project-tracked organization, the header for each train stop also displays project number and task number for a transaction.

On successful reporting of the operation transaction, a confirmation message is displayed on the Maintenance Dispatch List page showing the transaction details. In case of error, a message with error details is displayed on the Maintenance Dispatch List page.

Asset Train Stop

In the Asset train stop, you can review the transaction. The following are the attributes in the Asset train stop:

Attribute	Description
Asset	The asset associated with the maintenance work order.
Item	The item associated with the asset.
Serial Number	The serial number associated with the asset.
Work Center	The work center associated with the maintenance work order operation.

Attribute	Description
Work Order Quantity	The planned quantity of the maintenance work order.
Transaction Date	The date of the transaction. The field is set to the current date and time. However, you can update it to a past date and time.
Transaction Type	The transaction type of the current transaction.
Transaction Note	Any note for the transaction.
Attachments	The attachments in the transaction. It can be of file, text, or URL type.
Project Number	The number of the project. This is applicable only for project-specific work orders.
Task Number	The number of the task. This is applicable only for project-specific work orders.

Backflush Materials Train Stop

The Materials train stop enables you to review and edit the materials for the work order operation.

The Materials train stop is displayed:

- If the Allow Quantity Changes During Backflush plant parameter is set as Both or Material
- If there are lot or serial controlled components for backflush.

Note: This page won't show a consolidated list of all items, but shows only those whose Supply Type requires additional review. For example, Push type materials won't be displayed in this materials train stop.

The following are the attributes in the Materials train stop:

Attribute	Description
Status	Indicates the status of the entered record.
Transaction Type	The default types will be Issue or Return. Issue will record a material issue transaction and install the asset in the hierarchy. Return will remove the asset from the hierarchy and record a material return transaction. **Note:** If the feature Issue or Return Materials for Work Orders Pending Installation or Removal is enabled, users with the technician role can see only types of Install or Remove. Install will install the asset into the hierarchy. Remove will remove the asset from the hierarchy. The Issue and Return transactions are handled separately by users with the stock clerk privileges.
Operation Sequence Number	The operation sequence in the maintenance work order from which the material is derived. This can be the current operation or a previous automatically transact operation.

Attribute	Description
Component	The component being added for reporting.
Component Description	The description of the component being added for reporting.
Basis	The basis type as defined in the work order operation for the component. For the manually added components, the basis is always Variable.
Component Lot Number	The lot number of the component.
Component Serial Number	The serial number of the component.
Asset Number	The specific asset that will be installed or removed from the work order asset's hierarchy.
Parent Asset	The parent position in the work order asset's hierarchy under which the material transaction line's asset will be installed. It will default to the work order asset but can be manually updated to a child asset in the transaction line or by using the hierarchy viewer.
Basis	The basis type as defined in the work order operation for the component. For the manually added components, the basis is always Variable.
UOM	The unit of measure as defined in the component item or the organization item definition.
Required	The required quantity as defined in the maintenance work order for nonserial items. For serial items defined in the work order, the required quantity is 1 for each row and there can be as many rows as the quantity of item is required for the transaction.
Previously Issued	The quantity of the component that's already issued to the work order operation.
To Transact	For nonserial items, this quantity is set to the quantity specified in the Required attribute with minimum as 1. For serial items defined in the work order, this quantity can only be 1. The default value is controlled by the organization's plant parameter, Default Transaction Quantity, as detailed in the Implementing Manufacturing and Supply Chain Materials Management guide.
Secondary Quantity	The quantity is based on the item setup: • When the item's UOM defaulting control is set to fixed, you enter the transaction quantity in the primary or transactional UOM, which is automatically converted to the secondary quantity in the secondary UOM based on the standard or item specific UOM conversion. • When the item's UOM defaulting control is set to default, you can enter the transaction quantity in the primary or transactional UOM and override the secondary quantity that's defaulted from the standard or item specific UOM conversion. • When the item's UOM defaulting control is set to no default, you can enter the transaction quantity in the primary or transactional UOM and enter the secondary quantity in the secondary UOM.
Secondary Quantity UOM	The unit of measure as defined in the item setup.
Reservations	
Additional Information region	The additional information region is only enabled for serial-tracked and non-serial tracked operations if specific inventory flexfields have been defined and deployed. Additional details are covered in the Implementing Manufacturing and Supply Chain Materials Management guide.

Attribute	Description
Revision	The revision number of the component. The value is derived from the organization item definition.
Subinventory	Indicates the supply subinventory of the component.
Locator	Indicates the supply locator of the component.
Use Common Inventory	Check box to indicate whether the material is issued from the common inventory or from the project-specific inventory.

Backflush Resources Train Stop

The Resources train stop enables you to review and edit the resources for the work order operation. The Resources train stop is displayed if the Allow Quantity Changes During Backflush plant parameter is set up as Both or Resources.

The following are the attributes in the Resources train stop:

Attribute	Description
Status	Indicates the status of the entered record.
Operation Sequence Number	The operation sequence in the work order from which the resource is derived. This can be the current operation or a previous automatically transact operation.
Sequence	The resource sequence as defined in the work order operation resources.
Resource	The resource being added for reporting. The field lists values that are concatenation of resource code and resource name.
Type	The type of resource as defined in the work order resources or in resource definition.
Activity	The resource activity as defined in the work order resources or in resource definition.
Basis	The basis type as defined in the work order operation for the resource. For the manually added resources, the basis is always Variable.
UOM	The unit of measure as defined in the work order resources or in organization item definition.
Required	The required quantity as defined in the work order resources.
To Charge	The quantity is set to the quantity specified in the Required attribute.
Resource Instance	Name of the resource instance.

Record Meters Train Stop

The Record Meters train stop enables you to enter meter readings for the work order operation. The Record Meters train stop is displayed only if the work order operation has one or more active meters with the Record Meters at Work Order Completion attribute set as Mandatory.

Note: Meter readings wouldn't be recorded if any of the preceding the train stop steps require reporting or if any transactions fail to record with an error.

The following are the attributes in the Record Meters train stop:

Attribute	Description
Name	Name of the meter.
Code	Code of the meter.
Reading Type	The type of the meter reading. The valid values are: • Absolute: The displayed reading on the physical meter at the time of recording. • Change: The net change in the current and last displayed readings on the physical meter.
Direction	The direction of the meter reading. The valid values are: • Ascending: Increases in value. • Descending: Decreases in value.
Displayed Reading	The reading value displayed on the meter at the time of recording.
Life to Date Reading	The cumulative meter reading value that gets updated after each new meter reading entry.
UOM	Unit of measure of the meter reading.
New Reading	New meter reading value.
Rollover	Specifies whether or not the meter rollover is to be enabled.
Reading Date	The date on which the meter reading is recorded.
Comments	Any comment regarding the new meter reading.
History	The icon to view the meter reading history.

Related Topics

- How You Review a Maintenance Dispatch List
- How You Report an Operation Transaction
- How You Report an Operation Transaction Using Quick Complete

Report an Operation Transaction

The following example illustrates performing an operation transaction in a serialized enabled operation. The example discusses reporting the completion of a maintenance work order operation.

Steps to Report an Operation Transaction

To report the operation transaction, perform the following steps:

1. In the Tasks pane, in Work Execution, click the Review Maintenance Dispatch List link.
2. On the Maintenance Dispatch List page, use the Search region to search for the work order for which you want to perform the material transaction. The records that fulfill the search criteria are displayed. For more information about searching and using maintenance dispatch list, refer the Maintenance Dispatch List: Explained topic.
3. Look for the row with the work order for which you want to perform the operation transaction. Click the expansion icon in the first column to expand the row.
4. Click the Complete with Details button.The Complete with Details option can be used only for Complete and not more than one quantity can be populated.
5. Leave the Transaction Date as the system current date and time.
6. Enter any value in the Transaction Note field to indicate any information for the transaction.
7. Click the Next button.
8. In the Materials tab, review the operation pull material requirements derived from the maintenance work order definition.
9. For the component that you want to perform the transaction, update the To Transact quantity.The To Transact quantities are populated by default from the maintenance work order definition and can be updated to reflect actual usage quantities.
10. Click the Next button.In the Resources tab, for the resource that you want to perform the transaction, update the To Charge quantity.The To Charge quantities are populated by default from the maintenance work order definition and can be updated to reflect actual usage quantities.
11. Click the Save and Close button. A confirmation message is shown to confirm the completion of the work order operation.

Related Topics

- How You Review a Maintenance Dispatch List
- How You Report an Operation Transaction
- How You Report an Operation Transaction Using Quick Complete
- How You Report an Operation Transaction Using Complete with Details

How You Report a Material Transaction

The report material transactions feature enables you to report the materials that are consumed in the operation. You can issue materials from inventory to the operation and return the issued materials to inventory. Depending on how the item is set up, you can issue materials from the common inventory or from the project-specific inventory. Dual units of measure is supported in material transactions. If you want to issue an item with dual units of measure, you can specify both the quantities in both the primary and secondary unit of measures.

Items that are issued to an asset using a material transaction are added to the asset's hierarchy if they are asset-tracked. Else, if not tracked, then they are only consumed by the work order operation.

Material Transactions are reported using several different methods:

- For items with a supply type of Push, you report them directly from an operation result row in the Dispatch List using the icon in the report materials column
- For items that don't have a supply type of Push, and don't require any additional details, you can automatically report them using the Quick Complete action
- For items with a supply type of Assembly pull or Operation pull, which require additional details, you can only report them using the Complete with Details action
- For reporting items outside of the Dispatch List, you can report by Work Order and Operation Sequence directly from the Maintenance Management landing page using the Report Material Transactions task under Execution. If you enable a certain feature and give users specific privileges, the page name changes to Issue and Return Materials from Inventory.

Issuing Materials to the Operation

Materials are issued depending on their supply type and if additional details are required to be reported at operation completion. You can report certain material transactions on the Report Material Transactions page, which can be accessed using either of the following methods:

- On the Maintenance Dispatch List page, view the Report Materials icon for the operation row:
  - If the circle region is empty, it indicates that manual reporting isn't required. This means there aren't any items with a Supply Type of Push, which require manual reporting if they're to be consumed by the operation. Clicking the circle navigates to the Report Material Transactions page, where you can optionally add one or more items to be consumed in the operation.
  - If the circle region has an icon, then hovering over the icon indicates Manual reporting required. This means that Push materials have been defined. You can optionally report any consumed items by clicking the icon and updating the applicable items rows in the Report Material Transactions page.
  - The Report Material Transactions won't show any items which have a Supply Type of Assembly pull or Operation pull, as they can only be viewed in the Complete with Details flow.
- In the Tasks pane, in Work Execution, click the Report Material Transactions link.
  - Then, select the work order and work order operation

You can report certain material transactions by using the Quick Complete action on the operation:

- This method to create the operation transactions in just two clicks. This mode can be used only if the maintenance work order has all the necessary data for the transaction and the transaction doesn't require any additional inputs. You can use the quick complete mode to create multiple operation transactions in one transaction cycle.

> **Note:** The Quick Complete button is disabled if the work order button is disabled for work orders with a mandatory inspection plan until you enter inspection results for the work orders or when you have materials serialized or lot control materials with supply type with operation pull or assembly pull.

For more information, refer to the Reporting Operation Transactions Using Quick Complete section.

You can report certain material transactions by using the Complete with Details action on the operation:

- You can use the complete with details method when the transaction requires you to review and update the transaction data, such as materials consumed, resources charged, or even meter entry is required.
- You can also use this method to provide the additional details for the transaction, such as lot and serial information for the components, supply sub-inventories for the components, and so on.
- This method requires navigation through multiple pages, known as train stops, providing you the flexibility to update the transaction data that's derived from the work order.

> **Note:** The Complete with Details button is disabled for work orders with a mandatory inspection plan until you enter inspection results for the work orders.

For more information, refer to the Reporting Operation Transactions Using Complete with Details.

You can optionally report materials transactions using different versions of the Report Materials Transaction page by enabling the feature Use a Work Order to Install and Remove Asset Parts. This feature will add new capabilities to optionally install and remove parts in the context of an asset hierarchy, as well as adding new capabilities to split the material issue and installation into an asset hierarchy into a two-step process. This is useful for customers who wish to separate these tasks across different user roles.

Here are the feature impacts:

- **If not enabled (default):**
  - The existing Report Material Transactions page can be accessed through the task menu, as well as from the Maintenance Dispatch List results rows using the icon entitled: Report Materials
  - The existing page will still be available in an Operation's Complete with Details action flow by using the Backflush Materials train stop
  - You can't enable the feature Issue or Return Materials for Work Orders Pending Installation or Removal
- **If enabled (via opt-in):**
  - The Report Material Transactions page from the Task menu will be replaced by the Issue and Return Material from Inventory page. This page is intended for a Stock Clerk role but supports both a one-step and two-step issue and return process.
  - The Report Material Transactions page will also be enhanced in the Dispatch List results rows as well as the Operation's Complete with Details action flow by using the Backflush Materials train stop will not change. This page in intended for a Maintenance Technician role to install and remove items from an asset hierarchy.
  - From the Dispatch List, a new icon may be displayed in the circle for a two-step issue and install or remove and return process. Hovering over the icon will indicate Report Material Transactions, meaning that materials of different supply types have already been issued from inventory by the Stock Clerk and are pending the Technician's action to finalize their installation prior to operation completion. If materials are issued, but not installed at work order completion, then another icon is displayed to the user, indicating the work order can't be set to Closed status pending installation.
  - Note: This feature includes a validation which prevents work orders from being Closed when issued items have not been installed or returned to inventory.

Issue and Return Material from Inventory Page

This page will be optionally available by opt-in, as described above. If enabled, it will replace Report Material Transactions page from the task menu on the Maintenance Management landing page.

This page is used to issue and return transactions for components using either a one-step or a two-step process. A one-step process can be considered an open shop, where different users can issue/install and remove/return components in an operation. While a two-step process is considered a closed shop, where only certain users can issue and return or install and remove components from a maintenance work order.

A one-step process helps the user issue a component from inventory and install it at a user-selected level in an asset's hierarchy. This process supports the existing flow of material issue transactions, adding the ability to select the parent asset level for installation. Stock Clerk, Maintenance Technician, and Maintenance Manager users don't need any additional user privileges to use this page or perform one-step issue or return transactions. Returns are handled using the same process. You can perform the following tasks from this page:

- View items with a supply type of Push, as defined in the operation's list of items. The To Transact quantity will be governed by the Default Transaction Quantity value set in the Organization's plant parameters. Setting a value of Both will ensure the To Transact quantity is equal to that of the required quantity.
- Add new item rows for newly discovered or requested materials
- Issue components from inventory and create the material transaction. Upon issue, the component is automatically installed to either to the work order asset or optionally, in a hierarchy position within the asset by updating the Parent Asset field.
- Show previously issued components by clicking the checkbox option. This will generate a list of issued and installed components in this work order and operation context, setting the transaction type to Return. Additionally, the To Transact quantity will be set to previously issued and installed quantity because in most of the cases you will want to remove and return the full quantity. Only Return rows with a quantity greater than 1 will be transacted, removing the items from the hierarchy, and returning them to inventory. Return rows with a quantity of zero will remain in the results list and are available for future Return transactions.
- Add new item rows to Return previously issued and installed components to inventory
    -

A two-step process allows a user who's assigned a job role that a stock clerk works to issue of a component from inventory, but not install it in the asset's hierarchy. In this case, the material transaction will be reported, but the installation is pending further reporting if you're responsible for maintenance technician tasks for your enterprise. If you're responsible for stock clerk tasks for your enterprise you need additional user privilege to enable them to perform a two-step issue or return transaction. Returns are handled using the same process.

To configure a two-step process:

- If you're responsible for stock clerk tasks for your enterprise you need the privilege MNT_WIP_MATERIAL_ISSUE_AND_RETURN_PRIV assigned using a custom role you can only issue and return components using the Issue and Return Material from Inventory page but can't install them. Additionally, they can't report materials from the Maintenance Dispatch List.
- If you're responsible for maintenance technician tasks for your enterprise, you need the MNT_WIP_PART_INSTALL_AND_REMOVE_PRIV privilege assigned using a custom role. You can only install and remove components to and from an Asset's hierarchy from the Maintenance Dispatch List. Additionally, they can't access the Issue and Return Material from Inventory page.

Users that are assigned these roles will then have different capabilities when using the page:

- View material items with supply type of Operation Pull and Assembly Pull, as defined in the operation's list of items. The To Transact quantity will be governed by the Default Transaction Quantity value set in the Organization's plant parameters. Setting a value of Both will ensure the To Transact quantity is equal to that of the required quantity.
- Add new item rows with transaction type defaulted as Issue for newly discovered or requested materials
- Issue components from inventory and create the material transaction. Upon issue, the material transaction will be created, but the component will not be installed to the work order asset. The hierarchy update will be pending the second step for installation by the Maintenance Technician.
- Show previously issued components by clicking the checkbox option. This will generate a list of items that were issued but not installed. Else, when the page is rendered you will not be able to see the list of items previously removed by Maintenance Technician user.
    - For items that have been issued, but not installed, the To Transact quantity will be set to zero, requiring you to specify the exact quantity to be returned
    - For items that have been removed, the To Transact quantity will be set to removal quantity
- note

> **Note:** If the Maintenance Technician does not install the issued components by the completion of the final operation of a work order, then the work order will be Completed, but it can't be set to a Closed status. During the work order closing process an error will be raised, requiring a Maintenance Manager to complete the installation or return the unused component. To help identify these issued but not-installed components, a unique icon and hover text is displayed in the materials column in the Dispatch List.

Report Material Transactions

If you enable opt-in, it will update the Report Material Transactions page from the Dispatch List results rows and the Complete with Details flow. This page is also supporting issue and return transactions for components using either a one-step or a two-step process.

Here are its capabilities when using a one-step process:

- Create issue and return transactions outside of the context of an asset's hierarchy
    - For each row that's created, you choose the transaction type as issue or return, and then search and select the component details directly in the transaction row
    - Issued and returned components will be updated in the work orders asset's hierarchy
- Create issue and return transactions in the context of the work order asset's hierarchy using the hierarchy viewer, which is displayed below the transaction row table
    - Navigate through the hierarchy levels, or use the search, to find the exact child asset level
    - Use the action icons in the asset node to either issue and install a new child component or remove and return an existing installed asset. The action will automatically create the respective transaction rows in the table.
    - Additionally, for any child asset node in the hierarchy, you can update its parent asset without creating a specific material transaction using the swap action
- Create issue and return transactions in the same transaction session
    - Perform both the install and removal of assets from the hierarchy at the same time. This includes both tracked and untracked component issue and returns, while also being able to easily return previous issued components from earlier work orders. When returning the previously issued untracked

components, the return transaction creates a no-cost miscellaneous return to inventory for the component
    - Additionally, you can use the save button, in addition to the save and close button, to perform multiple transactions without leaving the page
- Show Previously Issued Components by setting the checkbox option
    - Renders a list of all previously issued components from the work order operation that are eligible for return. Delete the component item rows that are not being returned, thereby processing only the rows that require return.
    - Once saved, the hierarchy is updated as components are removed and returned. You can also use a barcode scanner to enter the component and the lot and serial number being transacted, improving data entry correctness and speed.
- You can enter the transact quantity, serial number, and lot number for the material based on the material control setup. The sub-inventory and locator are populated by default based on setup at work order, organization level or item level. However, you can edit the sub-inventory and locator fields. The material transactions can also be reported by using a scanner. The scanner can scan the component number. Based on the material control setup, the scanner can optionally scan the serial and lot numbers.

Here are its capabilities when using a two-step process:

- Update the asset hierarchy using Install and Remove transactions when using a two-step process. This is for items that are asset-tracked and will be installed into a level in the hierarchy. Else, they will just be consumed by the work order and not require installation.
    - Users assigned with the tasks of a maintenance technician must have the MNT_REPORT_MAINTENANCE_MATERIAL_TRANSACTIONS_PRIV privilege assigned. This enables them to use the Report Material Transactions page from the Dispatch List results rows to Install items previously issued by users with stock clerk role. You see the new icon indicating items are pending installation.
    - For components requiring additional reporting, use the Complete with Details flow to further report the installation and removal of components from an asset's hierarchy
    - Any components that have been issued by the Stock Clerk, but are on-hold pending installation, are recorded by the Technician in the context of an Asset's hierarchy.
    - Additionally, users responsible for Stock Clerk role in their enterprise can remove components and create return transaction that are on hold, or pending for final recording into a sub inventory location.
    - Users responsible for technician tasks in their enterprise, won't have access to report inventory transactions. The Inventory and Locator fields are disabled from the Hide or Show Details region.

Returning Materials to Inventory

On the Report Material Transactions page, the materials issued to the work order are returned to inventory by specifying the transaction type as Return. You can control the returning of the materials using the Show components option. The Show components option is set by default based on the setting of the Default Transaction Mode plant parameter. However, you can edit the Show components option per your requirement.

- When the Show components option is set to All: All the materials issued to the work order for the operation with Push supply type are populated by default.
- When the Show components option is set to Manually entered: The material requirements as defined on the work order for the operation aren't populated by default and you can enter the required materials manually.

You can choose to restrict which component lot numbers can be selected for a return transaction using the Report Material Transactions page. If the restriction is configured for a maintenance organization, then you can return only lot numbers previously issued using the same maintenance work order operation. Additionally, if you

have some users who will need to override the organization-level restriction, you can give them the privilege: WIP_ALLOW_UNTRANSACTED_LOT_RETURN.

Note: The ability to restrict the return of component lot numbers is only available in certain versions of the Report Material Transactions page. The Report Material Transactions page is version-controlled, based upon your Opt-in decisions for the Maintenance Management offerings in the 21A and 21C updates.

Manually Adding Materials for Reporting

You can add materials for the work order operation by clicking the Add icon. A new row is created where you can add the details for the material.

The following are the attributes for manually adding the materials to the work order operation for reporting.

Attribute	Description
Status	Indicates the status of the entered record.
Component	The component being added for reporting.
Basis	The basis type as defined in the work order operation for the component. For the manually added components, the basis is always Variable.
UOM	The unit of measure as defined in the component item or the organization item definition.
Required	The required quantity as defined in the maintenance work order for nonserial items. For serial items defined in the work order, the required quantity is 1 for each row and there can be as many rows as the quantity of item is required for the transaction.
Previously Issued	The quantity of the component that's already issued to the work order operation.
To Transact	For nonserial items, this quantity is set to the quantity specified in the Required attribute with minimum as 1. For serial items defined in the work order, this quantity can only be 1. The default value is controlled by the Organization's Plant parameter Default Transaction Quantity, as detailed in the Implementing Manufacturing and Supply Chain Materials Management guide.
Secondary Quantity	The quantity is based on the item setup: • When the item's UOM defaulting control is set to fixed, you enter the transaction quantity in the primary or transactional UOM, which is automatically converted to the secondary quantity in the secondary UOM based on the standard or item-specific UOM conversion. • When the item's UOM defaulting control is set to default, you can enter the transaction quantity in the primary or transactional UOM and override the secondary quantity that's defaulted from the standard or item-specific UOM conversion. • When the item's UOM defaulting control is set to no default, you can enter the transaction quantity in the primary or transactional UOM and enter the secondary quantity in the secondary UOM.
Secondary UOM	The unit of measure as defined in the item setup.

Attribute	Description
Component Lot Number	The lot number of the component.
Component Serial Number	The serial number of the component.
Revision	The revision number of the component. The value is derived from the organization item definition.
Subinventory	Indicates the supply subinventory of the component.
Locator	Indicates the supply locator of the component.

Install and Remove Parts from Asset Hierarchy

Issue and return materials in the context of the work order asset's hierarchy using a new hierarchy viewer, which is now displayed below the transaction row table. You can manually navigate through the hierarchy levels, or use the search, to find the exact child asset. When located, you can select the asset and use the action icons in the asset node to either issue and install a new child component, or remove and return the context asset from the hierarchy. Selecting one of these actions automatically creates the respective transaction rows in the table. Additionally, for any child asset node in the hierarchy, you can update its parent asset without creating a specific material transaction using the swap action.

Related Topics

- How You Review a Maintenance Dispatch List
- Report a Material Transaction

Report a Material Transaction

You can perform two types of material transactions: Issuing materials to the maintenance work order and Returning materials to inventory. The material transactions are also supported for serial enabled operations. The following example illustrates reporting a material transaction for a serialized enabled operation.

Steps to Report the Material Transaction

To report the material transaction, perform the following steps:

1. In the Tasks pane, in Work Execution, click the Review Maintenance Dispatch List link.
2. On the Maintenance Dispatch List page, use the Search region to search for the work order for which you want to perform the material transaction. The records that fulfill the search criteria are displayed. For more information about searching and using maintenance dispatch list, see the How You Review a Maintenance Dispatch List topic in the Execute Maintenance Work chapter of this guide.
3. Look for the row with the maintenance work order for which you want to perform the transaction. Click the Report Material Transactions icon to initiate reporting of the material transaction.
4. Retain the Transaction Type option as Issue for issuing the materials to the maintenance work order operation. For returning the materials to inventory, you must select Return as the Transaction Type option.
5. Retain the default system date in the Transaction Date field. You can update the field to a past date if required.

6. In the Show Components option, select **All** or select any of these options:

Option	Description
All	Displays all the materials including the manually entered materials and the materials set up in the maintenance work order for the operation with Push supply type.
Manually entered	Displays the manually entered materials only. The materials set up in the work order operation aren't displayed.

7. Now, the materials set up on the work order operation are shown in the page. You can manually enter a new material by adding a new row. To add a new row, click the Add icon.
8. In the new row, from the Component drop-down list, select the material.
9. For each material that you want to issue, in the To Transact field, enter the material quantity to be issued to the work order operation. The To Transact quantity is derived from the work order and can be updated to reflect the actual usage quantity. A check mark is shown in the Status column when all the required data is entered for the component.
10. For each material that you want to issue, in the To Transact field, enter the material quantity to be issued to the work order operation. The To Transact quantity is derived from the work order and can be updated to reflect the actual usage quantity. A check mark is shown in the Status column when all the required data is entered for the component.
11. Click the Expand icon of each updated row to view more details. Verify the correct subinventory in the Subinventory drop-down list and update it if required.
12. Click the **Save and Close** button. A confirmation message is shown on the successful completion of the material transaction.

Note: You can also do these while reporting material transactions:

- Use the Show previous issue check box to show asset tracked and non-asset tracked components in context of the work order operation. This icon works for one step and two steps process explained above. In one step mode the system will display the previously issue components whereas in the two step the system will display the previously installed components.
- Use the icon at the row level for reserved materials to navigate and select the previously reserved components for the work order operation.
- See the dual unit of measure as well as the conversion value at the row level for items that are set up with dual unit of measure.

Related Topics

- How You Review a Maintenance Dispatch List
- How You Report a Material Transaction

How You Report a Resource Transaction

The report resource transaction feature enables you to charge a maintenance work order for the resources used in the operation. You can charge a resource to the maintenance work order operation and reverse the charges made earlier for a resource to the maintenance work order operation. Both charging and reversal are recorded as two separate transactions.

Resource transactions are reported using several different methods:

- For resources with a charge type of Manual, you will report them directly from an operation result row in the Dispatch List using the icon in the report resources column, using the icon entitled Manual Reporting Required
    - Resources must be manually reported for an operation step if a predefined item has a resource charge type of Manual. This means the resources are optional and if charged in the operation then they must be manually reported. This reporting should be performed prior to operation completion.
        - If one or more resources are set as type Manual, then the icon in the resource column of the Dispatch List operation results rows will display an icon that indicates Manual reporting required. Else, no icon is displayed indicating that Manual reporting not required.
        - Clicking the icon will render the Report Resource Transactions page with a list of resources which will require reporting if they are used. Enter the quantity for each resource as required, as only those resources with a quantity defined will be transacted during operation completion
    - No icon will be displayed in the circle region in the resource column of the Dispatch List operation results rows. However, clicking the circle will render the Report Material Transactions page with an empty list of resources, as none were defined with a charge type of Automatic. You can optionally create new resource transaction rows as well prior to work order completion.

      > **Note:** The page will not display any resources with a charge type of Automatic, as they can only be viewed in the Complete with Details flow.

- For resources that do not have a charge type of Manual, and do not require any additional details, then you can automatically report them using the Quick Complete action
    - You can use the quick complete method to create the operation transactions in just two clicks. This mode can be used only if the maintenance work order has all the necessary data for the transaction and the transaction doesn't require any additional inputs. You can use the quick complete mode to create multiple operation transactions in one transaction cycle.

      > **Note:** The Quick Complete button is disabled if the work order has a mandatory inspection plan, or when you have materials serialized or lot control materials with supply type with operation pull or assembly pull.

      For more information, refer to the section Reporting Operation Transactions Using Quick Complete
- For resources with a charge type of Automatic, which require additional details, then you can only report them using the Complete with Details action
    - You can use this method when the transaction requires you to review and update the transaction data, such as materials consumed, resources charged, or even meter entry is required.
    - You can also use this method to provide the additional details for the transaction, such as lot and serial information for the components, supply sub-inventory details for the components, and so on.
    - This method requires navigation through multiple pages, known as train stops, providing you the flexibility to update the transaction data that's derived from the work order.

      > **Note:** The Complete with Details button is disabled for work orders with a mandatory inspection plan until you enter inspection results for the work order.

      For more information, refer to the Reporting Operation Transactions Using Complete with Details: Explained topic.
- For reporting resources outside of the Dispatch List, then you can report by Work Order and Operation Sequence directly from the Maintenance Management landing page. There is a task under Execution entitled Report Resource Transactions.

Charging Resources to the Work Order Operation

You can charge a work order operation for the labor and equipment resources that are consumed while performing the operation. The consumed resources can be the resources that are set up in the work order operation or any other additional ad hoc resources that are consumed during the operation. Select the Transaction Type as Charge for charging the resources. If the Basis is set up as Fixed, then the resource appears only during the first transaction of the work order operation. At first, the manual charging is checked. The net charged quantity must be zero for the resource in the work order operation with Basis attribute as Fixed. If the net charged quantity isn't zero, then the resource isn't shown.

The equipment profile is validated when reporting an equipment resource. When reporting equipment resources, the system will enforce an entry of a qualified equipment resource instance. The resource transaction date is used to validate whether the resource instance possesses a valid qualification on this date. You can't proceed with an unqualified equipment resource instance or without specifying a resource instance and need to assign a qualified equipment resource instance to complete the transaction.

Reversing Resources Charged to the Work Order Operation

If a resource is charged by mistake, it can be reversed with another transaction of type Resource Reverse. Select the Transaction Type as Reverse for reversing the charged resources. If the Basis is set up as Fixed, then the resource appears only during the last transaction of the work order operation. For the last manual reverse, the quantity for resource in the work order operation must be zero in all the dispatch states except for Ready. And there must be some previously charged quantity that must become zero for the resource after the transaction.

Manually Adding Resources for Reporting

You can add resources for the work order operation by clicking the Add icon. A new row is created where you can add the details for the resource.

The following are the attributes for manually adding the resources to the work order operation for reporting.

Attribute	Description
Status	Indicates the status of the entered record.
Sequence	The operation sequence in which the resource is defined.
Resource	The resource being added for reporting. The field lists values that are concatenation of resource code and resource name.
Type	The type of resource as defined in the work order resources or in resource definition.
Activity	The resource activity as defined in the work order resources or in resource definition.
Basis	The basis type as defined in the work order operation for the resource. For the manually added resources, the basis is always Variable.
UOM	The unit of measure as defined in the work order resources or in organization item definition.
Required	The required quantity as defined in the work order resources.

Attribute	Description
Previously Charged	The quantity of the resource that's already charged to the work order operation.
To Charge	The quantity is set to the quantity specified in the Required attribute.
Resource Instance	Name of the resource instance.

Related Topics

- How You Review a Maintenance Dispatch List
- Report a Resource Transaction

Report a Resource Transaction

You can perform two types of resource transactions: Charging resources to a work order operation and reversing resources charged to a work order operation. The following example illustrates charging resources to the work order operation.

Steps to Report the Resource Transaction

To report the resource transaction, perform the following steps:

1. In the Tasks pane, in Work Execution, click the Review Maintenance Dispatch List link.
2. On the Maintenance Dispatch List page, use the Search region to search for the work order for which you want to perform the material transaction. The records that fulfill the search criteria are displayed. For more information about searching and using maintenance dispatch list, refer the Maintenance Dispatch List: Explained topic.
3. Look for the row with the operation sequence for which you want to perform the resource transaction. Click the Report Resource Transactions icon to initiate reporting of the resource transaction.
4. Retain the Transaction Type option as Charge for charging the resources to the work order operation. For reversing any charged resources, you must select Reverse as the Transaction Type option.
5. Retain the default system date in the Transaction Date field. You can update the field to a past date if required.
6. In the Show Resources option, select: All. You may select either of the following option per your requirement.

Option	Description
All	Displays all the resources including the manually entered resources and the resources set up in the work order operation.
Manually entered	Displays the manually entered resources only. The resources set up in the work order operation aren't displayed.

7. Now, the resources set up on the work order operation are shown in the page. If needed, you can manually enter a new resource by adding a new row. To add a new row, click the Add icon.
8. In the new row, from the Resource drop-down list, select the resource.
9. Optionally, from the Activity drop-down list, select the resource activity.
10. For each resource that you want to charge, in the To Transact field, enter the resource quantity to be charged to the work order operation. The To Transact quantity is populated by default from the work order definition and can be updated to reflect the actual usage quantity. A check mark is shown in the Status column when all the required data is entered for the component.
11. Click the Save and Close button. A confirmation message is shown on the successful completion of the resource transaction.

Related Topics

- How You Review a Maintenance Dispatch List
- How You Report a Resource Transaction

How You Report Maintenance Exceptions

Report and review maintenance exceptions on the Manage Maintenance Exceptions page. You can also create, update, and view exceptions using the Quality Issues REST API.

You can report the maintenance exceptions by providing the exception details and then add the work order operations that are impacted by the exception. The exceptions can be reported on the Report Maintenance Exception page. You can open the Report Maintenance Exception page through the following page flows:

- In the Tasks pane, in Work Execution, click the Report Maintenance Exception link.
- In the Tasks pane, in Work Execution, click the Review Maintenance Dispatch List link. On the Maintenance Dispatch List page, from the Action menu, select: Report Maintenance Exception.
- In the Tasks pane, in Work Management, click the Manage Maintenance Exceptions link. On the Maintenance Exceptions page, click the add icon.

Steps to Report a Maintenance Exception

To report a maintenance exception, perform the following steps:

1. Open the Report Maintenance Exception page.
2. Provide the exception details. Select from or enter the values for the following.

Attribute	Description
Exception Type	The type of the exception you're reporting. The exceptions can be of the following types: o Work Area o Work Center o Component o Resource

Attribute	Description
	○ Miscellaneous
Exception Status	The status of the exception. This attribute is read-only and at the time of reporting an exception, the exception status is always Open.
Description	The description of the exception.
Severity	The severity of the exception. The valid values are: Critical, High, Medium, and Low.
Expected Downtime in Minutes	Indicates the maintenance downtime that's expected due to the exception.
Expected Resolution Date	Indicates the expected date for the exception resolution.
Attachments	The attachments in the exception. It can be of file, text, or URL type.

3. Add the work order operations that are impacted by the exception. In the Impacted Work Order Operations region, click the **Add** icon.
4. In the Search for Work Order Operations dialog box, search for and select the work order operation that you want to add to the exception. Click the **Add** button. The Impacted work order Operations region displays the work order operation including details such as work order number, exception status, work order status, start date, completion date, and Item.
5. Click the **Save and Close** button. A notification is generated and sent to all the users with relevant roles.

How You Manage Maintenance Work Order Exceptions Using REST API

Use the Quality Issues REST API to report maintenance work orders exceptions and reference a work order operation. You can then view these exceptions on the Manage Maintenance Exceptions page. You can also enable work flow as part of the exception process.

Here is a sample payload to create a resource exception for a single work order operation:

```
{
"Name": "Maintenance Exception By ID",
"QualityTypeCode" : "ORA_ENQ_MNT_RESOURCE",
"Severity" : "ORA_MEDIUM",
"Downtime" : 0,
"Source": "ORA_MAINTENANCE",
"OrganizationCode" : "MNTALM",
"ReportedBy": "MNT_QA",
"ReportedDate": "2021-07-22T12:00:00+00:00",
"WorkflowStatusCode": "ORA_ISSUE_EXCEP_OPEN",
"AffectedObjects":[
{
"SupportedEntityCode" : "ORA_WORK_OPERATION",
"ContextId" : 300100549061424
},
{
"SupportedEntityCode" : "ORA_RESOURCE",
"ContextCode": "I-Inspector",
"SubContextCode" : "MNTALM"
```

```
}]
}
```

Payload Attribute	Level	Description	Allowed Values
QualityTypeCode	Parent resource	The type of the exception	Lookup: ORA_ENQ_SOURCE Values: ORA_ENQ_MNT_RESOURCE ORA_ENQ_WORK_CENTER ORA_ENQ_MNT_COMPONENT ORA_ENQ_MNT_WORK_AREA ORA_ENQ_MNT_MISCELLANEOUS ORA_ENQ_MNT_SUPPLIER_OPERATION
Severity	Parent resource	The severity of the exception	Lookup: ORA_ENQ_SEVERITY Values: ORA_HIGH ORA_MEDIUM ORA_LOW ORA_CRITICAL
Source	Parent resource	Maintenance is the exception source	ORA_MAINTENANCE
WorkflowStatusCode or WorkflowTemplateId	Parent resource	Optionally you can send a workflow template ID or a workflow status code	ORA_ISSUE_EXCEP_OPEN is an example of a workflow status code
SupportedEntityCode	Child resource: AffectedObjects Associates using a primary and secondary affected objects to the issue	For the primary affected object, you're referencing the work order operation	Therefore, the supported entity codes are first added as a child resource: Lookup: ORA_ENQ_SUPPORTED_ENTITIES Values and their associated IDs: ORA_WORK_ORDER - 1001 ORA_WORK_OPERATION - 1002 ORA_RESOURCE - 1003 ORA_COMPONENT - 1004 ORA_WORK_AREA - 1005

Payload Attribute	Level	Description	Allowed Values
			ORA_WORK_CENTER - 1006 ORA_INSPECTION_RESULT - 1007 ORA_RECEIPT - 1008
ContextId	Child resource: AffectedObjects	This will be the work order operation ID	Value will be the work order operation ID
SupportedEntityCode	Child resource: AffectedObjects	For the secondary affected object, you're referencing what the exception is for.	In this case, you could use the resource code: ORA_RESOURCE
ContextCode	Child resource: AffectedObjects	This will be the code of object you reference in the entity code	Pass the resource code in this example. This will be the code of the resource setup in the organization
SubContextCode	Child resource: AffectedObjects	This will be the organization code	Pass the organization code: the resource must be setup in this organization

Related Topics

- How You Review a Maintenance Dispatch List
- Overview of Maintenance Work Order Exceptions
- How You Review Maintenance Work Order Exceptions

Pick Materials for Work Orders

How You Pick Materials for Work Orders

In the Work Execution work area, use the Pick Materials for Work Orders task to pick materials for work orders that are in released status. Clicking the Pick Materials for Work Orders task opens the scheduler job page. This task initiates the movement of those materials from a common stock inventory to a shop floor supply subinventory to make them available to the work orders scheduled for maintenance work. As a Maintenance manager, you can schedule or submit the materials picking to more effectively control and move the materials to the shop floor for use in maintenance work.

You can initiate the picking of materials for timely availability of materials during maintenance work from the following pages:

- Manage Work Orders page
- Manage Material Availability Assignments page
- Pick Materials for Work Orders scheduler job, which is initiated by clicking the **Pick Materials for Work Orders** task on the Work Execution work area

Define Parameters for Picking of Materials

Initiate the scheduled process for picking from the Work Execution work area. The scheduled process creates a movement request to move your wanted materials to the appropriate shop floor location.

Follow these steps:

1. In the Work Execution work area, select the **Tasks** panel.
2. In the Execute Production section, select the **Pick Materials for Work Orders** task.
3. Specify the parameters required for picking.

   The following table provides you information about how to specify the different parameters:

Parameter	Value to be Specified	Considerations
Organization	Specify the organization where you're executing maintenance work.	This is a required parameter. The list of values displays all organizations that you have access to and you can select from the list.
Work Method	This value is populated based on the organization you select. Depending on the organization, the work method parameter takes one or more of these values: - All - Discrete Manufacturing - Process Manufacturing - Maintenance Management	If you have selected a maintenance-enabled organization, which has more than one work method, the work method is defaulted as All.
Work Order Type	Select one of the following values: - All - Standard - Nonstandard - Rework - Transform	If the work method is discrete manufacturing, you can choose the type of work order from this list of values. If the work method is process manufacturing, only the standard work order is available. If the work method is maintenance, you can choose the type of work order from the list of values: - All - Preventive - Corrective
Pick Materials For	Select one of the following values to pick materials for multiple work order operations:	If you have selected a partially picked work orders, the materials are picked up for work orders that have been partially picked.

Parameter	Value to be Specified	Considerations
	○ All Work Orders ○ Partially Picked Work Orders ○ Work Orders Not Picked	The All Work Orders is the defaulted value to pick materials for work order operations.
From Work Order	Select a work order to pick materials from the work orders list.	This parameter defines the range of work orders to pick materials from a work order.
To Work Order	Select a work order to pick materials from the work orders list.	This parameter defines the range of work orders to pick materials to a work order.
From Operation Sequence	Provide a specific work order operation sequence to pick materials from.	This parameter is a numeric value.
To Operation Sequence	Provide a specific work order operation sequence to pick materials to.	This parameter is a numeric value.
Hours Ahead	The default value is 8. You can specify any value up to 500.	This is a required parameter. This represents the number of hours ahead of current time until which you want materials to be picked.
Hours Behind	You can specify any value up to 500.	This represents the number of hours behind the current time within which you want materials to be picked.
Pick Slip Grouping Rule	The list of values are defaulted from what's specified in plant parameters.	This is a required parameter. The grouping rule enforces on what basis your pick slips can be grouped together.
Project Number	The project number associated with the work order. This parameter is available if the organization is tracked by project.	None
Task Number	The task number associated with the work order. This parameter is available if the organization is tracked by project.	None

4. The **Print pick slips** check box selection is inherited from what's specified in the plant parameter. If you don't want to print the pick slip report you can deselect the check box.

   You can also route the pick slip report to the output devices such as fax, printer, and email, based on the plant parameters defined up in the Manage Inventory Document Output Preferences task in Inventory. You can

configure these output devices through the Manage Inventory Document Output preferences inventory task for the Pick Materials for Work Orders scheduled process.

5. Select the check box **Pick a work order only if all eligible materials are available** if you don't want partial picking for work orders.
6. Click Submit.

Note: You can also schedule this task periodically to generate the picking request. Click Advanced and select **Using a schedule**.

You can pick materials only for work orders that are in Released status. The following table summarizes how picking is carried out for other work order statuses.

Work Order Status	Impact on Picking
Canceled	If the pick slip is confirmed when the work order status is set to canceled, there is no impact on picking. If the pick slip isn't confirmed when the work order is set to canceled, the pick slip line is canceled.
Closed	If the pick slip is confirmed when the work order status is set to closed, there is no impact on picking. If the pick slip isn't confirmed when the work order is set to closed, the pick slip line is canceled.
Unreleased	If the pick slip is confirmed when the work order status is set to Unreleased, there is no impact on picking. If the pick slip isn't confirmed when the work order is set to Unreleased, the pick slip line is canceled.

Conditions for Material Issue During Picking

The following table summarizes the various conditions, parameters, and scenarios that have an impact on material issue during the picking activity.

Issue Push materials Directly	Work Order Operation	Material	Supply Type	Subinventory	Move Order	Move Order Line Type
Yes	Serialized	Serial-tracked	Pull	Derived from plant parameters or specified in the work order	Moved to subinventory	WIP Material Pick
Yes	Serialized	Nonserial-tracked	Pull	Derived from plant parameters or specified in the work order	Moved to subinventory	WIP Material Pick
Yes	Serialized	Serial-tracked	Push	Specified in the work order	Moved to subinventory	WIP Material Pick
Yes	Serialized	Serial-tracked	Push	Not specified	Not picked	Not applicable

Issue Push materials Directly	Work Order Operation	Material	Supply Type	Subinventory	Move Order	Move Order Line Type
Yes	Serialized	Nonserial-tracked	Push	Specified in the work order	Moved to subinventory	WIP Material Pick
Yes	Serialized	Nonserial-tracked	Push	Not specified	Not picked	Not applicable
Yes	Nonserialized	Serial-tracked	Pull	Derived from plant parameters or specified in the work order	Moved to subinventory	WIP Material Pick
Yes	Nonserialized	Nonserial-tracked	Pull	Derived in the plant parameters or specified in the work order	Moved to subinventory	WIP Material Pick
Yes	Nonserialized	Serial-tracked	Push	Specified in the work order	Directly issued to work order	WIP Material Issue
Yes	Nonserialized	Serial-tracked	Push	Not specified	Directly issued to work order	WIP Material Issue
Yes	Nonserialized	Nonserial-tracked	Push	Specified in the work order	Directly issued to work order	WIP Material Issue
Yes	Nonserialized	Nonserial-tracked	Push	Not specified	Directly issued to work order	WIP Material Issue
No	Serialized	Serial-tracked	Pull	Derived from plant parameters or specified in the work order	Moved to subinventory	WIP Material Pick
No	Serialized	Nonserial-tracked	Pull	Derived from plant parameters or specified in the work order	Moved to subinventory	WIP Material Pick
No	Serialized	Serial-tracked	Push	Specified in the work order	Moved to subinventory	WIP Material Pick
No	Serialized	Serial-tracked	Push	Not specified	Not picked	Not applicable
No	Serialized	Nonserial-tracked	Push	Specified in the work order	Moved to subinventory	WIP Material Pick
No	Serialized	Nonserial-tracked	Push	Not specified	Not picked	Not applicable

Issue Push materials Directly	Work Order Operation	Material	Supply Type	Subinventory	Move Order	Move Order Line Type
No	Nonserialized	Serial-tracked	Pull	Derived from plant parameters or specified in the work order	Moved to subinventory	WIP Material Pick
No	Nonserialized	Nonserial-tracked	Pull	Derived from plant parameters or specified in the work order	Moved to subinventory	WIP Material Pick
No	Nonserialized	Serial-tracked	Push	Specified in the work order	Moved to subinventory	WIP Material Pick
No	Nonserialized	Serial-tracked	Push	Not specified	Directly issued to work order	WIP Material Issue
No	Nonserialized	Nonserial-tracked	Push	Specified in the work order	Moved to subinventory	WIP Material Pick
No	Nonserialized	Nonserial-tracked	Push	Not specified	Directly issued to work order	WIP Material Issue

Overpicking Materials for Work Orders

In a scenario when you can't reasonably or quickly split up the allocated quantity of material on your pick slip, you need the ability to pick more than the requested quantity and then move it to an area for further processing. To enable overpicking materials for work orders, you need to select **Allow overpicking for special handling** in Manage Inventory Organization Parameters. This enables you to specify more than the requested quantity on your pick-and-move requests for work orders, and move it to a staging or processing location.

You can overpick materials under the following conditions:

- The materials are nonserial-tracked.
- Detailed level reservation doesn't exist for the materials. You can overpick materials if high level reservation exists.
- If eligible for direct issue, the requested quantity will be directly issued to work order. The excess quantity remains in the staging subinventory or supply subinventory, which can then be moved back to the source subinventory.

Related Topics

- Assess Reports to Pick Materials for Work Orders
- Considerations for Picking Materials
- How You Manage Work Order Material Availability Assignments
- Overview of Work Orders
- How You Manage Work Order Operation Items

Considerations for Picking Materials

When you initiate the scheduled process Pick Materials for Work Orders in the Maintenance Management work area, you're creating a movement request in inventory. This creates movement lines for materials to be either directly issued to the work order which is in released status and must be started on the shop floor, or to be moved to a destination subinventory from where materials are available during maintenance work. There are a few points that must be considered.

They're as follows:

Work Order Status Changes

When the work order status is changed from released to canceled, closed, or unreleased, the following points must be considered:

- If there is any open movement request, the movement request lines are canceled.
- If the movement request line is pick confirmed, the allocated and picked quantity can't be reversed.

Work Order Quantity Changes

When the work order quantity is changed, the following points must be considered:

- If the work order quantity is increased, the work order is updated and the increase in materials is considered for the next pick release action.
- If the work order quantity is decreased, there is no impact on the material quantity because the decreased work order quantity can't be less than the issued material quantity. You're notified about the open movement request for the work order.

Work Order Material Quantity Changes

When the material quantity for a work order is changed, the following points must be considered:

- If the work order material quantity is increased, the increase in material quantity will be considered for the next pick release action.
- If the work order material quantity is decreased, there is no impact on the material quantity because the decreased work order material quantity can't be less than the issued material quantity. You're notified about the open movement request for the work order material.
- If the work order material is deleted, the quantity is updated to zero or negative and if there are any open movement request lines, they're canceled.

> **Note:** The material quantity is updated to negative only in case of rework and transform work orders.

Movement Request Status Changes

When the status of a movement request is changed, the following points must be considered:

- If the move order is canceled, the quantity to be moved is updated.
- If the move order is closed, the quantity to be moved is updated.

- If the move order is partially picked, the quantity to be moved is updated.

Note: The work order materials corresponding to the movement request lines would be eligible for pick release.

Movement Request Quantity Changes

When the movement request quantity is changed, the following points must be considered:

- There can't be an increase in the movement request quantity because overpicking isn't allowed.
- If the picked quantity is decreased, the work order material is allocated with the lesser quantity and the balance quantity of the material will be considered for the next pick release action.

Related Topics

- How You Pick Materials for Work Orders
- Assess Reports to Pick Materials for Work Orders
- Overview of Work Orders
- How You Update a Work Order

Reservation of Materials

Overview of Reservation of Materials for Maintenance Work Orders

If you want to maintain your maintenance schedule and on-time delivery, you must focus on material availability for maintenance work. Factories use various processes to ensure that material is available for maintenance activity to enable uninterrupted maintenance work. This process may be a material planning solution, such as Supply Chain Planning to make sure products are available based on projected demand. However, even with the best planning, maintenance managers sometimes need to guarantee material availability for a specific work order. To enable this, maintenance managers may need to reserve the materials to specific work orders before the actual start of maintenance work.

To use this feature, you must enable the **Allow reservations for work order materials** plant parameter. Users responsible for the inventory manager, warehouse manager, and maintenance manager tasks in their enterprise can use this feature.

Here's what you can do for reservation of materials for work orders:

- Create Reservations: You can create reservations at the organization level (automatic reservation) or detailed (manual reservation) at subinventory, locator, lot, or serial level
- View Reservations: You can identify, view, and edit the reservation
- Honor Reservations: You can respect and fulfill reservations in all related processes
- Issue Reserved Materials: You can transact the reserved materials to the respective work order
- Undo Material Reservations: You can undo the reserved material manually from inventory or from the work order

- Analyze Material Reservations: You can report on the reservation quantities for the required and issued quantities

You can reserve materials for work orders and perform reservation for work order materials from inventory and maintenance.

> **Note:** You can create, retrieve, update, and delete reservation for work order materials by using the inventory reservation user interface and the inventory reservation REST service.

Reserve Materials for Work Orders in Manufacturing and Inventory

In inventory, you can manage reservations for work order materials from inventory when you Query the work order and check the reservations, or launch the Create Reservations page and perform detailed reservations.

In maintenance, you can manage reservations for work order materials by using the Reserve Materials Manually action. You can reserve the on hand quantity using the scheduled process, or by using the **Reserve Materials Manually** action, launch the **Create Reservations** user interface in inventory and perform detailed reservations.

Here's a diagram that represents how you can reserve and manage materials in both Maintenance Management and Inventory Management and how they overlap with each other through the material reservation process.

Figure to be added.

Benefits of Reservation of Materials for Work Orders

There are many benefits in reserving materials. Among them are:

- You can ensure the reserved materials aren't used for any other demand, thereby maintaining maintenance schedule adherence and on time delivery
- You can reserve the right of materials for a work order
- You can plan and procure materials efficiently and ensure that the expected quality of output is maintained
- You can avoid delay in product deliveries because of shortage or non-availability of the right materials to manufacture the product

Using this feature, you can now reserve materials for the work order in advance and ensure timely completion of the product as per schedule.

How You Reserve Materials for Maintenance Work Orders

All material reservations are performed in Oracle Inventory. A work order is a demand placed on the warehouse to reserve and pick material similar to a sales order or a transfer order. You can manage reservation for work order materials in inventory. You can search, create, edit, and delete reservations for work order materials.

Manage Reservations in Inventory

The Manage Reservations and Picks page in inventory enables you to search reservations for work order demand. When you enable the plant parameter **Allow reservations for work order materials** for the organization, this page displays additional fields, such as Operation Sequence and Work Order Product. Work Order Product is the primary output on the work order.

With material picking, you can create picks for the work order demand. This feature lets you reserve material for work order demand. Using the search parameters, you can:

- Search for reservations for a work order number.
- Refine your search to look for reservations for a specific operation by entering the operation sequence number or the item.
- Look for reservations for a work order number by entering an organization or item, choosing the Demand Document Type as Work Order and entering the work order number in the **Demand Document Number**.

The Demand Document Number list of values displays work orders in Released and Unreleased status.

Reserve Materials Manually

You can reserve materials manually in the Create Reservations page in inventory. You can access this page from Oracle Maintenance and from Inventory.

- In Maintenance Management, the Manage Work Orders page, when you click the **Reserve Materials Manually** button corresponding to the work order number, the Create Reservations page opens. This retrieves all the eligible materials of a work order number and displays the reservation details corresponding to the material. You can select a specific work order material and create reservation for it.
- In Inventory, use the **Manage Reservations and Picks** task to access the Create Reservations page. The Demand Document Number value and the Operation Sequence value is displayed by default with the work order number when you access the Create Reservations page when you access this page through the work order from Maintenance. The values of these fields aren't displayed by default when you access this page from Inventory.

Reserve Materials Automatically

You can use the **Reserve Automatically** button to reserve the work order material to the on hand supply automatically. When on hand supply isn't available, you can reserve work order materials to sources other than on hand supply sources, such as Purchase Order, Requisition, Transfer Order, Transfer Order Return, and Work Order in the details section. You can reserve a work order material to on hand in a specific subinventory or locator. If you want to reserve specific serial numbers to a work order material, you can enter subinventory or locator, in case of a locator-controlled subinventory, and enter the specific serial numbers you want to reserve using the **Record Serial Number Information** button. For a lot-controlled material, you can reserve a specific lot number to a work order material.

Note: You can't delete a reservation for a work order when there are open picks associated to the reservation.

You can reserve materials automatically for materials of a project-based work order. The material that doesn't belong to any project is referred to as common material. You can control whether or not you can reserve common material instead of project material using the inventory attributes of an item.

The **Allow User of Common Supplies** attribute is dependent on the values of the **Hard Pegging Level** attribute. The behavior for this attribute is specified in the following table:

Hard Pegging Level	Allow User of Common Supplies	Expected Behavior
None	Null	Allows reservation of common inventory
No	No	Disallows reservation of common inventory

Hard Pegging Level	Allow User of Common Supplies	Expected Behavior
Project and Task Project Project Group	No	Allows reservation of common inventory

Honor Reservations

Pick release honors previously detailed reservations, which were created for work order materials. The detailed reservation, if created for subinventory, locator, lot number, serial number, project, and task number is honored by the material pick release process. As a result, the picks are created for work order materials as detailed during the manual reservation. The manual reservation is carried forward to the destination subinventory, if it's reservable.

If there are no prior reservations, pick release creates detailed reservations for work order materials on pick confirm if the destination subinventory is reservable. The reservations aren't created for work order materials when the destination subinventory isn't reservable.

How You Manage Reservations for Maintenance Work Order Materials

To manage reservations automatically for work order materials in Oracle Maintenance, you can select one or more work orders in released or unreleased status and reserve materials in the following two ways:

- In the Manage Work Orders page, you can create reservations using the **Reserve Materials Automatically** action, for the on hand quantity. A scheduled process starts in the background, to create reservations for all the eligible work order materials.
- In the Material Availability Assignments page, you can select one or more work orders in released or unreleased status and reserve materials. You can create reservations using the Reserve Materials Automatically action, for the on hand quantity. It's the same action as on the Manage Work Orders page, and a scheduled process starts in the background.

You can review the scheduled process output report and check the reservation details. The materials of the selected work orders are reserved based on the ATR (Available to Reserve) quantity. If not, an appropriate error message is displayed for those materials that aren't reserved. If a reservation has already been made for one or more materials, the lock icon is displayed for the work order.

You can also reserve materials manually for work order materials in Maintenance in the following two ways:

- In the Edit Work Order Operations page, use the Reserve Materials Manually action to reserve materials for the work order operation. The inventory reservation user interface is launched, and you can create detailed reservations for the materials, with Subinventory, Locator, Lot, and Serial details.
- In the Material Availability Assignments Details page, use the Reserve Materials Manually action to reserve materials for the work order operation. The inventory reservation user interface is launched, and you can create detailed reservations for the materials, for the Subinventory, Locator, Lot, and Serial details.

If the reservation for the work order material is made for another work order, the details are displayed in the existing Edit Work Order page Reservations tab. You can review the details of the work order product as supply and the details of

the work order component as demand. After the reservation is made for the work order material, the reserved quantity is displayed, and can be viewed in the Edit Operations Items page.

Transact Reserved Materials to Work Orders

You can transact the reserved materials to the work order. The View Reservations details of the work order material displays the details of the reserved material. These details include Document Type, Document Number, Revision, Lot, Subinventory, Locator, Reserved quantity, UOM, and Serial.

The reservation for the material is relieved when you transact reserved materials or when you perform material issue transaction. You can create reservations and perform the work in process issue transactions, which relieves the reservation. When you use the work order pick release, then the detailed reservation is also carried forward to the destination subinventory, and this reservation is relieved when the material issue transactions are performed for the work order.

Use Case 1 for Item Variations

When the item isn't enabled for lot or serial control, and the detailed reservation for work order material is performed for subinventory named **Stores**. Then this reservation is relieved only when the material is issued from the subinventory named Stores and is retained if you use material from a subinventory other than the one named Stores. When the reservation isn't detailed for a specific subinventory or locator, the reservation is relieved regardless of the subinventory you use to issue material to the work order.

Use Case 2 for Item Variations

If you have performed a reservation for a specific lot or serial, the reservation is relieved only when the reserved lot or serial is issued to the work order. When the reservation isn't detailed for a specific lot or serial, then the reservation is relieved regardless of what lot or serial is reserved. Also, when the reservation is detailed to a subinventory but not detailed to specific lot or serial, then the reservation is relieved as long as serials or lots in that subinventory are issued to the work order else the reservation is retained.

Delete Reservations of Work Order Materials

You can delete the existing reservations of the work order materials if you do any of the following:

- Change the work order status
- Decrease the work order quantity
- Decrease the operation item quantity

You can delete the pending reservations if you complete, cancel, or close the work order. If you have already allocated the materials, then the movement requests will also be deleted before the reservations are deleted.

Failure Capture for Work Order Assets

Capturing asset failures, causes, and resolutions helps organizations to measure and analyze asset reliability and availability that further helps in assessing maintenance effectiveness and efficiency. Failure data provides the necessary foundation to determine asset-specific maintenance strategies, optimize maintenance programs, and to support reliability tools like root cause analysis, failure modes and effects analysis, probability plotting, and statistical modeling.

Failure history data is required for gaining insights from machine learning prediction and recommendation. In essence, it's important to capture failure data.

Elements of the Failure capture:

- **Condition Codes**: This includes failure, cause, and resolution codes. These codes are created using a Manage Condition Event Codes task with code type as failure code, cause code, and resolution code respectively. If the condition codes aren't created, failure data can’t be captured in the maintenance work order.
- **The Failure Set**:
  - It's mandatory to define failure set before attempting to capture failure data for the work order asset. This is because failure set is a required attribute of the failure data capture. You need to have at least a default failure set for successful capture of failure data. Note that the failure set value is derived automatically when you set out to capture failure data for the asset.
  - When a failure set is associated to the failure data, the same is used until the work order is closed. Even if the failure set becomes invalid, the existing failure data where the failure set is associated continues to use the same.
  - Failure set also has a rule to mandate failure capture for the work orders associated with it. When failure capture is mandatory for a work order, you can't complete the work order without capturing the failure data.
- **Failures**:
  - Failure data is captured for a maintenance work order asset. Primary failure data set includes failure, cause, and resolution codes. Additionally, failed component or asset can be part of the captured failure data. Further, you can provide the comments for each data set. Any number of failure data sets can be recorded for a work order asset. Along with failures, you can record the failure date and also indicate whether the asset is functional or down after it failed.
  - The value of failure, cause and resolution codes during failure capture can be from the Condition code definitions or from the Failure chains in the failure set. If **Use chains for failure capture** is set to Yes, the values defined in failure chains are used during failure capture. Otherwise, all the valid condition codes are available during failure capture.
  - Failure data is mandatory for certain work orders and is based on the failure set definition. When the failure capture is mandatory you can't complete the work order without capturing the failure data.

Failure Sets

Failure set is designed to greatly enhance the accuracy and usability of failure capture process. Applying a failure set to an asset is failure association. The failure association is used to optionally mandate failure capture for an asset in a work order that's associated with a failure set. Failure chains are defined in the failure set, and each failure chain record is a combination of failure, cause, and resolution codes largely applicable for an asset or for group of assets. Usage of failure chains during failure capture is controlled by the **Use chains for failure capture** attribute.

Failure set can't be end dated, however, you can update it as needed. During failure capture, a failure set is derived for an asset based on its latest failure association details. When a failure set is used in a failure capture, it remains as is and can't be changed. For example, you can use failure set to predefine the valid set of failure, cause, and resolution codes specifically for grinding machines or even for a particular model of grinding machines. It's always easy and accurate to select failure, cause, and resolution codes from a failure set rather than from whole set of codes defined using the Manage Condition Event Codes task for all assets.

Components of Failure Sets

Failure Sets have following components:

- Associations
- Chains

Failure Associations

The failure set can become applicable to an asset based on one of the following four association types:

- Asset: Used when the failure set is defined for a specific asset. For an asset type association, asset number and description fields are displayed.
- Item: Used when the failure set is defined for assets associated with certain item number. For an item type association, the master organization, item number, and description fields are displayed.
- Item Category: Used when the failure set is defined for assets associated with certain item category associated with asset item number. For an item category type association, the category name and description are displayed.
- Default: This is a generic failure set that's used as default during failure capture when none of the other failure association exists for the work order asset.

For a work order asset, during the failure capture appropriate failure set is derived automatically in this order:

1. Asset type matching work order asset.
2. Item type matching item associated to the work order asset.
3. Item category type matching item category associated to the work order asset item.

If none of the above association types exists for an asset, the default failure set is used for the failure capture. You can define only one default failure set. Use the Failure Capture field to mandate failure capture for work orders that're associated with a failure set. You can select any of these options for the Failure Capture field:

- **No**: This is the default value. It sets failure capture as optional for the work orders that're associated with failure sets.
- **Yes**: Select Yes to make failure capture mandatory for work orders associated with failure sets.
- **Corrective Work Only**: Select this option to set failure capture as mandatory for work orders of Work Order Type, Corrective and are associated with failure sets.

Failure associations can't be edited except for the Failure capture required attribute. An association can be made inactive using deactivate action. After deactivation, you can't revert to an active status. Note that the active associations are only considered during asset failure capture.

Failure Chains

Failure chain is set of records with unique combinations of failure, cause, and resolution codes. It's recommended to define the failure set for an asset or group of assets, and therefore failure chains become automatically applicable for those specific assets. When these chains are used during a failure capture, it's not only easy to select the values for failure, cause, and resolution codes, it's also accurate for the asset in context. A failure chain record can't be updated, however, it can be made inactive using deactivate action. After deactivation, it can't be reverted to active status. Note that the active chains are only considered during asset failure capture.

How You Capture Failure Data

Capture failure data for all maintenance work orders until they're closed. You can enter the failure data to be captured on the Edit Work Order page and Maintenance Dispatch list.

Capture Failure Data on the Edit Work Order Page

1. Use Manage Maintenance work orders task to search the required work order.
2. Click the work order link to go to the Edit Work Order page.
3. Use **Capture Failure** button to go to the Capture Failure tab.
4. On the Failure Capture page, click **Add Failure** button. On the Add Failure UI, add these details:
    - Enter a failure code.
    - You can progressively capture these details until work order is closed:
        - Cause Code
        - Resolution code
        - Failed Item Number or Failed Asset Number
        - Operation sequence
        - Comments
5. Click **Save and Close**.

Capture Failure Data on the Maintenance Dispatch List

1. Use the Review Maintenance Dispatch List task to search the required work order operations.
2. Click the **Capture Failure** icon to navigate to the Capture Failure tab for entering the failure data of the work order asset.
3. Use **Capture Failure** button to go to the Capture Failure tab.
4. On the Failure Capture page, click **Add Failure** button. On the Add Failure UI, add these details:
    - Enter a failure code.
    - You can progressively capture these details until work order is closed:
        - Cause Code
        - Resolution code
        - Failed Item Number or Failed Asset Number
        - Operation sequence
        - Comments
5. Click **Save and Close**.

How You Review Maintenance Transaction History

On the Maintenance Transaction History page, you can view all the maintenance transactions reported against all the maintenance work orders. To open the Maintenance Transaction History page, click the Review Maintenance Transaction History link in Work Management in the Tasks pane. You can also view the transaction history of individual work order on the History tab of the Edit Work Order page.

The maintenance transactions are displayed in chronological order that enables you to view the recent transactions first on the list. A basic keyword search and an advanced search using filters are supported to look for the specific maintenance transactions. The following filters are supported: Asset, Work Order, Transaction Date, Transaction Type, Item, Item Serial Number, and Operation Type. If your organization is project-tracked, you can use the project number and task number filters to search for project-specific transactions. You can save the frequently used search criteria and reuse it. If you set a saved search as default, the default search runs automatically whenever the Maintenance Transaction History page is opened.

The maintenance transaction history is displayed in a tabular format with the following columns.

Column	Description
Work Order	The maintenance work order number for which the transaction was reported.
Operation	The operation for which the transaction was reported.
Transaction Date	The date on which the transaction was reported.
Transaction Type	The type of the transaction that was reported. The transaction types can be: Operation completion, Operation reversal, Material issue, Material return, Resource charging, Resource reversal, Purchase item receipt, Correct receipt, Correct return, Return to supplier, and Return to receiving.
Asset	The asset for which the transaction was reported.
Item	The item for which the transaction was reported.
Component or Resource	Refers to the component in material transaction or resource in resource transaction.
Quantity	The quantity of material or resource that were reported during the transaction.
UOM	The unit of measure as defined in the work order materials or work order resources.
Secondary Quantity	The quantity is based on the item setup: • When the item's UOM defaulting control is set to fixed, you enter the transaction quantity in the primary or transactional UOM, which is automatically converted to the secondary quantity in the secondary UOM based on the standard or item-specific UOM conversion. • When the item's UOM defaulting control is set to default, you can enter the transaction quantity in the primary or transactional UOM and override the secondary quantity that's defaulted from the standard or item-specific UOM conversion. • When the item's UOM defaulting control is set to no default, you can enter the transaction quantity in the primary or transactional UOM and enter the secondary quantity in the secondary UOM.
Secondary UOM	The unit of measure as defined in the item setup.
Purchase Order	The identification number of the purchase order.
Purchase Order Line	The number of the purchase order line for the purchased item.
Receipt	The receipt number for the transaction.
Project Number	The number of the project. This is applicable only for project-specific work orders.
Task Number	The number of the task. This is applicable only for project-specific work orders.

Column	Description

How You Transfer Transactions from Maintenance to Costing

The Transfer Transactions from Maintenance to Costing scheduled process is used to transfer the maintenance execution transaction details and maintenance work order status updates to costing for accurate costing of the maintenance work orders. The program reads the records in the resource transaction table.

As part of this transfer, the following are interfaced from Oracle Maintenance to costing:

- Resource transactions for the costed resources
- All the operation transactions
- Maintenance work order status updates

Note: For project-specific maintenance execution, resource transactions are transferred to the costing details of expenditure type, expenditure item date, expenditure organization and other project details.

The Transfer Transactions from Production to Costing page enables you to run the scheduled process on demand or schedule the program to run at a specific interval of time. You can open the page by clicking the Transfer Transaction from Maintenance to Costing link in Work Execution in the Tasks pane.

On the Transfer Transactions from Production to Costing page, select the organization and source system. Then, click the Submit button to run the scheduled process. To run the scheduled process at a specific schedule or time, click the Advanced button and then in the Schedule tab, select Using a schedule from the Run option. Now, you can select the frequency and enter a start date for the scheduled process to run.

How You Manage Maintenance Work Order Execution Transactions Using REST API

Define, view, and update maintenance work order transactions for an asset using REST services.

Use the Maintenance Work Orders Operation Transactions REST API to:

- Create operation transactions.
- Create and view operation transaction details.
- Create and view operation transaction details.

Use the Maintenance Work Orders Material Transactions REST API to:

- Create material transactions.

- Create and view material transaction details.
- Create and view material transaction lot details.
- Create and view material transaction serial details.

Use the Maintenance Work Orders Resource Transactions REST API to:

- Create resource transactions.
- Create and view resource transaction details.
- Create, view, and update flexfields for resource transaction details.
- Use the descriptive flexfields of inventory material transaction history to record data while performing material transactions throughout a REST service.

For more details, see the REST API for Oracle Supply Chain Management Cloud guide.

14 Execute My Maintenance Work

Overview of My Maintenance Work

The My Maintenance Work page provides a mobile-friendly user experience to review, research, and execute maintenance work orders. The new page works a little differently from the existing Maintenance Dispatch List page.

The My Maintenance Work page lets maintenance technicians perform maintenance work in addition to entering transactional data and helps improve work efficiency. As a technician, you can use My Maintenance Work to report on tasks like those included in the maintenance dispatch list. The workbench additionally includes several advanced features that assist with maintenance. For example, you can review service history for the asset or similar assets, research Knowledge Management articles, execute work order operations out of sequence, create operation and handover notes, upload attachments and photos.

Additionally, for work orders in an organization enabled for Advanced Scheduling, you can optionally clock in and out to track your time. This capability supports real-time execution of maintenance work orders.

> **Note:** You can choose to enable the My Maintenance Work page for one, many or all organizations, allowing you to optionally plan a phased roll out. If you enable advanced scheduling for at least one organization, then you must also enable each maintenance page for the My Maintenance Work page. For additional details, refer to the instructions in the Maintenance chapter of the Implementing Manufacturing and Supply Chain Materials Management guide.

My Maintenance Work includes the following key capabilities:

- My Maintenance Work is a smart search enabled page that automatically returns search results in a table when you navigate to the page. The count of the total number of rows returned is also included.
- Each result row corresponds to a work order and an asset, not to the next open count point operation in a work order. The user gets a holistic view of a work order and can use a single work order to repair one or more assets.
- The search region features a keyword search, as well as multiple ready-to-use filters, letting you further filter and refine the results. You can optionally create a saved search as well.
- The logged-in user's credentials, including resource instance and skills, can be optionally used to filter the results and provide a work queue of orders that require action.
- For each work order result row, you can preview the work and report transactions. You are required to explicitly complete the work order. This lets you interact with the work order and report work order completion incrementally, or all at once.
- All pages, and some regions, are enabled for guided journeys. Additional details on guided journeys are covered in the Maintenance chapter of the Implementing Manufacturing and Supply Chain Materials Management guide.

If you enable an organization for advanced scheduling, then it's expected that you define resource requirements are for each count-point operation in a work order. If count-point operations aren't defined with resources, then a user can't be assigned and complete the operation. This is a core requirement of using advanced scheduling.

The following table compares the work order capabilities of the Maintenance Dispatch List with the My Maintenance Work page:

Comparing Work Orders in My Maintenance Work and Maintenance Dispatch List

Functionality	My Maintenance Work	Maintenance Dispatch List
Execute work orders across organizations	Only available in this page. Work orders can be executed within and across organizations, based on the logged-in user's organization access.	Not available in this page. Work order operations can only be executed for the single organization in context.
Repair a single asset in a work order	Available in this page.	Available in this page.
Repair multiple assets in a single item-based work order	Only available in this page. You can interact with a work order for each unique combination of work order and asset in the search results, allowing you to report the material, resource, and operation completion for each asset.	Not available in this page. You must enable the My Maintenance Work page to execute multiple asset work orders.
Transform a single asset in a work order	Only available in this page. You can optionally define a target item to which you can transform an asset from Item A to Item B during the completion of a work order and optionally issue and return an asset to inventory after repair.	Not available in this page.
Transform an asset in a single item-based work order	Only available in this page. You can optionally define a target item to which you can transform each asset from Item A to Item B during the completion of a work order and optionally issue and return an asset to inventory after repair.	Not available in this page.
Issue and return repaired or scrap assets to inventory	Only available in this page. You can optionally issue and return an asset to inventory after repair. Additionally, if an asset is not repairable, you can return to an unserviceable or Material Review Board (MRB) sub-inventory location.	Not available in this page. You must enable the My Maintenance Work page to execute work orders that allow completion of an asset to inventory.
Complete work order operations in-sequence	Available in this page as the default method.	Available in this page as the only method.
Complete all work order operations out-of-sequence	Only available in this page. You can optionally enable a work order to allow completion of operations in any sequence.	Not available in this page.
Manual resequencing of operations in a work order	Not available in this page. It is recommended to set the option Allow out of sequence completion in the work order Completion Information region to enable all	Available in this page. However, you can only update the sequence of operations between count points in the dispatch list.

Functionality	My Maintenance Work	Maintenance Dispatch List
	operations, regardless of completion type, to be completed out of sequence if you are using the My Maintenance Work page to report execution.	
Outside Processing (OSP) Operations	Available in this page.	Available in this page.
Reversal of operation completion	Available in this page. If the last operation for a work order is reversed, any assets completed and returned to inventory are returned to the work order. You will have to complete the work order again to return the asset to inventory.	Available in this page.
Material item reservations	Not available in this page.	Available in this page.
Use AI Assist to help repair an asset	Available in this page. You can enable and use AI Assist to generate a repair suggestion based on similar repair history.	Not available in this page.
Review previous repair history	Available in this page. You can search and review service history for similar assets.	Not available in this page.
Research repair procedures using articles	Available in this page. You can search and review related repair articles using Knowledge Management.	Not available in this page.
Clock in and clock out of operations	Available in this page for organizations enabled for advanced scheduling.	Not available in this page.
Edit a work order	Available in this page based on these user privileges: • Manage Maintenance Work Orders (MNT_MANAGE_MAINTENANCE_WORK_ORDER_HEADERS_PRIV) • Manage Maintenance Work Order Operations (MNT_MANAGE_MAINTENANCE_WORK_ORDER_OPERATIONS_PRIV) You can edit a work order from the search, preview, and report work pages.	Available in this page based on user privilege.
Create a follow-up work order	Available in this page based on a user privilege: Create Follow-up Work Order (MNT_ALLOW_CREATE_FOLLOWUP_WO) You can create a follow-up a work order from the search, preview, report work, and complete work pages.	Not available in this page.

Functionality	My Maintenance Work	Maintenance Dispatch List
Complete a work order	You must explicitly complete a work order after each operation is reported as complete.	The last operation completion, as well as the complete with details flow, will validate and implicitly complete the work order.

The following table compares standard user tasks between the Maintenance Dispatch List and the My Maintenance Work page:

Comparing Functionality Between My Maintenance Work and Maintenance Dispatch List

Functionality	My Maintenance Work	Maintenance Dispatch List
Viewing the list of results by work order	The page displays result rows at a work order level, including both released and completed orders, in the context of the logged in user. For an organization enabled for advanced scheduling, a user sees their assignment start and end dates. These correspond to the next assigned, but uncompleted operation in the work order.	Not available in this page. The page only displays the next open count point operation, of a released work order, that is pending completion. You must change the filter results and navigate into the work order to view additional details.
Keyword search	Utilizes a smart search to allow searching across multiple attributes, including attributes such as Work Order Number, Work Order Description, Asset Number, Asset Description, Serial Number.	Limited keyword search using attributes such as Work Order Number, Asset Number
Search filters	Filter chips provide an easy method to further refine your results. Each filter displays the list of applicable rows, including the aggregated number of rows in the current results. Filters can be easily combined and removed from the search, refreshing the rows. In an organization enabled for advanced scheduling, the My Work chip will default to Open, returning work orders that are assigned and not completed by the user. Additionally, the Time Period chip will default to Today, returning work orders that start on or before the current date.	List of value (LOV) based filters provide general filtering but could result in conflicting or even no result rows. Direct entry filters require a user to know the data to filter using these attributes.
Saved searches	The page includes the ability to create personal or shared saved searches.	Not available in this page.
Sort by	Lets you organize your work order list results by work order number, work order description, planned start date, and planned completion dates. In an organization enabled for advanced scheduling, the sort by defaults to Assignment Start Date Old to New, returning open work orders by the next uncompleted operation that's assigned to the user that 's expected to be reported.	Sort features are available for the work order attributes.

Functionality	My Maintenance Work	Maintenance Dispatch List
Clocked in to work order banner message	In an organization enabled for advanced scheduling, if a user is currently clocked into a work order, then a banner message is displayed with the work order and operation details. Click the View details link to navigate to the report work page.	Not available in this page.
Assign or unassign yourself for a work order	You can optionally assign or unassign yourself for a work order if your resource instance matches at least one operation resource. The assignments will reflect not only at the work order, but for each operation that has a resource match and resulting assignment. You can unassign yourself if you have not reported any resource transactions using your resource instance. In an organization enabled for advanced scheduling, a user can unassign themselves only if they have the Allow Operation Unassignment privilege (MNT_ALLOW_OP_SELF_UNASSIGN).	Not available in this page.
My work queue	The logged in user's credentials, including resource instance and skills, can be optionally used to filter the results and provide a work queue of orders that require action. In an organization not enabled for advanced scheduling, you can use the My Work filter to view: • Assigned work orders. • Qualified (but not assigned) work orders. • Assigned and qualified but not assigned work orders. In an organization enabled for advanced scheduling, an additonal option that's selected by default: • Open work orders. This option returns work orders for which you're assigned to at least one operation resource and there exists at least one operation pending your completion. Assignments is an optional capability. If you are not using assignments, then you can disregard the My Work filter chip, as it will not return any results rows.	Not available in this page. A user can be assigned to a work order operation resource. However, this is only useful in searching for assigned operations.
Preview a work order	You can preview key details of the work order, including: • Work Order header details • Turnover Notes and attachments	You can navigate into the work order to view additional details about the work order, operations, items, and materials.

Functionality	My Maintenance Work	Maintenance Dispatch List
	• Operations • Asset details • Supplier Warranty Contract • Document References	
Review work order attachments	Not available in this page.	You can navigate into the work order to view additional details about the work order, operations, items, and material attachments.
Indication of push material optional reporting	Available in this page through a consolidated list of materials, including push (optional) and pull (automatic or requiring reporting) material supply types.	Available in this page. The icon indicator helps you navigate to a page that only supports reporting optional materials.
Indication of pull material required reporting	Pull materials that require lot and serial reporting are not supported currently. Only push or automatic reporting pull materials are supported.	Available in this page in the Complete with Details flow by operation or for the final count point operation.
Indication of resource optional reporting	Available in this page in a consolidated list of resources, including automatic and manual usage reporting.	Available in this page. The icon indicator helps you navigate to a page that only supports automatic report resources.
Indication of resource required reporting	Resources that require manual reporting have a text warning that will extinguish once the required usage is reported.	Available in this page in the Complete with Details flow by operation or for the final count point operation.
Indication of required failure capture	Available on the Complete Work Page metrics card. The card navigates you to the Failure Capture tab in the Report Work page.	Available in this page. The icon indicator helps you navigate to the failure capture page.
Indication of required quality inspection	Not available in this page.	An indication icon indicates if the work order has a required quality plan or not. You can also manually report inspection results for each operation.
Indication of work order exceptions	Not available in this page.	An indication icon indicates if the work order has one or more exceptions.
Report on a work order	You can report material, resources, and complete operations individually or all at once.	You can only transact on the next open count point operation until the final operation, where you can utilize the completion flow for additional reporting.
Assign or unassign yourself for an operation	You can optionally assign or unassign yourself for an operation if your resource instance matches the operation resource. You can unassign yourself if you have not reported any resource transactions using your resource instance. Assignment is optional, but is useful to manage a queue of assigned work.	Not available in this page.

Functionality	My Maintenance Work	Maintenance Dispatch List
Create turnover notes with attachments	You can create turnover notes to record key details about the repair or maintenance of the asset. Optionally, you can add attachments to the notes.	Not available in this page.
Work order progress	You can view status indicators of the remaining tasks on the Complete Work Order page. The status of reporting for operations, items, resources, meters, and failure capture are displayed. For uncompleted tasks, you can easily navigate to the appropriate tab on the Report Work page to complete any open reporting. Once all the required tasks are completed, you can submit the work order for completion.	Not available in this page for the entire work order. There are only limited indications of optional completion tasks.
Work summary	You can optionally create a summary narrative of maintenance or repair work performed in the work order. This summary can be manually written, or it can be automatically generated using **AI Assist**, if enabled. Selecting the **AI Assist** action will summarize your work order based on the work order description, operations performed, materials used, and any reported failure, cause, and resolution codes. You can then edit the summary to your liking and save. After saving your work summary, you can view it in the Notes section of the Preview Work page. Note: The AI Assist capability is optional, only enabled for the English language. and must be enabled for use in the work summary. Additional details for enabling AI Assist are covered in the Set-Up Maintenance chapter of the implementation guide.	You can only use the work order description field to record a work summary.
Return to inventory	If a work order is enabled for completion to inventory, then the *Return to Inventory*section is displayed on the Complete Work page. You will be able to confirm and update the location to which to return the serviceable or scrap asset prior to submitting the work order for completion.	Not available in this page. You must enable the My Maintenance Work page to execute work orders that allow completion of an asset to inventory.
Complete a work order	You must explicitly complete a work order. Prior to completion, you can review work order metrics and return to inventory details (if applicable). You can then optionally create and update a work summary using **AI Assist**.	The completion of the final operation in the work order, along with any additional details, will complete the work order. A manually entered repair summary can be record in a single description field during completion.

Functionality	My Maintenance Work	Maintenance Dispatch List
	Once all the required reporting and return information is provided, the **Submit** action will be enabled, allowing you to complete the work order.	

The following table compares the transaction reporting and completion actions between the Maintenance Dispatch List and the My Maintenance Work page:

Comparing Transaction Reporting and Completion Actions Between Pages

Functionality	My Maintenance Work	Maintenance Dispatch List
Clock In and Clock Out of Operations	If you enable an organization for advanced scheduling, you can optionally clock in and out of qualified or assigned operations. You can only be clocked into one operation at the time. You can clock out manually for an operation or by completing it. Additionally, if you have the Allow Clock Out with Details privilege (MNT_ALLOW_OP_DETAIL_CLOCKOUT), you can optionally adjust the clock in and out dates and times before submission. You can choose to clock out only or clock out and complete the operation with one click.	Not available.
Operation Completion	You can complete one or many operations across the work order. Operation completion requires mandatory reporting tasks to be completed first. If you enable an organization for advanced scheduling, then it's expected that you define resource requirements are for each count-point operation in a work order. If count-point operations aren't defined with resources, then a user can't be assigned and complete the operation. This is a core requirement of using Advanced Scheduling. Additionally, if a user is clocked into an operation, then completing the operation clocks the user out and perform a single resource transaction of the cumulative clocking time records for the operation.	You report only on the current open count point operation in context.
Material Issue or Return	You can report on pre-defined optional or required reporting materials across operations. You can also transact ad hoc material issue.	You can report on optional and required materials using different pages for the open count point operation in context.
Resource Report or Reversal	You can report on manual reporting resources across operations.	You can report on optional and required resources using different pages for the open count point operation in context.

Functionality	My Maintenance Work	Maintenance Dispatch List
	You can also transact ad hoc resource usage. If you enable an organization for advanced scheduling, you can optionally clock in and out of qualified or assigned operations. Completing the operation automatically reports a resource transaction for the user.	
Equipment and Resource Qualifications	Not available in this page.	Equipment and Resource qualifications are validated during resource reporting.
Failure Capture	You can capture failure events and one or more failure instances. This includes mandatory or optional failure capture events.	You can capture failure events and one or more failure instances.
Quality Inspection Event	Not available in this page. There are no validations during operation completion or work order completion for mandatory inspection plan reporting.	You can capture a quality inspection event and results.
Meter Recording	You can record meter readings for mandatory meters.	You can record meter readings for mandatory meters.
Project and Task reference	Not available in this page for item or resource transactions.	You can reference a project and task during reporting.
Dual Unit of Measure	Not available in this page for item or resource transactions.	Support for dual unit of measure during reporting.

Manage Work Orders in the My Maintenance Work Page

After you have enabled the page and the index has successfully ingested work orders, navigate to My Maintenance Work directly from the Supply Chain Execution functional area or by using the main task menu from the Maintenance Management landing page.

My Maintenance Work is a smart search enabled page that automatically returns search results in a table when you navigate to the page. The count of the total number of rows returned is also included. If you enable the page for only certain organizations or for advanced scheduling, you you see an organization selector at the top of the page.

Each row in the My Maintenance Work page corresponds to a specific work order and asset, in the order of date and priority. The page lets you repair one or more assets using a single work order.

The search section includes a keyword search, default filter chips, and additional filters. The results section displays rows that each correspond to a unique combination of work order and asset. You can use a single work order to repair one or more assets, resulting in one or more unique combination of rows in the results. The page provides you ready access to a list of actionable work orders in released status that require reporting and completion by work order and asset.

Search Section

By default, you see work orders from across all maintenance organizations to which you have access, and not just those for the contextual maintenance organization on the Maintenance Management landing page.

Refine the search results using:

- Keyword Search: The keyword search allows you to search directly on work order and asset attributes:
  - Work Order Number
  - Work Order Description
  - Asset Number
  - Asset Description: Helpful if the asset number is system generated.
  - Serial Number
  - Lot Number
  - Asset Item Number
  - Asset Item Description
  - Organization Code
  - Maintenance Program Code
  - Maintenance Program Name
  - Operation Name
  - Operation Description
  - Warranty Repair

- Default filter chips: Use these quick ready-to-use filters to further refine your results:
  - **My Work**: Use this filter to manage your work queue if you use resource assignments. You can select the following options:
    - **Assigned**: Returns work orders for which you're assigned to at least one operation resource.
    - **Open**: Returns work orders for which you're assigned to at least one operation resource and there exists at least one operation pending your completion. This filter chip is only displayed if the organization is enabled for advanced scheduling and is defaulted upon entering the page.
    - **Qualified**: Returns work orders for which you're qualified for at least one operation resource but are not assigned. You can then self-assign yourself to the qualified operations. Qualification is further defined later in this section.
    - **Qualified and assigned**: Returns work orders for which you're qualified for at least one operation resource, but are not assigned. Also returns work orders for which you're assigned to at least one operation resource.
  - **Work Order Asset Status**: Use this filter for item-based work orders to consider the completion status of each asset across a common work order. For asset-based work orders, the status will be the same as the work order status.
  - **Time Period**:
    - In an organization not enabled for advanced scheduling, use this filter to view work orders for Last Week, Today, or Next Week.
    - In an organization enabled for advanced scheduling, use this filter to view work orders for Today, Tomorrow, This Week (Today + 7 days), or Next Week (One week later + 7 days). The value of Today is defaulted when entering the page.
  - **Priority**: Use this filter to view by priority value or range of values.
- Filters: The complete list of filters can be accessed by clicking **Filters**. The list of filters includes:
  - **Work Order Status**: Use this filter to view **Released** or **Completed** work orders. Unreleased, on-hold, and closed work orders are not shown in the results rows. It is helpful to use a combination of the **My Work** and **Status** filters to view your open work.
  - **Planned Start Date**: Filters results by a start and end date range.
  - **Planned Completion Date**: Filters results by a start and end date range.
  - **Work Center**: Filters results by work orders that have at least one operation that matches the selected work center name.
  - **Resource**: Filters results by work orders that have at least one operation resource that matches the selected resource name.
  - **Resource Instance**: Filters results by work orders that have at least one operation resource assignment that matches the selected resource instance ID.
  - **Asset Work Center**: Filters work order results by an asset's location, as defined by the asset work center.
  - **Project Number**: Filter by a project number.
  - **Task Number**: Filter by a project number task.
  - **Warranty Repair**: Filter by work orders identified as a warranty repair.
  - **Work Order Groups**: Filter by Group name.
- Saved Search: You can optionally use saved searches, allowing you to easily set the default or user-selected search context of the results. You can create personal, as well as shared search result options.

Here are some tips you can follow when you do keyword-based searches:

- Searches are case insensitive. Both capitalized and non-capitalized keyword terms match when searching by work order or asset details.

- You can search using a full-text search, such as a work order or asset number. This narrows your search results.
- You can also use a partial-text search, such as the first few numbers of a work order or text in an asset description. Use **starts with** or **contains** for an effective search.
- If you search using text that is hyphenated, such as Lot-Based, the terms are searched using an OR condition. That is, the search engine searches using Lot or Based as separate text values.
    - With hyphenated text, you can also search by only a partial value text, such as Lot or Based. This broadens your search results.
    - If you don’t find your results or you get too many results, try searching for an exact phrase by adding quotation marks around the word such as, "Lot-Based". This tells the search to only return results that contain the exact words in the same order.
- If you search using a word that has an underscore, such as Lot_Based, the engine considers this as a one word.
    - Don't use word with underscore for a partial keyword search.
    - Special characters, such as asterisks aren't supported.

Here are some tips you can follow when you use filter chips:

- Filters can use a list of pre-defined values, directly return search results and the count of matches, or may require you to enter a value to refine the results.
- Some filters, such as dates, have a start and end range value that you need to select.
- You can use combinations of filters to refine your results. After you select each filter chip, the results are refreshed and the count of result rows is updated.
- You can optionally create a saved search based on the selected filters.
- You can remove a selected filter to refresh the results and revert to the previous search results.
- You can mix filters and keyword searches.

Results Section

Smart search results automatically appear on the My Maintenance Work page. The count of result rows returned appears above the results. The results are based on the default search criteria, which can also use a saved search. You can further refine the results through a keyword or search filter. For example, you can choose to see only work orders with a status of Released.

Each result row corresponds to a work order and an asset, not to the next open count point operation in a work order. The user gets a holistic view of a work order and can use a single work order to repair one or more assets.

The result rows include the following:

- Image Icon or Avatar: The image indicates if you're qualified, or not, for a work order. Once assigned, the image icon changes to the user’s avatar.
- User Qualification or Assignment: If you're qualified for or assigned to the work order, then the **Assign to Me** or **Unassign from Me** button above the result rows is enabled. You can optionally assign or unassign yourself for a work order if your resource instance matches at least one operation resource. The assignments reflect at the work order and also for each operation that has a resource match and a resulting assignment. You can self-assign an operation before you complete a work order. If you're an assigned user, you must complete the operation before completing the next operation or a work order.
- Create Follow-up Work Order: You can create a follow-up a work order from the search, preview, report work, and complete work pages if you have the Create Follow-up Work Order privilege

(MNT_ALLOW_CREATE_FOLLOWUP_WO). This renders a work order creation drawer defaulting to the work order's asset, but you can adjust the detail before submitting.

> **Note:** In an organization enabled for advanced scheduling, the Unassign from Me button or action is only enabled if users have the Allow Operation Unassignment privilege (MNT_ALLOW_OP_SELF_UNASSIGN).

> **Note:**
>
> > **Note:** Ensure that you match the work order operations based on resource requirements. Also, qualifications and assignment are important for maintenance organizations.

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- Work Order Number: Clicking the work order number takes you to the Report Work page.
- Asset Number
- Work Order Description
- Work Order Status
- Assignment Start Date (only for organizations enabled for advanced scheduling)
- Assignment End Date (only for organizations enabled for advanced scheduling)
- Planned Start Date
- Planned Completion Date
- Priority
- Asset Description
- Asset Operating Organization
- Work Order Asset Status
- Row Actions

Clicking the **Actions** menu for a result row lets you perform the following actions on the work-order and asset combination:

- **Preview Work**: Lets you review key work order details, such as the following:
  - Work order header details, including the work order description, asset, and warranty repair indications.
  - Work order scope of work details, including the maintenance program and work definition.
  - Turnover notes and attachments.
  - List of operations and required transactions.
  - Asset details, including the asset description and serial number.
  - Document References in case the work order was created by an outside process. For example, a work request from the help desk.
  - Supplier warranty contracts if defined for the asset or for any assets in the asset's physical hierarchy.
- **Report Work**:

  Lets you report on material, resources, and operations. You can report operation completion individually, or all at once, for each unique combination of a work order and an asset.

  You can additionally update the asset's meters, capture a failure event, and create and manage turnover notes.

- **Complete Work**:

  Lets you complete a work order. You can track the reporting progress for your work order, capture return to inventory details, optionally record a work summary, and submit the work order for completion.

- **Print Work Order**:

  Lets you generate a work order summary report using a scheduled process.

- **Edit Work Order**:

  Navigates you to the Edit Work Order details page. Clicking cancel returns you to the search results. You must have privilege to create and edit work orders for this action to be enabled.

Note: Work orders will only show a status of Completed once the ingestion is run to refresh the search index.

My Work

You can use the **My Work** filter chip to filter the results based on resource qualification and assignment. you're considered qualified for a work order if one or more operation resources match your user-level resource instance, and you're also HCM qualified (not applicable for advanced scheduling)for each operation resource. Once qualified, you can either be preassigned to an operation resource by a supervisor or planner, or you can self-assign to a work order or operation resource. This capability allows you to manage a user queue of assigned work.

In organizations not enabled for advanced scheduling, an HCM qualification is optionally defined for an operation resource by the Job Profile attribute, based on a standard operation, work definition, or manual definition in a work order. If a Job Profile is defined, then it is taken into consideration both during assignment and during the reporting of resource transactions. During assignment, you will not be able to self-assign to a work order if you're not HCM qualified. During resource transactions, a resource instance will be required and must be qualified, else the transaction will present an error. Only HCM qualified resources can report resource transactions.

To use the My Work filter chip functionality, you must first be defined as a resource instance for a unique resource within a maintenance organization's work center. Within a unique maintenance organization, your resource instance can only be assigned to a single resource. If you wish to leverage resource assignments, you will need to appropriately model users as being qualified for only one resource in an organization. If you don't wish to use assignments, then you do not need to define users with resource instances for a resource. You don't need to use assignments to report on or complete work order operations. If you enable an organization for advanced scheduling, then you must define resource instances for users to be considered for assignment.

Use the **My Work** filter to manage your work queue if you use resource assignments. You can select the following options:

- **Assigned**: Returns work orders for which you're assigned to at least one operation resource.
- **Open**: Returns work orders for which you're assigned to at least one operation resource and there exists at least one operation pending your completion. This filter chip is only displayed if the organization is enabled for advanced scheduling and is defaulted upon entering the page.
- **Qualified**: Returns work orders for which you're qualified for at least one operation resource but are not assigned. You can then self-assign yourself to the qualified operations.
- **Qualified and assigned**: Returns work orders for which you're qualified for at least one operation resource, but are not assigned. Also returns work orders for which you're assigned to at least one operation resource.

Additional details about resource assignments are available in the Report Work section.

Note: Assignments is an optional feature. If you're not using assignments, then you can disregard the **My Work** filter, as it will not return any result rows.

Preview Work

The work order preview provides a general overview of the work order and the work order's work scope for an asset. On the My Maintenance Work page, click **Preview Work** under the **Actions** menu for the work order row that you wish to preview.

The work order preview includes:

- Work order header details, including the work order description, asset, and warranty repair indications.
- Work order scope of work details, including the maintenance program and work definition.
- Work order notes and attachments.
- Work order definable flex fields (DFFs).
- List of operations and required transactions.
- Asset details, including the asset description and serial number.
- Document References in case the work order was created by an outside process. For example, a work request from the help desk.
- Supplier warranty contracts if defined for the asset or for any assets in the asset's physical hierarchy.
- Page-level actions

If the work order maintains or repairs multiple assets, you can view the common work order information, as well as information unique to the work order and asset combination. This table includes details of the various page sections.

Preview Work: Page Details

Page Section	Context
Page header	The work order details are common across assets. However, the asset number is passed from the selected work order row to set the context.
Overview	The work order overview is common across assets.
Asset Details	The asset details are unique to the repair of the asset.
Additional Information	The work order definable flex fields (DFFs) are displayed and can be optionally edited.
Notes and Attachments	The notes are uniquely captured by the combination of work order and asset in the Preview, Report Work, and Complete Work pages: • Preview Work: During preview you can optionally enable the Generate Repair Suggestion AI Assistant. The suggested repair text can be optionally saved as a repair suggestion note, then viewed in the preview page. • Report Work: During reporting you can optionally define notes of type turnover, general or repair suggestion. You can also optionally add an attachment to each note. • Complete Work: During the completion step you can optionally record a note of type work summary.

Page Section	Context
	Attachments that are pre-defined for the work order are also displayed below the notes. These are common across all assets in a work order. You cannot add or edit existing work order attachments.
Work Order Attachments	View and manage attachments for the work order.
Operations	The list of operations is common across assets. However, indications of required transactions are asset specific.
Document References	The document references are common across assets.
Supplier Warranty Contracts	The list of contracts is unique to the repair of the asset.
Page level actions	These actions are available: • **Generate Repair Suggestion**: You can use AI Assist to generate a repair suggestion, using the work order description as a problem statement. • **Create Follow-up Work Order**: You can create a follow-up a work order from the search, preview, report work, and complete work pages. You must have the user privilege Create Follow-up work order (MNT_ALLOW_CREATE_FOLLOWUP_WO) • **Edit Work Order**: You can edit a work order from the search, preview, and report work pages. You must have the user privileges: o Manage Maintenance Work Orders (MNT_MANAGE_MAINTENANCE_WORK_ORDER_HEADERS_PRIV) o Manage Maintenance Work Order Operations (MNT_MANAGE_MAINTENANCE_WORK_ORDER_OPERATIONS_PRIV) • **Cancel**: Returns to the search page.

Generate Repair Suggestion

You can use AI Assist to generate a repair suggestion, using the work order description as a problem statement. AI Assist looks for information from past work orders on similar assets of the same associated item and suggests repair strategies for you to get started. Click **Generate Repair Suggestion** to generate the repair suggestion.

The Generate Repair Suggestion drawer opens up where you can interact with the AI assistant to generate a repair suggestion. The work order description is used as the default problem statement. You can optionally modify the problem statement and click **AI Assist**. AI Assist looks for information from past work orders that match your problem statement for similar assets of the same associated item. It then suggests repair strategies for you to get started.

You can review the sources of the repair suggestion, as the referenced work order numbers are included in the suggestion. The repair suggestion typically includes a summary of the work performed, including the failures, causes, resolutions, parts, and operations. If you like a suggestion, you can review it and save it as a note. If not, you can always update the problem statement to generate a new repair suggestion. You can also edit the current suggestion and save it as a note. Click **Save as Note** to save the repair suggestion.

Service History

The Service History page lets you search and review the repair history of similar assets. From the My Maintenance Work page, click **Service History** under the **Actions** menu for the work order row that you wish to preview.

The item and organization filters use default values based on the work order asset. A list of recent repairs that have been completed for similar assets is displayed. The result rows include key work order details, including the repair summary that is optionally defined during work order completion.

You can use filters for asset item number, asset number, organization, and work order type to narrow down your result set. Additional filter criteria include the operation work center, asset work center, work order subtype, work order status, and actual start date. You can also use keyword-based search to refine the results.

Report Work

Use the Report Work page to report material, resources, and operations. You can report operation completion individually, or all at once, for each unique combination of a work order and an asset.

You can additionally update the asset's meters, capture a failure event, and create and manage turnover notes. If the work order is for an asset route, then you view and report the list of affected assets.

To report work from the My Maintenance Work page, click the work order number. Alternatively, select **Report Work** under the **Actions** menu for the work order row. You can also select **Report Work** from the work order preview page. After the reporting is complete, you can navigate to the Complete Work page to complete the work order.

For work orders that maintain or repair multiple assets, report work for each individual asset. The operations, items, and resources defined in the work order are common across all the assets.

The tabs on the Report Work page always display information for the chosen combination of work order and asset. This lets you view indicators and status values, report transactions, and finally complete the work order at the asset level. Additional details on this key concept are covered throughout this chapter.

You can also edit the work order details or create a follow-up work order if you have the privileges

Operations

The **Operations** tab lists all the operations in the work order, including count point, automatic transact, optional and supplier operations, ordered by operation sequence. Each row includes the operation sequence and name, scheduled start and completion date, and the operation status, whether in process, pending, or complete. Expand the row to see attachments for an operation. You, or another user, must complete each count-point operation row before you can submit a work order for completion. All transactions are for the unique combination of the selected work order and asset.

> **Note:** Eligible Supplier operation can be autocompleted upon receiving the OSP item, else the operation changes to the **Pending** status from **In Process** status.

If you enable an organization for advanced scheduling, then it's expected that you define resource requirements are for each count-point operation in a work order. This enables automatic, manual, or self-assignment of operations to one or more users. If count-point operations aren't defined with resources, then a user can’t be assigned and complete the operation. This is a core requirement of using advanced scheduling.

Additionally, in an organization enabled for advanced scheduling, you can optionally clock in and out to track your time. The action is enabled if you're qualified or assigned to the operation. Clocking in will also automatically assign you and begin a time collection session. After you're clocked in, you can:

- View an indication of a current time collection session on the My Maintenance Work search page. The banner will include the work order, operation and start date with time.
- View an indication at the operation level if you are currently clock in or not, as indicated by the status badge moving from Pending to Clock In status.
- Clock out of the active time collection session using the current date and time. Until operation completion, you can clock in and out as many times are necessary, creating new time collection sessions.
- Clock out with details: This is an optional action and enabled by privilege. Use this action to edit the time collection session details, including the start date and time and end date and time before submission.
- Clock out with details and complete the operation: This is an optional action and enabled by privilege. Use this action to edit the time collection session details, including the start date/time and end date/time before submission, along with requesting that the operation also be completed. This is a one-click option to perform both actions.
- Complete the operation: During completion, if you're actively clocked in, then you'll be clocked out. This action also submits a single resource transaction for the cumulative time of your time collection sessions.

In an organization enabled for advanced scheduling, you can only complete operations for which you are qualified and assigned. When completing an operation, you can use the Complete or Complete with Details option:

- **Complete:** Completes the operation in one step using today's date and time. This action is recommended for most operation completions.
- **Complete with Details**: Helpful if you wish to manually define when the operation was completed at a past date and time. Additionally, you can enter an operation completion note.

For each row, there may be additional indicators as follows:

- Required Resource Reporting: If any resources require manual reporting for an operation, then a Report Resource Transactions warning message appears against the operation. You can complete the operation, but you can select the Resources tab to report the transactions for each required resource in the operation.
- Resource Qualification and Assignment: If you have a resource instance, then each operation includes an Available for assignment message if you are qualified. Once assigned to an operation, you see the text, Assigned to me. Assignments are optional and are covered later in this section.
- Required Material Reporting: If any materials items require reporting of lot or serial details for an operation, then a Report Material Transactions warning message appears against the operation. You will not be able to complete the operation until you select the Materials tab and report the details for each item if they are lot or serial controlled. For plain items, reporting is not required.
- Required Material and Resource Reporting: If both are required, then a Material and Resources Transactions Required warning message appears against the operation. You will not be able to complete the operation until lot or serial items are reported.

By default, operations are completed in-sequence unless the out-of-sequence indicator is defined in the work order header. The list of actions for the row shows the **Complete** action as enabled, once all the required validations have passed and the operation is ready to report. These validations include the following:

- Work order is in released status.
- Operation is not already complete for the asset.

- For in-sequence operations, the previous count point operation is complete.
- Pull type materials that require reporting are not defined for the operation.
- For an organization enabled for advanced scheduling, a user must also be assigned to enable completion.

Note: For an organization enabled for advanced scheduling, count-point operations that don't have resource requirements defined aren't assigned and completed. This is a foundational requirement of the solution.

Selecting the **Complete** action moves the row status from Pending to Complete. The status displayed against each operation is a derived status based on asset-level and user-level reporting. The status is not the work order-level operation status. Asset-level and user-level statuses let you report operations that are in-sequence or out-of-sequence, for one or more assets. During work order execution, the asset-level status and the work-order level operation status may be out of sync in some scenarios, but, eventually, the completion of the operations aligns their statuses. User-level statuses let you assign one or more users to an operation, so you can do individual reporting of completion before the work order-level operation status is updated.

Asset-level statuses help you with the logical reporting of operations. When you select the **Complete** action for an operation, the application updates the asset-level and user-level status and additionally determines if the operation is ready to complete at the work order level. Additionally, the backflush of materials is different for in-sequence or out-of-sequence reporting. The following table lists various scenarios for asset-level and work-order level statuses:

About Asset-Level and Work-Order Level Statuses

Scenario	Overview
Repair of a single asset in a work order (in-sequence)	When you report the completion of an operation for an asset, the asset-level status moves from Pending to Complete for a count point operation. As there is only one asset in the work order, the system can then complete the operation and the work order level operation status also changes to Complete. The asset-level and work order-level status values are in-sync. Materials with a supply type of Pull, that don't require lot or serial reporting, are backflushed during operation completion.
Repair of one or more assets using a common work order (in-sequence)	As you report the completion of an operation for each asset, the asset-level statuses moves from Pending to Complete. As there are multiple assets in the work order, the system does not automatically complete the operation. The work order level status value is out-of-sync. The system checks if this is the last asset to be completed for the operation or not: • If **`true`**, the system then completes the operation and the work order level operation status also changes to Complete. • If **`false`**, the work order level operation status remains Incomplete until all the asset completions are reported. The status values are out-of-sync until the final asset is reported. Materials with a supply type of Pull, that don't require lot or serial reporting, are backflushed during operation completion.
Repair of a single asset in a work order (out-of-sequence)	You can report the operation completion in any order and the asset-level statuses move from Pending to Complete for each count point operation that you complete. However, the work order level operation status remains *Incomplete*. Once you have completed all the operations, submit the work order for completion. The system then completes each operation in sequence and the work order level operation status also changes to Complete.

Scenario	Overview
	Materials with a supply type of Pull, that don't require lot or serial reporting, are backflushed during operation completion.
Repair of one or more assets using a common work order (out-of-sequence)	You can report the operation completion in any order and the asset-level statuses move from Pending to Complete, as they complete. As there are multiple assets in the work order and you are completing them out-of-sequence,the system does not automatically complete the operation. The work order level status value is out-of-sync. The same process happens for each asset, so that when you report operation completion, it reflects at the asset-level only. Additionally, you can submit the completion of the work order for the asset. However, the system does not automatically complete any of the operations. The work order level operation status remains Incomplete. When you submit the work order for completion of the last asset, the system completes each operation in sequence, and the work order level operation status changes to Complete. Materials with a supply type of Pull, that don't require lot or serial reporting, are backflushed during operation completion.

User-level statuses let you assign one or more users to an operation, allowing individual reporting of completion before the work order-level operation status is updated. The status also depends on if you are using assignments and if the organization is enabled for advanced Scheduling or not, here are additional details:

About User-Level Statuses

Scenario	Not Enabled for Advanced Scheduling
Operation is in Pending status	The operation isn't completed at the asset-level or user-level. If any user completes the operation, it moves to Complete status at both levels.
Operation is in Pending your completion status	Not applicable
Operation is in Completed by you status	Not applicable
Operation is in Completed Status	If any user completes the operation, it will move to Complete status at the user-level. This helps users c operations without waiting on other users to complete theirs. After all users complete the operation, only then the asset-level status updates to Complete.

Note: Operation completion doesn't validate if the resources, whether equipment or labor, are qualified to complete the operation. Additionally, the Complete action does not support any automatic operations that have a qualification profile defined for an equipment or labor resource.

Once completed, the list of actions for the row enables the **Undo Completion** action for the last completed operation in the list. You can optionally undo completion for operations in a reverse sequence. There are several validations and limitations to enabling this action:

- The work order should be in released or completed status.
- The operation should not have already been reversed.
- The previous operation must be in completed status.

> **Note:** Undoing a work order completion on the last operation for an asset that was issued and completed to inventory returns the asset to the work order. After you complete your updates, complete the work order again to return it to the completion inventory sub-inventory location.

Operation Assignments

You qualify for an operation if one or more operation resources match your resource instance. To use operation assignments, the user must be set up as a resource instance for a resource in a work center within the work order's maintenance organization.

HCM qualification is defined for an operation resource by the Job Profile attribute, based on a standard operation, work definition, or manual definition in a work order. If a Job Profile is defined, then it is taken into consideration both during assignment and during the reporting of resource transactions. During assignment, you can't self-assign to a work order if you aren't HCM qualified. During resource transactions, a resource instance is required and must be qualified, else the transaction presents an error. Only HCM qualified resources can report resource transactions.

Your business processes determine if operation assignments are useful for managing your work. If useful, then you can further choose to use operation level assignments or work order level assignments. A resource instance can be assigned to only a single resource in the organization.

If you have a resource instance defined and you are qualified for an operation, then you see the over line text Available for assignment displayed for an operation row. If you don't have a resource instance defined, or if you are not qualified for the operation, then you do not see any over line text. Additionally, if you were previously assigned, or you self-assigned at the work order level, all the operation level assignments are displayed.

You can self-assign an operation using the **Assign to Me** action. Once assigned, you see the indication change from Available for assignment to Assigned to Me. Once assigned, it is expected that you complete the operation. You can use the **Unassign from Me** action to unassign yourself from an operation. This action returns an error in case you have not reported any resource transactions using your resource instance, thus not allowing you to unassign yourself.

One or more qualified resources can be assigned, or self-assigned, to an operation. This lets you have multiple users work on an operation, report resource usage, and complete an operation.

You can use the **My Work** filter on the My Maintenance Work page to filter your work orders, as follows:

- **Assigned**: Returns work orders for which you are assigned to at least one operation resource.
- **Qualified**: Returns work orders for which you are qualified for at least one operation resource, but are not assigned. You can then self-assign yourself to the qualified operations.
- **Qualified and assigned**: Returns work orders for which you are qualified for at least one operation resource, but are not assigned, as well as the work orders for which you are assigned to at least one operation resource.

The following recommendations and best practices help you effectively use resource assignments and the **My Work** filter to manage your work order queue and report work:

- If using assignments, set up resources with a reporting type of Manual, indicating to the user that resource usage time should be entered by the user during reporting. This renders over line text in the **Operation** and **Resources** tabs. Resources setup with a reporting type of Automatic are not useful for assignments in the workbench.
- If a single user executes and reports all operations of a work order, ensure that each operation has a matching resource defined for this resource instance. The user can then self-assign to the work order, search for it in their queue of released work orders, report their work, and complete it. Once complete, the work order disappears from their released work order queue.
- If multiple users execute and report all operations of a work order, ensure that each operation has a matching resource defined for their resource instances. Each user can then self-assign the work order and search for it in their queue of released work orders. During reporting, either user can issue and return materials for each operation on the **Materials** tab.
- On the **Resources** tab, the users are expected to only report time for themselves based on the indicated resource assignment. Once material and resource reporting are completed for an operation, then either user can go to the *Operations* tab and complete it. Once all the operations are completed, one user must complete the work order. Once complete, the work order disappears from each user's released work order queue.
- If a single user executes and reports on certain operations in a work order, ensure that the applicable operation has a matching resource defined for the user's resource instance. The user can self-assign the work order, which assigns them to only the matching operations, or they can manually assign themselves only to each matching operation on the **Operations** tab. Once assigned, they can search for the work order in their queue of released work orders. During reporting, they are expected to only report on their assigned operations, material and resources. However, they won't be restricted from reporting across unassigned or non-qualified operations. Once all the operations are completed, one user must complete the work order. Once complete, the work order disappears from their released work order queue.

> **Note:** Assignments is an optional feature. If you aren't using assignments, you can disregard the **My Work** filter, as it won't return any result.

Report Materials

The **Materials** tab lists all the operation materials by operation and material sequence. Each row includes the item number, description, operation sequence and name, and status. The required quantity per asset, issued quantity per asset, and open quantity per asset metrics indicate the progress of material reporting. All transactions are for the unique combination of work order and asset.

Materials can be pre-defined for an operation or manually reported. Regardless of the method, the list of materials includes all materials in the work order. You can use keyword search to filter the list of results by item name or description. Additionally, you can choose to view open, required, or all rows. Materials display the completed badge status once the open quantity drops to zero.

> **Note:** Materials rows also appear for operations that are automatically transacted. As this material doesn't require any additional reporting, you don't have to issue them. However, if you consume a quantity above the pre-defined quantity, you need to report it.

If an item row is pre-defined as a pull-type material that requires reporting of the lot or serial number, then a Report Material Transactions warning appears against the row. You can manually issue and report push-type materials as well as pull-type materials that require lot and serial number tracking. When you issue materials manually, it's accounted for

during automatic issuance, thus preventing double counting or over issuance. Only items that aren't manually issued by the technician are backflushed during operation or work order completion. For example, if two units of a material are required for an operation and two units have already been issued manually, the process recognizes this and prevents further issuance during backflushing.

> **Note:** To allow backflushing, ensure that the **Backflush Lot and Serial-Controlled Materials During Operation Completion Using a REST API and File-Based Data Import** feature of Oracle Manufacturing is enabled.

You don't have to complete material transaction for plain items, if they are pre-defined as a pull-type material, because the material demand is automatically fulfilled when you complete an operation or the last operation in a work order.

Each material row displays metrics for the unique combination of work order and asset. The following features apply:

- The quantity values for each material row displays in the context of the work order and asset being repaired. If the work order is repairing multiple assets, then the work order operation-level values are not displayed, only asset-level values are displayed.
- When material is issued, it is recorded as issued at the asset level, updating the issued and open values. This key capability aligns with the asset-level operation process.
- Ad hoc material reflects in the materials list with an open quantity of zero for the asset.
- Returned material reduces the issued and open quantity for the asset.

To report item consumption, you can either report using an existing pre-defined row or manually report using the ad hoc issue action. For a pre-defined item row, select **Issue** from the **Actions** menu for the row, which brings up the Issue Item dialog. Alternatively, you can click the **Add** button to manually report an item, which brings up the New item transaction dialog.

> **Note:** To perform ad hoc material issue or return, you must have Inventory Organization and Item Class access. Else, you can't search the item LOV and select an existing item number.

> **Note:** You can use business rules to change the default entry method from barcode scanning to user selection via list of values for an item. The constant is entitled **ItemBarcodeDefaultEnabled** and is set to true by default.

Provide additional details for the items being issued:

- **Transaction Type**: For an ad hoc issue, select whether you are reporting an **Issue** or **Return** transaction. The default transaction type is **Issue**.
- **Operation**: For an ad hoc issue, select the operation sequence.
- **Item**: For an ad hoc issue, select the item to be issued. You need to provide the item details.
- **Issue Quantity**: Defaults to the open quantity, but you can update to any positive value. For ad hoc issues, you must enter the value.
- **Supply Subinventory**: Picks the organization's default inventory, but you can update it to another inventory as required. For ad hoc issues, you must search and select a value. You can either scan or select the subinventory name from the list.
- **Supply Locator**: If an item is locator controlled, you can select the supply locator. You can either scan or select the supply locator from the list.
- **Lot**: If an item is lot controlled, you can select the lot number. You can either scan or select the lot number from the list.

- **Serial**: If an item is serial controlled, you can select the serial number. You can either scan or select the serial number from the list.
- **Asset**: If the item is asset-tracked, then you can search for the asset by number or description. You can either scan or select the asset from the list.
- **Parent Asset**: If the asset is in a physical hierarchy, then you can select the parent asset. During issue, it is installed as a child to the parent asset.
- **Repair Transaction Code**: You can optionally define a code that is recorded in the issue transaction. If you use coding for supplier warranty, this code is considered during the creation of a warranty claim.
- **Report Date**: Record the date and time of issue. The value must be greater that the released date and time of the work order.
- **Additional Information**: You can optionally or conditionally record definable flexfields (DFFs) for the transaction.

For lot and serial controlled items, you must define item details for each unique item or serial item. In the Add Item Details area, click the **Add** button to add a new item row and details region. After supplying the details, click **Save** to save the item row. You can add more item rows, which lets you report many item transactions at once. You can click **Edit** to update an item's row region, or click **Delete** to delete an item row before submitting. After defining your items, you can click **Submit** to process the transaction.

Items can also be returned to report the removal of an item from an asset, or to return unused items that were previously issued. Use the ad hoc issue action to manually return an item to inventory that was not previously issued in the same work order. Select the transaction type of **Return** in the New item transaction dialog. Once submitted, the transaction returns the item as stock removal to inventory.

If you wish to return previously issued material in the same work order, use the **Return** action on an item row. The Return item dialog retrieves the previously issued item details, letting you select the item, lot, and serial to return. Once submitted, the transaction returns the item as material return to inventory.

Report Resources

The **Resources** tab lists all the operation resources by operation and resource sequence. Each row includes the resource name, operation sequence and name, and reporting status. The required usage quantity per asset, charged usage, and open usage quantity metrics indicate the progress of resource reporting. All the predefined and ad hoc transactions reported are for the unique combination of work order and asset.

Resources can be pre-defined for an operation or can be added through ad hoc reporting. Regardless of the method, the list of resources includes all resources in the work order. You can toggle the view to return **Required**, **Open**, or **All** reporting rows. Resources that have open usage require reporting and display a status of pending. Rows show a completed status once the open usage drops to zero.

> **Note:** Resources rows also appear for operations that are automatically transacted. As these resources normally do not require any additional reporting, you do not have to report them. However, if you consume a quantity above the pre-defined usage quantity, you need to report ad hoc only the additional amount, not the complete amount. Remember that the automatic reporting also occurs at operation completion for the pre-define usage quantity.

If an item row is pre-defined with a reporting type of manual, then the Report Resource Transactions warning appears against the row. This indicates that you must report the actual usage consumed in completing the operation. If a warning is not displayed, then either the required usage has been fully reported and the open usage has dropped to zero, it was a resource ad hoc reported or the resource is automatically reported during operation completion.

For a required reporting row, if you report usage that is less than the pre-defined value, you satisfy the required reporting validation. However, the warning remains as the reporting was less than the pre-defined required usage.

Additionally, on the Complete page, the Resources card moves from Pending to Complete based on either partial or full reporting.

Each resource row displays metrics for the unique combination of work order and asset. The following features apply:

- The usage values for each resource row are shown in the context of the work order and asset being repaired. If the work order is repairing multiple assets, then the work order operation-level values are not shown, only asset-level values are shown.
- When resources are reported, it is recorded as reported at the asset level, updating the reported and open usage values. This key capability aligns with the asset-level operation process.
- Ad hoc reporting reflects in the resources list with an open usage value of zero for the asset.
- Reversed resource reporting reduces the reported and open usage values for the asset.

To report resource usage, you can either report using an existing pre-defined row, or manually report using the ad hoc report action. For a pre-defined resource row, select **Report** from the **Actions** menu for the row, which brings up the Report Resource dialog. Alternatively, you can click the **Add** button to manually report a resource, which brings up the New resource report dialog.

Provide additional details for the resource being reported:

- **Operation**: For an ad hoc report, select the operation.
- **Resource**: For an ad hoc report, select the resource.
- **Resource Type**: Shows the resource type for the resource for reference.
- **Resource Instance**: Conditional. Lets you identify the user who performed the work. If you are assigned to an operation, then it is recommended to select your resource instance. If the resource has an HCM qualification defined by a Job Profile, then the Resource Instance is mandatory. If you report a non-qualified user, an error is displayed.
- **Project Number**: Used only in a project enabled organization.
- **Required Usage**: Displayed for a pre-defined resource requiring manual reporting.
- **Task Number**: Used only in a project enabled organization.
- **Open Usage**: Displayed for a pre-defined resource comparing required and actual usage reporting.
- **Activity**: Optional. Lets you select an activity.
- **Reason for Repair**: Optional. Lets you select a reason for repair code.
- **Repair Transaction Code**: Optional. Lets you select a repair transaction code. If you use coding for supplier warranty, this code is used during the creation of a warranty claim.
- **Work Accomplished Code**: Optional. Lets you select a work accomplished code.
- **Transaction Quantity**: Defaults to the open usage, but you can update to any positive value. For ad hoc reporting, you must enter the value.
- **Transaction Date**: Record the date and time of usage. The value must be greater that the released date and time of the work order.
- **Additional Information**: You can optionally or conditionally record definable flexfields (DFFs) for the transaction.

You can also reverse a resource report to correct a data entry mistake. You must enter a transaction quantity and date. You can also optionally enter the resource instance.

Report Asset Meters

The Meters tab lists all the asset's active meters that exist for the asset. Each row includes the meter name, last reading date/time, meter code, displayed reading, life-to-date reading, and an indicator of required reporting. Expanding the row displays additional details about the meter.

Meter readings can be recorded or not based on the meters Record Meters at Work Order Completion option:

- Null (no value defined): You can optionally record new readings.
- Do not allow: You aren't allowed to record new readings. The Edit action for a meter row is disabled.
- Mandatory: Record a new reading to compete the work order. These meters are indicated by a Required badge.

> **Note:** Mandatory meter entry is tracked and displayed on a card on the Complete page. A card status of Pending means that one or more meters require reporting to complete the work order. The card status changes from Pending to Complete when at least one meter reading for each mandatory reporting meter is recorded. Note that the Required badge against a row on the Meters tab is not affected by whether the card is Pending or Complete.

You can expand a meter row to show the following details:

- Meter Type
- Reading Type
- Reading Direction
- Rollover indicator
- Reset indicator

Select **Edit** from the **Actions** menu for a meter row to record a new reading. The row refreshes to show a meter reading entry region, which lets you enter the following information:

- **Reading Date and Time**: Defaults to the current date and time. You can update the date if it follows the last meter reading in history validations.
- **New Reading**: Enter a reading value that follows the last meter reading in history validations. For example, you must enter a value for an absolute reading that is greater than or equal in value to the last reading in history based on the date and time entered.
- **Comments**: Optional. Lets you record a text comment about the reading.
- **Work Order**: The work order reference is automatically recorded for each reading and not displayed to you in the edit region.

Clicking the **Save** action submits the meter reading update. If there are any errors, they are shown in the edit region. You can correct the reading or date values and save again to resolve any data entry mistakes. You can also click the **Cancel** action to disregard the meter reading details and refresh the meters results list.

You can select the action **View Meter History** for a meter row to view a recent history of meter readings recorded for the meter.

Record Failure Events

The **Failures** tab lets you record a failure event and one or more failure instances. To create a new failure, click **Add Failure Event**. Provide the following information:

- **Failure Date**: Defaults to the current date and time, but can be updated.

- **Failure Set Name**: Read only value based on the failure set definitions.
- **Asset Down indicator**: Lets you indicate if the failure event has led to an asset down time.

Click **Save** to create the event, or **Cancel** to cancel creating the failure event.

To create a failure instance, click **Add Failure** under the Failures section that appears below the Failure Event. Enter the details related to the failure:

- **Failure**: Select a failure code.
- **Cause**: Select a cause code. The values are filtered based on the selected failure code.
- **Resolution**: Select a resolution code. The values are filtered based on the selected cause code.
- **Asset Number**: Optional. You can select a related asset as the source of the failure.
- **Failed Component**: Optional. You can select a failed component as the source of the failure.
- **Operation**: Optional. You can select an operation reference where the failure was detected.
- **Failure Comments**: Optional. You can optionally add other details, as comments.

Click **Save** to add the failure. You can use the **Add Failures** button to add more failures. You can also edit the failure events and failures after they are created.

> **Note:** Mandatory failure entry is tracked and displayed on a card on the Complete page. A card status of Pending means that failure reporting requires creating an event to complete the work order. The card status changes from Pending to Complete once the mandatory failure event is created.

Quality Inspection Plans

The **Quality Inspection Plans** tab on the Report Work page lets you view any associated asset type inspection plans.

You can use the filters to selectively view the **Required**, **Open** or **All** plans. If an inspection plan is required, then the work order cannot be completed until the inspection is performed.

To perform an inspection, click **Add Event** against the inspection plan row. You can record inspection data for each characteristic. If the data you enter passes the inspection criteria, then the status updates to Pass.

Add Notes

The **Notes & Attachments** tab lets you record notes for the work order. Click the **Add** to add a new note. Provide details for the new note:

- **Secondary Source**: The primary source is automatically designated as the work order. However, you can optionally select a secondary source of **Operation** to further designate the new note as being related to a specific operation sequence.
- **Secondary Source Value**: If a secondary source of **Operation** is selected, then the secondary source value lists the operations in the work order.
- **Note Type**: Select between **General Note**, **Repair Suggestion**, and **Turnover Note**. Custom note types may also appear.
- **Note Visibility**: You can indicate if the note is **Public** or **Private**.
- **Note Text**: Enter your note text here. After entering the note, you can optionally click the **AI Assist** action, if enabled, to reformat your text entry.

- **Attachments**: You can optionally add or remove attachments within the note.

Note: The AI Assist capability is optional and is only available for the English language. The capability needs to be enabled for use in the work summary. Additional details for enabling AI Assist are covered in the Maintenance chapter of the Implementing Manufacturing and Supply Chain Materials Management guide.

You can optionally create custom note types and determine if they have a note type of public or private. Additional details are covered in the HCM documentation.

When you create a note, it is available under the **Notes & Attachments** tab. You can see a preview of the note text, type of note, work order asset, and the user who created the note. You can sort the notes by date, author, source type, and note type.

Enable the AI Assist Capability

The AI Assist capability is optional and is available only for the English language. You need to enable the option for use in the work order notes.

To enable the **AI Assist** button for notes on the Report Work page:

1. Switch to the **Notes & Attachments** tab.
2. Click the **Settings and Actions** menu for the page. You can click your user image or name in the global header to open the **Settings and Actions** menu.
3. Select **Edit Page in Visual Builder Studio**.

   Note: To view the **Edit Page in Visual Builder** option in the **Settings and Actions** menu, the user must have a role that includes the View Administration Link privilege (`FND_VIEW_ADMIN_LINK_PRIV`).

4. Set the **enableAIAssist** attribute to true and **Publish** the change.

The **AI Assist** button should now appear for new notes that you add.

Asset Routes

Asset routes allow you to centrally plan, execute and record maintenance for a collection of assets using a single work order. Asset routes are useful for repetitive or routine maintenance such as inspections or preventative maintenance, eliminating the overhead of creating multiple work orders for the same activity.

For example, these are some use cases where you can use asset routes:

- Inspect and maintain Fire extinguishers in each floor of a building.
- Maintain hospital beds by room in each ward of a hospital.
- Perform basic preventative maintenance on forklifts in a production facility.

Routes are:

- Defined using a logical hierarchy.
- Forecasted using a maintenance program.
- Managed using the Maintenance Supervision page.
- Recorded for compliance in the My Maintenance Work page.

  For now, routes aren't supported in a manually created work orders.

To get started, model these assets:

- An asset that represents the asset route activity or a physical location such as a plant, building, floor, or a production line. This asset is forecasted by a preventative maintenance program and is used to create maintenance work orders. Therefore, it's recommended to name it something that represents the collection of assets being maintained by the asset route.
- Maintainable assets that are referenced in the asset route but can also be individually maintained.

Complete Work

Use the Complete Work page to complete a work order. The page helps you verify the progress of required reporting and submit a work order for completion.

You can complete a work order from the My Maintenance Work page. Use the **Actions** menu for the work order row to complete the work order. You can also complete the work order from the Report Work or Preview Work Order pages.

> **Note:** Until you complete the work order on the Complete Work page, the status for the last count point operation shows as incomplete.

Work Summary

Use the Work Summary section to optionally record a short narrative of the work that was performed on the asset. You can use the summary to outline the purpose of the work order, conditions observed, actions taken to resolve the issue or complete the planned service. Once finalized, the summary is saved as a special type of note that can be viewed on the Complete Work page or the Preview Work page.

Click **Add Notes** to create a work summary. You have the following options to define a work summary:

- You can manually compose the narrative text and save it.
- You can click the **AI Assist** button to automatically summarize your work order based on the work order description, operations performed, materials used, and any reported failure, cause, and resolution codes. You can then save the summary.
- You can use AI Assist to generate the summary, review and manually edit the generated summary, and then save it.

> **Note:** The AI Assist capability is optional and is available only for the English language. You need to enable the option for use in the work summary.

Enable the AI Assist Capability

The AI Assist capability is optional and is available only for the English language. You need to enable the option for use in the work summary.

To enable the **AI Assist** button for the work summary on the Complete Work Order page:

1. Click the **Settings and Actions** menu for the page. You can click your user image or name in the global header to open the **Settings and Actions** menu.

2. Select **Edit Page in Visual Builder Studio**.

   > **Note:** To view the **Edit Page in Visual Builder** option in the **Settings and Actions** menu, the user must have a role that includes the View Administration Link privilege (FND_VIEW_ADMIN_LINK_PRIV).

3. Set the **enableAIAssist** attribute to true and **Publish** the change.

The **AI Assist** button should now appear for the **Work Summary** field.

Return to Inventory

A Return to Inventory section appears below the Work Summary if the work order is enabled for the completion of assets to inventory. In this section, you must define the completion sub-inventory location, and if locator controlled, a return locator. Additionally, if an asset is not repairable, you can return to an unserviceable or Material Review Board (MRB) sub-inventory location.

If the Return to Inventory section is enabled, then the work order completion **Submit** button is disabled until the inventory details are defined.

Reporting Overview

The Reporting Overview section tracks the reporting progress for your work order. Each card has a status badge and a link to the relevant tab in the Report Work page. Use this section to review pending reporting under the following:

- Operations: The status moves from pending to completed once all operations have been completed for the work order and asset. If multiple users are assigned to operations, then completions by each assigned user must be reported. If there are any users clocked into an operation, then a status of Pending - Clocked In appears.
- Asset Route: This appears for asset route work orders only. It shows if the assets are automatically reported or need manual reporting to complete a work order. For manual reporting, the status moves from pending to completed only after all the assets are reported.
- Materials: The status moves from pending to completed once all mandatory reporting materials are finished. Mandatory reporting is required for pull-type materials that are lot or serial controlled. Pull-materials that are plain items don't require reporting and display a status of completed, as they can be optionally reported, else they will be backflushed during operation or work order completion.
- Resources: The status moves from pending to completed once all manual reporting resources are finished. Manual resource reporting is satisfied if partial, full, or over quantity is reported. Else, if no reporting is performed, it shall remain as pending.
- Meters: The status moves from pending to completed once all the mandatory meters have been reported. If there are no mandatory meters, the status will show as completed.
- Failures: The status moves from pending to completed once a mandatory failure capture event has been reported. If there is no mandatory event, the status will show as completed.
- Notes & Attachments: The status always shows completed.

The work order completion **Submit** button shows disabled until all statuses show as completed.

Submit for Completion

The **Submit** button is enabled once all items in the Reporting Overview section show as **Completed**. Clicking **Submit** processes the work order for completion. This completes the last operation sequence for the work order and returns the asset to inventory if applicable. If no error messages are returned, the work order is completed and the status is updated in the page header.

Note: Work orders show a status of Completed in the My Maintenance Work page results after the ingestion is run to refresh the search index.

How You Use Knowledge Management

You can leverage Knowledge Management's knowledge repository in My Maintenance Work, as part of the maintenance work order execution process.

You can also review, optionally edit, and suggest changes to published articles in context of the maintenance tasks that you are executing.

Create and Publish Articles

Knowledge articles are digital documents that can include text, videos, images, infolets, animations, and online interviews.

Within Knowledge Management, there are several departments for which the user can create articles. Knowledge Management and Oracle Maintenance Cloud work with the Internal Help Desk department. This means that you need to create your articles based on the content type of the Internal Help Desk department.

To create a new knowledge article:

1. In Fusion Service, navigate to Knowledge Authoring.
2. Click **Create Article** on the Authoring page.
3. Select the appropriate content type, and provide the necessary details.
4. Select the user groups that apply.
5. Click Create.
6. Publish the knowledge article.

Note: Knowledge articles must be created and published in content types associated with the Internal Help Desk department to show up in the Maintenance Cloud application.

View Your Knowledge Content in My Maintenance Work

You can navigate to Knowledge Management in the context of a work order by selecting **Knowledge Management** from the **Actions** menu for a work order row in My Maintenance Work. Alternatively, you can select the **Knowledge Management** tab from the Report Work page. The work order description appears as the default text in the search bar, which lets you search for published knowledge articles related to the work.

15 Reports and Analytics

How You Print a Maintenance Work Definition Report

The Maintenance Work Definition Report contains a list of work definitions and their details, describing how to perform a specific maintenance activity. The report provides a complete view of the work definition header and each operation's materials and resources requirements. You have the flexibility to control the creation, view, download, and printing of the report using a .PDF format.

> **Note:** The report will only reference Work Definitions in the contextual Maintenance Organization. However, you can't generate a report across Maintenance Organizations.

The maintenance work definition report provides you the ability to perform:

- Offline review to ensure that the work definition has been set up correctly.
- Exchange information offline, for example, with quality engineers, operators, and so on.

You can access a Work Order Material List Report from multiple pages in the application:

- Manage Maintenance Work Definitions Page

  You can generate the report for a single work definition row returned in the results table by selecting the row level action labeled **Print Work Definition Report**. This action generates an on-demand report in a .PDF format for you to review.
- Maintenance Management work area task panel

  The Print Maintenance Work Definition Report task navigates you to a report page. This page enables you to run a scheduled process to generate and view the maintenance work report based on one or more optional report parameters. In addition, you can use the advanced options to schedule the report to regularly run on a schedule.

  The report is for work definitions only in the contextual organization. You can change the Organization in the page header and run the report again for any Maintenance Organization.
- Scheduled Processes page

  You can schedule a process to generate the Print Maintenance Work Definition Report from this page. The parameters and advanced options are also the same. The report is for the Work Definitions only in the contextual organization.

The Print Maintenance Work Definition page provides the following parameters that you can select from or enter to generate the report. These parameters are optional, if you don't define any parameters, then the report runs for all the Work Definitions in the contextual Organization. By default, all versions of a Work Definition are included in the report.

Parameter	Description
Work Definition Name	The name of the work definition for which you're generating the maintenance work definition report.

Parameter	Description
Work Definition As-of Date	The effective date of the work definition version.
From Version	The first version number in the range of work definition versions for generating the maintenance work definition report.
To Version	The last version number in the range of work definition versions for generating the maintenance work definition report.
Version Start Date	The start date of the specific work definition version.
Version End Date	The end date of the specific work definition version.
Additional Operation Details	Specify whether you want the additional operation details in the maintenance work definition report. The valid values are Yes and No.
Count Point Operations Only	Specify whether you want to include only the count point operations in the maintenance work definition report. The valid values are Yes and No.
Additional Component Details	Specify whether you want the additional component details in the maintenance work definition report. The valid values are Yes and No.
Work Center Resources	Specify whether you want to include the work center resources in the maintenance work definition report.

You can run the scheduled process on demand or schedule it to run at a specific internal of time. To run the scheduled process at a specific schedule or time, you can click the **Advanced** button and then in the Schedule tab, select Using a schedule from the Run option. Now, you can select the frequency and enter a start date for the scheduled process to run.

How You Print a Material List

The Work Order Material List report contains a list of work orders which have operations with material items. The report provides a complete view of the work order header and each operation's materials requirements, providing a planner and technician with all the necessary information to prepare for and execute each work order operation. You have the flexibility to control the creation, view, download and printing of the report using a .PDF format.

The report is organized by each work order, including work order number, description, asset number, status, start date, completion date, asset quantity, and Unit of Measure (UOM). If your organization is project-tracked, you can also view the associated project number and task number for the project-specific work orders.

Within each work order, the materials are listed in order of the operation sequence. This includes details such as the item number, description, operation sequence, operation name, work center, required quantity, Unit of Measure (UOM), basis, supply type, required date, sub-inventory, and locator.

Several report fields also include bar codes, including work order number, asset number, and item number.

Note: The report will only reference Operation Material Items for Work Orders in the contextual Maintenance Organization. However, you can't generate a report across Maintenance Organizations.

You can access a Work Order Material List Report from multiple pages in the application:

- Manage Maintenance Work Orders page

  You can generate the report for a single work order row returned in the search results by selecting the row level action labeled **Print to PDF** and **Print Material List**. This action generates an on-demand report in a .PDF format for you to review.

- Maintenance Management work area task panel

  The Print Material Item task navigates you to a report page. This page enables you to run a scheduled process to generate and view the material list report based on one or more optional report parameters. In addition, you can use the advanced options to schedule the report to regularly run on the schedule.

  The report is for work orders only in the contextual organization. You can change the Organization in the page header and run the report again for any Maintenance Organization.

- Scheduled Processes page

  You can schedule a process to generate the Print Material List report from this page. The parameters and advanced options are also same. The report generated is for the work orders only in the contextual organization.

The Print Material List page provides the following parameters that you can select from or enter to generate the report. You must define at least one parameter to generate the report. These parameters include a work order number from or to value, or a start date from or to value. You can provide these parameters individually or as a group to control a range of work order numbers or start dates.

Parameter	Description
From Work Order	The first work order number in the range of work orders for which the material list report is to be generated.
To Work Order	The last work order number in the range of work orders for which the material list report is to be generated.
From Work Order Start Date	The first date in the range of work order start dates for which the material list report is to be generated.
To Work Order Start Date	The last date in the range of work order start dates for which the material list is report to be generated.
Work Order Asset	The asset for which the maintenance work is being done per the work order.
Work Center	The work center to which the work order belongs.
Work Order Status	You can select from the following work order statuses: • Unreleased • Released

Parameter	Description
	• On Hold • Canceled • Completed • Closed The default is blank.
From Material Required Date	The date starting from which the material is required.
To Material Required Date	The date until which the material is required.
Group by	You can group the material list by: • Work Order • Work Order/ Work Center
Sort by	You can sort the material list by: • Subinventory • Material
Project Number	The number of the project. This is applicable only for project-specific work orders. **Note:** This option appears only for project enabled organizations.
Task Number	The number of the task. This is applicable only for project-specific work orders. **Note:** This option appears only for project enabled organizations.

How You Print Maintenance Work Order Details

The Work Order Details Report contains a list of work orders and their operation details, describing how to perform a specific maintenance activity. You have the flexibility to control the creation, view, download and printing of the report using a .PDF format.

The work order details report contains the following information to assist you to in planning and completing the work order:

- Work order header details, including project number and task number for project-specific work orders
- Work definition details

- Work order operations, materials, resources, and resource instances
- Attachments such as work instructions, design docs, and so on

Note: The report references only the Operation Material Items for Work Orders in the contextual Maintenance Organization. However, you can't generate a report across Maintenance Organizations.

You can access one of several Work Order Details Reports from multiple pages in the application:

- Manage Maintenance Work Orders page

  You can generate the report for a single work order row returned in the results table by selecting the row level action labeled **Print to PDF** and **Print Work Order Details**. This action generates a single on-demand report in .PDF format for you to review.

  This report will automatically include any work order attachments.

- Maintenance Management work area task panel

  The task Print Work Orders Details navigates you to a report page. This page enables you to run a scheduled process to generate and view the work order details report based on one or more optional report parameters. Optionally, you can use the advanced options to schedule the report to run on a schedule.

  This page includes two unique parameters:

  - Include Attachments

    By default, this parameter is set to Yes. Therefore, each report will include work order attachments. However, you can deselect this option before submitting the process.
  - Single output file

    By default, this parameter is set to No. Therefore, the report output will create a unique .PDF files for each work order. However, you can check this option before submitting the process, which will then combine all the work orders into a single output file.

  No Output tab under the Advanced options:

  You cant' pick the format or destination, always use as an .PDF output file in the process.

  The report will be for work orders only in the contextual organization. You can change the Organization in the landing page header and run the report again for any Maintenance Organization.

- Scheduled Processes page

  You can schedule a process to generate a similar Work Order Details report from this page. The parameters are slightly different, but the advanced options are the same. However, you can neither include attachments nor a single output file option. Hence, individual output files for each work order are created.

  Output tab under the Advanced options:

  You can pick the format and destination options.

  The report will also be for Work Orders only in the contextual Maintenance Organization.

The Print Work Order Details page provides the following parameters that you can select from or enter to generate the report. You must define at least one of the several parameters to generate the report. These parameters include a work

order number from or to value, or a start date from or to value. You can define these parameters either individually or grouped together to control a range of work order numbers or start dates.

Parameter	Description
From Work Order	The first work order number in the range of work orders for which the work order details report is to be generated.
To Work Order	The last work order number in the range of work orders for which the work order details report is to be generated.
From Work Order Start Date	The first date in the range of work order start dates for which the work order details report is to be generated.
To Work Order Start Date	The last date in the range of work order start dates for which the work order details report is to be generated.
Work Order Asset	The asset for which the maintenance work is being done per the work order.
Work Order Status	You can select from the following work order statuses: • Unreleased • Released • On Hold • Canceled • Completed • Closed The default is blank.
Include Attachments	You can include the following type of attachments: • Short text • Long text • Image file • URL • File attachments
Single output file	If set to No (default), then individual output files are created for each work order. If set to Yes, then a single consolidated file of all the work orders is created. **Note:** This option is only available from the Print Work Order Details page.
Project Number	The number of the project. This is applicable only for project-specific work orders.

Parameter	Description
	Note: This option will only appear for the project enabled organizations.
Task Number	The number of the task. This is applicable only for project-specific work orders. **Note:** This option will only appear for the project enabled organizations.

OTBI for Oracle Maintenance

Oracle Transactional Business Intelligence (OTBI) offers you real time, self-service reporting directly from Oracle Maintenance. It's a dynamic reporting layer built keeping the business user in mind.

You can create and view the OTBI analysis using the **Reports and Analytics** option. You can also be access it from the Navigator by selecting it from the **Tools** option on the Home page. You can also make this page a Favorite.

If you're responsible for maintenance manager tasks for your enterprise, you have access to OTBI subject areas related to manufacturing. However, you can analyze only for the organizations you have permissions for.

OTBI provides the following Maintenance subject areas, which you can use to build modified analysis:

- Installed Base - Meter Based Asset Usage Real Time

  Provides real time information on asset usage based on meter readings.
- Maintenance Management - Asset Real Time

  Provides information about Assets and the Actual Quantity Used.
- Maintenance Management - Forecast Real Time

  Provides real time information on forecasts generated from work requirements of specified maintenance programs.
- Maintenance Management - Material Usage Real Time

  Provides information about Material Usage Planned, Actual and Variance quantity, issued and returned quantity of the components.
- Maintenance Management - Purchased Item Usage Real Time

  Provides information about direct procurement of items for the work order. This includes purchased item quantities that were requested, ordered, received, returned, and so on.
- Maintenance Management - Resource Usage Real Time

  Provides information about Resource Usage Planned, Actual, and Variance quantity.
- Maintenance Management - Work Order Performance Real Time

  Provides information about work order performance. This includes work order aging, cycle times, number of work orders, and so on.
- Maintenance Management - Work Requirement Real Time

  Provides real time information on maintenance programs and related work requirements.
- Maintenance Management - Asset History Real Time

  Provides real time information of asset history.

OTBI provides the following Install Base subject areas, which you can use to build modified analysis for customer assets:

- Installed Base - Customer Asset Real Time

  This subject area provides real time information on customer asset definition and related customer details. Only assets that have a customer defined will be included.
- Installed Base - Customer Asset Structure Real Time

  This subject area provides real time visibility into customer asset structures. Each structure is a list of components associated to a configured asset when it's shipped.
- Installed Base - Asset History Real Time

  This subject area provides real time of installed base assets.

Here are the dimensions, key facts, and metrics for each subject area:

Subject Area	Dimensions	Key facts	Key Metrics
Installed Base - Meter Based Asset Usage Real Time	• Asset Details • Item • Item Organization • Maintenance Organization • Meter Details • Meter Reading • Meter Reading Details • Time-Meter Reading Date • Work Center • Work Order	• Reading value • Reading displayed value • Reading net change • Reading net value (life-to-date value)	Net meter reading value
Maintenance Management - Asset Real Time	• Asset • Asset Details • Asset Group • Asset Group Assignment • Asset Group Rule • Inventory Organization • Product • Time of Planned Start Date • Work Center • Work Order • Work Order Status	• Asset Number • Asset Descriptive Flexfields • Work Order Name • Scheduled Start Date • Scheduled End Date • Item Primary Unit of Measure • Item Primary Unit of Measure Quantity • Item Secondary Unit of Measure • Item Secondary Unit of Measure Quantity • Enable for Customer Self Service • Service Request Enabled	• Actual Quantity Usage in Primary UOM • Actual Quantity Usage in Primary UOM
Maintenance Management - Forecast Real Time	• Asset Details • Calendar Pattern • Forecast Details • Forecast Line • Forecasts • Maintenance Organization • Maintenance Program • Production • Time-Forecast • Work Center • Work Definition • Work Order • Work Order Status	• Forecast Date • Forecast Meter Reading • Forecast Sequence • Suppressed Option • Work Order Name • Scheduled Start Date • Scheduled End Date • Item Primary Unit of Measure • Item Primary Unit of Measure Quantity • Item Secondary Unit of Measure • Item Secondary Unit of Measure Quantity	

Subject Area	Dimensions	Key facts	Key Metrics
	• Work Requirement Details o Asset Historical Service Date o Asset Historical Service Interval o Assets Included Option o Day Based o Forecast Window in Days o Number of Days o Work Order Window in Days o Work Order Priority o Work Order Firm o Work Order Status o Work Order Create Option o Work Requirement Next Due By o Work Requirement Reference o Affected Assets - Asset Historical Service Date - Asset Historical Service Interval - Asset Start Date - Work Order Create Option o Work Definition Due Details - Work Definition Due at Interval - Work Definition Repeats at Interval - Disabled		
Maintenance Management - Material Usage Real Time	• Current On-Hand Inventory • Inventory Material • Inventory Organization • Inventory Project Details • Material Transaction Details • Material Usage • Product • Project Details • Time of Planned Start Date • Transaction Project Details • Work Definition • Work Order • Work Order Operations • Work Order Status	• On Hand Balance • On Hand Balance in Secondary UOM • Work Order Name • Operation Name • Scheduled Start Date • Scheduled End Date • Status • Item • Item Primary Unit of Measure • Item Primary Unit of Measure Quantity • Item Secondary Unit of Measure	• Actual Usage Quantity • Material Issued Quantity in Primary UOM • Material Issued Quantity in Secondary UOM • Material Issued Quantity in Transaction UOM • Material Returned Quantity in Primary UOM • Material Returned Quantity in Secondary UOM • Material Returned Quantity in Transaction UOM • Planned Usage Quantity • Reserved Quantity • Usage Quantity Variance

Subject Area	Dimensions	Key facts	Key Metrics
		• Item Secondary Unit of Measure Quantity • Transaction Date	• Usage Quantity Variance %
Maintenance Management - Purchased Item Usage Real Time	• Asset Details • Maintenance Organization • Procurement Item • Product • Project Details • Purchase Order • Purchased Item Usage • Receipt, Returns and Corrections • Requester • Requisition • Time of Planned Start Date • Work Center • Work Order • Work Order Operations • Work Order Status	• Item • Item Primary Unit of Measure • Item Primary Unit of Measure Quantity • Item Secondary Unit of Measure • Item Secondary Unit of Measure Quantity • Purchase Order • Need By Date • Promised Date	• Correct Receipt Quantity in Primary UOM • Correct Receipt Quantity in Secondary UOM • Correct Return Quantity in Primary UOM • Correct Return Quantity in Secondary UOM • Delivered Quantity in Primary UOM • Delivered Quantity in Secondary UOM • Purchase Order Amount • Purchase Order Quantity in Primary UOM • Requisition Amount • Requisition Quantity in Primary UOM • Requisition Quantity in Secondary UOM • Return to Receiving Quantity in Primary UOM • Return to Receiving Quantity in Secondary UOM • Return to Supplier Quantity in Primary UOM • Return to Supplier Quantity in Secondary UOM
Maintenance Management - Resource Usage Real Time	• Inventory Organization • Product • Project Details • Resource • Resource Instance • Resource Transaction Details • Resource Usage • Time of Planned Start Date • Transaction Project Details • Work Center • Work Definition • Work Order	• Work Order Name • Operation Name • Scheduled Start Date • Scheduled End Date • Status • Resource Name • Resource Type • Resource Instance • Asset Name • Item Primary Unit of Measure • Item Primary Unit of Measure Quantity	• Actual Quantity Usage • Planned Quantity Usage • Usage Quantity Variance • Usage Quantity Variance %

Subject Area	Dimensions	Key facts	Key Metrics
	• Work Order Operation Resources • Work Order Operations • Work Order Status	• Item Secondary Unit of Measure • Item Secondary Unit of Measure Quantity • Transaction Date • Transaction Note	
Maintenance Management - Work Requirement Real Time	• Asset Details • Calendar Pattern • Condition Event • Maintenance Organization • Maintenance Program • Meter • Product • Time - Maintenance Program • Time - Work Requirement • Work Center • Work Definition • Work Requirement Details	• Asset Name • Item Primary Unit of Measure • Item Primary Unit of Measure Quantity • Item Secondary Unit of Measure • Item Secondary Unit of Measure Quantity	• Count of Assets with Work Requirements • Count of Total Assets • Count of Work Requirements • Percentage of Assets with Maintenance Programs

Subject Area	Dimensions	Key facts	Key Metrics
	• Work Requirements o Asset Historical Service Date o Asset Historical Service Interval o Assets Included Option o Day Based o Forecast Window in Days o Number of Days o Work Order Window in Days o Work Order Priority o Work Order Firm o Work Order Status o Work Order Create Option o Work Requirement Next Due By o Work Requirement Reference o Affected Assets - Asset Historical Service Date - Asset Historical Service Interval - Asset Start Date - Work Order Create Option o Work Definition Due Details - Work Definition Due at Interval - Work Definition Repeats at Interval - Disabled		
Maintenance Management - Asset History Real Time	• Asset History • Asset History Count • Customer • Customer Asset Detail • Inventory Location • Item • Item Organization • Work Center Location	• Asset Attributes Changes • Asset Location Changes • Sales Order Changes • Split from Asset • Work Order Changes	• Asset Transaction Count
Installed Base - Customer Asset Real Time	• Asset Group • Asset Group Assignment • Asset Group Rule • Bill-to Customer • Bill-to Customer Account	• Asset Number • Customer Asset Descriptive Flexfields • Item • Item Primary Unit of Measure	Customer Asset Count

Subject Area	Dimensions	Key facts	Key Metrics
	• Bill-to Customer Account Site • Bill-to Customer Site • Business Unit • Current Location Details • Customer • Customer Asset Details • Customer Assets • Item • Item Organization • Time	• Item Primary Unit of Measure Quantity • Item Secondary Unit of Measure • Item Secondary Unit of Measure Quantity • (Customer) Preferred Name	
Installed Base - Customer Asset Structure Real Time		• As Built Asset Structure • As Built Asset Structure Details • As Sold Asset Structure • As Sold Asset Structure Details • Customer Asset Details (Child Asset) Build Structure • Customer Asset Details (Child Asset) Sold Structure • Customer Asset Details (Parent Asset) Build Structure • Customer Asset Details (Parent Asset) Sold Structure • Item Organization (Child Asset) Build Structure • Item Organization (Child Asset) Sold Structure • Item Organization (Parent Asset) Build Structure • Item Organization (Parent Asset) Sold Structure • Item (Child Asset) Build Structure • Item (Child Asset) Sold Structure • Item (Parent Asset) • Item (Parent Asset) Sold Structure • Time	• Asset Number • Customer Asset Descriptive Flexfields • Item • Item Primary Unit of Measure • Item Primary Unit of Measure Quantity • Item Secondary Unit of Measure • Item Secondary Unit of Measure Quantity • (Customer) Preferred Name
Installed Base - Customer Asset History Real Time	• Asset Detail • Asset History • Asset History Count	• Asset Attributes Changes • Asset Location Changes • Sales Order Changes	• Asset Transaction Count

Subject Area	Dimensions	Key facts	Key Metrics
	• Inventory Organization • Product • Work Center • Work Order	• Split from Asset • Work Order Changes	

Subject Area	Dimensions	Key facts	Key Metrics
Supplier Warranty - Asset Real Time	• The Claim folder includes these attributes: o Claim ID o Claim Number o Claim Type o Manually Created o Object Type o Object ID o Warranty Provider ID o Claim Date o Claim Status o Submit By Date o Claim Amount o Claim Amount Currency Code o Claim Notes o Reimbursement Reference o Assigned To Person ID o Reason For Repair Code o Provider Labor Rate o Match To TXN o Material Amount Total o Equipment Amount Total o Labor Amount Total o Standard Labor Amount o Other Amount o Claim Adjustment Amount o Currency Conversion Type o Currency Conversion Rate o Reimbursement Amount o Reimbursement Type o Resolution Date o Active End Date o Currency Code o Corp Currency Code o Currency Conv Rate Type		

Subject Area	Dimensions	Key facts	Key Metrics
	• The Person Details folder includes these attributes: o Business Unit o Department o First Name o Last Name o Middle Name o Name o Party ID o Person Number o Person Type o Primary Email o Primary Phone o Registry ID		

Subject Area	Dimensions	Key facts	Key Metrics
	• The Entitlements folder includes these attributes: o Entitlement ID o Claim ID o Entitlement Number o Entitlement Date o Entitlement Type o Organization ID o Contract ID o Asset ID o Entitlement Description o Manually Created o Warranty Entitled o Cost Transaction ID o Work Order ID o WO Operation ID o WO Operation Resource ID o WO Operation Material ID o Transaction Code o Work Accomplished Code o Reason for Repair Code o Reimbursement Qty o Reimbursement Qty UOM Code o Reimbursement Unit Cost o Reimbursement Total Cost o Reimbursement Currency Code o Entitlement Notes o External Reference Number o Currency Code o Corp Currency Code o Currency Conv Rate Type • Claim Detail: Standard set of attributes • Entitlement Detail: Standard set of attributes • Time - Claim Date: Standard set of attributes		

Subject Area	Dimensions	Key facts	Key Metrics
	• Time - Entitlement Date: Standard set of attributes		
Maintenance Management - Asset Equipment Qualification	• Time - Qualified Date • Product • Inventory Organization • Work Order • Work Definition • Work Order Operations • Work Order Operation Resource • Resource Instance • Asset Details • Maintenance Program • Qualification Inspection Event Dispositions • Qualification Sample Results • Qualification Characteristics • Qualification Inspection Specifications • Qualification Samples • Qualification Inspection Events • Qualification Inspection Plan • Maintenance Equipment Requirement Inspection Plans • Maintenance Equipment Qualification Requirements • Maintenance Equipment Qualification Requirements Profile • Asset Qualification • Asset Qualification Details		

Creating an Analysis

The following section explains some subject areas in detail and provides guidance on creating different analysis for the different subject areas.

For more information about the subject areas, see the Subject Areas chapter in the Creating and Administering Analytics and Reports for SCM guide.

Maintenance Management - Forecast Real Time

This subject area provides real time information for creating an analysis of the forecast for a Maintenance Program. You can use these data dimension folders to create your analysis:

- Asset Details
- Calendar Pattern
- Forecast Details
- Forecast Line
- Forecasts
- Maintenance Organization
- Maintenance Program
- Product
- Time-Forecast
- Work Center
- Work Definition
- Work Order
- Work Order Status
- Work Requirement Details

To properly create an analysis, its important to understand what data dimensions are available in these folders, how they're related, and how they relate to the data model:

1. Select the columns that will be included in the analysis.
2. Select a Table layout.
3. Edit the Table layout, define sorting and filtering, and save the analysis in your folders with a unique analysis name and description.
4. Now. you can use the analysis to query your data.

   > **Note:** Optionally, you can minimally define the analysis during creation and then perform these edits after creation in the context of your data by providing more realistic creation and output comparisons of real-time data.

5. Navigate to the **Browse Catalog** option from the Reports and Analytics page.

   This opens a new tab for the Oracle Transactional Business Intelligence application. You can then look for your newly created analysis under the My Folders drop down.
6. Click **Edit** on your analysis, which will render the Results tab that returns a query of your data.
7. After you created your analysis, click on the **Criteria** tab to view the data dimension folders and edit the selected columns.
8. Drag and drop columns and arrange them as per your requirement.
9. Optionally, use the **Settings** icon to format your data to perform the following tasks:
   - Define the sort order
   - Edit a formula
   - View and edit column properties, which includes formatting numbers in the results data
   - Create and edit a filter

- Delete the column from the analysis
- Save the column as a special object

10. Optionally, you can edit, copy, or remove the filter that you applied.
11. If you remove the selected column for the filter, the filter still remains to be in use. Remove the filter as well.
12. Now, you select additional columns and apply filters.
13. Click the **Results** tab to see a refreshed analysis of your data.
14. You can then adjust the selected columns, filter and sort options to refine your analysis results.

Here's the sample order of attributes and formatting in the Selected Columns region for a Maintenance Forecast analysis, including key details about the forecast method and resulting due dates and Work Orders:

Folder	Attribute	Data Dimension Description	Formatting Ideas
Maintenance Program	Maintenance Program Name	Name of the Program	Add a filter to limit the analysis to a single Maintenance Program
Work Requirement Details	Work Requirement Name	Name of the Work Requirement	Add a filter to limit the analysis to a single Work Requirement in a Maintenance Program
Work Requirement Details	Work Requirement Start Date	Start Date	
Asset Details	Asset Number	Asset Number	Add a filter to only show the forecast for a single asset
Work Requirement Details	Forecast Using Cycle	Yes or No If yes a cycle interval number is defined	
Work Requirement Details	Work Requirement Cycle Interval	If Yes for the Forecast Using Cycle, then the number of intervals in a cycle	
Work Requirement Details	Next Work Order Only	Yes, if Next Work Order is created	
Work Requirement Details	Calendar Based	Yes, if its calendar based	
Calendar Pattern	Calendar Pattern Name	Calendar Pattern name, if defined for the work requirement	
Work Requirement Details	Meter Based	Yes, if its meter based	
Forecast Line	Meter ID	ID of the Asset Meter that's due in the Forecast, if defined for the work requirement	
Forecast Line	Forecast Meter Reading	The forecasted meter reading at which the forecasted due date is calculated	

Folder	Attribute	Data Dimension Description	Formatting Ideas
Forecast Line	Forecast Date	Due Date in the Forecast	Add a filter to only show the forecast for certain date ranges
Forecast Line	Forecast Sequence	Represents the due at interval in the cycle of a work definition. If its set to repeat over the cycle, then each iteration will be shown	
Work Definition	Work Definition Name	Work Definition Name	
Forecast Line	Due at Cycle Interval	Represents at which interval in the cycle a Work Definition is due	
Work Order	Work Order Name	Name of the Work Order that a user can recognize	
Work Order	Scheduled Start Date	Scheduled Start Date	
Work Order Status	Work Order Status	Work Order Status	

Using the above sample table, you can create an analysis, which is:

- Organized by the Maintenance Program and then a Work Requirement
- Listed with each matching Asset, and the source Work Requirement's forecast method and the resulting sequential Due Dates
- Displayed for each Due Date, the Forecast sequence, Work Definition, and the resulting Work Order

Additionally, you can move columns around in the Results to change the presentation of the analysis. For example, if you move the Asset Number column before the Forecast Sequence, the analysis will change resulting to Work Requirement focused. You can save your analysis for future use. You can also print or export the analysis for further research using Excel.

Here's the sample order of attributes and formatting for a Work Order analysis using the Forecast subject area. This analysis provides a Work Order schedule that includes meter reading history by the Maintenance Program:

Folder	Attribute	Data Dimension Description	Formatting Ideas
Maintenance Program	Maintenance Program Name	Name of the Program	Add a filter to limit the analysis to a single Maintenance Program
Work Requirement Details	Work Requirement Name	Name of the Work Requirement	Add a filter to limit the analysis to a single Work Requirement in a Maintenance Program
Work Requirement Details	Work Requirement Start Date	Start Date	

Folder	Attribute	Data Dimension Description	Formatting Ideas
Asset Details	Asset Number	Asset Number	Add a filter to only show the forecast for a single asset
Forecast Line	Forecast Meter Reading	The forecasted meter reading at which the forecasted due date is calculated	
Forecast Line	Forecast Date	Due Date in the Forecast	Add a filter to only show the forecast for certain date ranges
Forecast Line	Forecast Sequence	Represents the due at interval in the cycle of a work definition. If its set to repeat over the cycle, then each iteration will be shown	
Work Definition	Work Definition Name	Work Definition Name	
Work Order	Work Order Name	Name of the Work Order that a user can recognize	
Work Order	Scheduled Start Date	Scheduled Start Date	
Work Order	Scheduled End Date	Scheduled End Date	
Work Order Status	Work Order Status	Work Order Status	

Here's the sample order of attributes and formatting for a Work Order schedule using the Forecast subject area:

Folder	Attribute	Data Dimension Description	Formatting Ideas
Maintenance Organization	Maintenance Organization Code	The Organization for the Maintenance Program	Add a filter to only show a single organization
Forecast Line	Forecast Date	Due Date in the Forecast	Add a filter to only show the forecast for certain date ranges
Asset Details	Asset Number	Asset Number	Add a filter to only show the forecast for a single asset
Calendar Pattern	Calendar Pattern Name	Calendar Pattern name, if defined for the work requirement	
Forecast Line	Forecast Meter Reading	The forecasted meter reading at which the forecasted due date is calculated	

Folder	Attribute	Data Dimension Description	Formatting Ideas
Work Definition	Work Definition ID	Identification of the Work Definition, useful if work definitions are merged	
Work Definition	Work Definition Name	Work Definition Name	
Work Order	Work Order Name	Name of the Work Order that a user can recognize	
Work Order	Scheduled Start Date	Scheduled Start Date	
Work Order	Scheduled End Date	Scheduled End Date	
Work Order Status	Work Order Status	Work Order Status	

Adding a Deep Link to an Analysis

Deep links can be embedded for an asset or work order directly in related results attributes of an analysis. Here's an example of how you can enable the asset number attribute with an asset details deep link in a simply analysis.

1. Create a new analysis and add these subject areas:
    - Maintenance Management - Work Order Performance Real Time
    - Maintenance Management - Asset Real Time
2. Add these fields from the dimension folders:
    - Asset Number
    - Asset ID (only from asset details)
    - Work Order ID
    - Work Order Name
    - Work Order Description
    - Document type and document number details (optional)

3. To add a deep link, click on the Asset Number details icon, then select column properties.
    a. Click the Interaction tab
    b. Select Action Links as the value.
    c. Add an Action Link by clicking the + symbol in the Action Links region.
    d. The New Action Link dialog box will open. On it:
        i. Click the left most running man icon. From the list of options, select the Navigate to a Web Page.
        ii. The New Action Link dialog box will display a URL field. On it:
            a. Click the Define Parameters button. A Define Parameter region will appear below the URL field.
            b. Click the + symbol to create a new parameter. A parameter region will appear.
            c. Define four new unique parameter rows, as follows:
                - Row 1: ORA_MNT_ASSET
                - Row 2: EDIT
                - Row 3: select the drop down option of column Value for Asset ID. The full name of the value is Maintenance Management - Asset Real Time, Asset Details, Asset ID.
                - Row 4: select the drop down option of column Value for Asset Number. The full name of the value is Maintenance Management - Work Order Real Time, Asset Details, Asset ID.
            d. After the parameter rows are defined, you can define the URL for the deep link to use these parameter rows.

                Enter the URL as: https://<servername>/fscmUI/faces/deeplink?objType=@{1}&action=@{2}&objKey=assetId=@{3};assetNumber=@{4}

                The {1} references parameter row 1, {2} references parameter row 2, and so on.

                Here's an example of a standard URL for a deep link: https://<environment name>/fscmUI/faces/deeplink?objType=ORA_MNT_ASSET&action=EDIT&objKey=assetId=<assetId value>;assetNumber=<asset number value>
            e. Finally, click Options on the New Action Link dialog box. Select the Open in new window check box
            f. Click OK to save and close the New Action Link dialog box.

        The link is defined in the column properties of the asset number.
4. To test, render the analysis and retrieve asset data. You should see a hyperlink on the Asset Number field. Click the link and a new browser tab should render and display the Edit Asset details page or similar

How You Define Report and Analytics

Create custom reports and perform data analytics by leveraging subject areas to which you have access in Oracle Transformation Business Intelligent.

This capability allows you to access reports and analytics faster and more conveniently through the Reports and Analytics pane because they are readily accessible in Maintenance Management. Subject areas represent an area of

business data that users can view in the analysis report. It consists of folders, measure columns, attribute columns, hierarchical columns, and hierarchy levels.

Here's how you define reports and analytics:

1. Navigate to **Supply Chain Execution** > **Maintenance Management**.
2. On the right side to the page, below Tasks panel drawer, click the **Report and Analytics** icon.
3. On the Report and Analytics panel drawer, click the **Create** button to create a new analysis or report.
4. From the **Select Subject Area** menu, select an operational subject area or business model that's applicable to the report or visualization you want to create. Apply business analytics by:
    - Select specific data sets to use in the report and then apply filters to each set.
    - Select and configure the resulting appearance of data. For example, you can rearrange the columns and rows in the table, insert visualizations and charts, and change column labels.
    - You can add and configure user prompts so you let users configure data filters as needed, on the reports. For example, you can add a date selection prompt to let users set the range of dates for which they need the report.

      See the Oracle Fusion Middleware Oracle Business Intelligence guide to learn more about how to create and edit analysis reports and view dashboards.