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Preface

This preface introduces information sources that can help you use the application.

Using Oracle Applications

Help

Use help icons ? to access help in the application. If you don't see any help icons on your page, click your user image or name in the global header and select Show Help Icons. Not all pages have help icons. You can also access the Oracle Help Center to find guides and videos.

Watch: This video tutorial shows you how to find and use help.

You can also read about it instead.

Additional Resources

- **Community:** Use Oracle Cloud Customer Connect to get information from experts at Oracle, the partner community, and other users.

- **Training:** Take courses on Oracle Cloud from Oracle University.

Conventions

The following table explains the text conventions used in this guide.

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<th>Meaning</th>
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<td>boldface</td>
<td>Boldface type indicates user interface elements, navigation paths, or values you enter or select.</td>
</tr>
<tr>
<td>monospace</td>
<td>Monospace type indicates file, folder, and directory names, code examples, commands, and URLs.</td>
</tr>
<tr>
<td>&gt;</td>
<td>Greater than symbol separates elements in a navigation path.</td>
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Documentation Accessibility

For information about Oracle's commitment to accessibility, visit the Oracle Accessibility Program website. Videos included in this guide are provided as a media alternative for text-based help topics also available in this guide.

Contacting Oracle

Access to Oracle Support

Oracle customers that have purchased support have access to electronic support through My Oracle Support. For information, visit My Oracle Support or visit Accessible Oracle Support if you are hearing impaired.

Comments and Suggestions

Please give us feedback about Oracle Applications Help and guides! You can send an e-mail to: oracle_fusion_applications_help_ww_grp@oracle.com.
## 1 Overview

### Overview of Oracle Manufacturing Cloud

**Introduction**

Oracle Manufacturing Cloud delivers core discrete and process manufacturing capabilities in the cloud that allow you to efficiently set up, manage, execute, and cost your production operations. It supports in-house manufacturing activities of standard products for both discrete and process manufacturing. In addition, for discrete manufacturing, it allows configured products to be executed to plan or to order, and supports contract manufacturing of standard products executed to plan or to order. It supports discrete and process manufacturing scenarios where one or more operations of a work order are outsourced to a supplier who provides specialized manufacturing services. You can run both process manufacturing and discrete manufacturing in the same plant. The enhanced capabilities to support batch production of multiple co-products and by-products provide the foundation for mixed-mode manufacturing in the same plant. It supports project-specific manufacturing execution. Oracle Manufacturing complements other Oracle Cloud applications in providing a comprehensive and complete supply chain solution for discrete and process manufacturing companies.

**Key Capabilities to Support Discrete and Process Manufacturing**

Oracle Manufacturing Cloud and Oracle Cost Management Cloud provide a breadth of capabilities that allow you to do the following:

**Set Up Manufacturing Plant Data**

Oracle Manufacturing empowers manufacturing engineers with web-based interface tools to build a foundation of manufacturing plant data, and design the discrete and process manufacturing process for items. Additionally, the application offers intuitive visualization for ease of use.

Manufacturing enables you to quickly define the necessary manufacturing setup data of your plant hierarchy. It helps you establish process standards with a standardized data model for production operations, which can be adapted to changing business processes and market conditions. The manufacturing plant data includes the following:

- **Manufacturing Plant**: Defines an organization where manufacturing setup data is specified, manufacturing processes are run, and materials management is supported.
- **Manufacturing Calendar**: Defines a production calendar to represent plant working times that includes work days, shifts, and exceptions.
- **Plant Parameters and Profile Options**: Associates a manufacturing calendar to the plant, and set up parameters and profile options to determine the behavior of work definition, work order, and work execution in a plant.
- **Work Areas**: Defines work areas to represent locations in a plant. Each work area is comprised of one or more work centers.
- **Production Resources**: Defines equipment or labor resources and resource instances used in production, and the corresponding resource rates.
  
  **Note**: Resource rates are defined in Oracle Cost Management Cloud.

- **Work Centers**: Defines work centers, such as departments or production lines where an operation is performed. Work centers comprise production resources for which the capacity and availability information is maintained.
Oracle SCM Cloud
Using Manufacturing

Chapter 1
Overview

- **Standard Operations**: Defines a predefined library of standardized in-house or supplier operations and their resources and usages, in order to add to work definitions and work orders.

In addition, Manufacturing enables you to do the following:

- Design the production process on a work definition for discrete manufacturing and process manufacturing work methods using an advanced graphical editing tool.
- Define a work definition for discrete production where the product is a standard item or configured item that's based on an ATO model.
- Define a work definition for a process with co-products and by-products. The process can complete multiple co-products and by-products at any in-house or supplier operation.
- Print a work definition report and share it internally within the organization, or externally with contract manufacturers for discrete manufacturing.
- Calculate manufacturing lead times for a product in discrete manufacturing and for all outputs in process manufacturing.
- Coordinate engineering changes and revisions to item structures through automated notifications received in discrete manufacturing.

You can quickly assess the impact to the work definitions referencing the item structure and revise them accordingly in discrete manufacturing.

- Create and update standard operations using Applications Development Framework Desktop Integrator (ADFdi) or using REST services.
- Create and update work definitions using file-based data import, ADFdi (currently supported for only discrete manufacturing work method), or using REST services.
- Stay connected with key stakeholders in managing work definitions, and collaborate real-time with cross functional teams by leveraging the power of social collaboration in manufacturing operations through embedded Oracle Social Network.
- Automatically create work definitions applicable in kitting and light assembly manufacturing environments that don't require shop floor control, in discrete manufacturing.
- Capture electronic signatures and generate electronic records while managing standard operations and work definitions.
- Obtain a real time view of machine data collected on the shop floor through a drill down from the Resource Instances section of the Edit Resource page.

**Monitor and Manage Production**

Oracle Manufacturing provides several capabilities that enable production supervisors to effectively monitor and manage production activities. All of these are designed and optimized for use on a tablet, enabling users to take action while on the move. The following infolets in the Overview page provide insight into key production related metrics at plant, work area, or work center levels:

- Work Orders
- Rework (currently supported for only the discrete manufacturing work method)
- Open Exceptions
- Operations Scheduled Versus Actual
- WIP Inspections
- Operations
Tip: The Open Exceptions and WIP Inspections infolets are applicable only at the plant level.

Note: Manufacturing provides production supervisors and production operators single click access to drill from the metrics into the details, and take action to resolve issues.

Manufacturing enables production supervisors to manage plant, work center resource working times by defining shift and resource exceptions. Manufacturing helps in managing work order-based production with in-house and supplier operations by allowing you to do the following:

- Create and manage standard work orders using a work definition as a means to initiate regular production.
- Discrete manufacturing enables you to:
  - Create and manage nonstandard work orders with or without a work definition, typically used for nonstandard production activities, such as prototyping.
  - Create and manage work orders to rework or transform products.
  - Create a standard, nonstandard, rework, and transform work order with project details in an organization that's enabled for inventory tracking by project.
- Process manufacturing enables you to:
  - Create a batch or work order based on a process name or the primary output.
  - Scale the batch based on input or output items.
  - Create a standard work order with project details in an organization that's enabled for inventory tracking by project.
- Perform forward, backward, or midpoint scheduling in an unconstrained mode.
- Configure material availability rules and analyze material shortages to effectively manage work orders.
- Perform mass actions to update status, change work order priorities, and print work order reports for multiple work orders.
- Capture additional information by using descriptive flexfields.
- Review and manage work order attachments, such as standard operation procedures, and quality specifications.
- Print work order traveler, components list, and product labels.
- Discrete manufacturing enables you to:
  - Enforce serialization-enabled manufacturing by associating predefined serial numbers to work orders.
  - Manage work order supplies in advanced fulfillment scenarios, such as back-to-back or configure to order, by providing visibility into the corresponding reservation details.
- Process manufacturing enables you to:
  - Report completion of co-products and by-products.
- Collaborate socially to manage work orders and resolve shop floor issues using embedded social.
- Create and update work orders through the file-based data import infrastructure using predefined macro-enabled spreadsheet templates.
- Manage and resolve production exceptions related to in-house and supplier operations. Capture electronic signatures and generate electronic records while closing production exceptions.
- Trigger automatic creation of purchasing documents and shipment lines for supplier operations.
- Review and manage supplier operations and handle demand and supply side changes in outside processing.
• Procure materials directly for work orders.

Discrete manufacturing enables you to:
  o Use the Supervisor Mobile Application to access the work order execution status, and take action on the go using a smartphone.
  o Gain insight into real-time work order execution through a drill down from the Edit Work Order page.
  o Use shop floor data to automatically report operation transactions.

Oracle Transactional Business Intelligence (OTBI) for Manufacturing offers real-time, self-service reporting, directly off manufacturing transactions. It provides five different manufacturing subject areas used by production supervisors to analyze production performance, and they're as follows:

• Work Order Performance
• Material Usage
• Resource Usage
• Actual Production
• Production Exceptions
• Purchased Item Usage

**Execute Production**

Manufacturing offers robust capabilities for work order-based execution for discrete and process manufacturing, and orderless execution for discrete manufacturing. With interfaces designed and optimized for use on a tablet, it provides rich user experience for production operators. Additionally, the application facilitates information-driven execution by providing insight into production information with several visual cues allowing users to take appropriate actions. It helps improve productivity of shop floor personnel through simplified reporting, and ability to enter data using scanning devices.

Through a simple, intuitive, easy to use dispatch list, it provides a single place for production operators to do the following:

• Review in-house work order operations sequenced to be worked upon for their specific work center and shift
• Review work order details
• Report operation transactions, such as complete, scrap, reject, and material and resource usages
• Print work order traveler and product labels
• Indicate when the production activity for a work order operation has started or stopped, and calculate the runtimes for a work order operation

Manufacturing also helps you to:

• Minimize user interactions by providing the ability to record material, resource, and operation transactions in just two clicks.
• Review work order and operation attachments, and enter additional details, such as lot and serial information, if required to complete a transaction. In addition, you can capture additional information required for reporting production transactions by using descriptive flexfields.
• Pick materials for work orders and create movement requests to move materials to specified supply subinventory, or issue materials directly to work orders.
• Report production transactions by specific product serial numbers that are pre-associated to work orders. This is to comply with serialization-enabled manufacturing. This is currently supported for only discrete manufacturing.
Discrete manufacturing enables you to:
  - Report inspection results and automatically decide on disposition based on inspection results while reporting an operation transaction against a work order operation.
  - Initiate manual inspection from the dispatch list. You can inspect the operation or the end item. Inline and manual inspections are available for both discrete and process manufacturing work orders.
  - Automatically or manually report material and resource usages. You can report material and resource usages based on the work order requirements or on a dynamic basis based on actual usage. For serialization-enabled discrete manufacturing, you can report material usages in reference to specific product serial numbers.
  - Report operation, material and resource transactions for a project-specific work order.
  - Report production activities without the need to create work orders. You can report orderless completion, or scrap of an item with reference to a work definition. This is currently supported for only discrete manufacturing.
  - Report orderless transactions with project details in an organization that's enabled for inventory tracking by project.
  - Review of work order-based or orderless production transaction history. The transaction details are displayed in a reverse chronological order.
  - Report production exceptions and notify key stakeholders for resolution.
  - Import material, resource, and operation transactions through the file-based data import infrastructure. This is possible with the provision of predefined macro-enabled spreadsheet templates.

Process manufacturing enables you to:
  - Report multiple outputs
  - Report output at or against any operation
  - Report manual and automatic outputs

Import work order, material, resource, and operation transactions, and start and stop operation times into manufacturing by using REST services.

Capture and view the genealogy data for all work order operation transactions and work order material transactions related to lot control and serial control enabled items.

Report and manage production exceptions.

Capture electronic signatures and generate electronic records while reporting production transactions.

Analyze and Control Production Costs

Oracle Fusion Cost Management provides robust support for planning, cost accounting, and analysis of manufacturing costs for the discrete or process manufacturing work method. It enables users to determine which work definitions to use in costing, efficiently enter material and resource costs with a spreadsheet import, perform cost rollup and gives a flexible means to cost work orders costing by supporting all the costing methods. Costing methods include standard, actual, and FIFO (first-in, first-out).

Cost Management provides a view of costs by work order, or breakdown of the costs by operation and cost element, and work order variances, and helps identify the manufactured items that aren't in compliance with defined plant cost standards.

Note: For more information about manufacturing accounting, refer to the Oracle Supply Chain Management Cloud Using Supply Chain Managerial Accounting guide.
Overview of Manufacturing Job Roles and Work Areas

Oracle Fusion Manufacturing provides the following three predefined job roles:

- **Manufacturing Engineer**: A role responsible for developing, maintaining, and improving manufacturing processes needed to achieve production goals according to product specifications.

- **Production Supervisor**: A role responsible for managing shop floor production resources and activities, to ensure on-time production of products at the required quality levels that meet customer expectations.

- **Production Operator**: A role responsible for efficient operation of equipment, or assembly of goods, based on standard operating procedures, and reporting production progress.

Based on the roles assigned to the user, manufacturing tasks are accessed and performed through the following two distinctly different work areas:

- **Work Definition**: This work area provides insight into key setup information for a manufacturing plant, and lists all the tasks to define and manage manufacturing setup data.

- **Work Execution**: This work area provides insight into plant, work area, and work center level production information, and lists all the tasks to manage and execute production activities.

**Note**: For more information about manufacturing roles and privileges, refer to the Oracle Supply Chain Management Cloud Security Reference for Manufacturing and Supply Chain Materials Management Guide.

**Related Topics**
- Overview of the Work Definition Work Area
- Overview of Work Execution Work Area

Overview of Manufacturing in Supply Chain Management Business Processes

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

**Plan-to-Produce**

Plan-to-produce refers to scenarios where products are manufactured based on a forecast. Sales orders are typically filled from existing stock, and work orders are created to replenish that stock based on planning recommendations.

The plan-to-produce process starts with running the plan in Supply Chain Planning, and releasing the planned order recommendations for work execution. This leads to the creation of supply orders in Oracle Fusion Supply Chain Orchestration, which then initiates the creation of work orders in Oracle Fusion Manufacturing. Once created, the work orders are released to the shop floor for production.

After reporting product completion at the final operation, the finished goods inventory is updated, and work orders are finally closed.

**Note**: Plan-to-produce flow is currently supported for only discrete manufacturing.
Back-to-Back

Back-to-back order fulfillment flow refers to scenarios where the supply for fulfilling a sales order is created only after the order is booked. And in some cases, the demand is fulfilled by manufacturing the product representing a build to order scenario.

The back-to-back process begins with order capture, and scheduling of the sales order in Oracle Fusion Order Management. Once scheduled, Oracle Fusion Global Order Promising promises the back-to-back orders, and releases supply recommendations or the supply picture to Oracle Fusion Supply Chain Orchestration. Once the sales order fulfillment line is scheduled, Oracle Order Management releases fulfillment line information or the demand picture to Supply Chain Orchestration. Supply Chain Orchestration processes the demand picture from Order Management, and the supply picture from Global Order Processing, to create a supply order in Supply Chain Orchestration.

In a scenario where the product must be manufactured to fulfill the order, the supply document is a work order, and Supply Chain Orchestration initiates the creation of the work order in Manufacturing. As soon as the work order is created in Manufacturing, it's tied to the back-to-back sales order in the form of a reservation in Oracle Fusion Inventory Management.

Production activities are reported for the work order and the final operation completion transaction yields finished goods to inventory, which are then shipped to the customer to fulfill the back-to-back sales order.

Note: For more information about back-to-back order fulfillment, refer to the Implementing Back-to-Back Fulfillment chapter in the Oracle Supply Chain Management Cloud Implementing Manufacturing and Supply Chain Materials Management Guide.

Note: Back-to-back flow is currently supported for only discrete manufacturing.

Configure to Order

Configure to Order process is essentially a back-to-back fulfillment process with a few key differences in the processing of a configured item in relation to a standard item. This flow assumes that the order is created in Oracle Fusion Order Management, but the source of configured orders could be Oracle Fusion Configure, Price, and Quote Cloud, Oracle Fusion Order Management, Oracle Fusion Configurator, or another source.

- This process starts with a sales order customer being created in Order Management with the Assemble to Order (ATO) model item as the ordered item. When an ATO model is ordered, the customer has the ability to configure the model, and select the options.
- Once the options are selected, the model and selected options are sent to Supply Chain Orchestration to determine if the configuration already exists.
- If a match is found, the existing configured item is passed back to Oracle Order Management. If there is no match, the configured item creation process is initiated, and a new configured item is created in Oracle Fusion Product Model using attributes values from the base model item. The new item is then passed back to Order Management.
- Next, the sales order is booked in Order Management, and is sent to Global Order Promising so that the order can be scheduled and the source of supply can be determined based upon sourcing rules set up at the model level. The supply and demand information for the configured item is then sent to Supply Chain Orchestration, and a supply order is created.
- If the supply has to be fulfilled by manufacturing the configured item, Supply Chain Orchestration initiates the creation of the work order for the configured item in Manufacturing. The work order for the configured item is created using a dynamically-generated configured item work definition based on the ATO model work definition in Oracle Fusion Manufacturing.
- The work order is then executed and completed. Once the configured product is available, it's shipped to the customer, showing the model and options selected on the bill of lading, and the order is fulfilled.
Note: Sales Order attachments from back-to-back sales orders for standard items and configured items are displayed in the Reservations tab of the work order.

Note: Configure to order flow is currently supported for only discrete manufacturing.

Contract Manufacturing

Contract manufacturing refers to scenarios where an original equipment manufacturer (OEM) outsources the manufacturing of a standard product to an external supplier referred to as a contract manufacturer (CM).

A contract manufacturing flow could be initiated either to fulfill a sales order created in Order Management, or as a result of running a supply chain plan in Planning Central and releasing the planned orders. In either case, supply orders are created in Supply Chain Orchestration, following which it initiates the creation of a work order in Manufacturing to track the progress of manufacturing at the contract manufacturer’s facility.

Supply Chain Orchestration then sends a request to Purchasing for creating a purchase order on the contract manufacturer for the contract manufacturing service item. Once the manufacturing process is completed, the contract manufacturer reports completion to the OEM. Manufacturing receives the details and automatically initiates the creation of a receipt of the contract manufacturing service item against the purchase order.

Next, it automatically reports completion of the last operation of the work order that results in increasing the contract manufacturing finished good item inventory, and backflush of contract manufacturing service item in the contract manufacturing organization.

Contract Manufacturing is applicable for standard products. It’s not supported for configured (ATO, CTO) products.

Note: For more information about Contract Manufacturing, refer to the Implementing Contract Manufacturing chapter in the Oracle Supply Chain Management Cloud Implementing Manufacturing and Supply Chain Materials Management Guide.

Note: Contract manufacturing flow is currently supported for only discrete manufacturing.

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 manufacturing services. These services may vary depending on the nature of the industry.

The first step is to create and release a work order with supplier operations in Manufacturing. Work orders are scheduled using the unconstrained logic in Planning Central Cloud and Supply Planning. Once the work order is released, a request is sent to 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 Self Service Procurement. An outside processing purchase order is created in 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 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 Receiving and deliver them to manufacturing. You can optionally create an Advance Shipment Notice (ASN) in Oracle Fusion Supplier Portal or Oracle Fusion Receiving which can be used to create a receipt. However, ASN creation is mandatory in case of consecutive supplier operations. For a non-serialization enabled supplier operation, receipt and delivery of goods to manufacturing results in
automatic completion of quantities at the supplier operation. Supplier operations are then managed and tracked in
manufacturing. The receipt, delivery and operation transactions result in receipt and cost accounting in Oracle Fusion
Cost Management.

**Note:** 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.

### Inventory Replenishment Min-Max Planning

Min-max planning is an inventory replenishment method where replenishment supply requests are generated based on
the specification of minimum and maximum inventory levels for items.

Min-max planning in Oracle Fusion Inventory Management optionally considers work order supply and work order
component demand in replenishment calculations, and generates replenishment work order requests for manufactured
items. This in turn leads to the creation of supply orders in Supply Chain Orchestration, which then initiates the creation
of work orders in Oracle Fusion Manufacturing. Production activities are reported for the work orders and the final
operation completion transaction replenishes the finished goods in inventory. In process manufacturing scenarios, only
the primary item can be planned using min-max planning.

**Note:** For more information about Min-Max Planning, refer to the Plan Inventory Replenishment chapter in
the Oracle Supply Chain Management Cloud Using Inventory Management Guide.

### Direct Procurement of Materials for Work Orders

In some scenarios, materials that are consumed in the manufacturing process aren't planned in advance. They are
instead procured directly for work orders. 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, and
perform corrective actions, such as correcting receipt quantities and returning materials.

### Project-Specific Manufacturing

Project-specific manufacturing refers to a supply chain management scenario where manufacturing activities are
tracked by project. In such scenarios, executing work orders and manufacturing transactions in the context of a project
is essential to ensure that the right material and resources are used and manufacturing costs are allocated to the right
project. In addition, it's necessary to ensure that only the eligible raw material and subassemblies are used in project-
specific manufacturing work orders and completed products are put away into project-specific inventory.

Oracle Supply Chain Management along with Oracle Project Portfolio Management application provides an end-to-end,
integrated solution to support project-specific manufacturing execution. This solution supports business processes of
both manufacturing, and asset intensive companies. It provides the ability to execute project-specific manufacturing by
creating a work order, or through orderless execution, issue components from common, or project-specific inventory,
and put away the end product into project-specific inventory. You can also purchase outside processing services on
project-specific work orders, and import material and resource costs to the project.

### Overview of Dependencies and Interactions With Other Cloud Applications

To support discrete and process manufacturing business processes, Oracle Fusion Manufacturing integrates with the
following supply chain management applications:
**Oracle Product Management Applications:** Manufacturing references items and item structures maintained in Oracle Fusion Product Model to create and manage work definitions, work orders, and record material transactions. Manufacturing processes the item structure changes in Product Model to the impacted work definitions. Manufacturing lead times calculated in Manufacturing are updated in the Product Model.

Production Exceptions reported in Manufacturing are stored and maintained as Quality Issues in the Oracle Fusion Quality Issue and Action Management application.

**Oracle Fusion Supply Chain Management Common Components:** Manufacturing references Plant Parameters, Unit of Measure (UOM), subinventories, locators, calendars, shifts, and exceptions maintained in the Supply Chain Management Common Components application, for work definition and work execution. The IoT Production Monitoring Cloud application defined as a Third-Party Application in the Setup and Maintenance work area is used by manufacturing through Supply Chain Common Component services to drill down to the IoT Production Monitoring application. Default Expenditure Types defined in the Supply Chain Management Common Components application are defaulted on to project-specific work orders, resource, and orderless transactions. Manufacturing interacts with Supply Chain Management Common Components to perform Project cost transaction validations.

**Oracle Fusion Trading Community Model:** Labor resource instances in Manufacturing Cloud can be optionally associated to a person record maintained in the Trading Community Model. Employees and Contingent Workers defined in Human Capital Management can be associated to Manufacturing through the Trading Community Model.

**Oracle Value Chain Planning Applications:** Manufacturing interacts with Oracle Fusion Planning Central for unconstrained work order scheduling. Planning Central collects manufacturing data for supply chain planning. Oracle Fusion Global Order Promising and Oracle Fusion Supply Planning use the Manufacturing Lead Times calculated by Manufacturing and stored in the Product Model.

| Note: | Process manufacturing related details aren’t currently collected by Planning. This is currently available for only the discrete manufacturing work method. |

**Oracle Fusion Inventory Management:** Lots and serials maintained in Inventory Management are used in Manufacturing for work order-based and orderless execution. Material transactions created in Manufacturing are interfaced to Inventory Management. On-hand and reservation details maintained in the Inventory Management application are displayed in work orders. Work order supply reservations in Inventory Management are updated when performing operations transactions in Manufacturing. Manufacturing uses the inventory on-hand quantities maintained in Inventory Management to calculate the material availability and shortage at the work order level. Manufacturing interacts with Inventory Management to pick materials that are required to execute a work order.

**Oracle Fusion Supply Chain Orchestration:** Supply Chain Orchestration interacts with Manufacturing to create and update work orders against supply orders. It interacts with work order business events to get the details related to progress on a work order. Manufacturing interacts with Supply Chain Orchestration to create purchase requisitions and shipment lines and manage demand side changes in outside processing. Supply Chain Orchestration communicates the details of purchase orders and shipments that are created in outside processing to Manufacturing. In the event of any supply side changes in outside processing, Supply Chain Orchestration communicates such changes that results in logging of supplier operation exceptions in Manufacturing.

**Oracle Fusion Cost Management:** Resource rates and work definitions maintained in Manufacturing are referenced by Cost Management for cost planning. Work order status updates, operations and resource transactions in Manufacturing are transferred to Cost Management for cost accounting.

**Oracle Procurement Cloud Applications:** For procuring materials directly for work order operations, Manufacturing provides a list of work orders and the related operations for displaying in the Oracle Fusion Self Service Procurement application to create a requisition with reference to a work order operation. Such requisitions are displayed in the Review Purchased Items details page in Manufacturing.
For contract manufacturing, Manufacturing references the purchase order details maintained in the Oracle Fusion Purchasing application for display in the contract manufacturing work orders.

For outside processing, Manufacturing interacts with Purchasing to display outside processing purchase orders from the Review Supplier Operations Details page of the work order.

For direct item procurement for work orders, Manufacturing provides a list of work orders and the related operations to display in the Purchasing application to create a Purchase Order with reference to a work order operation. In addition, Manufacturing references the related purchase order details maintained in Purchasing and is displayed in the Review Purchased Item Details page.

**Oracle Fusion Shipping:** Manufacturing interacts with Shipping to display outside processing shipment details from the Review Supplier Operation Details page.

**Oracle Fusion Receiving:** In contract manufacturing, manufacturing interacts with Receiving for the creation of the receipt of the contract manufacturing service item. In outside processing, Receiving interacts with Manufacturing to progress quantities at supplier operations after the receipt and delivery of the outside processing service item. Manufacturing interacts with Receiving to display the outside processing receipt and delivery details, and manage corrections and returns from the Review Supplier Operation Details page. It also interacts with Receiving to display the receipt and delivery details for items procured directly for work orders, and manage corrections and returns from the Review Purchased Items Details page.

**Oracle Fusion Quality Inspection Management:** Inspection characteristics and inspection plans are defined and maintained in Quality Inspection Management. Manufacturing initiates inspection plans during work order operation transactions to report inspection results, and to automatically decide on dispositions of the inspected quantities or serials. Inspection results captured while reporting manufacturing transactions and stored in the Quality Inspection Management application can be accessed from the Work Execution Work Area.

**Oracle Fusion Asset Lifecycle Management:** Material transactions (work order based transactions and orderless transactions), and operation transactions performed in Manufacturing are interfaced to Asset Lifecycle Management for tracking product genealogy. Equipment resource instances are referenced from Asset Lifecycle Management. Equipment resource instances defined in Manufacturing are optionally associated to Assets defined in Asset Lifecycle Management.

**Oracle Fusion Electronic Signatures and Electronic Records:** Manufacturing interacts with Electronic Signatures and Electronic Records to capture electronic signatures and generate electronic records while managing standard operations, work definitions, reporting work execution transactions, and closing production exceptions in Manufacturing.

**Oracle IoT Production Monitoring:** Pre-built integration between Manufacturing and IoT Production Monitoring application provides operational visibility into real-time production monitoring and actionable insights by sharing connected equipment resource instances, and synchronizing manufacturing work orders. Manufacturing work orders are automatically synchronized with IoT Production Monitoring Cloud, including information about the work orders’ plant, products, equipment and labor resources, and equipment and labor resource instances. The shop floor data collected by the IoT devices connected to the equipment resource instances of a work order operation can be used to automatically report operation transactions in the Manufacturing Cloud.

**Oracle Project Portfolio Management Cloud Applications:** Expenditure types defined in Project Portfolio Management are associated to resources. Projects and Tasks defined in Project Portfolio Management are referenced on work orders and orderless transactions.

**Oracle Fusion Transactional Business Intelligence (OTBI):** Manufacturing uses OTBI for real-time, self-service reporting of manufacturing transactions.
2 Manage Manufacturing Plant

Overview of Manufacturing Plants

A manufacturing plant is a type of inventory organization in which the manufacturing of a product is carried out. Manufacturing plants are categorized as:

- In-house manufacturing
- Contract manufacturing

Using the Setup and Maintenance work area, an SCM implementor sets an inventory organization either as an in-house manufacturing plant or a contract manufacturing plant in the Manage Inventory Organization Parameters page. Further, using the Manage Plant Parameters task, the parameters are set which influence the nature of the plant.

To know more about this, refer to the Implementing Manufacturing chapter in the Implementing Manufacturing and Supply Chain Materials Management guide.
Manufacturing plants are made up of work areas, which comprise work centers, resources, and resource instances. Here’s an illustration:

Figure 1 An illustration of a manufacturing plant.

**How You Set Up Your Manufacturing Plant**

As a manufacturing engineer, you must set up the manufacturing plant that’s used by a production supervisor or a production operator for their day-to-day manufacturing tasks. Here’s how you set up your manufacturing plant:

1. Create work areas.
A work area is a specific region in the manufacturing plant where you execute production activities.

2. Create resources.

Resources are people, equipment, and tools allocated to a work center.

3. Create work centers and associate each of them with an appropriate work area.

Work centers are specific production units that consist of people or equipment.

4. Assign resources to work center and allocate resource units to shifts of your manufacturing plant. This helps you to maintain a work center resource calendar for each resource.

5. (Optional) Create specific instances of each resource that you created. Resource instances are specific equipment or individual people working in your shop floor.

6. (Optional) Create standard operations, where you define the attributes and assign specific resources to it. So, when you reference a standard operation to a work definition, all its attributes and resources are carried forward to the work definition. This helps you save effort and time by enabling reuse of the standard operation.

Work Areas

How You Manage Work Areas

A work area is a specific region in the manufacturing plant where you execute production activities. The work area is a physical, geographical, or logical grouping of work centers.
Here’s an illustration of how work areas relate to manufacturing plants and work centers.

Figure 2 An illustration of how work areas relate to manufacturing plants and work centers.

As a manufacturing engineer, you must define at least one work area for a manufacturing plant and at least one work center for each work area. Use the Manage Work Areas page to create, edit, and delete work areas.

A production operator can report material, resource, and operation transactions performed at work centers that belong to a specific work area.

Navigate to the Manage Work Areas page using one of two ways:

- Click Navigator > Work Definition.
  In the Tasks pane, select Manage Work Areas.
- Click Navigator > Setup and Maintenance.
  - Offering: Manufacturing and Supply Chain Materials Management
  - Functional Area: Manufacturing Master Data
  - Task: Manage Work Areas

Create a Work Area

To create a work area:

1. On the Manage Work Areas page, click the Add icon.
2. On the Create Work Area page, add these work area details:
   - A unique name for the work area
   - A unique code for the work area
   - A description of the work area
3. Click Save and Close.

Edit a Work Area

To edit a work area:
1. On the Manage Work Areas page, click the work area link that you want to edit.
2. On the Edit Work Area page, you can update the work area name, code, or description details.
3. Click Save and Close.

Note: You can deactivate a work area when you’re editing it. To deactivate a work area, update the Inactive On date to a future date. To use a deactivated work area, you must first reactivate it.

Delete a Work Area

To delete a work area, select the work area and that you want to delete and click Delete. You can’t delete a work area that’s in use.

Note: You can also query, create, update, or delete a work area using a REST API.

Resources

How You Manage Resources

Resources are people, machines, and tools allocated to a work center. Resources are of two types:
- Labor
- Equipment

As a manufacturing engineer, you can search for, create, edit, and delete the resources using the Manage Resources page.

Navigate to the Manage Resources page using one of two paths:
- Click Navigator > Work Definition.
  In the Tasks pane, select Manage Work Areas.
- Click Navigator > Setup and Maintenance.
  - Offering: Manufacturing and Supply Chain Materials Management
  - Functional Area: Manufacturing Master Data
Task: Manage Production Resources

Here's an illustration of how the resources and resource instances associate to a work center.

![Diagram of work centers, resources, and resource instances]

Figure 3 An illustration of how the resources and resource instances associate to a work center.

Create a Resource

To create a resource:

1. On the Manage Resources page, click the Add icon.
2. On the Create Resource page, add these resource details:
   - A unique name
   - A unique code
   - A description
3. Select these resource attributes:
   - Type of the resource
     The type determines whether the resource is a labor or equipment
   - Class of the resource
     The lookup code for this resource class is defined in the Setup and Maintenance work area
   - Usage UOM, which is the unit of measure for the planned and actual usage of the resource
4. If you require to define cost rates for the resource, select the **Costing enabled** check box.
5. (Optional) If your organization is enabled for tracking by project, and you want to cost this resource, select these attributes:

- Costing enabled check box
- The default expenditure type of the resource

The specified expenditure type is used while transferring the resource transactions to Costing.

6. Click **Save** and **Close**.

**Note:** You can schedule a resource in a work definition and work orders only if the usage UOM belongs to the UOM class as defined in the profile SCM Common: Default Service Duration class.

**Edit a Resource**

To edit a resource:

1. Click the resource link that you want to edit.
2. On the Edit Resource page, you can update the resource name, code, description, class, or costing enabled details.
3. Click **Save** and **Close**.

When you edit a resource, you can't do any of these:

- Edit the resource type when a resource instance is associated.
- Change the usage UOM of a resource when it's associated with a work center.

**Note:** You can deactivate a resource when you're editing it. To do so, update the **Inactive On** date to any future date. To use a deactivated resource, you must first reactivate it.

**Delete a Resource**

To delete a resource, select the resource that you want to delete and click **Delete**.

You can't delete an active resource or a resource that's assigned to a work center.

**Note:** You can also query, create, update, or delete a production resource using a REST API.

**How You Manage Resource Instances**

Resource instances are detailed representations of a labor or equipment resource in the Manufacturing application. You can define specific instances of each resource. For example, you might identify the machines used on your shop floor, and the name of people working there. You can associate one or more resource instances to a resource.

**Labor Resource Instances**

A labor resource instance is the name of a person working in the manufacturing shop floor. You can optionally associate specific person types to a labor resource instance. A person type in the Manufacturing application 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 Human Capital Management Cloud, 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 Customer Relationship Management Cloud, which is automatically available in the Oracle Trading Community Model.

**Equipment Resource Instances**

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

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

**IoT Production Monitoring Integration**

If you have set up your integration with IoT Production Monitoring Cloud, you can view your resources and resource instances belonging to your Manufacturing plant in IoT.

Additionally, you can view useful insights by navigating through the IoT Insights icon. Here's the list of IoT insights that you can view:

- Machinery performance
- Real time sensor data
- Insight into analytics, anomalies, predictions, and trends

**Create a Labor Resource Instance**

To 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. Provide these resource instance details:
   - A unique code as an identifier
   - A name to the resource instance
4. Select and assign a primary work center to the resource instance to identify the department or location that the resource instance primarily works in.
5. (Optional) Select the person name working in the manufacturing shop floor. Such associations are unique within a plant.
6. Click Save and Close.

**Create an Equipment Resource Instance**

To create an 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. Provide these resource instance details:
   - A unique code as an identifier
   - A name to the resource instance
4. Select and assign a primary work center to the resource instance to identify the department or location that the resource instance primarily works in.
5. (Optional) Select an asset number defined in the Maintenance Cloud. Such associations are unique within a plant.
6. Click **Save** and **Close**.

**Edit a Resource Instance**

Edit a Resource Instance:

1. On the **Manage Resources** page, click the resource link that you want to edit.
2. On the **Edit Resource** page, in the Resource Instances section, you can update the resource instance identifier or the resource instance name details.
3. Click **Save** and **Close**.

**Note:** You can deactivate a resource instance when you're editing it. To deactivate a resource instance, update the Inactive On date to any future date. To use a deactivated resource instance, you must first reactivate it.

**Delete a Resource Instance**

Delete a Resource Instance:

1. On the **Manage Resources** page, click the resource link that you want to delete.
2. On the **Edit Resource** page, in the Resource Instances section, select the resource instance and click **Delete**.
   - You can't delete a resource instance that's in use in work execution.

**Note:** You can also query, create, update, or delete a labor resource instance using a REST API. Similarly, you can also query, create, update, or delete an equipment resource instance using a REST API.

**Work Centers**

**How You Manage Work Centers**

Work centers are specific production units that consist of people or equipment. You can associate each work center with an active work area.

As a manufacturing engineer, here’s what you can do using the Manage Work Centers page in the Work Definition work area:

- Create, edit, and delete work centers
- Add resources to a work center and allocate resources to different shifts
- View and manage exceptions associated to the resources

Navigate to the **Manage Work Centers** page using one of two paths:

- Click **Navigator > Work Definition**.
  
  In the Tasks pane, select **Manage Work Centers**.
- Click **Navigator > Setup and Maintenance**.
  
  - Offering: Manufacturing and Supply Chain Materials Management
  - Functional Area: Manufacturing Master Data
  - Task: Manage Work Centers

**Related Topics**

- How You Manage Work Center Resource Calendars
- Create a Resource Exception

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## Create a Work Center

To create a work center:

1. On the **Manage Work Centers** page, click the **Add** icon.
2. On the **Create Work Center** page, add these work center details:
   
   - A unique name
   - A unique code
   - A description
3. Select an active work area and supply subinventory to which the work center is associated.
4. Click **Save** and **Close**.

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## Edit a Work Center

To edit a work center:

1. On the **Manage Work Centers** page, click the work center link that you want to edit.
2. On the **Edit Work Center** page, in the General Information section, click the **Show More** link.
3. Update the work center name, code, description, work area, supply subinventory, or supply locator details.
4. Click **Save** and **Close**.

**Note:** You can deactivate a work center when you're editing it. To do so, update the **Inactive On** date to any future date. To use a deactivated work center, you must first reactivate it.
Delete a Work Center

To delete a work center, select the work center and click **Delete**.

If you're unable to delete a work center, there are three possible reasons why:

- A resource is associated with it
- It's being referenced in work definition operation
- It's being referenced in work order operation

**Note:** You can query, create, update, and delete a work center using a REST API.

Assign Resources to a Work Center

Now that you have created a work center, assign some resources to it. You can assign the resources that are either labor or equipment.

1. Click the work center link to which you want to assign resources.
2. On the **Edit Work Center** page, click the **Add** icon in the Resource Availability section.
3. Select the resource name.
4. In the **Default Units Available** field, provide the total number of resource units available in the work center.
5. Select the **Available 24 Hours** check box if this resource is working round the clock. Leave it unchecked if you want the resource to be available in shifts.

   You must allocate these resource units to specific shifts.

6. Select the **Check Capable to Promise** check box if you want the Global Order Promising engine to consider the capacity of this resource during order promising.
7. In the Utilization field, enter the percentage of the resource time available for manufacturing.

   For example, if you enter 50%, the scheduler doubles the length of time that the resource is required to complete a work order.
8. In the efficiency field, enter the percentage of the time a resource takes to complete manufacturing operations.
9. Click **OK**.
10. Click **Save** and **Close**.

   **Note:** You can add resources to a work center while creating a work center.
Here’s an example of how you can assign the resources to work centers.

Figure 4 An illustration of how you can assign the resources to work centers.

**How You Allocate Resource Units to Shifts**

If you don't select the *Available 24 Hours* check box while assigning the resource to a work center, then units of that resource are made available in shifts.

You need to allocate the number of resource units for each shift. You do this on the *Edit Work Center* page in the column for each shift. If you don’t manually specify the number of units, default number of units available in that work center is used for each shift.

The default units available are automatically assigned to all the shifts of your calendar, which you can modify.

**Example**

Let’s say you assign four resources, R1, R2, R3, and R4, to a work center WC1.

- WC1 functions in two shifts, *Day Shift* and *Night Shift*.
- 2 units of each resource are available in work center WC1.
- You didn’t select the *Available 24 Hours* check box while assigning any resource, so resource units are allocated to shifts

Let’s say you have varying resource requirements. Let’s consider each one and understand how you implement them.

**For R1: You want two units of R1 for the day shift only.**

1. In the Resource Availability Region, in the Day Shift column for R1, enter a value of 2.

**For R2: You want one unit of R2 for the day shift and one unit for the night shift.**

1. In the Resource Availability Region, in the Day Shift column for R2, enter a value of 1.
2. In the Night Shift column also, enter a value of 1.

**For R3: You want both units of R3 available for both shifts.**
1. In the Resource Availability Region, in the Day Shift column for R3, enter a value of 2.
2. In the Night Shift column also, enter a value of 2.

**For R4: You want R4 available all day.**
1. Click the resource link.
2. Select the **Available 24 Hours** check box.
3. Click **OK**.

Here’s what your resource availability looks like now:

<table>
<thead>
<tr>
<th>Resource</th>
<th>Default Units Available</th>
<th>Day Shift</th>
<th>Night Shift</th>
</tr>
</thead>
<tbody>
<tr>
<td>R1</td>
<td>2</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>R2</td>
<td>2</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>R3</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>R4</td>
<td>2</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

**Note:** The **Resource Calendar** icon is enabled and visible for those resources that are available in shifts.

When you’re done, click **Save and Close**.

**How Utilization and Efficiency Percentages Impact Scheduling**

Utilization and efficiency percentages determine the duration of the resources that are scheduled on a work order.

**Work Center Settings That Affect Scheduling**

- Utilization percentage
- Efficiency percentage
- Shift assignments

**How Scheduling Is Calculated**

By default, the utilization and efficiency percentages are set to 100 percent. When you set these percentages to less than 100, the scheduled duration of the resources gets extended.

Let’s say you want two hours of work done using a resource. You begin with the assumption that your resources will be fully utilized, and at full efficiency. To know whether your work will be done in two hours, divide the number of work hours by the product of your utilization and efficiency percentages. That’s 2 / (1*1), which equals 2. This confirms that your work will be done in two hours.
Now let's say you halve the utilization and efficiency percentages. The new calculation is $2 / (0.5 \times 0.5)$, which equals 8. This means your work will take longer to complete, and that's because your resource isn't being fully utilized at 100 percent.

### How You Manage Resource Exceptions

You use the work center resource calendar to manage the exceptions related to the resources. Exceptions may also be created in the production calendar. In case of a conflict, the exceptions granted in the work center resource calendar override the ones granted in production calendar.

**Related Topics**
- How You Manage Work Center Resource Calendars
- Create a Resource Exception

### Standard Operations

#### How You Manage Standard Operations

As a manufacturing engineer, you can define similar operations in the manufacturing process as standard operations, which you can reuse in multiple work definitions and work orders. Standard operations are of two types: In-House operations, which are executed in your manufacturing plant, and Supplier operations, which are outsourced to suppliers.

Use the **Manage Standard Operations** page in the Work Definition work area to search for, create, edit, and delete standard operations.

**Related Topics**
- How You Create Work Definitions
- Create Standard Discrete Work Orders
- Create Nonstandard Work Orders

#### Search for the Standard Operations

Here are some pointers to aid your search:

- Search for a standard operation using the name, code, description, work center, or work center code, or supplier of the standard operation.
- Select the **Include inactive operations** check box to include the standard operations that are inactive.

#### Create a Standard Operation

Standard operations are of two types: In-House operations, which are executed in your manufacturing plant, and Supplier operations, which are outsourced to suppliers.
Create an in-house standard operation

1. On the **Manage Standard Operations** page, click the **Add** icon.
2. On the **Create Standard Operation** page, select **In-house** as an operation type.
3. Add these standard operation details:
   - A name for the standard operation
   - A unique code for the standard operation which you can't update when a standard operation is in use in a work definition or a work order.
   - A description of the standard operation
4. Select the active work center you want to associate this standard operation with.
5. Enable one of these based on / considering reporting requirement:
   - Count point, to perform the operation and report manually. The Count point and Automatically transact attributes are mutually exclusive.
   - Automatically transact, so that the operation is reported automatically, the pull components are backflushed, and the resources are automatically charged when the next count point operation is completed.

   **Note:** If you don’t select either of these attributes, this standard operation is said to be an optional operation.

6. (Optional) Select the date on which the standard operation becomes inactive.
7. (Optional) Add attachments. You can attach either a file, or text or an URL file type.
8. (Optional) Select the **Default for automatic work definition** check box to set this operation as default for automatic work definitions.
9. Select the material transaction and operation completion validations:
   - Whether or not to allow issue of any additional materials that aren't defined in the work order with push supply type, or manually issue quantities greater than those specified in the work order.
   - Whether or not to allow operation completions when materials with push supply type haven't been issued. The possible values are Allow, Allow with warning, and Do not allow.
   - Whether or not to allow operation completions when there are any open exceptions. The possible values are Allow, Allow with warning, and Do not allow.

**Resources subsection:**
10. In the Resources section, click the **Add** icon to assign resources to this standard operation.
11. In the new row, add these standard operation resource details:
   - The resource sequence.
   - The name of an active resource that's associated to the work center.
   - The number of assigned resource units, which can't exceed the available units for the resource as defined in the work center resource availability definition.
   - The usage amount of the standard operation resource.
   - Whether the resource usage is Fixed or Variable. Select Fixed if the resource usage is fixed per product quantity produced or Variable if it varies with the product quantity produced.
The usage unit of measure as defined in the resource definition. This is a read only field inherited from the resource definition.

- Whether or not this resource is a scheduled resource.
- Whether this resource is the principal resource within a group of simultaneous resources.
- Whether the resource charge type is Manual or Automatic. Select Manual if it's an optional operation.

12. Expand the row.

- Select the activity type of this standard operation resource.
- Select the date on which the standard operation becomes inactive.

13. (Optional) Attach any attachments by clicking the Add icon.

You can attach either a file, or text or an URL file type.

**Alternate resources subsection:**

14. (Optional) Attach any alternate resources that are ranked by priority by clicking the Add icon.

In the Alternates page, you can't update the Basis, Scheduled, and Charge Type which are inherited from the primary resource. The Usage, Inverse Usage and Units Assigned are defaulted from the primary resource definition, which you can update.

**Note:** If your resource cost is charged to the work order then the Costing enabled field is selected by default. This is a read only field inherited from the resource definition. If the check box is enabled, then the Resource cost is charged to Work Order. This is a read only field and is inherited from the resource definition.

15. Click Save and Close.

**Create a supplier standard operation**

1. On the Manage Standard Operations page, click the Add icon.
2. On the Create Standard Operation page, select Supplier as an operation type.
3. Add these standard operation details:

   - A name of the standard operation.
   - A unique code for the standard operation which you can't update when a standard operation is in use in a work definition or a work order.
   - A description of the standard operation.

4. Select the work center to associate this standard operation.

You can assign an active work center to an operation.

5. (Optional) Select the date on which the standard operation becomes inactive.
6. (Optional) Attach any attachments by clicking the Add icon.

You can attach either a file, or text or an URL file type.
7. Select the material transaction and operation completion validations:
   ◦ Whether or not to allow issue of any additional materials that aren't defined in the work order with push
     supply type, or manually issue quantities greater than those specified in the work order.
   ◦ Whether or not to allow operation completions when materials with push supply type haven't been
     issued. The possible values are Allow, Allow with warning, and Do not allow.
   ◦ Whether or not to allow operation completions when there are any open exceptions. The possible values
     are Allow, Allow with warning, and Do not allow.

8. In the Supplier Operation Details section, search and select these supplier operation details:
   ◦ The outside processing item that represents the value-added service being performed on the assembly
     in outside processing.
     The item is defined in Product Information Management.
   ◦ The recommended supplier used in creating the requisition.
     The supplier is an external party who provides specialized manufacturing services to manufacture a
     product.
   ◦ A recommended supplier site.
   ◦ The unit of measure for the lead time of a supplier operation.
   ◦ The fixed lead time for the operation which is independent of the order quantity.
   ◦ The variable lead time for the operation which is dependent on the quantity.

9. Click **Save and Close**.

---

**Edit a Standard Operation**

1. On the **Manage Standard Operations** page, click the standard operation link that you want to edit.
2. On the Edit Standard Operation page, you can update these standard operation details:
   ◦ The standard operation details such as name, description, inactive date, and attachments.
   ◦ The Work Center attributes only if there are no resources associated with this standard operation.
   
   **Note:** You can add, delete, and update the resources and their alternates associated with this
   standard operation.

3. Click **Save and Close**.

**Delete a Standard Operation**

To delete a standard operation, on the **Manage Standard Operations** page, select the standard operation that you
want to delete and click **Delete**.

You can't delete the standard operation if it's being referenced in any work definition operation or any work orders.
How You Use Standard Operations

When you assign a standard operation to a work definition or a work order, all the attributes of this standard operation are inherited by the work definition or the work order. This includes the resources, descriptive flexfields, and attachments assigned to the standard operation.

Use the standard operations in one of two ways:

<table>
<thead>
<tr>
<th>When You Use The Standard Operation Mode</th>
<th>What You Need To Do</th>
<th>What Happens</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reference a standard operation</td>
<td>Select the <strong>Referenced</strong> check box when you add the standard operation in the work definition or a work order.</td>
<td>The changes that you make to the standard operation are automatically reflected in the work definitions that reference the standard operation.</td>
</tr>
<tr>
<td>Copy a standard operation</td>
<td>Clear the <strong>Referenced</strong> check box when you add the standard operation in the work definition or work order.</td>
<td>Any future changes that you make to the standard operation aren't reflected in the work definitions and work orders that reference the standard operation.</td>
</tr>
</tbody>
</table>

**Note:** You can't edit any resources assigned to the standard operation in the work definition. Referencing also ensures that any future changes to the standard operation are reflected in the work definition operation.

**Note:** You can edit and update any attributes. After you remove the reference to a standard operation, you can't reference it again. When you remove the reference to a standard operation, you can add or delete the resources assigned to the standard operation in the work definition.
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 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.

Overview of Electronic Signatures and Electronic Records for Standard Operation Management

Manufacturing engineers use the Oracle Fusion E-Signatures and E-Records to securely capture, store, retrieve, and print e-records and e-signatures inline while creating and updating a standard operation in the Work Definition work area.

The E-Signatures and E-Records feature is disabled by default. When enabled, the e-signature approval process is initiated and approvers are required to authenticate transactions.

Here are the details that an e-record contains with:

- Standard Operation Details
- Attachment Details
- Resource Details
- Resource Level Attachment Details
- Alternate Resource Details

As an SCM implementation consultant, you need to enable and configure this feature.

Enable:

1. Click **Navigator > Setup and Maintenance**.
   - Offering: Manufacturing and Supply Chain Materials Management
   - Functional Area: Facilities
   - Task: Configure Electronic Signature Preferences

2. Click the **Configure Electronic Signature Preferences** link.
3. On the **Configure E-Signature Preferences** page, in the Organization section, select the organization that you want to enable the E-Signature for Standard Operation Management transaction.
4. On the right pane, select the check box in the **Signature Enabled** column for the transactions for which to activate e-signatures.
5. Click **Save and Close**.

Configure:

1. Click **Navigator > Setup and Maintenance**.
   - Offering: Manufacturing and Supply Chain Materials Management
   - Functional Area: Facilities
   - Task: Manage Task Configurations for Supply Chain Management

2. On the **BPM Worklist** page, select the Task Configuration tab from where you can create or edit a rule.
3. Search for the **StandardOperationApproval** task and click the **Edit** icon.
4. Configure the approval rule.
5. Click **Save and Close**.
6. Enter comments in the text box and click **OK**.

**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 Work Definition Management
- How You Capture E-Signatures and Generate E-Records for Standard Operation Management

### How You Capture E-Signatures and Generate E-Records for Standard Operation Management

As a manufacturing engineer, you initiate an inline process to generate e-records and capture e-signatures, by defining a standard operation and submitting it for approval.

**Note:** The process to generate E-Records and capture E-Signatures isn't initiated when a standard operation is created and updated through ADF desktop integration (ADFdi). When you create or edit the standard operation, you can also be an approver. You can review the electronic records, enter comments, indicate your approval or rejection, and sign the E-Record in the E-Signature page.

Notifications are sent to other approvers who can access them through the bell notifications in the Oracle Cloud application. Approvers can review the electronic records before adding their electronic signature, enter their comments, indicate their approval or rejection and sign the electronic record by entering their password. The standard operation isn't saved until all approvals are completed based on defined rule. Depending upon the outcome of the approval, the standard operation creation or update is either saved or rolled back.

You can search and view the existing E-Records for standard operations from the Electronic Records work area.

**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.
3 Production Process Design

Overview of Production Process Design

A manufacturing engineer can use the work definitions feature in Oracle Fusion Manufacturing to design and manage production processes. In the case of discrete manufacturing, an Assembly could be a standard item or configured item that is based on an Assemble to Order (ATO) model that is completed in discrete units, at the final operation. In the case of process manufacturing, this will be a batch production where manufacturing involves moving batch quantities through each stage of the production process instead of the individual discrete units. You can design a work definition that represents the production operations, materials, outputs, and resources needed to make a product or a production batch.

In mixed-mode manufacturing, producing bulk intermediate material that is packaged into finished goods typically requires a hybrid of process and discrete manufacturing capabilities within the same plant. This is achieved through the plant setup with the help of two plant parameters; Enable Process Manufacturing and Default Work Method. If you select the Enable Process Manufacturing attribute in plant parameters, the capabilities for process manufacturing work definitions become available. If the plant is enabled for process manufacturing, you can optionally set the default work method to process manufacturing.

Oracle Application Development Framework Desktop Integrator (ADFdi) enables you to mass create and update the work definitions using Microsoft Excel spreadsheet. The work definitions are uploaded into and downloaded from the Oracle Fusion Manufacturing.

You can import process manufacturing work definitions through FBDI or using the REST services. Separate FBDI templates are available to import discrete and process manufacturing work definitions.

Based on planning and costing priorities, you can define primary and alternate manufacturing processes. The manufacturing lead times are calculated based on the primary work definition. Work definition versions are used to monitor and implement the changes that occur in the manufacturing process. The work definition report includes information on all the operations and their associated materials, outputs and resource requirements. This report can be shared internally within the enterprise or externally with the contract manufacturers, as in the case of a discrete manufacturing.

For discrete manufacturing work definitions, the item structure changes implemented by a product engineer in Product Information Management are notified through the worklist notifications to the manufacturing engineer and the cost accountant. Any users who perform this role receive these notifications for the manufacturing plants to which they have the access. The manufacturing engineer can then assess the item structure change impact on the work definitions and make the necessary changes.

To summarize, you can perform the following tasks in the Work Definition work area:

- Manage the work definition names
- Manage the work definitions in user interface
- Assess the item structure change impact on the work definitions and make changes accordingly
- Create the work definition versions
- Calculate the manufacturing lead times
- Mass create and update work definitions using ADFdi
- Import manufacturing work definitions using FBDI templates
Overview of the Work Definition Work Area

The Work Definition Overview page is the landing page for you if you have the required role and privileges of a manufacturing engineer. It provides you a quick view of key setup matrix for a manufacturing plant and quick access to the daily tasks you need to perform.

The following panels are shown in the Work Definition Overview page:

- **Recently Updated Work Definition**: Shows the most recent work definitions that were last updated either automatically or manually.
- **Plant Resources**: Shows the total number of resources that are of equipment type and the total number of resources that are of labor type.
- **Work Centers by Work Area**: Shows the five work areas with the most number of work centers.
- **Work Center Resources**: Shows the five work centers with the most number of resources.
- **Tasks**: Shows the primary tasks you need to perform as a manufacturing engineer.
- **Additional Tasks**: Shows the less frequent tasks you need to perform as a manufacturing engineer.

Related Topics

- Overview of Manufacturing Plants

Work Definition Names

The work definition names are used to define the different ways of making a given product and are used in both discrete manufacturing and process manufacturing work definitions. There may be a primary manufacturing process and other alternate manufacturing processes to make a product. A predefined work definition name with display name as Main and internal name as ORA_MAIN can be used to create the primary work definition for an item. If you need to define an additional work definition for the same item, you have to first create a work definition name, for example, Alternate.

In addition, work definition names Rework and Transform (internal names ORA_REWORK and ORA_TRANSFORM) are predefined and can be used to define a rework work definition and a transform work definition. In the case of Transform or Rework work definitions, you can create a circular reference or loop between the work definition item and operation items referenced in the work definitions by specifying different work definition names.

**Note**: The process to create work definition names should be centralized and controlled. The work definition names can be referenced by multiple products.

The following table lists all the fields and their corresponding descriptions which helps you to choose or select values in order to create a work definition name:

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Display Name</td>
<td>The name of the work definition that's shown.</td>
</tr>
</tbody>
</table>
### Field

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internal Name</td>
<td>The unique identifier of a work definition name. The value can't be edited once the name is used in a work definition.</td>
</tr>
<tr>
<td>Description</td>
<td>The description of the work definition name.</td>
</tr>
<tr>
<td>Type</td>
<td>Determines the work definition type as Standard, Rework, or Transform. The default value is Standard.</td>
</tr>
<tr>
<td>Used in Planning</td>
<td>If selected, you can assign a production priority for the work definition that references the work definition name. As a result, supply chain planning will plan for the materials and resources based on the work definition.</td>
</tr>
<tr>
<td>Start Date</td>
<td>The date on which the work definition name becomes effective.</td>
</tr>
<tr>
<td>End Date</td>
<td>The date on which the work definition is no longer effective.</td>
</tr>
</tbody>
</table>

**Note:** The work definition name is used in aligning lower-level phantom work definitions in the work definition explosion process while creating the work order for the product. To explode a component that has been defined as phantom, the work definition explosion process selects the work definition of the *phantom* with the same name as the work definition of the finished good.

**Note:** You can also query work definition names using a REST API.

### Overview of Work Definitions

You can define discrete work definitions and process work definitions in a single manufacturing plant only if **Enable Process Manufacturing** is selected in the plant parameter. A work definition defines the manufacturing process for a product. It is essentially a template to create a work order for the work execution.

**Note:** You can define both discrete and process work definitions for a given item.

A discrete work definition defines the manufacturing process for a product that consists of operations, materials, and resources. The work definition effectively combines an item structure and routing into a single view. It corresponds to a single buildable level of the item structure. If a product consists of several subassemblies that are also manufactured, then you define a work definition for the product and a work definition for the subassemblies.

A process work definition consists of operations, outputs, materials, and resources. There is no reference to an item structure. You can define multiple outputs, but you must designate one output as a primary output. The manufacturing process moves in batch quantity instead of discrete unit.

You can define more than one work definition for a product. A primary work definition of an item is the work definition using work definition name of type Standard with the production priority equal to 1. The primary work definition is used by the supply chain planning applications to generate the planned orders and create the standard work orders of
the item. You can also define alternate work definitions to account for variations in the operations, components, and resources. When there are more than one work definitions for an item, you can rearrange their priority; however there must always be a work definition with production priority equal to 1.

If you have a prescribed way of reworking a product, you can define a rework work definition using work definition name of type Rework. If the Rework work definition item is serial-controlled, then the work definition is always serial-tracked. If you perform upgrade or downgrade to a product to produce a finished good that is of higher or lower specifications, you can define a transform work definition using work definition name of type Transform.

Note: Rework and Transform are currently supported for only discrete manufacturing.

You can define a work definition that enables the serial tracking through the manufacturing process, provided that the item's serial generation attribute is to Predefined. You identify the work definition operation from which serial-tracking must be enabled. Throughout the execution process, the serial-tracking is enforced in operation completions, material and resource transactions.

Note: Serial tracked work definitions are currently supported for only discrete manufacturing.

The table summarizes some key differences between discrete work definitions and process work definitions.

<table>
<thead>
<tr>
<th>Feature</th>
<th>Supported in Discrete Work Definitions</th>
<th>Supported in Process Work Definitions</th>
</tr>
</thead>
<tbody>
<tr>
<td>ATO Model</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Rework, Transform</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Work Definition Header: Item Structure Reference</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Work Definition Header: Serial Tracked</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Work Definition Operation: Serialization</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Work Definition Operation Outputs</td>
<td>Not applicable</td>
<td>Yes ad hoc items</td>
</tr>
<tr>
<td>Work Definition Operation Items</td>
<td>Item structure components</td>
<td>Ad hoc items</td>
</tr>
<tr>
<td></td>
<td>Ad hoc items</td>
<td></td>
</tr>
<tr>
<td>Process Item Structure Changes</td>
<td>Yes</td>
<td>Not applicable</td>
</tr>
<tr>
<td>ADFdi</td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>

A work definition consists of the following elements:

- Header
• Operations
• Operation Outputs (applicable to process work definitions)
• Operation Items
• Operation Resources

Header

The work definition header captures details such as the work method, the product being produced, the production priority, and optionally costing priority. In a discrete work definition, completion subinventory and completion locator are captured at the header level, but in a process work definition, they are captured at the operation output level.

Operations

The work definition operations define the sequence of manufacturing steps to be performed in making the item. The operations are executed in a linear path based on the operation sequence. A work definition must have at least one operation. An operation must be associated to a work center. You can use either standard operations, or you can manually enter the operations. If an operation is not indicated as a count point or an automatically transact operation, then it is considered as an optional operation. You can define descriptive flexfields for an operation.

Operations Outputs

In a process work definition, the operation outputs are the products and by-products that are yielded by the process. Product is materials of value that are desired and intentionally produced, whereas By-product is materials of value that are produced as a residual of, or incidental to, the production process. Outputs are assigned as ad hoc items. You can define descriptive flexfields for an operation output.

Operation Items

The operation items define the material requirements for operations. In a discrete work definition, the components of the item structure of the product are assigned to the operations where they are required. You can also assign existing items to operations. Such an item is considered an ad hoc item. Assigning ad hoc items requires the Override Item Structure Components in Work Definition privilege. In a process work definition, you assign ad hoc items as operation items, and it does not require a privilege. You can define descriptive flexfields for an operation item.

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 adds value to the manufacturing process. You can define descriptive flexfields for an operation resource.

Tip: If you use a referenced standard operation, you will not be able to 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 Standard Operations page.

How You Manage Work Definitions in the User Interface

You can use the Manage Work Definitions page in the Work Definition work area as a starting point to create a new work definition and manage the existing work definitions. You can have your key work definitions shown automatically by creating a saved search and setting it as a default. The Search Results region shows the work definitions matching the search criteria.
Search for a Work Definition
You can use the basic search or the advanced search to search for the existing work definitions on the Manage Work Definitions page. Advanced search enables you to use search operators other than equal to, and add additional search fields. You have the option of saving the search criteria and it will be shown in the Saved Search list.

Create a Work Definition
You can create a new work definition or copy an existing work definition.

The reasons for copying a discrete work definition can be:

• To define the same manufacturing process to make a different product
• To define the same manufacturing process for an alternate item structure that makes the same product (the product is the same, but the structure name is different
• To define an alternative manufacturing process to make the same product (the product and structure name are the same, but the work definition name is different

The reasons for copying a process work definition can be:

• To define the same manufacturing process to make the same primary output for a different batch quantity
• To define the same or similar manufacturing process to make a different primary output with variations in materials and other products or by-products

Edit a Work Definition
You can edit a work definition by clicking on the work definition name link in the search results table to take you to the details page of the work definition. You can update some attributes of the work definition header, operations, operation outputs (applicable to process manufacturing), operation items, and operation resources.

Note: You can query, create, and update a work definition using a REST API.

Delete a Work Definition
You can delete a work definition that you created by mistake. You can use the Manage Work Definitions page to delete either manual or automatic work definitions. It will delete all versions of the work definition name for an item. You cannot delete a work definition, which is referenced by work orders or is used in published cost scenarios. Deleting a work definition removes its visibility in planning, work execution, and costing.

Deactivate a Work Definition
You can deactivate a work definition as a mechanism to make it obsolete. For example, you must deactivate a work definition if the manufacturing process it represents is no longer valid. You can deactivate a specific work definition from the Manage Work Definitions page, using file-based data import, or a REST service.

Deactivating a work definition deactivates all the versions of the work definition and it becomes inactive immediately. The work definition status changes from Active to Inactive. The Inactive On date is populated with the system date when you deactivate the work definition or when the import-scheduled process is completed. You cannot update or reactivate an inactive work definition.

You can search and view an inactive work definition, and create a new work definition by copying an inactive work definition. However, inactive work definitions are not available for use by consuming applications. You cannot create a work order using an inactive work definition in Manufacturing. However, any existing work orders using an inactive
How You Create Work Definitions

You can create a work definition using the Manage Work Definitions page in the Work Definition work area. You can create a work definition in two ways: by creating a new work definition, or by copying from an existing work definition. You can create a discrete work definition or a process work definition based on the work method you choose.

Here’s how you can create a discrete work definition:

1. Enter the discrete work definition header details.
2. Create the operations.
3. Assign items to the operations.
4. Assign resources to the operations.

Here’s how you can create a process work definition:

1. Enter the process work definition header details.
2. Create the operations.
3. Assign outputs to the operations.
4. Assign items to the operations.
5. Assign resources to the operations.

Enter Discrete Work Definition Header Details

On the Manage Work Definitions page, click the Add icon or from the Actions menu, select: Add. This opens the Create Work Definition dialog box. Retain the option as New work definition.

Here are a list of the work definition header related fields and their descriptions:

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Work Method</td>
<td>If an organization is enabled for process manufacturing, then both Process Manufacturing and Discrete Manufacturing work methods are available. The value in the Work Method drop-down list is defaulted from what is specified in the plant parameter Default Work Method. If an organization is not enabled for process manufacturing, then only work method Discrete Manufacturing is available.</td>
</tr>
<tr>
<td>Product section:</td>
<td>The product area.</td>
</tr>
<tr>
<td>Item</td>
<td>The product for which you are creating the work definition.</td>
</tr>
<tr>
<td>Field</td>
<td>Description</td>
</tr>
<tr>
<td>-----------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Description</td>
<td>The description of an item. The item description is automatically populated after you enter an item.</td>
</tr>
<tr>
<td>Structure Name</td>
<td>This is an optional field. If the item has a primary item structure, then that item structure is referenced. If you do not enter an item structure, then the item structure is not shown on the Edit Work Definition Details page.</td>
</tr>
<tr>
<td>Structure Item Type</td>
<td>The value is automatically populated after you enter an item structure. The item structure type is Standard for a standard item and Model for an assemble-to-order model item.</td>
</tr>
<tr>
<td>Serial Tracked</td>
<td>You can create a serial tracked work definition if the item’s serial generation is set up as Predefined serial number.</td>
</tr>
<tr>
<td>Completion Subinventory</td>
<td>The value is derived from the plant parameter and can be overridden.</td>
</tr>
<tr>
<td>Completion Locator</td>
<td>The value is derived from the plant parameter and can be overridden.</td>
</tr>
<tr>
<td>Work Definition section</td>
<td>The work definition area.</td>
</tr>
<tr>
<td>Name</td>
<td>Select the work definition name.</td>
</tr>
<tr>
<td>Type</td>
<td>Based on the selected work definition name, the work definition type is displayed.</td>
</tr>
<tr>
<td></td>
<td><strong>Note:</strong> If the work definition type is Transform, then you must specify the Transform-from Item. This is the item being transformed to the work definition item.</td>
</tr>
<tr>
<td>Version</td>
<td>The value is set to 1 and can be overridden.</td>
</tr>
<tr>
<td>Start Date</td>
<td>The value is set to the application date and can be overridden.</td>
</tr>
<tr>
<td>Production Priority</td>
<td>The production priority value for the first work definition of an item, that uses a work definition name for which the Used in Planning check box is selected, is enforced as 1. The value for subsequent work definition for the same item is derived sequentially.</td>
</tr>
<tr>
<td>Costing Priority</td>
<td>This is an optional field. The value is used in costing planning scenario to determine which work definition to use when rolling up costs.</td>
</tr>
<tr>
<td>Costing Batch Output Size</td>
<td>This is an optional field. The value is the assumed batch size for the purposes of computing a standard cost. For discrete manufacturing, it is defaulted from the Standard Lot Size, if defined for the work definition item. If not, Costing considers the value of 1.</td>
</tr>
</tbody>
</table>
### Enter Process Work Definition Header Details

On the Manage Work Definitions page, click the Add icon or from the Actions menu, select: Add. This opens the Create Work Definition dialog box. Retain the option as New work definition.

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attachments</td>
<td>Attachments of type file, text, or URL in the work definition. The attachments are automatically carried over to the work order header.</td>
</tr>
<tr>
<td>Work Method</td>
<td>If an organization is enabled for process manufacturing, then both Process Manufacturing and Discrete Manufacturing work methods are available. The value in the Work Method drop-down list is defaulted from what is specified in the plant parameter Default Work Method. If an organization is not enabled for process manufacturing, then only work method Discrete Manufacturing is available.</td>
</tr>
<tr>
<td>Process section</td>
<td>The process work method area.</td>
</tr>
<tr>
<td>Name</td>
<td>A unique identifier of a process work definition. Name must be unique within the manufacturing plant.</td>
</tr>
<tr>
<td>Primary Output</td>
<td>The intended product to be produced.</td>
</tr>
<tr>
<td>Description</td>
<td>The description of the primary output. It is automatically populated after you enter a primary output.</td>
</tr>
<tr>
<td>Batch Quantity</td>
<td>The quantity of the production batch used for batch sizing and scaling, where all input and output quantities are defined in terms of the batch quantity.</td>
</tr>
<tr>
<td>UOM</td>
<td>The UOM of batch quantity. It is defaulted to the primary output item's primary UOM.</td>
</tr>
<tr>
<td>Work Definition section</td>
<td>The work definition area.</td>
</tr>
<tr>
<td>Name</td>
<td>Select the work definition name.</td>
</tr>
<tr>
<td>Type</td>
<td>Based on the selected work definition name, the work definition type is displayed.</td>
</tr>
<tr>
<td>Version</td>
<td>The value is set to 1 and can be overridden.</td>
</tr>
<tr>
<td>Start Date</td>
<td>The value is set to the application date and can be overridden.</td>
</tr>
<tr>
<td>Field</td>
<td>Description</td>
</tr>
<tr>
<td>--------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Production Priority</td>
<td>The production priority for the first work definition of an item that uses a work definition name for which the Used in Planning check box is selected, is enforced as 1. The value for subsequent work definition for the same item is derived sequentially.</td>
</tr>
<tr>
<td>Costing Priority</td>
<td>This is an optional field. The value is used in costing planning scenario to determine which work definition to use when rolling up costs.</td>
</tr>
<tr>
<td>Costing Batch Output Size</td>
<td>This is an optional field. The value is the assumed batch size for the purposes of computing a standard cost. For process manufacturing, it is defaulted from Batch Quantity. If not defined, Costing considers the value as 1.</td>
</tr>
<tr>
<td>Attachments</td>
<td>Attachments of type file, text, or URL in the work definition. The attachments are automatically carried over to the work order header.</td>
</tr>
</tbody>
</table>

### Create Operations

After specifying the details of the work definition header, click **Next** to create the work definition operations.

There are three ways to create a work definition operation:

- **Reference a standard operation:** You can reference a standard operation by selecting the code of the standard operation and retaining the **Referenced** check box as selected. You cannot edit any attributes in this case.

  **Note:** When you reference a standard operation, you cannot edit the resources assigned to the standard operation in the work definition. Referencing also ensures that any future changes to the standard operation are reflected in the work definition operation.

- **Copy a standard operation:** You can copy a standard operation by selecting the code of the standard operation and deselecting the **Referenced** check box. You can edit and update the attributes. After you remove the reference to a standard operation, you cannot reference it again.

  **Note:** When you remove the reference to a standard operation, you can add or delete the resources assigned to the standard operation in the work definition. Any future changes to the standard operation are not reflected in the work definition operation.

- **Manually enter an operation:** You can create an operation by manually entering the name, work center, and specifying whether it is a count point or automatically transact operation. To enter a description and add attachments, expand the operation row.

The following are the operation related fields:

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sequence</td>
<td>The value is derived from the plant parameters Starting Operating Sequence and Operation Sequence Increment. The value can be overridden but must be unique.</td>
</tr>
<tr>
<td>Field</td>
<td>Description</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Standard Operation Code</td>
<td>The code of the standard operation when you choose to reference or copy a standard operation.</td>
</tr>
<tr>
<td>Standard Operation Referenced</td>
<td>Indicates that the standard operation definition is referenced in the work definition operation. Any future changes to the standard operation are reflected in the work definition operation. Once you deselect the Referenced check box, you cannot select it again.</td>
</tr>
<tr>
<td>Operation Type</td>
<td>Indicates if an operation is executed in-house or outsourced to suppliers.</td>
</tr>
<tr>
<td>Name</td>
<td>The name of the operation.</td>
</tr>
<tr>
<td>Description</td>
<td>The description of the operation.</td>
</tr>
<tr>
<td>Work Center</td>
<td>The work center that is associated to the operation.</td>
</tr>
<tr>
<td>Work Center Inactive Date</td>
<td>The inactive date of the work center that is associated to the operation.</td>
</tr>
<tr>
<td>Start Date</td>
<td>The start date of the operation, which is aligned to the work definition version start date.</td>
</tr>
<tr>
<td>End Date</td>
<td>The end date of the operation, which is null initially.</td>
</tr>
<tr>
<td>Count Point</td>
<td>Indicates that 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.</td>
</tr>
<tr>
<td>Automatically Transact</td>
<td>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.</td>
</tr>
<tr>
<td>Serialization</td>
<td>Indicates that the operation is a serialization start operation. It can be selected only if the work definition item is set up as serial-tracked. Serialization is applicable to only discrete work definitions.</td>
</tr>
<tr>
<td></td>
<td><strong>Note:</strong> Currently supported for only discrete manufacturing.</td>
</tr>
<tr>
<td>Lead Time Percent</td>
<td>The offset of a given operation as a percentage of the manufacturing lead time considering all operations of the work definition. These lead time percent values are used as an input in the calculation of cumulative lead times.</td>
</tr>
<tr>
<td>Attachments</td>
<td>Attachments of type file, text, or URL for the work definition operation. The attachments are automatically carried over to the work order operation.</td>
</tr>
</tbody>
</table>
Supplier Operation Details

The defining characteristics of a supplier operation is that it is always a count point operation, and it cannot have resources. You can define one or more supplier operations and they can be consecutive. A supplier operation can be the last operation sequence in a work definition.

In an assemble-to-order model work definition, a supplier operation can be defined either as a mandatory or option-dependent operation. If it is defined as a mandatory operation, then the supplier operation will always be included in the resulting configured item work definition and work order. If it is defined as an option-dependent operation, then the supplier operation will be included in the resulting configured item work definition and work order if the option associated to the operation is selected by you. This is the same behavior as an in-house operation.

The following are the supplier operation related fields:

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outside Processing Item</td>
<td>An item that represents the value-added service being performed on the assembly in outside processing. The item is defined in the Product Information Management work area. The primary UOM of the outside processing item must be the same as that of the work definition item. Note: For process manufacturing, the primary unit of measure of the outside processing item must be the same as the unit of measure of the batch quantity.</td>
</tr>
<tr>
<td>Item Description</td>
<td>The description of the outside processing item.</td>
</tr>
<tr>
<td>Supplier</td>
<td>The recommended supplier used in creating the requisition. The supplier is an external party who provides specialized manufacturing services to manufacture a product. The field is mandatory if the prior operation is also a supplier operation.</td>
</tr>
<tr>
<td>Supplier Site</td>
<td>The recommended supplier site. The field is mandatory if the prior operation is also a supplier operation.</td>
</tr>
<tr>
<td>Generate Shipment</td>
<td>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</td>
</tr>
</tbody>
</table>
### ASSIGN OUTPUTS TO OPERATIONS

After creating operations, click Save and Edit. The Edit Work Definition Details page opens. The operations are shown in the work definition region. If you are creating a process work definition, the Outputs vertical tab will be shown where the primary output item card is displayed. After you assign the primary output to an operation, a check mark is shown on the primary output item card. The primary output must be assigned to an operation in order to have a valid process work definition.

You can assign multiple outputs to an operation. To assign an output to an operation, perform a search for the item in the Outputs vertical tab. An item card for the output that you search is displayed in the search results. You can assign an output to an operation either by performing drag and drop or right-click Assign action. The Assign Operation Output dialog box opens, where you can enter the output attributes, and then click the OK button.

### ASSIGN ITEMS TO OPERATIONS IN A DISCRETE WORK DEFINITION

After creating operations, click Save and Edit. The Edit Work Definition Details page opens. The operations are shown in the work definition region. The item structure is shown in the Item Structure vertical tab. A count badge is shown against the components indicating their assigned quantity out of total quantity.

There are multiple ways to assign an item structure component to an operation:

- **Drag and drop:** You can drag and drop an item structure component to an operation for which the component is required. The entire quantity of the component 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 component on the item structure indicating that all of the quantity is assigned.

- **Right-click Assign action:** You can right-click an item structure component and from the Actions menu, select Assign. The Assign Operation Item dialog box opens. You can edit the operation item attributes if needed, and then click the OK button.

- **Multiselect item structure components:** You can click the Collect icon in the Item Structure vertical tab. The Not Collected icon is shown against the item structure components. The component is now collected as indicated by the count against the Collected Items icon. Select the other components that you want to assign. You can

---

### Field | Description
--- | ---
Shippable attribute. It is unchecked if the prior operation is a supplier operation or if the supplier operation is the first operation in sequence. **Note:** If you check the Generate Shipment check box, Manufacturing sends a request to Supply Chain Orchestration, to create a shipment line to ship the goods to the supplier once the goods are reported as completed at the operation prior to the supplier operation. Supply Chain Orchestration creates a supply order line based on the request sent by manufacturing and orchestrates the automatic creation of a shipment line in Shipping.
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 and is independent of the order quantity.
Variable Lead Time | The variable lead time for the operation and is dependent on the quantity.
do this by either dragging and dropping the Collected Items to an operation for which they are required or by right-clicking the Collected Items and from the Actions menu, select Assign. The Assign Operation Items dialog box opens. You can edit the operation item attributes if needed and 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 is not shown if you do not have the Override Item Structure Components in Work Definition privilege.

**Assign Items to Operations in a Process Work Definition**

As there is no item structure reference in a process work definition, you assign ad hoc items as inputs to operations. To assign an 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. The Assign Operation Item dialog box opens, where you can enter the input attributes, and then click the OK button.

**Assign Resources to 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 is required. The Assign Operation Resource dialog box opens. You can edit the operation resource attributes if needed and 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. The Assign Operation Resource dialog box opens. You can edit the operation resource attributes if needed and then click the OK button.

- **Multiselect resources:** You can click Collect in the Resources vertical tab. The Not Collected icon is shown against the resources. When you click the Not Collected icon to select a resource, the icon is activated. The resource is now collected as indicated by the count against the Collected Items icon. Select the other resources that you want to assign. Drag and drop the basket icon to an operation for which they are required. Or right-click the basket icon and from the Actions menu, select: Assign. The Assign Operation Resources dialog box opens. You can edit the operation resource attributes if needed and then click the OK button.

**Copy an Existing Discrete Work Definition**

On the Manage Work Definitions page, click on the Add icon or from the Actions menu, select: Add. The Create Work Definition dialog box opens. Select the Existing work definition option. The Create Work Definition dialog box opens with Existing Work Definition region and New Work Definition region. Select Discrete Manufacturing as the Work Method. Enter the Item and Work Definition Name of the existing work definition. Enter the Item, Structure Name, and Work Definition Name of the new work definition.

Rules for creating a new discrete work definition from an existing discrete work definition:

- Operations and operation resources are copied.
- If the item and structure name are the same, then the operation items are copied.
- If the item is changed in the new work definition, then the operation items are not copied.
• If the item is the same, but the structure name is changed in the new work definition, then the operation items are not copied.
• Based on the work definition type selected for the existing work definition, only the work definition names of the same type can be selected for the new work definition.

**Copy an Existing Process Work Definition**

On the Manage Work Definitions page, click on the Add icon or from the Actions menu, select: Add. The Create Work Definition dialog box opens. Select the Existing work definition option. The Create Work Definition dialog box opens with Existing Work Definition region and New Work Definition region. Select Process Manufacturing as the Work Method. Enter the Process Name of the existing work definition. Enter the Process Name, Primary Output, Batch Quantity, UOM, and Work Definition Name of the new work definition. Determine whether you want to copy operation items and operation outputs from the existing work definition to the new work definition.

Rules for creating a new process work definition from an existing process work definition:

• Operations and operation resources are copied
• Operation items are copied if Copy items is checked
• Operation outputs are copied if Copy outputs is checked
• If the primary output of the existing work definition is the same as the primary output of the new work definition, then the primary output item and the primary output indicator is copied
• If the primary output of the existing work definition is different from the primary output of the new work definition, then the primary output item is copied, but the primary output indicator is not copied. You will have to assign the primary output explicitly in the new work definition.

**How You Edit Work Definitions**

When a work definition is created, certain header information, operations, operation outputs, operation items, and operation resource attributes can be updated. However, you can't add or delete an operation in the current effective work definition version. You will have to create a new version in order to add or delete an operation.

**Note:** The start date of a work definition is set to the application date. While creating 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.

The manufacturing work definition is a social object. If you enable it for use in Oracle Social Networking, the Social icon will appear on the Edit Work Definition page.

**Note:** For more information about Oracle Social Networking setups, refer to the Implementing Manufacturing chapter of the Oracle Supply Chain Management Cloud Implementing Manufacturing and Supply Chain Materials Management guide.

**Edit Discrete Work Definition Header Details**

You can update Completion Subinventory, Completion Locator, Costing Batch Output Size, and Attachments in the Edit Work Definition Details dialog box. You can also update the production priority and costing priority on Edit Priorities dialog box, which can be accessed either from the Search Results region on the Manage Work Definitions page or in the Edit Work Definition Details dialog box from the Edit Work Definition Details page.

**Edit Process Work Definition Header Details**
You can update Process Name, Batch Quantity, UOM, Costing Batch Output Size, and Attachments in the Edit Work Definition Details dialog box. You can also update the production priority and costing priority on Edit Priorities dialog box, which can be accessed either from the Search Results region on the Manage Work Definitions page or in the Edit Work Definition Details dialog box from the Edit Work Definition Details page.

**Edit Operations**

You can rename an operation and associate it to a different work center. You can rearrange the operations by updating the operation sequence. If you use a referenced standard operation whose definition no longer reflects how the operation is performed, you can deselect the Referenced check box. Now, the Count Point and Automatically Transact attributes can be edited. For example, a count point operation can now be made an automatically transact operation by deselecting the Count Point check box and selecting the Automatically Transact check box.

To add a new operation, click the Operations vertical tab, and drag and drop the new operation card into the work definition region. You can also right-click on the work definition region and select Assign to add a new operation. The Add Operation dialog box opens. Enter the details of the operation. You can also search for a standard operation, then drag and drop the standard operation card into the work definition region.

To copy an 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.

To delete an operation, right-click the operation card in the work definition region, and then from the Actions menu, select: Delete.

Note: You can't add or delete an operation in the current effective work definition version. You have to create a new version to add or delete an operation.

**Edit Operation Outputs**

Most of work definition operation output attributes can be updated, with the exception of Primary output indicator and Costing Priority of the primary output.

The following are the operation outputs related fields:

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operation</td>
<td>The operation to which the output is assigned.</td>
</tr>
<tr>
<td>Sequence</td>
<td>The material sequence of the operation output. The value must be unique in an operation.</td>
</tr>
<tr>
<td>Output</td>
<td>The item which you're producing in the production process.</td>
</tr>
<tr>
<td>Description</td>
<td>The description of the output.</td>
</tr>
<tr>
<td>Output Type</td>
<td>The possible values are Product and By-product. A product is a material that's intentionally produced in the production process and it can be a primary or a co-product. Co-products are produced in the production process due to product or process similarities. Both are defined with an output type of Product. A by-product is a material that's produced as a residual of, or incidental to, the production process. It is defined with an output type of By-product.</td>
</tr>
<tr>
<td>Field</td>
<td>Description</td>
</tr>
<tr>
<td>---------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Primary Output</td>
<td>The indicator that an output is the primary product, produced in the production process. This is a Read-Only field. It's enabled only for the primary output identified on the work definition header and disabled for a co-product.</td>
</tr>
<tr>
<td>Quantity</td>
<td>The quantity of the output produced in an operation.</td>
</tr>
<tr>
<td>UOM</td>
<td>The unit of measure of the operation output quantity. It’s defaulted to the item’s primary unit of measure, and can be updated to a convertible UOM.</td>
</tr>
</tbody>
</table>
| Completion Type     | Completion type of an output can either be automatic or manual. Automatic is when the output completion is reported automatically when a work order operation is completed. Manual is when the output completion must be manually reported by the user independent of when a work order operation is completed. Relationships between completion type and a count point, automatically transact, or optional operation:  
  - Count point operation can have completion type Automation or Manual  
  - Automatically transact operation can have completion type Automatic only  
  - Optional operation can have completion type Manual only |
| Completion Subinventory | The completion subinventory where the output is expected to be completed to.                                                              |
| Completion Locator  | The completion locator where the output is expected to be completed to.                                                                     |
| Cost Allocation     | This field specifies whether the cost of an output is rolled up or manually entered. The possible values are Percentage and Fixed value. Cost allocation percentage represents the percentage of costs that will be allocated to the output up through the operation where it’s being produced. Total cost allocation percentage can’t exceed 100 percent for all outputs in an operation. If the cost of an output is manually entered, then select fixed value. |
| Costing Priority    | This is an optional field. The value is used to identify a priority for cost rollup of an output when the output can be produced by multiple work definitions. For a primary output, the field is disabled, because its costing priority is the costing priority on the work definition header. |
| Attachments         | Attachments of type file, text, or URL for the work definition operation output. The attachments are automatically carried over to the work order operation output. |

**Edit Operation Items in a Discrete Work Definition**

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 fields:
<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operation</td>
<td>The operation to which the item is assigned.</td>
</tr>
<tr>
<td>Sequence</td>
<td>The material sequence of the operation item. The value must be unique in an operation.</td>
</tr>
<tr>
<td>Item</td>
<td>The name of the item.</td>
</tr>
<tr>
<td>Item Description</td>
<td>The description of the item.</td>
</tr>
<tr>
<td>Basis</td>
<td>Determines whether the quantity of the component that's used, is a fixed amount or varies linearly with the quantity produced. The value is either Fixed or Variable. Note: Basis is always referenced from the item structure and hence, can't be updated.</td>
</tr>
<tr>
<td>Quantity</td>
<td>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. The quantity can be negative if the work definition type is Rework or Transform. 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.</td>
</tr>
<tr>
<td>Inverse Quantity</td>
<td>Inverse Quantity is equal to 1 divided by quantity. If a value for the Quantity attribute is entered, then value for the Inverse Quantity attribute is calculated automatically. If a value for the Inverse Quantity attribute is entered, then value for the Quantity attribute is calculated automatically. Note: Inverse quantity is typically used in situations where the component quantity per assembly is a large fractional number that's difficult to enter and maintain while it's easy to enter the inverse of the fractional number. After you enter the inverse of fractional quantity in the Inverse Quantity field, the application automatically calculates and stores the desired component quantity per assembly. Storing the exact fractional quantity per assembly prevents any undesirable material usage variances that might occur in work orders with large build quantities.</td>
</tr>
<tr>
<td>UOM</td>
<td>The unit of measure of the operation item quantity. The value is derived from the item structure.</td>
</tr>
<tr>
<td></td>
<td>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.</td>
</tr>
</tbody>
</table>

---

**Note:** If you need to clear or remove a component quantity or inverse quantity, you must clear both, as a whole, from the item structure. You cannot clear one quantity and leave the other behind.
### Field | Description
--- | ---
Item Yield | The amount of good or acceptable material available after the completion of a process. A yield factor of 0.90 means that only 90% of the usage quantity of the component is acceptable to be included into the finished good. The value is derived from the item structure.  
**Note:** You need the Override Item Structure Components in Work Definition privilege to update the item yield.
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, 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, plant parameter. You can update the default value.
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, plant parameter. You can update the default value.
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 Product Information Management work area.
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 Product Information Management work area.
Ad hoc item | The indicator that an operation item is an ad hoc item, which means that the item doesn't come from the item structure.
Attachments | Attachments of type file, text, or URL for the work definition operation item. The attachments are automatically carried over to the work order operation item.
Substitutes | If an item structure component has substitutes defined in Product Information Management, then the substitutes are automatically pulled to the work definition. You can't add, delete, or edit substitutes in the work definition. If the primary component quantity is split across multiple operations, the substitute quantity is proportionally distributed among the operations.

**Tip:** For more information about how changes in item structure affect the work definition operation items including substitutes, refer to the Process Item Structure Changes to Work Definitions: Explained topic in this guide.

### Edit Operation Items in a Process Work Definition

As there's no item structure reference in a process work definition, the operation items are always of type ad hoc items. Unlike discrete work definition, you don't need a privilege to update operation item attributes.

The following are the operation item related fields:
<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operation</td>
<td>The operation to which the item is assigned.</td>
</tr>
<tr>
<td>Sequence</td>
<td>The material sequence of the operation item. The value must be unique in an operation.</td>
</tr>
<tr>
<td>Item</td>
<td>The name of the item.</td>
</tr>
<tr>
<td>Item Description</td>
<td>The description of the item.</td>
</tr>
<tr>
<td>Basis</td>
<td>Determines whether the quantity of the material that's used, is a fixed amount or varies linearly with the quantity produced. The value is either Fixed or Variable.</td>
</tr>
<tr>
<td>Quantity</td>
<td>The quantity of the operation item required in an operation.</td>
</tr>
<tr>
<td>Inverse Quantity</td>
<td>Inverse Quantity is equal to 1 divided by quantity. If a value for the Quantity attribute is entered, then value for the Inverse Quantity attribute is calculated automatically. If a value for the Inverse Quantity attribute is entered, then value for the Quantity attribute is calculated automatically.</td>
</tr>
<tr>
<td>UOM</td>
<td>The unit of measure of the operation item quantity. It's defaulted to the item's primary unit of measure, and can be updated to a convertible UOM.</td>
</tr>
<tr>
<td>Item Yield</td>
<td>The amount of good or acceptable material available after the completion of a process. A yield factor of 0.90 means that only 90% of the usage quantity of the component is acceptable to be included into the finished good. The value is derived from the item structure.</td>
</tr>
<tr>
<td>Supply Type</td>
<td>Controls how the materials are supplied to the work orders. The valid values are: Assembly Pull, Operation Pull, Push, Phantom, Bulk, and Supplier. The value is defaulted from the 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.</td>
</tr>
<tr>
<td>Supply Subinventory</td>
<td>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, plant parameter. You can update the default value.</td>
</tr>
<tr>
<td>Supply Locator</td>
<td>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, plant parameter. You can update the default value.</td>
</tr>
<tr>
<td>Start Date</td>
<td>As this is an ad hoc item, there's no start date.</td>
</tr>
<tr>
<td>End Date</td>
<td>As this is an ad hoc item, there's no end date.</td>
</tr>
<tr>
<td>Ad hoc item</td>
<td>The indicator that an operation item is an ad hoc item. It's checked.</td>
</tr>
</tbody>
</table>
## Edit Operation Resources

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 fields:

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operation</td>
<td>The operation to which the resource is assigned.</td>
</tr>
<tr>
<td>Sequence</td>
<td>The resource sequence of the operation resource.</td>
</tr>
<tr>
<td>Resource</td>
<td>The name of the resource.</td>
</tr>
<tr>
<td>Resource Code</td>
<td>The code of the resource.</td>
</tr>
<tr>
<td>Units Assigned</td>
<td>The assigned units can't exceed the available units for the resource as defined in the resource definition.</td>
</tr>
<tr>
<td>Basis</td>
<td>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.</td>
</tr>
<tr>
<td>Usage</td>
<td>The usage amount of the operation resource.</td>
</tr>
<tr>
<td>Inverse Usage</td>
<td>Inverse Usage is equal to 1 divided by Usage. If the Usage attribute is entered, then the Inverse Usage attribute is calculated automatically. If the Inverse Usage attribute is entered, then the Usage attribute is calculated automatically.</td>
</tr>
<tr>
<td>UOM</td>
<td>The usage unit of measure as defined in the resource definition.</td>
</tr>
<tr>
<td>Scheduled</td>
<td>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_SERVICE_DURATION_CLASS.</td>
</tr>
<tr>
<td>Principal</td>
<td>The indicator that a resource is the principal resource within a group of simultaneous resources (resources sharing the same resource sequence number).</td>
</tr>
<tr>
<td>Field</td>
<td>Description</td>
</tr>
<tr>
<td>-----------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Charge Type</td>
<td>The valid values are: Automatic and Manual.</td>
</tr>
<tr>
<td>Activity</td>
<td>The predefined values are: Setup, Run, and Tear Down. The lookup can be extended by adding new values.</td>
</tr>
<tr>
<td>Costing enabled</td>
<td>The indicator that the resource cost is charged to the work order.</td>
</tr>
<tr>
<td>Inactive On</td>
<td>The date on which the resource becomes inactive.</td>
</tr>
<tr>
<td>Attachments</td>
<td>Attachments of type file, text, or URL for the work definition operation resource. The attachments are automatically carried over to the work order operation resource.</td>
</tr>
<tr>
<td>Alternates</td>
<td>Alternate resources are ranked by priority. Basis, Scheduled, and Charge Type are inherited from the primary resource and can't be updated. Usage, Inverse Usage and Units Assigned are defaulted from the primary resource definition and can be updated.</td>
</tr>
</tbody>
</table>

**Item Revision and Date in a Discrete Work Definition**

On the Edit Work Definition Details page, the Item Revision list displays the item revisions that fall within the date range of the work definition version being viewed or edited. The Date list shows the distinct component effective start dates that correspond to the item revision selected in the Item Revision list. In an ATO model work definition, the Date list includes the distinct component effective start dates of the lower level components also. If the date was introduced through an Engineering Change Order, the Change Order Number, and the Change Order Line Number will be appended to the Date.

Selecting an item revision in the Item Revision drop-down list and a date in the Date drop-down list does the following:

- Updates the item structure view and shows the effective components as of that date.
- Updates the work definition region and shows the effective work definition as of that date.

Consider the following example:

The following table lists the fields and their respective values for Item A123 Revision A dated 1/1/16.

<table>
<thead>
<tr>
<th>Component</th>
<th>Quantity</th>
<th>Start Date</th>
<th>End Date</th>
<th>Change Order Number</th>
<th>Change Order Line Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>C123</td>
<td>1</td>
<td>1/1/16</td>
<td>Blank</td>
<td>Blank</td>
<td>Blank</td>
</tr>
<tr>
<td>C124</td>
<td>3</td>
<td>1/1/16</td>
<td>Blank</td>
<td>Blank</td>
<td>Blank</td>
</tr>
<tr>
<td>C125</td>
<td>6</td>
<td>1/1/16</td>
<td>Blank</td>
<td>Blank</td>
<td>Blank</td>
</tr>
<tr>
<td>C126</td>
<td>1</td>
<td>3/1/16</td>
<td>Blank</td>
<td>Blank</td>
<td>Blank</td>
</tr>
</tbody>
</table>
The following table lists the fields and their respective values for Item A123 Revision B dated 6/1/16.

<table>
<thead>
<tr>
<th>Component</th>
<th>Quantity</th>
<th>Start Date</th>
<th>End Date</th>
<th>Change Order Number</th>
<th>Change Order Line Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>C123</td>
<td>1</td>
<td>1/1/16</td>
<td>Blank</td>
<td>Blank</td>
<td>Blank</td>
</tr>
<tr>
<td>C124</td>
<td>4</td>
<td>1/1/16</td>
<td>Blank</td>
<td>Blank</td>
<td>Blank</td>
</tr>
<tr>
<td>C125</td>
<td>8</td>
<td>1/1/16</td>
<td>Blank</td>
<td>Blank</td>
<td>Blank</td>
</tr>
<tr>
<td>C126</td>
<td>1</td>
<td>3/1/16</td>
<td>Blank</td>
<td>Blank</td>
<td>Blank</td>
</tr>
<tr>
<td>C127</td>
<td>2</td>
<td>6/1/16</td>
<td>Blank</td>
<td>MFG-1040</td>
<td>10</td>
</tr>
<tr>
<td>C128</td>
<td>2</td>
<td>8/1/16</td>
<td>Blank</td>
<td>Blank</td>
<td>Blank</td>
</tr>
</tbody>
</table>

The following table shows the work definition Version 1 of the item A123. The start date of the version is 1/15/16. The end date of the version is 5/31/16.

<table>
<thead>
<tr>
<th>Field</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Item Revision</td>
<td>Revision A</td>
</tr>
</tbody>
</table>
| Date    | • 1/15/16  
          • 3/1/16  |

The following table shows the details of work definition Version 2 of the item A123. The start date of the version is 6/1/16. The end date of the version isn’t specified.

<table>
<thead>
<tr>
<th>Field</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Item Revision</td>
<td>Revision B</td>
</tr>
</tbody>
</table>
| Date    | • 6/1/16 MFG-1040.10
          • 8/1/16  |
Note: If the work definition version start date is later than the item revision date, then the work definition version start date is shown in the Date drop-down list.

**Item Revision and Date in a Process Work Definition**

On the Edit Work Definition Details page, the Item Revision list displays the item revisions that fall within the date range of the work definition version being viewed or edited. As there's no item structure in a process work definition, the Date list only shows the Start Date of the Item Revision.

**Search Within a Work Definition**

On the Edit Work Definition Details page, expand the Search: Work Definition region to access the search functionality within a work definition. The Contains search is conducted across the operations, operation outputs (applicable only for process work definitions), operation items, and operation resources based on the keywords, such as item name, output name, item description, output 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.

**How You Create an Assemble to Order (ATO) Model Work Definition**

Oracle Manufacturing Cloud supports configured item fulfillment flow for a make-to-order configured product. The customer order is created with the Assemble to Order (ATO) model as the ordered item. When an ATO model is ordered, the customer has the ability to configure the model and select the options. The selected options result in a configuration and for each unique configuration, the application creates a configured item. Then, the work order to fulfill the customer order is created against the configured item.

Note: Assemble to Order work definitions are currently supported for only discrete manufacturing.

To create a work order for a configured item, a primary work definition for the ATO model must be defined first. There are a few traits about an ATO model work definition that are different from a standard item work definition. The specifics are highlighted and discussed here in more detail.

**ATO Model Work Definition Operations**

In an ATO model work definition, the Create Operation, Assign Operation, and Edit Operation dialog boxes display the Option Dependent Details region.

The following table lists all the fields and their corresponding descriptions which helps you to choose or select values in order to create an ATO model work definition:
<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Option dependent</td>
<td>Indicates that an operation is an option dependent operation. An option dependent operation is included in the configured item work order in case of either of the following:</td>
</tr>
<tr>
<td></td>
<td>• The optional components that are assigned to the operation are selected in the configuration.</td>
</tr>
<tr>
<td></td>
<td>• The criteria, as defined in the applicability rule, are met.</td>
</tr>
<tr>
<td></td>
<td>If the option dependent check box is not selected, then the operation is considered a mandatory operation. A mandatory operation is always included in the configured item work order.</td>
</tr>
<tr>
<td>Applicability Rule</td>
<td>Defines the criteria to include an option dependent operation in the configured item work order. There can be only one applicability rule for an option dependent operation.</td>
</tr>
<tr>
<td>Planning Percentage</td>
<td>The percentage of the nominal resource usage that is applied when planning the resource capacity requirements to satisfy a demand forecast of the parent model item.</td>
</tr>
</tbody>
</table>

**ATO Model Work Definition Operation Items**

You can create an ATO model work definition only for the ATO model item structure with the structure name as Primary. The item structure visualization displays the multilevel ATO model item structure. You can expand option classes to view the options. You can also expand standard item phantoms to view the components that make up the phantoms. However, you cannot expand child ATO models.

**Note:** The supply type of option classes and standard item phantoms must be set to Phantom at the item structure component level. This setup is required to expand option classes and standard item phantoms to see options and lower level components respectively, when viewing the item structure in the work definition.

The count badge that you see against an item structure component card indicates the number of components for a single parent node. The count badge, shown only for a leaf node, indicates the assigned quantity over the component total quantity. The count badge turns into a check mark after the component is assigned to an operation. If you hover over the check mark icon, you can view the operation sequence to which the component is assigned to.

You can assign any component from any level to an operation. The rules governing this feature:

- If the parent is assigned, the children cannot be assigned.
- If the children are assigned, assigning the parent automatically deletes the children's assignments.

This means for an option class, you can choose whether to assign the option class or the options. Similarly for a standard item phantom, you can choose whether to assign the parent phantom or the components. Assigning an option class to an option-dependent operation means that the operation is included in the configured item work order if any of the options of the specific option class is selected.

**Note:** There are no enforcements between the type of operations, that is, mandatory or option dependent, and the type of the component that can be assigned, that is, mandatory or optional. If you assign an optional component to a mandatory operation, then the operation is always included in the configured item work order. But the optional component is not included if it is not selected in the configuration.
There are two operation item attributes that are specific to ATO model work definitions. These attributes are referenced from Oracle Fusion Product Model and hence, cannot be updated. The operation item attributes specific to ATO model work definitions are:

- Planning Percentage: The percentage that is used by Planning in forecast explosions. A planning percent can be greater than 100 to plan for a component in excess.
- Optional: Indicator that a component is an optional component. If the Optional check box is not selected, then the component is considered as a mandatory component.

**Note:** In an ATO model work definition, you must assign the entire component quantity to an operation. You cannot update the quantity, inverse quantity, unit of measure, and yield. You also cannot assign ad hoc items, which are existing items that are not components of the ATO model item structure.

**Tip:** For more information refer to the Process Item Structure Changes to Work Definitions: Explained topic in this guide.

### Applicability Rule

An applicability rule can be assigned to an option dependent operation. The rule defines the criteria to include the operation in the configured item work order. The operation is included in the work order only if the criteria are met. You can define an applicability rule using optional components, option classes, transactional item attributes (TIA), or any of the combinations.

Consider an example, in which, there are two types of performance tests as a part of building tablets. Depending on the selected CPU option, one of the performance test operation is executed. You can model this by doing the following:

- Create two option dependent operations for the two types of performance tests.
- Assign an applicability rule defining the criteria to select the performance test based on which CPU option is selected.

If you want to use the TIAs in the applicability rule to determine when to include the option dependent operations, then while defining the TIAs, the TIAs must be assigned to application scope Configuration Matching. The TIAs are used in the configuration matching process to determine if a configuration already exists. The TIAs are also leveraged by Oracle Fusion Manufacturing to determine the operations that are to be executed to build a configured item.

Transactional item attributes are defined in Oracle Fusion Product Hub. Because TIA is associated with an item class, all items that belong to the item class will inherit the TIA. Based on the item class setup, you can define TIA for the top-level ATO model, optional components, or child ATO models. You can define an applicability rule using transactional item attributes with either numeric or string data type, as long as the associated value sets have a validation type of either independent or subset.

**Note:** Assign either the optional components or an applicability rule to an option-dependent operation. If you assign both, then the applicability rule is not evaluated.

### Create an Applicability Rule

To create an applicability rule, you must select the Option dependent check box in the Option Dependent Details region. This enables the Add icon. Click the Add icon to open the Add Applicability Rule dialog box. Unlike the Edit Work Definition Details page, the item structure visualization in the Add Applicability Rule dialog box shows the multilevel item structure of an ATO model. However, only the optional components are displayed. The current and future effective components and TIAs are shown based on the date selected in the Date list on the Edit Work Definition Details page. From the first-level components, you can expand the option classes to view the lower-level optional components. You cannot expand a child ATO model. If you have defined the transactional item attributes, then they appear as the child nodes of a component. And expanding the transactional item attribute node shows the attribute values.
In the item structure, once you locate the item or TIA value that you need for defining the rule, you can do either of the following:

- Drag and drop the item or TIA card to the Rule Text region.
- Right-click the item or TIA card, from Actions menu, select: Insert into Rule Text.

After you drag and drop or insert the rule text, the Rule Text region shows the component hierarchy of the item or transactional item attribute. A component hierarchy is the relative path of the item node to the top-level ATO model node.

The following example shows the item structure and component hierarchy of ATO MODEL 1:

- OPTION CLASS 1: ATO MODEL 1.OPTION CLASS 1
  - OPTION 11: ATO MODEL 1.OPTION CLASS 1.OPTION 11
  - OPTION 12: ATO MODEL 1.OPTION CLASS 1.OPTION 12
- OPTION CLASS 2: ATO MODEL 1.OPTION CLASS 2
  - OPTION 21: ATO MODEL 1.OPTION CLASS 2.OPTION 21
  - OPTION 22: ATO MODEL 1.OPTION CLASS 2.OPTION 22

The Rule Text region has various operators that can be used to define an applicability rule. You can have a combination of items and TIAs in a rule, and build a complex expression using AND and OR conditions. Click the Validate button to validate the rule you are defining. If the rule fails to meet the valid syntax, an appropriate error message is shown. You have to correct the error before you can save the rule.

For numeric attributes, the valid operators are:

- Equal to
- Not equal to
- Less than
- Less than or equal to
- Greater Than
- Greater than or equal to

For string attributes, the valid operators are:

- Equal to
- Not equal to
- STARTSWITH
- ENDSWITH
- CONTAINS
- DOESNOTCONTAIN

Valid rule syntax:

- Keyword ITEM is used to specify an item, that is, ITEM is equal to 'ATO MODEL 1''OPTION CLASS 1'
- Keyword TRANSACTIONALATTRIBUTE is used to specify a transactional item attribute, that is, 'ATO MODEL 1''OPTION CLASS 1''OPTION 11'. TRANSACTIONALATTRIBUTE ["Finish"] is equal to "Matte"
- Item numbers are wrapped within single quotes
- Transactional item attribute name and value are wrapped within double quotes
• Dot is used as a separator in the component hierarchy
• Operators are in upper case and are not translatable

The Add Applicability Rule dialog box shows the display name of a transactional item attribute, which is translatable. If the value set used by a TIA is translatable, then the item structure visualization shows the internal name of the value and the translated value next to it in parenthesis. The applicability rule is evaluated against the value of the internal name and not the translated value.

Note: Using drag and drop or selecting Insert into Rule Text from the Actions menu ensures that the rule syntax is valid. However, you can also create or edit a rule in the Rule Text region by entering the syntax manually.

Export Operation Item Assignments

The Export Operation Item Assignments action is available in the Actions menu in the Edit Work Definition page. It enables you to export the complete multilevel ATO model item structure to Excel in an indented view. The Excel captures the following information:

• Displays the operations to which components are assigned.
• Indicates if there is pending work in the Assignment Status column.
• Lists other relevant item and item structure attributes such as User Item Type, Item Revision, and Structure Item Type.

Assignment status can be Complete, Incomplete, Explicit, or Implicit. An Explicit assignment status shows to which operation a component is directly assigned to. An Implicit assignment status applies to the children when their parent is directly assigned to an operation. Incomplete and Complete assignment status is derived by the application. In a parent-child scenario, if you have assigned all the children, then the assignment status for the parent is Complete, but if you haven’t assigned all the children, then the assignment status for the parent is Incomplete.

You can quickly find out whether or not there is pending work by looking at the assignment status of the top level ATO model. If it is Incomplete, then it means you still have pending work in terms of operation item assignments. If it is Complete, then it means you have fully completed operation item assignments.

Related Topics
• Define Common SCM Configuration: Define Advanced Items

How You Create a Configured Item Work Definition

Configure to Order (CTO) is the process of ordering and fulfilling configured products. The configured products, also referred as configured items, are either procured or made to order. The configured item work definition defines the manufacturing process to build the configured item.

Note: Configured item work definitions are currently supported for only discrete manufacturing.

Process to Create a Configured Item Work Definition

When Oracle Fusion Manufacturing receives a request to create a work order for the configured item:

• First, it creates the configured item work definition.
• Then, based on the configured item work definition, it creates the configured item work order
A configured item work definition is created dynamically using the primary ATO model work definition, selected options, and transactional item attributes. Unlike the ATO model work definition, the configured item work definition is not saved in the database. Also, you cannot create a work definition for a configured item manually or search for it in the user interface.

The following figure illustrates the steps to create a configured item work definition dynamically. First, the application retrieves the configuration details that include the selected options, TIA, and mandatory components. Then, the application creates the configured item work definition header based on the base ATO model work definition header. It includes all the mandatory operations, mandatory components, and related resources. Based on the options and transactional item attributes that are selected during the configuration process, it includes the corresponding option-dependent operations along with the optional components and related resources. The application also explodes standard items with supply type as phantom for the ATO model and includes the components that make up the phantom according to the item structure. A configured item work order is then created based on the configured item work definition.

Example to Create a Configured Item Work Definition

The following example illustrates how a configured item work definition is created.

The following shows how a configured item is created from the item structure:

- ATO MODEL 1
  - OPTION CLASS 1
    - OPTION 11: (selected option: Y)
    - OPTION 12
• MANDATORY COMP 13
  ◦ OPTION CLASS 2
    • OPTION 21: (selected option: Y)
    • OPTION 22
    • MANDATORY COMP 23 (Phantom)

• MANDATORY COMP 23
  ◦ COMP 231
  ◦ COMP 232

The following table illustrates the various attributes of the work definition for ATO Model 1:

<table>
<thead>
<tr>
<th>Operation Sequence</th>
<th>Operation Name</th>
<th>Option Dependent</th>
<th>Operation Item</th>
<th>Applicability Rule</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>Assembly</td>
<td>N</td>
<td>MANDATORY COMP 3</td>
<td>Blank</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>OPTION CLASS 1</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>Hand insertion</td>
<td>Y</td>
<td>OPTION CLASS 2</td>
<td>Blank</td>
</tr>
<tr>
<td>30</td>
<td>Performance Test A</td>
<td>Y</td>
<td>Blank</td>
<td>If OPTION 21 is selected</td>
</tr>
<tr>
<td>40</td>
<td>Performance Test B</td>
<td>Y</td>
<td>Blank</td>
<td>If OPTION 22 is selected</td>
</tr>
<tr>
<td>50</td>
<td>Pack</td>
<td>N</td>
<td>MANDATORY COMP 4</td>
<td>Blank</td>
</tr>
</tbody>
</table>

The following table illustrates the various attributes of the work definition for configured item ATO Model 1:1:

<table>
<thead>
<tr>
<th>Operation Sequence</th>
<th>Operation Name</th>
<th>Operation Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>Assembly</td>
<td>MANDATORY COMP 3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>OPTION 11</td>
</tr>
<tr>
<td>20</td>
<td>Hand insertion</td>
<td>OPTION 21</td>
</tr>
<tr>
<td></td>
<td></td>
<td>COMP 231</td>
</tr>
<tr>
<td></td>
<td></td>
<td>COMP 232</td>
</tr>
<tr>
<td>30</td>
<td>Performance Test A</td>
<td>Blank</td>
</tr>
<tr>
<td>50</td>
<td>Pack</td>
<td>MANDATORY COMP 4</td>
</tr>
</tbody>
</table>
Chapter 3
Production Process Design

Work Definitions for Contract Manufacturing

Contract manufacturing is a business process in which an organization, known as the original equipment manufacturer (OEM), outsources manufacturing to another organization, known as the contract manufacturer to manufacture a specific part or a full product. The contract manufacturer manufactures the product to exact specifications of the original equipment manufacturer's label. The original equipment manufacturer may supply some or all components to the contract manufacturer. Contract manufacturing allows the original equipment manufacturer to completely outsource their manufacturing process to the contract manufacturer.

Note: Work definitions for contract manufacturing are currently supported for only discrete manufacturing.

The contract manufacturing business flow in Oracle Manufacturing Cloud involves two types of items:

- Contract Manufacturing Finished Good: Refers to the item that is in demand. It is the ordered item on the customer sales order. The work definition and work order in manufacturing is created for this item.
- Contract Manufacturing Service Component: Refers to the item with which the supply is fulfilled. It is the item on the purchase order. This item is issued to the manufacturing work order as a component.

In contract manufacturing scenarios, the work definition is the source document, business object that is used internally by the Oracle Fusion Supply Chain Orchestration to create the work order and communicate with the contract manufacturer. The following figure is a quick overview of the manufacturing related business processes that are involved:
The following figure explains how the various applications are involved in completion of the contract manufacturing business flow. This diagram partially depicts the flow, starting with creation of a sales order in Order Promising and ending in creation of a purchase order in Purchasing.

The following figure is a continuation of the previous diagram and explains the contract manufacturing business flow after a purchase order has been created in Purchasing. The flow ends with the work order completion notification sent to supply orchestration and then notifying supply availability for the service item.
The following table summarizes key setup aspects in a contract manufacturing flow:

<table>
<thead>
<tr>
<th>Setup</th>
<th>Considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Define the Contract Manufacturer</td>
<td>Do the following:</td>
</tr>
<tr>
<td></td>
<td>• Set up a supplier and supplier site for the supplier who represents the contract manufacturer.</td>
</tr>
<tr>
<td></td>
<td>• Setup a manufacturing plant that represents the facility of contract manufacturer.</td>
</tr>
<tr>
<td></td>
<td>In the Plant Parameters page, ensure you have set the plant as a contract manufacturer with the supplier and supplier site as defined.</td>
</tr>
<tr>
<td>Grant access to the manufacturing plant modeled as the contract manufacturer</td>
<td>Same as that for an in-house manufacturing plant.</td>
</tr>
</tbody>
</table>
In order for Supply Chain Orchestration to create a work order for a Contract Manufacturing Finished Good item, a primary work definition must be defined first. The contract manufacturing work definition has a few different business rules compared to a standard item work definition. The specifics are highlighted and discussed here in more detail.

In the context of a contract manufacturing work definition operation, the following simple business rules are reinforced:

- The contract manufacturing service item must have a supply type of Assembly Pull. It is also recommended that there is only one service component on the work definition and consumed as such on the last count point operation of the work definition.
- All other operation items on the work definition can use the following supply types only: Phantom, Assembly Pull, or Operation Pull for Original Equipment Manufacturer provided items and Supplier for Supplier provided items.
- Contract manufacturing is not applicable for supplier operations.

**Note:** It is important that the work definition is printed as a report after the production definition is complete. This report can then be made available in the business process flow, so that it is sent as an attachment to the contract manufacturer.

**Related Topics**
- Implementing Contract Manufacturing
How You Process Item Structure Changes to Work Definitions

While Oracle Fusion Manufacturing maintains the manufacturing process, that is the work definition, for a product; an item structure, which is maintained in the Product Information Management work area, defines the product bills of materials. It is recommended that a business keeps these two structures aligned.

**Note:** Processing of item structure changes to work definitions is applicable for only discrete manufacturing.

Based on the successful completion of the Process Item Structure Changes to Work Definitions scheduled process, the manufacturing engineer gets notified through a worklist notification of any item structure changes implemented in Product Information Management that require a manual user action. To reflect these changes in work definition, the enterprises typically implement one of the following:

- Edit an existing work definition version to reflect these item structure changes. The exact version to update mostly depends on the time from which these changes become effective.
- Create a new effective work definition version to implement the item structure changes. A few such scenarios would involve adding new operations for a change order implemented in Product Information Management OR for component changes that introduce a meaningful change to the production process.

The Notification Detail page provides a summary and detailed view of the item structure changes. If the component changes in the item structure were initiated due to implementation of an Engineering Change Order in Product Information Management, an attribute with the label Change Order is displayed on the page which shows the change order number and the change order line number. You can click the **Impacted work definitions** link to navigate to the **Manage Work Definitions** page, the search results of which show the pre-queried work definitions that were impacted by these changes. For item structure changes that are not completed through an Engineering Change Order, the notification consolidates all the component changes for a given item that have occurred at the time, the Process Item Structure Changes to Work Definitions scheduled process was executed.

A worklist notification is generated when all the following conditions are met:

- At least one change to the item structure components.
- Product Information Management publishes the business events generated for item structure component changes.
- The Process Item Structure Changes to work definitions delivered by Manufacturing picks up the business events published by Product Information Management and the scheduled process completes successfully.
- There is at least one work definition in manufacturing referencing the item structure for which the component changes were completed in Product Information Management.

The Process Item Structure Changes to Work Definitions scheduled process requires manual user action for the following item structure component changes of a **standard item**:

- Quantity (if it has been assigned to multiple operations in the work definition)
- UOM (if it was overridden in the work definition)
- Yield (if it was overridden in the work definition)

It is always the discretion of the manufacturing engineer to decide how to or even whether or not to reflect any of the above changes on the production process.
Note: For a Supply Type change as well as a component addition to the item structure for standard item or ATO model, the manufacturing engineer has to manually update the work definition(s).

Synchronize Item Structure Changes to Work Definitions

This example demonstrates how to review the worklist notification and make changes to the production process for a standard product.

Note: Synchronizing item structure changes to work definitions is applicable for only discrete manufacturing.

In this scenario, the manufacturing plant in Atlanta for Computer Service and Rentals has an effective work definition as of Aug 01 2015 to manufacture the standard item Vision Tablet. For compliance reasons, a change order ECO-2015-Tabs-204 is initiated for the Vision Tablet to add a new component SD20011, which is effective from Oct 30 2015. The change order is already Scheduled to be implemented. Another item structure change effective immediately, on Sept 01 2015, is the update to the component quantity for CM86324, from 1 to 4.

The following table lists components and their attributes for which a change order has been initiated. The table also lists the original values for each component and attribute and the corresponding updated values after the change order is approved.

<table>
<thead>
<tr>
<th>Component</th>
<th>Attribute</th>
<th>Original Value</th>
<th>Updated Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>CM86324</td>
<td>Check ATP</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>CM86324</td>
<td>Basis</td>
<td>Variable</td>
<td>Fixed</td>
</tr>
<tr>
<td>CR40002</td>
<td>Required to Ship</td>
<td>No</td>
<td>Yes</td>
</tr>
</tbody>
</table>

The following table summarizes key considerations in this scenario:

<table>
<thead>
<tr>
<th>Consideration</th>
<th>In this Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>You have been granted access to the manufacturing plant that is in context.</td>
<td>Yes</td>
</tr>
<tr>
<td>You have been granted the function privilege Receive Item Structure Change Notification for Work Definitions so as to receive the manufacturing worklist notifications.</td>
<td>Yes</td>
</tr>
<tr>
<td>You have successfully completed the item structure change in the Product Information Management work area.</td>
<td>Yes</td>
</tr>
<tr>
<td>Consideration</td>
<td>In this Example</td>
</tr>
<tr>
<td>------------------------------------------------------------------------------</td>
<td>-----------------</td>
</tr>
<tr>
<td>A work definition for the item structure already exists in the manufacturing plant that is in context.</td>
<td>Yes</td>
</tr>
<tr>
<td>The scheduled program Process Item Structure Changes to Work Definitions has been successfully completed for the manufacturing plant that is in context.</td>
<td>Yes</td>
</tr>
<tr>
<td>After reviewing the item structure changes in the worklist notification, you decided to make the corresponding changes to the manufacturing work definitions.</td>
<td>Yes</td>
</tr>
</tbody>
</table>

As a response to the implemented item structure changes, the manufacturing engineer must perform the following tasks:

- Review the worklist notification to identify the impacted work definitions.
- Make the changes in the work definitions, either by creating a new work definition version or editing an existing work definition version.

**Review the Worklist Notification**

Let us suppose that the scheduled program Process Item Structure Changes to Work Definitions, which ran successfully on Sept 02 2015, finds both the eligible changes to process. That is, the changes through change order number ECO-2015-Tabs-204, and the changes completed on Sept 01 2015.

1. Changes completed through the Change Order, ECO-2015-Tabs-204.10: The change order detail, ECO-2015-Tabs-204.10 is displayed in the notification header whereas the details section captures the newly added component SD20011 that requires a manual user action for the work definition.
2. Changes completed with immediate effect on Sept 01 2015: CM86324 is not captured in the Notification. Since the component was assigned to a single work definition operation, the scheduled program Process Item Structure Changes to Work Definitions, automatically synchronizes the quantity changes.

**Make Changes to the Work Definition**

The manufacturing engineer decides to create a new work definition version to implement the change order ECO-2015-Tabs-204 for the Vision Tablet. The user models this change by creating a new operation and assigning the component SD20011 to it along with an operation resource, as needed.
The manufacturing engineer performs the following steps to make the necessary changes to the work definitions:

1. On the Notification Detail page, the manufacturing engineer clicks the Impacted Work Definitions link. The Manage Work Definitions page opens in a new browser session.
2. The manufacturing engineer clicks the prequeried work definition version for editing.

The following table lists certain attributes for different operation items and their corresponding values assigned by the change order:

<table>
<thead>
<tr>
<th>Operation</th>
<th>Operation Item</th>
<th>Attribute</th>
<th>Assigned Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 (Assemble)</td>
<td>CM86324</td>
<td>Check ATP</td>
<td>Not Applicable</td>
</tr>
<tr>
<td>10 (Assemble)</td>
<td>CM86324</td>
<td>Basis</td>
<td>Fixed</td>
</tr>
<tr>
<td>10 (Assemble)</td>
<td>CR40002</td>
<td>Required to Ship</td>
<td>Not Applicable</td>
</tr>
<tr>
<td>Not Applicable</td>
<td>SD20011</td>
<td>Not Applicable</td>
<td>Not Assigned</td>
</tr>
</tbody>
</table>

3. There is no user action required for any of the attribute changes to the currently assigned components. Updates to the Basis and Quantity attributes for CM86324 are synchronized automatically whereas the changes to Check ATP and Required to Ship attributes are also reflected automatically, since these are not tracked in the Manufacturing Work Definition.

4. For the newly added component SD20011, the manufacturing engineer creates a new work definition version 1.1, with an effective start date of Oct 30 2015, to add a new operation, Operation 25. The manufacturing engineer then assigns the operation items and resources for the operation.

The following table lists certain attributes of different operation items after a new work definition is created based on the change order:

<table>
<thead>
<tr>
<th>Operation</th>
<th>Operation Item</th>
<th>Attribute</th>
<th>Assigned Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 (Assemble)</td>
<td>CM86324</td>
<td>Quantity</td>
<td>4</td>
</tr>
<tr>
<td>10 (Assemble)</td>
<td>CM86324</td>
<td>Check ATP</td>
<td>Not Applicable</td>
</tr>
<tr>
<td>10 (Assemble)</td>
<td>CM86324</td>
<td>Basis</td>
<td>Fixed</td>
</tr>
<tr>
<td>10 (Assemble)</td>
<td>CR40002</td>
<td>Required to Ship</td>
<td>Not Applicable</td>
</tr>
<tr>
<td>25 (Testing-Dest)</td>
<td>SD20011</td>
<td>Quantity</td>
<td>1</td>
</tr>
</tbody>
</table>

5. The manufacturing engineer clicks Save and Close.
How You Manage Work Definition Versions

A work definition version defines the dates for which a production process is effective. A work definition always has an effective start date, whereas the effective end date can be null. A work definition with an effective end date as null means that it is open ended and is effective.

The following table explains the predefined rules that govern the creation of a work definition version:

<table>
<thead>
<tr>
<th>Change</th>
<th>Predefined Business Rule</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adding a new operation</td>
<td>A new version is mandatory only if the work definition being edited is currently effective, that is, the version start date is earlier than or equal to the system date.</td>
</tr>
<tr>
<td>Deleting an existing operation</td>
<td>A new version is mandatory only if the work definition being edited is currently effective, that is, the version start date is earlier than or equal to the system date.</td>
</tr>
<tr>
<td>Any other changes</td>
<td>A new version is optional. Changes to an existing version would make them applicable from the effective start date of that version.</td>
</tr>
</tbody>
</table>

Create a Work Definition Version

You can use either of the following navigational flows to create a work definition version:

- On the Manage 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.

**Note:** When you create a version, the current system date and time is set as the start date of the work definition version. You must ensure the correct start date before saving the version. Once saved, the start date cannot be updated. Additionally, if the start date of the prior version is a future date. The default start date is Null.

Typically, upcoming production process changes are modeled by creating a future effective work definition version.

The following table lists the fields and their corresponding values which you must choose to create a work definition version:

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Version</td>
<td>Enter a version number to uniquely identify the work definition version.</td>
</tr>
<tr>
<td>Start Date</td>
<td>Date from which the work definition version becomes effective.</td>
</tr>
</tbody>
</table>
Edit a Work Definition Version

Once you save a version, you cannot edit the Version and Start Date attributes. These are the unique identifiers of the version and hence, cannot be edited. Editing a work definition version is same as explained in the Edit Work Definitions: Explained topic.

Delete a Work Definition Version

You can delete a work definition version by clicking the Version icon on the Manage Work Definitions page. You cannot delete past and current effective work definition versions. You can delete a future effective version if it is not the first version created. To maintain data integrity, you cannot delete a future effective version if it is referenced by work orders or used in published cost scenarios.

Automatic Work Definitions

Considerations for Generating Automatic Work Definitions

If you have an applicable manufacturing scenario in your enterprise, you can choose to have your work definitions generated automatically. For example, there are some kitting and light assembly manufacturing scenarios that require minimum shop floor control and capacity requirements planning.

Note: Automatic work definitions are applicable for only discrete manufacturing.

After the work definition is created automatically, you can use it to create a standard work order for execution.

The main advantage of creating a work order from an automatic work definition is that you do not have to manually maintain the work definition in case of item structure changes.

Automatic Work Definition Setup in the Work Definition Work Area

Some steps must be completed in the Work Definition work area before product management takes the action to create an automatic work definition.

The following are the required steps:

- Ensure that the predefined work definition name ORA_MAIN is active. This predefined work definition name is used to create the automatic work definition.
- Select a standard operation that is to be used in automatic work definitions by enabling the attribute Default for automatic work definition.

When a standard operation is selected as the default, the standard operation is enforced as count point enabled. You can update the default standard operation, but there can be only one default at a given point in time.

- Ensure that you don't create manual work definitions prior to creating an automatic work definition. When the application creates an automatic work definition, it is assigned production priority 1. If a manual work definition already exists with production priority 1, the automatic work definition creation fails.
Using Work Definitions Created Automatically

If your enterprise uses automatically created work definitions, the work definitions inherit certain specific characteristics. They are as follows:

- On the Manage Work Definitions page, a column attribute named automatic indicates that a work definition is created automatically.
- You can update the production priority and costing priority, but you cannot drill down to the detailed view of the work definition.
- You cannot search for your automatic work definitions using ADFdi.
- You cannot print a work definition report for an automatic work definition.

If the production process changes and you require more shop floor control you can create a manual work definition to use instead. Swap the manual work definition as the primary work definition by updating its production priority to 1.

Related Topics
- How You Create Work Orders from Automatic Work Definitions

How Automatic Work Definitions Are Created

Automatic work definitions can be created using either the user interface or a scheduled process. You can access the user interface from the Product Information Management work area. You can access the scheduled process from the Create Automatic Work Definitions task in the Work Definition work area.

How Automatic Work Definitions Are Created in the User Interface

The product manager must follow these steps to create an automatic work definition:

1. Navigate to the Product Information Management work area and select the Manage Items task.
2. Search for the item and navigate to the Edit Item page.
3. On the Structures tab of the Edit Items page, click the Actions menu.
4. Select the option Create Automatic Work Definition.
   
   Note: The option is enabled only if the organization is set up as a manufacturing plant.

5. Save the changes.

The product manager can create an automatic work definition for only the primary item structure of an approved standard item.

The following table lists all the values for the attributes you can find on the automatic work definition header.

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Automatic</td>
<td>Yes</td>
</tr>
<tr>
<td>Item</td>
<td>Item Name</td>
</tr>
<tr>
<td>Structure Name</td>
<td>Primary</td>
</tr>
</tbody>
</table>
### Attribute | Value
---|---
Structure Item Type | Standard
Serial-Tracking | Enabled if the item serial generation is set to Predefined, otherwise not enabled.
Completion Subinventory | From plant parameters
Completion Locator | From plant parameters, otherwise not defined
Work Definition Name | Main (internal name ORA_MAIN)
Version | 1
Start Date | SYSDATE
End Date | Not defined
Production Priority | 1
Costing Priority | Not specified
Costing Batch Output Size | From item master, otherwise not defined

**Note:** The action to create an automatic work definition must be performed once for each item. Changes to the item structure are synchronized automatically to the work definition.

### How Automatic Work Definitions Are Created Using a Scheduled Process
You can create an automatic work definition for a set of items using Create Automatic Work Definitions scheduled process. The parameters of the scheduled process are Organization, User Item Type, Item Category, From Item, and To Item.

You can use a scheduled process to create a large number of automatic work definitions for a given user item type, or item category, or both. You can also schedule the process to run periodically so that as new items are created, automatic work definitions are subsequently created.
How You Manage Work Definitions in a Spreadsheet

The Oracle Application Development Framework Desktop Integration (ADFdi) enables you to combine the third party desktop productivity applications with the Oracle web applications. So, you can use a program like Microsoft Excel as an interface to access the Oracle web application data.

**Note:** Managing work definitions in a spreadsheet is currently supported for only discrete manufacturing.

In the Navigator, in the Tools, select the Download Desktop Integration Installer to install the desktop integration installer. After installing it, on Work Definition Overview page, in the Tasks pane, click the Manage Work Definitions in Spreadsheet link to download the worksheets. Then, you can log in and start working.

You can mass create and update the work definitions and their operations, items, and resources by using the ADFdi. There are five worksheets representing the Work Definitions and Operations, Operation Items for Standard Assemblies, Operation Items for ATO Model, Operation Items - Multilevel ATO,and Operation Resources. You can search for the work definition details based on the search criteria available in each spreadsheet. To update the data, you can overwrite the data in the search results table. After the update, an icon appears in the Changed column for each updated row. The cells that are read only fields and aren't included in the upload process. Press the Upload button when you're ready to synchronize the changes with the Oracle Fusion applications. Any data validation errors will be shown after the upload. And the success or failure of each row being uploaded is reflected in the Row Status column.

**Note:** The attributes Basis, Quantity, Inverse Quantity, UOM, Yield, Optional, and Planning Percent in Operation Items for ATO Model worksheet are referenced from Product Information Management and they’re read-only.

During creation, you must identify the product and work definition details, and then define the sequence of the operations. You must separately build the associations between the operations and the components and resources used in each operation. During update, you must first search for the work definitions, operations, operation items, or operation resources before you can update any of the attributes. You must not run a blind report with values not specified for any of the parameters.

As a manufacturing engineer, you can use the Application Development Framework Desktop Integration (ADFdi) Operation Items - ATO Model spreadsheet to upload and download Assemble to Order (ATO) model work definitions with visibility to the first level of the model structure in order to assign items to operations. To build the operation item assignments in a multilevel Assemble to Order (ATO) model work definition, a separate spreadsheet Operation Items - Multilevel ATO tab is available.

The spreadsheet tab enables you to do the following:

- View all the levels of the option class and phantom structures, including the hierarchy from a component to the top parent item.
- Build the operation item assignments for an ATO model work definition and provides you the same flexibility in assigning items to operations as in the user interface.
- Assign an item from any level in the item structure, such as child ATO model, option class, option, phantom, or mandatory component, to a work definition operation. For example, lower level components, such as options can inherit their operation assignment based on their parent’s assignment, such as option class.
- Search for ATO model work definitions and operations that use a specific material and perform a mass update, such as replacing an option that appears under different option classes.
Create and update the expanded levels of ATO model work definitions using the ADFdi spreadsheet enables more accurate data setups and easier change management for the work definitions of product configurations created through the Configure to Order (CTO) business process.

To assign the components to different operations the following sequence must be followed:

1. Query based on Organization and ATO Model in **Operation Items - Multilevel ATO** worksheet.
2. Review Component Hierarchy and Level in addition to other details before assigning the component.
3. After completing the component assignments, requery based on Organization and ATO Model and check the assignment status of all components.

**Tip:** You can define operation applicability rules based on selected options and Transactional Item Attributes (TIA) only in the user interface.

If you have same work area, resources, work centers and standard operations defined in two organizations, you can use ADFdi to copy the work definitions from one organization to another organization. In the Work Definitions and Operations worksheet, create the work definition header and operations. Copy all the details of the organization from which you want to copy the work definition and paste them in the same worksheet. Modify the dates as required and change the organization to the organization in which you want the copied work definition. Then, upload all the details.

**Caution:** The standard item and Assemble to Order (ATO) model work definitions are supported in ADFdi. However, you can't create, query, or update configured item work definitions in the user interface or ADFdi. Also, you can't create Rework and Transform work definitions using ADFdi.

**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 work definitions using ADFdi, only data type validations are performed.

Using the ADFdi feature is beneficial for you in the following ways:

- Once you have downloaded the work definition data hosted on the Oracle Manufacturing Cloud 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.
- You can use the Microsoft Excel features, such as macros and calculation.

### How You Import Discrete Work Definitions

You can use the work definition import method to create and update work definitions through the cloud import framework using spreadsheets. You can also provide the descriptive flexfields information during the work definition import. To import discrete work definitions using the cloud import framework, you can download and use the WorkDefinitionTemplate.xlsm. The .xlsm template organizes the work definition information in these tabs:

- **Instructions and CSV Generation:** The procedure to import work definitions using the .xlsm template.
- **Import Batch:** The batch identifies the group of work definitions that are being imported.
- **Work Definition Headers:** The work definition header information is identified uniquely by a Header Number within a batch. You can import work definitions across plants within a batch.
- **Work Definition Operations:** You can optionally specify work definition operation information against the Batch Code and Header Number.
- **Work Definition Operation Items - Standard Items:** You can optionally specify work definition operation items information for standard items against the Batch Code, Header Number, and Operation Sequence.
• **Work Definition Operation Items - ATO Model**: You can optionally specify work definition operation items information for ATO models against the Batch Code, Header Number, and Operation Sequence.

• **Work Definition Operation Resources**: You can optionally specify work definition operation resources information against the Batch Code, Header Number, and Operation Sequence.

• **Work Definition Operation - Alternate Resources**: You can optionally specify work definition operation alternate resources information against the Batch Code, Header Number, and Operation Sequence.

You can import discrete work definitions in batches using create and update modes either by providing the basic work definition header details or by providing the complete details of work definition header, operation requirements, operation item requirements, operation resource and alternate resource requirements. You can create or update discrete work definitions using the modes of import documented in the table.

Here are the modes of import you can use to create or update work definitions:

<table>
<thead>
<tr>
<th>User Preference</th>
<th>Header Action</th>
<th>Operations Action</th>
<th>Operation Items Action</th>
<th>Operation Resources and Alternate Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td>To create work definition with header and a minimum of one operation</td>
<td>CREATE</td>
<td>CREATE</td>
<td>Not Applicable</td>
<td>Not Applicable</td>
</tr>
<tr>
<td>To create work definition with header and details</td>
<td>CREATE</td>
<td>CREATE</td>
<td>CREATE</td>
<td>CREATE</td>
</tr>
<tr>
<td>To update work definition</td>
<td>UPDATE</td>
<td>CREATE, UPDATE</td>
<td>CREATE, UPDATE</td>
<td>CREATE, UPDATE</td>
</tr>
</tbody>
</table>

You can see the successfully imported discrete work definitions as well as the errors if any, in the Schedule Process output.

**Note:** For more information about file-based data imports to import or update legacy and other data into Supply Chain Management Cloud from external applications, refer to the File-Based Data Import for Oracle Supply Chain Management Cloud Development Guide.

### How You Import Process Work Definitions

You can use the work definition import method to create and update work definitions through the cloud import framework using spreadsheets. You can also provide the descriptive flexfields information during the work definition import. To import process work definitions using the cloud import framework, you can download and use the ProcessWorkDefinitionTemplate.xlsm. The .xlsm template organizes the work definition information in these tabs:

• **Instructions and CSV Generation**: The procedure to import work definitions using the .xlsm template.

• **Import Batch**: The batch identifies the group of work definitions that are being imported.

• **Work Definition Headers**: The work definition header information is identified uniquely by a Header Number within a batch. You can import work definitions across plants within a batch.
• **Work Definition Operations:** You can optionally specify work definition operation information against the Batch Code and Header Number.

• **Work Definition Operation Items:** You can optionally specify work definition operation items information for standard items against the Batch Code, Header Number, and Operation Sequence.

• **Work Definition Operation Outputs:** You can specify work definition operation outputs information for products and by-products against the Batch Code, Header Number, and Operation Sequence.

• **Work Definition Operation Resources:** You can optionally specify work definition operation resources information against the Batch Code, Header Number, and Operation Sequence.

• **Work Definition Operation - Alternate Resources:** You can optionally specify work definition operation alternate resources information against the Batch Code, Header Number, and Operation Sequence.

You can import process work definitions in batches using create and update modes either by providing the basic work definition header details or by providing the complete details of work definition header, operation requirements, operation item requirements, operation resource and alternate resource requirements. You can create or update process work definitions using the modes of import documented in the table.

Here are the modes of import you can use to create or update work definitions:

<table>
<thead>
<tr>
<th>User Preference</th>
<th>Header Action</th>
<th>Operations Action</th>
<th>Operation Items Action</th>
<th>Operation Resources and Alternate Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td>To create work definition with header and a minimum of one operation and a primary output</td>
<td>CREATE</td>
<td>CREATE</td>
<td>Not Applicable</td>
<td>Not Applicable</td>
</tr>
<tr>
<td>To create work definition with header and details</td>
<td>CREATE</td>
<td>CREATE</td>
<td>CREATE</td>
<td>CREATE</td>
</tr>
<tr>
<td>To update work definition</td>
<td>UPDATE</td>
<td>CREATE, UPDATE</td>
<td>CREATE, UPDATE</td>
<td>CREATE, UPDATE</td>
</tr>
</tbody>
</table>

You can see the successfully imported process work definitions as well as the errors if any, in the Schedule Process output.

**Note:** For more information about file-based data imports to import or update legacy and other data into Supply Chain Management Cloud from external applications, refer to the File-Based Data Import for Oracle Supply Chain Management Cloud Development Guide.

### Calculation of Lead Times
Lead Times Usage in Manufacturing

Lead time represents the duration in days required to manufacture or buy an item used in manufacturing a product. Lead times of make items are calculated using the work definition. Supply chain planning uses lead times of items to plan for material requirements. The lead time calculation determines requirement dates for available-to-promise calculations in order promising.

Note: Available-to-promise calculations are currently supported for only discrete manufacturing.

The following table illustrates all the key concepts related to lead time calculation.

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lead Time Lot Size</td>
<td>Quantity of an item used to calculate manufacturing lead times. The default lead time lot size is 1 but you can modify it to represent the typical lot size in which the item is manufactured or purchased.</td>
</tr>
<tr>
<td></td>
<td>Note: For process manufacturing items, the lead time lot size is considered from the expected output quantity of the standard batch size of the primary work definition</td>
</tr>
<tr>
<td>Fixed Lead Time</td>
<td>This represents the time to process all the manufacturing steps which are independent of the lot size of an item. You can either manually enter the fixed lead time value, or it can be calculated as part of the lead time scheduled process. It's expressed in days.</td>
</tr>
<tr>
<td>Variable Lead Time</td>
<td>This represents the time to process all the manufacturing steps which are dependent on the lot size. You can either manually enter the variable lead time value, or it can be calculated as part of the lead time scheduled process. It's expressed in days per unit.</td>
</tr>
<tr>
<td></td>
<td>Note: For process manufacturing items, the variable lead time is converted to days per unit in the item's primary unit of measure.</td>
</tr>
<tr>
<td>Processing Lead Time</td>
<td>The time required to make or buy an item.</td>
</tr>
<tr>
<td></td>
<td>• For a make item, it represents the number of working days taken to manufacture the lot size of an item while considering the shift duration of the plant. It's calculated by summing the fixed lead time, and the variable lead time multiplied by the lot size. Processing lead time = Fixed lead time + (Variable lead time * lead time lot size)</td>
</tr>
<tr>
<td></td>
<td>• For a buy item, it represents the time required by the supplier to supply the item. It represents the lead time from the time the purchase order is released to the time when the item is received. You must manually assign a value.</td>
</tr>
<tr>
<td></td>
<td>It's expressed in days.</td>
</tr>
<tr>
<td>Preprocessing Lead Time</td>
<td>Component of the lead time that represents the time required to release a purchase order or create a work order from the time you learn of the requirement. You can manually enter preprocessing lead time for both make and buy items. It's expressed in days.</td>
</tr>
</tbody>
</table>
### Attribute | Description
--- | ---
**Postprocessing Lead Time** | For buy items, it’s the component of the lead time that represents the time to have a buy item available in inventory from the time you receive it.
For make items, it’s the lead time of activities performed after manufacturing operations are completed, but before the item is available for shipping or the next stage of the manufacturing process.
You must manually assign a value for each item. It’s expressed in days.

**Cumulative Manufacturing Lead Time** | Total time required to make an item if you had all raw materials in stock, but had to make all subassemblies level by level. It’s expressed in days.

**Cumulative Total Lead Time** | Total time required to make an item if no inventory existed, and you had to order all the raw materials and make all subassemblies level by level. It’s expressed in days.

The manufacturing lead time calculation calculates the fixed and variable lead times in order to calculate the processing lead times. It’s calculated based on the primary work definition of the item. The plant calendar shift exception and the work center resource exception aren’t considered in the calculation.

The lead time percent value is calculated and updated for each operation in the primary work definition. The lead time percent represents the offset of a given operation as a percentage of the manufacturing lead time considering all operations of the work definition. These lead time percent values are used as an input in the calculation of cumulative lead times to compute the cumulative manufacturing lead time and cumulative total lead time.

In discrete manufacturing, manufacturing lead times can be computed optionally for assemble-to-order models. However, this will represent inflated lead time values for all possible configurations within that assemble-to-order model item. Manufacturing lead time calculation isn’t supported for assemble-to-order configured items. The calculation of the cumulative lead times aren’t supported for assemble-to-order model items and configured items.

For computation of cumulative lead times, the hierarchy to roll up lead times are calculated using the primary work definitions at each level.

---

**Note:** Lead times aren’t computed for items in a reference organization.

### Submit the Scheduled Process to Calculate Lead Times

The following section explains the procedure to submit the scheduled process to calculate lead times.

Perform these actions to submit the scheduled process that calculates the manufacturing lead times and rolls up the cumulative manufacturing and total lead times. Based on the manufacturing lead time calculation, the lead time percent will be calculated and updated at the operation level in the primary work definition. The lead time percent will also be used as an input to calculate the cumulative manufacturing and cumulative total lead times.

1. In the **Work Definition** work area, in the Tasks pane, click the **Calculate Lead Times and Roll Up Cumulative Lead Times** link. This will direct you to the scheduled process page.

   You can also initiate the scheduled process from the Navigator> Tools> Scheduled Processes.

2. On the **Calculate Lead Times and Roll Up Cumulative Lead Times** page, you must specify certain values.
The following table lists the fields and the corresponding values you must specify in the **Parameters** tab to calculate lead times:

<table>
<thead>
<tr>
<th>Field</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Scope</strong></td>
<td>You can specify whether you want to calculate only single-level manufacturing lead time, or only cumulative lead times, or both. The default value is <strong>Calculate Manufacturing Lead Time</strong>. Alternatively, you can choose <strong>Calculate Cumulative Lead Times</strong> or <strong>Calculate Manufacturing and Cumulative Lead Times</strong>. If you are running the scheduled process for the first time, or for new items, it is recommended that you first calculate the manufacturing lead times, followed by calculating the cumulative lead times. Alternatively, you can select the <strong>Calculate Manufacturing and Cumulative Lead Times</strong> option to run a combined scheduled process.</td>
</tr>
<tr>
<td><strong>Organization</strong></td>
<td>Select the unique code of your manufacturing plant.</td>
</tr>
<tr>
<td><strong>Item Catalog</strong></td>
<td>Select the item catalog which may be stripped by any of the functional areas in the application.</td>
</tr>
<tr>
<td><strong>From Item</strong></td>
<td>Enter the name of the item that defines the start of the range of items that you want to include.</td>
</tr>
<tr>
<td><strong>To Item</strong></td>
<td>Enter the name of the item that defines the end of the range of items that you want to include.</td>
</tr>
<tr>
<td><strong>Item Category</strong></td>
<td>Select the item category that includes the items you have specified.</td>
</tr>
<tr>
<td><strong>Calculation Date</strong></td>
<td>Enter the date on which the lead time is to be computed for the selected items. This date should have a valid work definition version existing prior to this date.</td>
</tr>
<tr>
<td><strong>Planner</strong></td>
<td>Enter the planner responsible for the items. If specified, the lead time calculation is restricted to the items belonging to the specified planner.</td>
</tr>
<tr>
<td><strong>Include ATO Model</strong></td>
<td>Select whether or not items of the ATO model category should be included in the lead time calculation for discrete manufacturing. The default value is No.</td>
</tr>
<tr>
<td></td>
<td>o If set to <strong>No</strong>: The calculation process excludes ATO model items from the manufacturing lead time calculation.</td>
</tr>
<tr>
<td></td>
<td>o If set to <strong>Yes</strong>: The calculation process includes only the ATO model items in the manufacturing lead time calculation.</td>
</tr>
</tbody>
</table>

3. Click **Submit**. A scheduled process request is submitted. Note the process request ID and click **OK**.
4. Navigate to the **Scheduled Processes** work area.
5. Review the progress of the submitted scheduled process. The **Calculate Lead Times and Roll Up Cumulative Lead Times** program will calculate the lead times based on the primary work definition and then trigger a child scheduled process called **Item Import**, which in turn may spawn off more child scheduled processes. Track the completion of all the scheduled processes till the status changes to **Succeeded**
6. Click the **Succeeded** status link to view additional information. You can click the **(1 more)** link and open the text file which lists all details for the calculated lead times of the selected items.

After you have reviewed all calculation details, you can verify if the lead times have been correctly updated in the item. Follow these steps:

1. In the **Product Information Management** work area, in the **Tasks** pane, select the **Manage Items** task.
2. Search for the required item. Select the item corresponding to the organization you based your search on.
3. Click the **Specifications** tab, and click the **Planning** link.
4. In the **Lead Times** region, verify the values of the following lead times, depending on what was the scope of your lead time calculation when you submitted the scheduled process:
   - Processing Days
   - Fixed
   - Variable
   - Cumulative Manufacturing
   - Cumulative Total
   - Lead Time Lot Size (only for process manufactured items)

You can also search for the primary work definition and check if the lead time percent, as determined by the manufacturing lead time calculation, is updated at the operation level.

### Considerations for Calculating Lead Times

When you run the **Calculate Lead Times and Roll Up Cumulative Lead Times** scheduled process to calculate the manufacturing lead times, cumulative total lead times, and cumulative manufacturing lead times for certain items, there are a few validations that the application performs which you must consider:

#### Key Considerations for Lead Time Calculation

The following points are key considerations for lead time calculations in manufacturing:

- The application only considers the primary work definition with production priority of 1 of an item when calculating its lead times. The calculation is done considering whether the work method selected for production priority of 1 at each level is discrete manufacturing and process manufacturing.
- The item must be set up either as a make or a buy item in the Product Information Management work area.
- For any level in the item hierarchy, if a phantom item is encountered, then the application explodes it till no further lower-level phantoms can be exploded and the flattened list of component items are included as part of that particular level.
- While calculating, if any of the values are not available because either you did not specify or if the scheduled process was never run previously for the manufacturing lead times, the application treats the empty values as zero.
- If a same component is assigned more than once to different operations, the component is evaluated twice because it is consumed twice in two operations.
- The precision of the lead time values are displayed in the output text file based on the value set in the profile Time Duration Decimal Precision. The precision of the final lead time values stored in Item definition is based on the precision set in Oracle Product Information Management.
- For process manufacturing, manufacturing lead time calculation considers all operations of the primary work definition irrespective in which operation the output item is yielded.
For process manufacturing, the manufacturing lead time of the primary product is copied over to the co-product or the by-product if:

- the co-product or by-product is within the domain of items selected in the scheduled process
- the co-product or by-product does not have a primary work definition of its own
- the manufacturing lead time for the co-product or by-product wasn't calculated previously in the current scheduled process.

Once the lead time of a co-product or by-product is computed, it is not overwritten by a subsequent calculation.

For process manufacturing, the cumulative manufacturing lead time of the primary product is copied over to the co-product or the by-product if:

- the co-product or by-product does not have a primary work definition of its own
- the cumulative manufacturing lead time for the co-product or by-product wasn't calculated previously in the current scheduled process.

Once the lead time of a co-product or by-product is computed, it is not overwritten by a subsequent calculation.

Example of How Lead Times are Calculated in Discrete Manufacturing

This topic provides you a detailed illustration of how lead times are calculated for items whose primary work definition has a work method as discrete manufacturing. The example covers the calculation logic for manufacturing lead times, cumulative total lead times, and cumulative manufacturing lead times for a simple item hierarchy.

For brief descriptions on the various types of lead times used in manufacturing, take a look at the topic Concepts Related to Lead Times Used in Manufacturing: Explained.

In this example, the total number of days as per the manufacturing calendar is 5 days, with an 8 hour shift for each work day. We are also assuming that the lot size for all items is 1 each.

In this example, we are taking a simple item hierarchy of two levels for calculation purposes. The top-level at the hierarchy is item A which is a make item. A is made up of B which is a buy item, and C which is a make item. C is again made up of item D which is a buy item.

The following table provides you the sample values of the various user-defined lead times for the two buy items, B and D that we are going to use in this example.

<table>
<thead>
<tr>
<th>Item</th>
<th>Lot Size</th>
<th>Processing Lead Time</th>
<th>Preprocessing Lead Time</th>
<th>Postprocessing Lead Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Item B</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Item D</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>3</td>
</tr>
</tbody>
</table>
The following table provides you the sample values of the various user-defined lead times for the two make items, A and C that we are going to use in this example.

<table>
<thead>
<tr>
<th>Item</th>
<th>Lot Size</th>
<th>Preprocessing Lead Time</th>
<th>Postprocessing Lead Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Item A</td>
<td>1</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Item C</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

Manufacturing Lead Time Calculation

In this item hierarchy, there are two make items for which we need to calculate their manufacturing lead times: A and C.

1. Let's first look at the Work Definition of Item A to determine the lead times:

<table>
<thead>
<tr>
<th>Operation Sequence</th>
<th>Resource</th>
<th>Basis</th>
<th>Usage</th>
<th>Items Assigned</th>
<th>Lead Time Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>RES1</td>
<td>Fixed</td>
<td>8 hours</td>
<td>Item B</td>
<td>0</td>
</tr>
<tr>
<td>20</td>
<td>RES2</td>
<td>Variable</td>
<td>8 hours</td>
<td>Item C</td>
<td>50</td>
</tr>
</tbody>
</table>

2. **Fixed lead time** for A: usage of the fixed resource divided by the total shift duration. In this example, that can be calculated as \( \frac{8}{8} = 1 \text{ day} \). The fixed lead time is independent of lot size.

3. **Variable lead time** for A: \( \frac{\text{usage of the variable resource divided by the total shift duration}}{\text{lot size}} \). In this example, that can be calculated as \( \frac{8}{8}/1 = 1 \text{ day/unit} \).

4. **Processing lead time** for A: \( \text{fixed lead time (1)} + \{\text{variable lead time (1) }\times \text{lot size (1)}\} = 2 \text{ days} \).

5. The lead time percentage is calculated as the offset percentage value of the start of a given operation to the total manufacturing lead time for all the operations of the work definition. The calculated values are shown in the table.

6. Now let's look at the Work Definition of Item C to determine the processing lead time:

<table>
<thead>
<tr>
<th>Operation Sequence</th>
<th>Resource</th>
<th>Basis</th>
<th>Usage</th>
<th>Items Assigned</th>
<th>Lead Time Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>RES1</td>
<td>Fixed</td>
<td>8 hours</td>
<td>None</td>
<td>0</td>
</tr>
<tr>
<td>20</td>
<td>RES2</td>
<td>Variable</td>
<td>16 hours</td>
<td>Item D</td>
<td>33.33</td>
</tr>
</tbody>
</table>

7. **Fixed lead time** for C: usage of the fixed resource divided by the total shift duration. In this example, that can be calculated as \( \frac{8}{8} = 1 \text{ day} \). The fixed lead time is independent of lot size.

8. **Variable lead time** for C: \( \frac{\text{usage of the variable resource divided by the total shift duration}}{\text{lot size}} \). In this example, that can be calculated as \( \frac{16}{8}/1 = 2 \text{ days/unit} \).

9. **Processing lead time** for C: \( \text{fixed lead time (1)} + \{\text{variable lead time (2) }\times \text{lot size (1)}\} = 3 \text{ days} \).
10. The lead time percentage is calculated as the offset percentage value of the start of a given operation to the total manufacturing lead time for all the operations of the work definition. The calculated values are shown in the table.

Cumulative Manufacturing Lead Time Calculation

Now let’s find out the cumulative manufacturing lead time for both the make items. For calculating the cumulative manufacturing lead times for a make item, here is the calculation logic:

Cumulative manufacturing lead time for a make item at any level = processing lead time + Maximum [0, preprocessing lead time, (cumulative manufacturing lead time - offset days)] + postprocessing lead time.

1. The application first calculates the cumulative manufacturing lead time for the make item at the lowest level of the hierarchy and then it traverses to higher levels. First let’s calculate the cumulative manufacturing lead time for Item C.

   For Item C, the processing lead time is 3 days. The maximum would be 1 the preprocessing lead time is 1 and because there is no make item below C in the item hierarchy. The postprocessing lead time is 2 days, as defined by the user. Therefore, the cumulative manufacturing lead time is calculated as 3 + 1 + 2 = 6 days.

2. For Item A, the processing lead time is 2 days. Item C is the only make item under A and is used in operation 20, which has an lead time percent of 50% causing the offset to be 0.5 * 2 = 1 day. The maximum therefore would be cumulative manufacturing lead time of Item C minus the offset days, which is 6 - 1 = 5 days. The postprocessing lead time is 2 days, as defined by the user. Therefore, the cumulative manufacturing lead time is calculated as 2 + Maximum [0, 2, (6-1)] + 2 = 2 + 5 + 2 = 9 days.

Cumulative Total Lead Time Calculation

1. First let’s calculate the cumulative total lead time for the buy items B and D using this formula: Preprocessing lead time + processing lead time + postprocessing lead time. Here are the lead times for items B and D, defined in their work definitions.

<table>
<thead>
<tr>
<th>Item</th>
<th>Processing Lead Time</th>
<th>Preprocessing Lead Time</th>
<th>Postprocessing Lead Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Item B</td>
<td>2</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Item D</td>
<td>0</td>
<td>1</td>
<td>3</td>
</tr>
</tbody>
</table>

For item B, the cumulative total lead time is 2 + 1 + 1 = 4 days.
For item D, the cumulative total lead time is 0 + 1 + 3 = 4 days.

2. Now let us calculate the cumulative total lead time for both the make items, A and C. For calculating the cumulative total lead time calculation for a make item, here is the calculation logic:

Cumulative total lead time of a make item at any level = processing lead time + maximum [0, preprocessing lead time, (cumulative total lead time - offset days) for any make or buy component] + postprocessing lead time

For item C, the processing lead time is 3 days. The preprocessing lead time is 1 day, as defined by the user. The number of offset days is 1 because the component D is required at the end of day 1. The cumulative total lead time is 4 days as derived from the cumulative total lead time for the buy item component item D. The
postprocessing lead time is 2 days, as defined by the user. Therefore, the cumulative manufacturing lead time is calculated as \( 3 + \text{Maximum} \left[ 0, 1, (4-1) \right] + 2 = 3+3+2 = 8 \) days.

For item A, the processing lead time is 2 days. The preprocessing lead time is 2 days as defined by the user. The number of offset days is 0 for component B as it's required on the first day itself, and 1 for component C because it's required at the end of day 1. The cumulative total lead time is 4 days as derived from the cumulative total lead time for the item component B, and 7 days as derived from the cumulative total lead time of the item component C. The postprocessing lead time is 2 days, as defined by the user. Therefore, the cumulative manufacturing lead time is calculated as \( 2 + \text{Maximum} \left[ 0, 2, (4-0), (8-1) \right] + 2 = 2+7+2 = 11 \) days.

3. Based on all the calculations and derivations, here's a final summary of all the lead time values:

<table>
<thead>
<tr>
<th>Item</th>
<th>Type</th>
<th>Lot Size</th>
<th>Fixed Lead Time</th>
<th>Variable Lead Time</th>
<th>Processing Lead Time</th>
<th>Preprocessing Lead Time</th>
<th>Postprocessing Lead Time</th>
<th>Cumulative Manufacturing Lead Time</th>
<th>Cumulative Total Lead Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Item A</td>
<td>Make</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>9</td>
<td>11</td>
</tr>
<tr>
<td>Item B</td>
<td>Buy</td>
<td>1</td>
<td>Not applicable</td>
<td>Not applicable</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>Not applicable</td>
<td>4</td>
</tr>
<tr>
<td>Item C</td>
<td>Make</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>6</td>
<td>8</td>
</tr>
<tr>
<td>Item D</td>
<td>Buy</td>
<td>1</td>
<td>Not applicable</td>
<td>Not applicable</td>
<td>0</td>
<td>1</td>
<td>3</td>
<td>Not applicable</td>
<td>4</td>
</tr>
</tbody>
</table>

Example of Calculation of Process Manufacturing Lead Times

This topic provides you a detailed illustration of how lead times are calculated for for items whose primary work definition has a work method as process manufacturing. The example covers the calculation logic for manufacturing lead times. The cumulative total lead times and cumulative manufacturing lead times follows the same logic as the example for discrete manufacturing.

For brief descriptions on the various types of lead times used in manufacturing, take a look at the topic Concepts Related to Lead Times Used in Manufacturing: Explained.

In this example, we are taking a simple item hierarchy of two levels for calculation purposes. The top-level at the hierarchy is item A which is a make item and the primary output of the work definition. A1 is a co-product yielded from the same work definition. A is made up of C, which is a buy item, and B, which is a make item. In the work definition of B, B is the primary output item and B1 is a by-product. B is made up of items D and E, both of which are buy items.

Manufacturing Lead Time Calculation

In this item hierarchy, there are two make items for which we need to calculate their manufacturing lead times: A and B. We will copy the calculated manufacturing lead times to the co-product and by-product: A1 and B1. For item A, the
primary UOM is drums, where 1 drum = 10 Liters and for item A1, the primary UOM is Dz. For items B and B1, the primary UOM is Liters.

1. Let's first look at the work definition of Item A. The standard batch size of the work definition is 100 Ga, in which 70 Liters of item A and 30 Ea of item A1 are expected to be yielded.

<table>
<thead>
<tr>
<th>Operation Sequence</th>
<th>Output Items</th>
<th>Input Items</th>
<th>Resource Usage</th>
<th>Lead Time Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>N/A</td>
<td>N/A</td>
<td>Resource: RES 1</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Basis type: Fixed</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Usage: 1</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>UOM: Days</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>Item: A1</td>
<td>Item: B</td>
<td>Resource: RES 2</td>
<td>33</td>
</tr>
<tr>
<td></td>
<td>Quantity: 30</td>
<td>Quantity: 50</td>
<td>Basis type: Variable</td>
<td></td>
</tr>
<tr>
<td></td>
<td>UOM: Ea</td>
<td>UOM: Liters</td>
<td>Usage: 1</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>UOM: Days</td>
<td></td>
</tr>
<tr>
<td>30</td>
<td>Item: A</td>
<td>Item: C</td>
<td>Resource: RES 3</td>
<td>66</td>
</tr>
<tr>
<td></td>
<td>Quantity: 70</td>
<td>Quantity: 50</td>
<td>Basis type: Variable</td>
<td></td>
</tr>
<tr>
<td></td>
<td>UOM: Liters</td>
<td>UOM: Ea</td>
<td>Usage: 1</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>UOM: Days</td>
<td></td>
</tr>
</tbody>
</table>

2. **Fixed lead time** for A: The fixed lead time is independent of lot size. In this example, it is 1 day.

3. **Variable lead time** for A: Since the basis type is variable, it takes $1+1 = 2$ days to manufacture 70 Liters of A, which is 7 drums (as 1 drum = 10 Liters), the variable lead time is $2/7 = 0.2857$ days/drum.

4. **Lot size** for A: The lot size for process manufacturing items is determined from the primary work definition. In this example, the primary work definition yields 70 Liters of item A. However since the primary UOM is drums, the lot size is updated as 7 drums.

5. **Processing lead time** for A: fixed lead time (1) + (variable lead time (0.2857)*lot size (7)) = 3 days.

6. The lead time percentage is calculated as the offset percentage value of the start of a given operation to the total manufacturing lead time for all the operations of the work definition. The calculated values are shown in the table.

7. Let us now calculate the manufacturing lead time of the co-product A1.

8. **Fixed lead time** A1: The fixed lead time is copied over from A, which is 1 day.

9. **Variable lead time** for A1: The variable lead time of 2 days is copied over to and restated considering the primary unit of measure of item A1. The primary work definition is expected to yield 30 Ea, which when restated in primary UOM is 2.5 Dz (1 Dz = 12 Ea). So the variable lead time is $2/2.5 = 0.8$ days/Ea.

10. **Lot size** for A1: The lot size for process manufacturing items is determined from the primary work definition. In this example, the primary work definition yields 30 Ea of item A1. However since the primary UOM is Dz, the lot size is updated as 2.5 Dz.

11. **Processing lead time** for A1: The processing lead time is copied from A, which is 3 days

12. Now, let us look at the work definition of item B to determine the processing lead time:
<table>
<thead>
<tr>
<th>Operation Sequence</th>
<th>Output Items</th>
<th>Input Items</th>
<th>Resource Usage</th>
<th>Lead Time Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>Item: B1</td>
<td>Item: D</td>
<td>Resource: RES 1</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Quantity: 40</td>
<td>Quantity: 80</td>
<td>Basis type: Fixed</td>
<td></td>
</tr>
<tr>
<td></td>
<td>UOM: Liters</td>
<td>UOM: Liters</td>
<td>Usage: 2</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>UOM: Days</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>N/A</td>
<td>N/A</td>
<td>Resource: RES 2</td>
<td>40</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Basis type: Variable</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Usage: 1</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>UOM: Days</td>
<td></td>
</tr>
<tr>
<td>30</td>
<td>Item: B</td>
<td>Item: E</td>
<td>Resource: RES 3</td>
<td>60</td>
</tr>
<tr>
<td></td>
<td>Quantity: 60</td>
<td>Quantity: 20</td>
<td>Basis type: Variable</td>
<td></td>
</tr>
<tr>
<td></td>
<td>UOM: Liters</td>
<td>UOM: Liters</td>
<td>Usage: 2</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>UOM: Days</td>
<td></td>
</tr>
</tbody>
</table>

13. **Fixed lead time** for B: The fixed lead time is independent of lot size. In this example, it is 2 days.
14. **Variable lead time** for B: Since the basis type is variable, it takes $2+1 = 3$ days to manufacture 60 Liters of B, the variable lead time is $3/60 = 0.05$ days/Liter.
15. **Lot size** for B: The lot size for process manufacturing items is determined from the primary work definition. In this example, the primary work definition yields 60 Liters of item B.
16. **Processing lead time** for B: fixed lead time (2) + \{variable lead time (0.05)*lot size (60)} = 5 days.
17. The lead time percentage is calculated as the offset percentage value of the start of a given operation to the total manufacturing lead time for all the operations of the work definition. The calculated values are shown in the table.
18. Let us now calculate the manufacturing lead time of the by-product B1.
19. **Fixed lead time** B1: The fixed lead time is copied over from A, which is 2 days.
20. **Variable lead time** for B1: The variable lead time of 3 days is copied over to and stated in the primary unit of measure of item B1. The primary work definition is expected to yield 40 Liters, So, the variable lead time is $3/40 = 0.075$ days/Liter.
21. **Lot size** for B1: The lot size for process manufacturing items is determined from the primary work definition. In this example, the primary work definition yields 40 Liters of item B1.
22. **Processing lead time** for B1: The processing lead time is copied from B, which is 5 days.
Overview of Electronic Signatures and Electronic Records for Work Definition Management

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 definitions and capture electronic signatures.

A work definition is available for use in production after the first version for that work definition is in Approved status. A work definition version that is not in Approved status is not available for creating a work order or be used in Planning or Costing. When you submit a work definition version for approval, the process of generating electronic records is initiated. The Submit action is available after creating and updating a work definition version. Note that you cannot update an existing approved version.

Note: You cannot initiate the Electronic Records and Electronic Signatures process when you create or update a work definition through the ADF desktop integration (ADFdi) or the supported web services.

To capture electronic signatures and generate electronic records for work definition management in an organization, you need to set up the following:

- Enable Manufacturing Work Definition Management 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 E-Signature for the Work Definition Management transaction.

  Note: You cannot disable E-Signatures for work definitions when one or more work definition versions exist in draft or pending approval status.

- Configure the Business Process Rules to Determine the Approvers for Work Definition Management. 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 Definition Management.

  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-Signatures and Generate E-Records for Standard Operation Management

You can enable the ability to capture electronic signatures and generate electronic records for work definition creation, and work definition update.

The electronic record that you automatically generate for a work definition has the following information:

- Work Definition Details
- Attachment Details
- Operation Details
- Operation Item Details
- Operation Output Details, for a process work definition
- Substitute Details for an Operation Item, for a discrete work definition
- Operation Resource Details
- Alternate Resource Details for an Operation Resource

After you enable electronic signatures for a manufacturing work definition, the created work definition has a version in Draft status. You can continue to save changes to a Draft work definition version.

Work definition version status works simultaneously with the workflow for the deferred approval and can have one of the following statuses:

- Draft
- Pending Approval
- Approved

You can initiate the deferred electronic signature capture process when you submit the work definition for approval. Approvers can access notifications in the Oracle Cloud application. They can review the electronic records before adding their electronic signature. Approvers can also enter comments, indicate their approval or rejection, and sign the electronic record by using a password. Approvers also have the visibility to the current status of the approval process in the approval History region in the approval workflow notification. Electronic records are generated and the electronic signatures are captured during this approval process. The work definition version is updated as Approved for an approved outcome and Draft for a rejected outcome.

The behavior for the work definition operations, operation materials and resources for an approved work definition version is the same as the work definition that is pending approval. The only exceptions are when:

- Further changes can be made by creating a new work definition version.
- Work definition priorities can be changed without requiring a new electronic signature.
- In the case of a discrete work definition, the item structure component changes approved and completed in the Oracle Fusion Product Model are processed by the Process Item Structure Changes to Work Definitions scheduled process.

A new work definition version and any changes introduced including the deletion of any operations go through the same electronic signature process. The deleted operation or any changes are only available for use in production after these are approved.
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.

**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.

**Signature History**

You can enable the ability to capture electronic signatures and generate electronic records for work definition creation and work definition update.
4 Manage Production

Overview of Production Management

Oracle Manufacturing Cloud provides various capabilities that enable production supervisors to efficiently manage production activities.

By providing visibility into production performance and exceptions, it facilitates information driven management and helps in proactive resolution of shop floor issues. It enables production supervisors to manage production calendars by creating shift exceptions and work center resource exceptions to represent shop floor conditions.

Oracle Manufacturing Cloud supports discrete and process production work methods and provides the ability to manage a work order through its entire life cycle. This includes tasks, such as creating work orders, releasing them to production, pre-assigning serials, editing the work order details to adapt to changes in production priorities, reviewing supply reservations and production progress, tracking production transaction history, and finally closing the work orders after production completion.

Through predefined macro-enabled spreadsheet templates, it enables users to create and update work orders using the file-based data import infrastructure.

A typical day in a life of a production supervisor starts by accessing the Work Execution work area to review key production information and manage production activities.

Related Topics
- Overview of Production Execution Tasks
- How You Manage Work Areas
- How You Manage Work Centers
- Overview of Manufacturing Plants

Infolet-Based Work Execution Work Area

Overview of Work Execution Work Area

The Overview page in the Work Execution work area serves as a landing page for shop floor personnel to review, manage, and report production activities. It provides insight into plant, work area, work center level production details, and lists all the work execution-related tasks used to manage and execute discrete production.

The Work Execution work area can be accessed by you if you have the job role of the Production Supervisor or Production Operator.

The Work Execution Overview page has a collection of infolets providing high-level summary of the production details of the selected manufacturing plant. The page also has a Panel drawer that lets you directly access the tasks and Reports and Analytics for your manufacturing plant. The Panel drawer can be accessed from the Overview page or any other page within this work area.

Infolets
If you have the role of a Production Supervisor, you see the following infolets:

- Work Orders
- Rework (for discrete manufacturing work orders)
- Open Exceptions
- Operations Scheduled Versus Actual
- WIP Inspections
- Operations

If you have the role of a Production Operator, you see a subset of infolets relevant to production execution which comprises of the following:

- Operations Scheduled Versus Actual
- WIP Inspections
- Operations

The metrics displayed in the **Work Orders**, **Rework**, **Operation Scheduled Versus Actual** and **Operations** infolets are displayed based on the values you set by clicking the **View By** icon.

To change the basis on which the metrics are displayed in the infolets, click **View By** on the Overview page.

- To view plant level metrics, leave both the **Work Area** and **Work Center** fields to the default value of All.
- To view work area specific metrics, select the required **Work Area**.
- To view work center level metrics, select the correct combination of both the **Work Area** and **Work Center** fields.

**Note:** The **Open Exceptions** and **WIP Inspections** infolets are not affected by this setting and are always applicable at the plant level.

After you have set the value for **View By** and can view metrics relevant to your work area or work center of your manufacturing plant, you can now click a specific metric and drill down to the underlying page such as the Manage Work Orders page, or the Review Dispatch List page for more detailed information or to perform further actions.

**Tasks**

If you have the role of a Production Supervisor, you can access and perform all of the following discrete manufacturing tasks:

- Manage Work Orders
- Material Availability Rules
- Material Availability Assignments
- Manage Production Exceptions
- Manage Supplier Operations
- Close Work Orders
- Transfer Transactions from Production to Costing
- Review Product Genealogy
- Manage Production Calendar
- Manage Work Center Resource Calendar
- Review Dispatch List
- Report Production Exception
- Create Inspection
- Inspections
- Report Material Transactions
- Report Resource Transactions
- Report Orderless Completion
- Report Orderless Return
- Review Production Transaction History
- Print Work Order Traveler
- Print Components List
- Pick Materials for Work Orders
- Import Work Orders
- Import Material Transactions
- Import Resource Transactions
- Import Operation Transactions
- Purge Records from Interface
- Correct Work Orders and Transactions for Import

These tasks are displayed in the panel drawer in the Work Execution work area, based on the privileges granted to the job roles that are assigned to you. So, if you have the job role and privilege of only a production operator or a user-defined role assigned to you, you are able to view and access only a subset of these tasks.

**Reports and Analytics**

Using Reports and Analytics, you can create and view reports or analysis related to your manufacturing plant. You can use Oracle Transactional Business Intelligence to create analysis and Oracle Business Intelligence Publisher to create reports.

*Related Topics*

- How You Use and Personalize Infolets in Oracle SCM and Procurement Cloud

**Infolets Related to Work Orders**

You can view the following infolets in the Work Execution work area for Manufacturing only if you have the required security privilege or user role of a production supervisor:

**Work Orders Infolet**

The **Work Orders** is a text layout-based infolet that displays count of work orders having at least one operation within the selected work area or work center.

The infolet shows three key metrics:

**On Hold:** Displays the count of those work orders in On Hold status.

**Past Due:** Displays the count of those work orders having the following:

- In Released status.
- Scheduled completion date of work order is past due the current date.

**Unreleased:** Displays the count of those work orders in Unreleased status.

Each count drills down to the Manage Work Orders page with the appropriate query criteria filtered. You can search for your required work order and track its progress.

**Rework Infolet**

The **Rework** infolet is a text layout-based infolet that displays count of work orders having at least one operation within the selected work area or work center.

The infolet shows two key metrics:

**Rework:** Displays the count of those work orders having the following:
- Work order type is defined as Rework.
- In Unreleased, On Hold, or Released status.

**Transform:** Displays the count of those work orders having the following:
- Work order type is defined as Transform.
- In Unreleased, On Hold, or Released status.

Each count drills down to the Manage Work Orders page with the appropriate query criteria filtered. You can search for your required work order here and track its progress.

**Note:** Both the Work Orders infolet and the Rework infolet cannot be flipped or expanded.

**Note:** Rework infolet flow is currently supported for only discrete manufacturing.

### Infolets Related to Work Execution

The Operations infolet and the Operations Scheduled Versus Actual infolet shows key metrics at either the plant level or the work area or work center level that you have selected using the **View By** icon.

**Operations Infolet**

The Operations infolet is a text-layout-based infolet that displays the count of operations which are Past Due, Ready and Reject, belonging to the selected work area or work center.

The infolet shows three key metrics:

**Past Due:** Displays the count of operations having the following:
- Operation type is specified as in-house.
- In Ready or Reject status.
- Scheduled completion date of the operation is past due the current date.
- Operation type is specified as in-house.

**Reject:** Displays the count of operations having the following:
- Operation type is specified as in-house.
- In Reject status.
Oracle SCM Cloud
Using Manufacturing

Chapter 4
Manage Production

Ready: Displays the count of operations having the following:
- Operation type is specified as in-house.
- In Ready status.

Each count drills down to the Review Dispatch List page with the appropriate query criteria filtered. You can search for your required operation here and track its progress.

Note: The Operations infolet cannot be flipped or expanded.

Operations Scheduled Versus Actual Infolet
The Operation Scheduled Versus Actual infolet is a ring-chart-based infolet.
It shows the following two kinds of metrics:

Scheduled Quantity: Displays the total quantity scheduled for production in the current shift. This is the sum of all work order quantities against operations which have the following:
- Scheduled completion date of the operation is within the current shift.
- Operation type is specified as in-house.

Operation Quantity by Dispatch Status: The ring segments are color-coded to represent operation quantities in their corresponding dispatch status such as Ready, Complete, Reject and Scrap.

The Not Ready metric calculation is derived as the total of Ready, Scrapped, Rejected, and Completed quantity deducted from the Scheduled total quantity. If Not Ready is calculated as negative in any of the operations, it is displayed as zero.

You can view more details regarding the operations in your work center and the progress of each work center based on the shift you select by clicking the Expand icon on the infolet.

The expanded view of this infolet is a list of records which displays the operation quantities and their completion progress by work center. This list is sorted in the ascending order of the least performing work centers. The Progress percentage is calculated as Completed Quantity divided by Total quantity.

Each metric on the infolet in either the front view or expanded view directs you to the Review Dispatch List page with the appropriate query criteria filtered. You can search for your required operation here and track its progress.

Related Topics
- How You Use and Personalize Infolets in Oracle SCM and Procurement Cloud

Infolet Related to Production Exceptions
You can view the Open Exceptions infolet in the Work Execution work area for Manufacturing only if you have the required security privilege or user role of a production supervisor:

Open Exceptions Infolet
The Open Exceptions infolet is a text-layout based infolet that displays the count of open exceptions that are reported in the plant.

The infolet shows two key metrics:
New: Displays the count of exceptions having the following:

- Status is Open.
- Exceptions reported on the current date as reflected in the application.

Total: Displays the count of exceptions in Open status.

You can view more details of the total count of open exceptions by clicking the expanded view icon. The expanded view of Open Exceptions infolet is a ring chart based infolet. It displays two key metrics:

- Total
- By Exception Type

The ring-based expanded view of the Open Exceptions infolet shows the number of total exceptions in the center of the ring. The ring itself is color-coded to identify the different exception types which are:

- Component
- Resource
- Supplier Operations
- Work Area
- Work Center
- Miscellaneous

Each count in either the front view or expanded view drills down to the Manage Production Exceptions page with the appropriate query criteria filtered. You can search for your required work order exception and take required actions.

Related Topics
- How You Use and Personalize Infolets in Oracle SCM and Procurement Cloud

Infolet Related to Inspections

Some operations in your manufacturing plant may have required inspection predefined for them. As a production supervisor or operator you can perform the inspection and complete the transaction to decide the disposition for those operations. You can complete, reject or even scrap quantities of such operations based on your privileges.

Inspections Infolet

The Work in process (WIP) Inspections infolet is a text-layout-based infolet that displays the percentage of rejected WIP samples or serials compared to the WIP samples or serials inspected in the last 7 days in the plant.

The calculations are derived based on the following criteria:

- Operation samples or serials inspected by a Work in process inspection plan.
- Inspection disposition is either completed or rejected.
- The inspection date for the samples or serials is 7 days or less prior to the current date.

The percentage count drills down to the View Inspections: Inspection Results List page. You can search for your required operations which have required inspection and track their progress.

Related Topics
- How You Use and Personalize Infolets in Oracle SCM and Procurement Cloud
How You Manage Production Calendars

A production calendar represents the schedule associated with a manufacturing plant using the Manage Plant Parameters page. You can use the Setup and Maintenance work area to define the shifts, workday patterns, and schedules. Oracle Manufacturing Cloud 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 manufacturing plant. 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 for you to analyze with ease.

You use the Manage Production Calendar page from the Work Execution 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.
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 plant 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 plant 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 plant 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 plant 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 plant 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 plant 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.

How You Manage Work Center Resource Calendars

A 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 does not affect the whole plant. You cannot 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 plant 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 does not affect the whole plant.

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 plant 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.

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 plant 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 plant 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 zero. 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.
Overview of Work Orders

A work order refers to a document that conveys the authority for the production of a specific product. It contains information about what, how to, how many, and when to manufacture a product. The product item, work definition details, operations, resources, components, quantities, and dates are specified in the work order. As a production supervisor, you can use the Manage Work Orders page to perform work execution tasks such as search, create, and update work orders. In addition, you can create user-defined statuses for work orders. The Manage Work Order page is designed for tablet-friendly user interfaces, and is optimized for a high resolution.

Some of the key features of discrete work orders are:

- Work orders are created by Supply Chain Orchestration as supplies for the following:
  - Planned orders from Oracle Fusion Planning Central Cloud Service
  - Sales orders for back-to-back ordered make items
  - Sales orders for configured items
  - Contract manufactured items
- Enables collaboration using Oracle Social Networking to communicate with stakeholders for better fulfillment of work order supply.
- Supports serialized manufacturing by previously assigning serials.
- Helps to prioritize work orders by reviewing sales order reservation details of the work order.
- Maintains work order and production transactions history for each work order, which can be viewed at any time.
- Work orders can be created and updated through cloud import framework using the .xlsm template.
- Enables collaboration using Oracle Social Networking to communicate with stakeholders for better fulfillment of work order supply.

Some of the key features of process work orders are:

- Supports multiple output items in a work order in the form of co-products and by-products.
- Supports scaling of work definition batch in the work order, based on changes in either batch quantity, input item quantity, or output item quantity.
- Maintains work order and production transactions history for each work order, which can be viewed at any time.
- Work orders can be created and updated through cloud import framework using the .xlsm template.
- Enables collaboration using Oracle Social Networking to communicate with stakeholders for better fulfillment of work order supply.

Search Work Orders

You can use the Manage Work Orders page to search for work orders to review or update. You can perform basic search using important attributes, such as Work Order, Item, Status, Start Date and Completion Date. You can also perform advanced search using additional criteria, such as work order Type, Subtype, Work Definition, Priority, Customer, Serial Number, Work Center, and so on. Additional attributes, such as Work Method, Process Name, Output Item, and Output Item Description have been added to make the search for process work orders more effective.

By default, the search enables you to retrieve all work orders which start today and the next seven days, in predefined statuses such as Unreleased, Released, or On Hold and available user-defined statuses. You can personalize the search
criteria using the saved search feature, and set them as the default search if required. Work order records are presented in a tabular format with visual indicators to highlight past due work orders, and indicate work order progress. In the case of process work orders, the multiple outputs of a work order can be viewed in search results.

Click the IoT Insights icon in the Manage Work Orders page to drill down to the work order view in IoT Production Monitoring Cloud to view work order details, factory-level metrics, and machine-level details. In the Manage Work Orders search results page and the Edit Work Order page, History tab you can drill down to the work order view in IoT Production Monitoring Cloud to gain insights into the actual production progress of the work order.

Note: For a work order, you can print Components List, Labels, or Work Order Traveler from the Manage Work Orders page.

Create Work Orders

The Create Work Order page captures minimal mandatory information to quickly create work orders. You can create discrete work orders based on attributes such as Item, Work Order Status, Work Order Quantity, Start Date or Completion Date, Work Definition, and so on. You can also select a user-defined status to create work orders. You can only create standard process work orders based on either the process name or primary output item.

Update Work Orders

You can update the following work order details:

- Work order header attributes such as Quantity, Priority, and so on
- Reschedule the work order by updating the Start or Completion Dates
- Update the work order status to predefined or user-defined statuses
- Manage operations, material, and resource requirements
- Add or delete attachments
- Perform mass actions to update work order status or priority
- Capture values for the descriptive flexfields

New attributes are displayed for process manufacturing work orders in the Process and Primary Output regions. You can optionally update the batch quantity or the primary output item quantity. Based on the update to one attribute, the other is recalculated.

Pick Materials for Work Orders

On the Manage Work Orders page, you can also select one or more work orders and click Release to release them to the shop floor for production. You can also click Release and Pick Materials to directly initiate the scheduled process Pick Materials for Work Orders. A dialog box with the following picking parameters is displayed. The parameters are defaulted from the plant parameters.

- Pick Slip Grouping Rule
- Print pick slips
- Hours Ahead
- Pick a work order only if all eligible materials are available

This dialog box is also displayed when you click the Release and Pick Materials action on the Manage Material Availability Assignments page to initiate the scheduled process. You can review and update the parameters as required and click OK to start the process.
This will ensure that a movement request is created for materials to be either directly issued to the work order from the inventory or to be transferred to a destination subinventory from where it can be used. You can take this action for work orders that are in released status so that materials are available on the shop floor during production.

**Note:** For more information about picking of materials for work orders refer to the Pick Materials for Work Orders: Explained topic in the Executing Production chapter of this guide.

**Note:** You can manage work orders using a REST API. However, you can’t add, update, or delete attachments of a work order, operations, materials, and resources using a REST API.

### Attachments

Attachments for the work order entity can be used to readily access files such as work instructions, drawings, checklists, standard operating procedures, and so on. Work orders support attachments at the following levels:

- Work Order Header
- Operations
- Operation Items
- Operation Resources
- Operation Output (applicable only for process work orders)

During work order creation, if a work definition is specified, all attachments from the work definition which correspond to the earlier mentioned levels are copied into the work order. When a standard operation is added to the work order, the operation and operation resource level attachments are copied to the work order. Once the attachments are copied, they reside independently within the work order. You can add more attachments, or delete existing attachments as required.

Attachments belonging to the Miscellaneous category are always displayed by default. However, other user-defined attachment categories may be configured and displayed based on the security setup. Security can be enabled using the standard attachment security framework provided in the Setup and Maintenance work area and the Security Console.

### Descriptive Flexfields

Descriptive flexfields enable you to configure the work order entity to capture additional information. Work orders support descriptive flexfields to capture user-defined data for the following levels:

- Work Order Header
- Operations
- Operation Items
- Operation Resources
- Operation Output (applicable only for process work orders)

The descriptive flexfields if enabled are available as Additional information in the user interface. You can also manage descriptive flexfields through work order import.

### Social Collaboration

Work orders are enabled for social collaboration using Oracle Social Network. The production supervisor can use this framework to collaborate with stakeholders. You can enable the following attributes for the work order object, so that it’s shared on the OSN object wall and the subsequent streaming updates.

- Work Order Number
- Start Date
IoT Production Monitoring Integration at Work Order Level

The Internet of Things (IoT) Production Monitoring Cloud can be deployed in manufacturing environments to monitor production flow and equipment health.

You can drill down from a specific work order in Manufacturing Cloud to view a KPI dashboard and digital twin simulation of the real time and predicted status of a work order or equipment in IoT Production Monitoring Cloud. Quick access from Manufacturing Cloud to IoT Production Monitoring Cloud insights is provided in multiple pages:

- Manage Work Orders page
- Edit Work Order page, in the History tab

With anomaly detection and predictive analytics of IoT Production Monitoring Cloud, you can decide what actions to take in Manufacturing Cloud or IoT Production Monitoring Cloud. Using the IoT Insights button provided in the Manage Work Orders page, drill down to the work order view in IoT Production Monitoring Cloud to view work order details, factory-level metrics, and machine-level details.

Related Topics

- Overview of Work Definitions
- Overview of Production Execution Tasks

Overview of Standard Work Orders

Standard work orders are used as a means to initiate regular production. It is a type of work order and always has a work definition. When a user creates a standard work order, the automatic pre-selection logic is used to derive the work definition name and version based on the item, and the date specified on the work order. You can create standard work orders in both discrete and process manufacturing based on the work method.

A standard work order is created quickly with minimal header details. On saving the work order record, the application automatically does the following:

- For the specified work definition, the work definition explosion logic is used to determine the work order material and resource requirements for all the operations.
- Using the scheduling logic, the work order, operation, material and resource dates are determined.

If the plant parameter is enabled for process manufacturing, you can optionally set the default work method to process manufacturing. There are two ways to create a standard process work order, based on the Process Name or Primary Output.
Create Standard Discrete Work Orders

You can create a standard work order for discrete or process manufacturing based on the work method. The standard discrete work order is created in the following sequence in the user interface:

1. Specify the Work Method. In this case, select Discrete Manufacturing option instead of Process Manufacturing. Selection of the Work Method is applicable only if the organization is enabled for both discrete and process manufacturing.
2. Specify the item to be manufactured. A primary work definition must exist for the item to create a standard work order.
3. Specify the work order quantity. This will always be in the primary unit of measure of the item.
4. The work order start date is by default the current date and time. You can update the field if required. 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:** You can create a standard discrete work order by specifying this minimal information. The application selects the primary work definition of the item to explode the operation, material and resource requirements into the work order and perform scheduling to compute the rest of the dates of the work order. All other information required for the creation of work order is automatically derived in the background, and the standard discrete work order is created in Unreleased status.

**Tip:** To create a standard discrete work order with additional details, click the **Show More** link.

5. Optionally, you can enter a work order number manually. The application automatically generates a unique work order number if you don't enter the number.
6. If you enter the completion date of the work order, the start date of the work order is blanked out. When the work order is saved, the application performs a backward scheduling from the completion date to calculate the rest of the dates.
7. The primary work definition is selected by default and displayed in the user interface. You can select an alternate work definition, if available.
8. Work definition date is displayed by default from either the start or completion date, as provided by the user. You can modify the work definition date to a specific date, if it’s required to select the corresponding version of the work definition.
9. On selecting the work definition name and work definition date, the work definition version and the item structure details such as item structure name, revision, and version are automatically displayed on the user interface.
10. Status field is by default Unreleased. You can also select predefined statuses, such as Released or On Hold status or any user-defined status for the work order to be created in the specified status.
11. Optionally, you can specify the work order description and work order subtype.

**Note:** When you save the work order with this additional information, the application uses the specified work definition of the item to explode the operation, material, and resource requirements into the work order, and perform scheduling to compute the rest of the dates of the work order.
Tip: Attachments are copied over from the work definition to the work order. All other information required for the creation of work order is automatically derived in the background.

Related Topics
- Overview of the Work Definition Work Area

Create Standard Process Work Orders

You can create a standard work order for discrete or process manufacturing based on the work method. If the plant parameter is enabled for process manufacturing, you can optionally set the default work method to process manufacturing. There are two methods to create a standard work order for process manufacturing. First method is based on the Process Name and the second method is Primary Output. The Process Name is a unique identifier for a specific process manufacturing work definition that can produce multiple outputs.

If the organization is enabled for both discrete and process manufacturing, you will have the choice of both work methods. The standard process work order is created in the following sequence in the user interface:

2. Specify the Creation Basis. It can be either Process Name or Primary Output. Currently, use the Process Name as the default attribute.
3. If you enter a Process Name value, the Batch Quantity and UOM will be automatically defaulted. Also, the work definition details are selected. You can optionally update the Batch Quantity.
4. If you specify Primary Output, the Primary Output Quantity and UOM will be defaulted based on the Process Name that is selected. The Process Name is selected based on the lowest production priority. You can search and select another process name.
5. Start Date: The work order start date is by default the current date and time. You can update the field if required. 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.
6. You can now save the standard process work order.

Note: To create a standard process work order with additional details, click the Show More link. You will also find primary output details and work definition details when you click this link.

Overview of Phantom Explosion in Work Orders

A phantom represents a product that is physically built but not stocked, before being used in the next stage or level of manufacturing. It is a method to move around a group of components having the same item name. When you create a work definition for a parent product item, you can specify the supply type of a component as phantom. You can define work definitions for phantoms in the same way as any other product items.
During the creation of a work order which references a work definition, the following happens:

- The application selects the appropriate work definition version based on the work definition date specified and explodes the work definition by copying its operations, resources and component items.
- When a component item with phantom supply is required for an operation, the application looks for a work definition for the phantom item, explodes the same by copying its constituent components and resources to the same operation.
- The action of whether only components or both components and resources must be inherited is determined by the plant parameter **Phantom Operation Inheritance**.
- If multiple levels of phantoms are encountered during the explosion process, the application keeps exploding though all levels until no further child phantoms are encountered.
- At any level, if the explosion process does not find a work definition for a phantom, it uses the item structure to explode that phantom level and its lower levels. If an item structure is also not defined for a phantom item, further explosion is not performed for that node.

**Note:** Phantom assemblies act like normal assemblies when they represent a top-level assembly, such as when you create a work order on it. However, as a subassembly, they lose their identity as distinct assemblies, and are a collection of their components and resources.

**Note:** The same item can be used in a phantom supply in certain work definitions and a regular stock component in other work definitions.

### Phantom Explosion in Process Manufacturing

The phantom explosion in process manufacturing adheres to the following business rules:

- During explosion of a phantom input item, the application restricts to Process Manufacturing work method with no mingling of Discrete Manufacturing and Process Manufacturing work methods.
- Components and resources are inherited to the same operation as phantom input item honors plant parameter for phantom operation inheritance, but ignores multiple output items from the phantom work definition.
- Considers phantom item structures if no phantom work definition exists
- In case of phantom within a phantom, if structure is considered, the work definitions will not be considered again and the explosion continues based only on the structure.

### How Work Orders are Scheduled

Oracle Manufacturing Cloud uses unconstrained scheduling engine in the background to schedule work orders during create and certain update actions. In addition, the scheduling engine is also used to compute the manufacturing lead time of a product based on its primary work definition.

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.

• **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.**

• **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 are not 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 Scheduling

Work order scheduling behavior 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:

<table>
<thead>
<tr>
<th>Work Center</th>
<th>Resource Name</th>
<th>Efficiency Percentage</th>
<th>Utilization Percentage</th>
<th>Available 24 Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Machine Shop</td>
<td>CNC Milling</td>
<td>100%</td>
<td>50%</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>Technician</td>
<td>100%</td>
<td>100%</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>QA Inspector</td>
<td>100%</td>
<td>100%</td>
<td>No</td>
</tr>
<tr>
<td>Assembly Line</td>
<td>Operator</td>
<td>100%</td>
<td>100%</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>Conveyor Line</td>
<td>100%</td>
<td>100%</td>
<td>No</td>
</tr>
<tr>
<td>Packing Line</td>
<td>Auto Packer</td>
<td>50%</td>
<td>100%</td>
<td>Yes</td>
</tr>
</tbody>
</table>

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 Order** 123, with **Operation** 10: Machining, and **Work Center** Machine Shop.

The following table lists the details of three different resources:
<table>
<thead>
<tr>
<th>Sequence</th>
<th>Resource Name</th>
<th>Required Usage</th>
<th>UOM</th>
<th>Assigned Units</th>
<th>Scheduled</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>CNC Milling</td>
<td>2</td>
<td>Hours</td>
<td>1</td>
<td>Yes</td>
</tr>
<tr>
<td>20</td>
<td>Technician</td>
<td>2</td>
<td>Hours</td>
<td>2</td>
<td>Yes</td>
</tr>
<tr>
<td>30</td>
<td>QA Inspector</td>
<td>1</td>
<td>Hours</td>
<td>1</td>
<td>No</td>
</tr>
</tbody>
</table>

**Work Order 123**, with **Operation 20**: Assembly, and **Work Center** Assembly Line.

The following table lists the details of two different resources:

<table>
<thead>
<tr>
<th>Sequence</th>
<th>Resource Name</th>
<th>Required Usage</th>
<th>UOM</th>
<th>Assigned Units</th>
<th>Scheduled</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>Operator</td>
<td>4</td>
<td>Hours</td>
<td>1</td>
<td>Yes</td>
</tr>
<tr>
<td>10</td>
<td>Conveyor Line</td>
<td>4</td>
<td>Hours</td>
<td>2</td>
<td>Yes</td>
</tr>
</tbody>
</table>

**Work Order 123**, with **Operation 30**: Packing, and **Work Center** Packing Line.

The following table lists the details of one resource:

<table>
<thead>
<tr>
<th>Sequence</th>
<th>Resource Name</th>
<th>Required Usage</th>
<th>UOM</th>
<th>Assigned Units</th>
<th>Scheduled</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>Auto Packer</td>
<td>1</td>
<td>Hours</td>
<td>1</td>
<td>Yes</td>
</tr>
</tbody>
</table>

1. During the scheduling process, the application computes the duration of a resource in the following manner:

\[
\text{Resource duration} = \frac{(\text{Required usage} / \text{Assigned units})}{(\text{Resource Efficiency} \% \times \text{Resource Utilization} \%)}
\]

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 does not 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 it is 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:

<table>
<thead>
<tr>
<th>Operation Sequence</th>
<th>Resource Sequence</th>
<th>Resource Name</th>
<th>Resource Duration</th>
<th>Scheduled Dates With Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>10</td>
<td>CNC Milling</td>
<td>(2/1)/(50%*100%) = 4 hours</td>
<td>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.</td>
</tr>
<tr>
<td>10</td>
<td>20</td>
<td>Technician</td>
<td>(2/2)/(100%*100%) = 1 hour</td>
<td>The Technician performing the task after CNC Milling resource is scheduled from 12:00 noon to 1:00 p.m.</td>
</tr>
<tr>
<td>Operation Sequence</td>
<td>Resource Sequence</td>
<td>Resource Name</td>
<td>Resource Duration</td>
<td>Scheduled Dates With Explanation</td>
</tr>
<tr>
<td>--------------------</td>
<td>-------------------</td>
<td>---------------</td>
<td>-------------------</td>
<td>----------------------------------</td>
</tr>
<tr>
<td>10</td>
<td>20</td>
<td>QA Inspector</td>
<td>(0 hours (Since Scheduled= N))</td>
<td>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.</td>
</tr>
<tr>
<td>20</td>
<td>10</td>
<td>Operator</td>
<td>(4/1) / (100%*100%) = 4 hours</td>
<td>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.</td>
</tr>
<tr>
<td>20</td>
<td>10</td>
<td>Conveyor Line</td>
<td>(4/2) / (100%*100%) = 2 hours</td>
<td>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.</td>
</tr>
<tr>
<td>30</td>
<td>10</td>
<td>Auto Packer</td>
<td>(2/2) / (50%*100%) = 2 hours</td>
<td>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.</td>
</tr>
</tbody>
</table>

**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:

<table>
<thead>
<tr>
<th>Operation Sequence</th>
<th>Resource Sequence</th>
<th>Resource Name</th>
<th>Resource Duration</th>
<th>Scheduled Dates With Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>30</td>
<td>10</td>
<td>Auto Packer</td>
<td>$\frac{2}{2} \times (50% \times 100%) = 2$ hours</td>
<td>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 resource requires 2 hours, Packing operation starts on day 2 at 11:00 a.m. and ends at 1:00 p.m.</td>
</tr>
<tr>
<td>20</td>
<td>10</td>
<td>Conveyor Line</td>
<td>$\frac{4}{2} \times (100% \times 100%) = 2$ hours</td>
<td>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 does not 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.</td>
</tr>
<tr>
<td>Operation Sequence</td>
<td>Resource Sequence</td>
<td>Resource Name</td>
<td>Resource Duration</td>
<td>Scheduled Dates With Explanation</td>
</tr>
<tr>
<td>---------------------</td>
<td>-------------------</td>
<td>----------------</td>
<td>---------------------------</td>
<td>----------------------------------</td>
</tr>
<tr>
<td>20</td>
<td>10</td>
<td>Operator</td>
<td>(4/1) / (100%*100%) = 4 hours</td>
<td>on day 2, and 4:00 p.m. to 5:00 p.m. on day 1.</td>
</tr>
<tr>
<td>10</td>
<td>20</td>
<td>QA Inspector</td>
<td>(0 hours (Since Scheduled= N)</td>
<td>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.</td>
</tr>
<tr>
<td>10</td>
<td>20</td>
<td>Technician</td>
<td>(2/2)/ (100% *100%) = 1 hour</td>
<td>The Technician performing the Machining operation is scheduled from 3:00 p.m. to 4:00 p.m. on day 1.</td>
</tr>
<tr>
<td>10</td>
<td>10</td>
<td>CNC Milling</td>
<td>(2/1)/ (50% *100%) = 4 hours</td>
<td>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.</td>
</tr>
</tbody>
</table>

**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:

<table>
<thead>
<tr>
<th>Operation Sequence</th>
<th>Resource Sequence</th>
<th>Resource Name</th>
<th>Resource Duration</th>
<th>Scheduled Dates With Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>10</td>
<td>Operator</td>
<td>(4/1) / (100%*100%) = 4 hours</td>
<td>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.</td>
</tr>
<tr>
<td>20</td>
<td>10</td>
<td>Conveyor Line</td>
<td>(4/2) / (100%*100%) = 2 hours</td>
<td>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.</td>
</tr>
<tr>
<td>30</td>
<td>10</td>
<td>Auto Packer</td>
<td>(2/2) / (50%*100%) = 2 hours</td>
<td>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.</td>
</tr>
</tbody>
</table>
| 10                 | 20                | QA Inspector      | (0 hours (Since Scheduled = N)) | All upstream operations are scheduled using Backward Scheduling.
<table>
<thead>
<tr>
<th>Operation Sequence</th>
<th>Resource Sequence</th>
<th>Resource Name</th>
<th>Resource Duration</th>
<th>Scheduled Dates With Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>20</td>
<td>Technician</td>
<td>(2/2)/(100% *100%) = 1 hour</td>
<td>Invoking Backward Scheduling, the Technician performing the Machining operation is scheduled from 10:00 a.m. to 11:00 a.m. on day 2.</td>
</tr>
<tr>
<td>10</td>
<td>10</td>
<td>CNC Milling</td>
<td>(2/1)/(50% *100%) = 4 hours</td>
<td>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.</td>
</tr>
</tbody>
</table>

### Overview of Nonstandard Work Orders

Nonstandard work orders are used to initiate rework, repair, prototype work, and other non-regular production activities. It is a type of work order and can be created with or without a work definition. If a work definition is referred, the behavior is same as that of the standard work order. The nonstandard work order is created in Unreleased or On Hold status, if the work definition is not specified. The next step is to add operations, components, and resources for the operations. After an operation is added to the work order, the work order can be released.

**Note:** Nonstandard work orders are currently available for only the discrete manufacturing work method.
Create Nonstandard Work Orders

The nonstandard work order is created in the following sequence using the user interface:

1. Optionally, you can enter a work order number manually. The application automatically generates a unique work order number if this is not provided.
2. Specify the item to be manufactured. A work definition need not exist for this item.
3. Specify the work order quantity. This will always be in the primary unit of measure of the item.
4. A work definition is not selected by default, and the valid work definitions are available for you to select.
5. The work order start date is by default the current date and time. You can update the field if required. If a work definition is specified, you must provide either a start date or completion date. If a work definition is not specified, you can provide both the start date and completion date.
6. Status field is by default Unreleased. If a work definition is specified, you can create the work order in Unreleased, Released or On Hold status. If a work definition is not specified, but you can create the work order only in Unreleased or On Hold status.
7. If a work definition is specified, the work definition date is displayed by default from the start or completion date fields, as provided earlier. You can modify the work definition date to a specific date, if it is required to select the corresponding version of the work definition.
8. On selecting the work definition name and work definition date, the work definition version and the item structure details such as item structure name, revision and version are automatically defaulted on the user interface.
9. Optionally, you can specify the work order description and work order subtype.

When the work order is saved, the following behaviors are applicable:

- If work definition is specified, the application uses the specified work definition of the item to explode the operation, material and resource requirements into the work order and perform scheduling to compute the rest of the dates of the work order. Attachments are copied over from the work definition to the work order. All other information required for the creation of work order is automatically derived in the background.
- If work definition is not specified, the application saves only the work order header. You can update the work order to add operations, resources, and items manually. At least one operation must be added to release the work order.

Note: If a work definition is specified, the behavior of the nonstandard work order is similar to the standard work order.

Overview of Rework Work Orders

Oracle Fusion Manufacturing provides users with additional options in scenarios where the finished item must be reworked. You can do the following in a Rework work order:

- You can create Rework work order with or without specifying a Rework work definition.
- You can specify a negative quantity for work order operation items. The same item can be specified in two item sequences, such as a sequence with a positive quantity, and a sequence with a negative quantity.
In material transactions, material-negative issue transactions are supported to transact items with negative quantities. Additionally, ad hoc items with negative quantity can be transacted in material transactions. The genealogy of the reworked assembly can be reviewed for serial tracked Rework work orders.

The following figure illustrates the Rework work order process flow:

**Rework Work Order – Process Flow**

![Diagram](image)

The process flow diagram for a Rework work order shows how a defective assembly in inventory can be reworked on the manufacturing shop floor, completed as a finished good, and returned to inventory after rectifying the defect. Rectifying the defect can be by removing a defective component and replacing it.

A Rework work order is created in Oracle Fusion Manufacturing, where a defective assembly from the inventory is issued to that work order, and rework operations are executed on the shop floor. The component that is defective is removed from the assembly and replaced with a new component. For example, the defective battery of a mobile phone is replaced with a new battery, returning it to working condition. Then, the reworked assembly is completed in the inventory as a finished item.

**Note:** Using FBDI (.xlsm) templates (similar to the importing standard and nonstandard work orders), you can import Rework work orders. For Rework work orders, the sheets added are to denote Assembly Item, Material Lot, and Material Serial.

**Note:** Rework work orders are currently available for only the discrete manufacturing work method.

**How You Rework a Work Order**

You can create a rework order in manufacturing. The Work Definition and Work Execution work areas are both used to do this.
**Work Order**

You must select the specific work order type to create a rework work order. If you have access to Manage Work Orders task, you can create the new Rework work order.

When you create a Rework work order, all the valid Rework work definitions defined for the item are displayed and you can select one among them. Additionally, for the Rework work order, the work definition is optional. You can create a Rework work order without a work definition.

The current subinventory is specified with the current locator, if required. The current subinventory is the subinventory from where the rework item is automatically issued to the first operation of the work order when it is released.

The rework item that was automatically issued to the first operation of the work order when it is released is displayed. You cannot update the item details. The items with negative quantity can be assigned to the work order operations. Items with negative quantity are inherited though the work definition explosion, or can be ad hoc items specified for the operation.

**Note:** For an operation, an item can be defined as positive quantity and negative quantity in different item sequences.

**Negative Issue and Negative Return**

The new transaction types Negative Issue and Negative Return are supported in Rework work orders. If the quantity is negative and the transaction type is Issue, then it is a negative issue transaction. If the quantity is negative and the transaction type is Return, then it is a negative return transaction.

Items with a negative quantity and a Push supply type are transacted using negative issue transaction. The negative issue transaction removes the item from the assembly and issues it back to the stores. If the item is lot or serial controlled, you must specify details.

Items transacted with a negative issue transaction type can be returned back to the assembly through a negative return transaction. If the item is lot or serial controlled, you must specify details.

In addition to the negative quantity items specified in the work order, users can also transact ad hoc items with negative quantity through negative issue transactions. For a Rework work order, the defective item is removed using a negative issue transaction, and the replacement for that item is done using issue transaction.

If **Enable Genealogy Tracking** is set for the items, and the Rework work order is serial tracked, then the details of the assembly serial and component serials that are issued to the rework work order are posted to genealogy.

**Note:** The new transaction types Negative Issue and Negative Return are also supported in transform work orders.

**Note:** Rework work order flow is currently supported for only discrete manufacturing.

**Overview of Transform Work Orders**

A finished goods assembly can be transformed into a different assembly by removing or adding components. To support this business practice, Oracle Fusion Manufacturing provides the following capabilities:

- You can create Transform work order with or without specifying a Transform work definition.
- You can specify **Transform from Item** for a Transform work order.
• You can specify a **negative quantity** for work order operation items. The same item can be specified in two item sequences, such as a sequence with a positive quantity, and a sequence with a negative quantity.

In material transactions, material-negative issue transactions are supported to transact items with negative quantities. Additionally, ad hoc items with negative quantity can be transacted in material transactions. The genealogy of the reworked assembly can be reviewed for serial tracked Rework work orders.

The following figure illustrates the Transform work order process flow:

### Transform Work Order – Process Flow

The business flow diagram for the Transform work order process flow shows how an assembly in inventory can be transformed into another assembly in the manufacturing shop floor and completed as a finished good back in inventory. The transformed assembly can be an upgraded or downgraded version of the original assembly.

A Transform work order is created in the Oracle Fusion Manufacturing, where the assembly to be transformed is issued from Oracle Fusion Inventory to the work order, and operations are executed on the shop floor. One or more components are removed from the assembly and they can be replaced with new components. The assembly now gets transformed to another item because of change in components. For example, 32GB RAM is removed and replaced with 128GB RAM, by which the assembly is upgraded to a higher version. Then, the transformed assembly is completed in Oracle Inventory as a finished item.

**Note:** Using FBDI (.xlsm) templates (similar to the importing standard and nonstandard work orders), you can import Transform work orders. For Transform work orders, the sheets added are to denote Assembly Item, Material Lot, and Material Serial.

**Note:** Transform work orders are currently available for only the discrete manufacturing work method.

### How You Create a Transform Work Order

To create transform work order in manufacturing, you must complete tasks in both the Work Definition and Work Execution work areas:
Work Order

You can select a specific work order type to create a transform work order. If you have access to Manage Work Orders, you can create the new Transform work order. For a Transform work order, the work definition is optional. However, you must specify the Transform from Item field. Transform from Item is the item from which the work order item is being transformed to.

The valid work definitions of type Transform which are defined for the work order item, and the Transform from Item combination are displayed. You can select any one of them. You can create the Transform work order in a Released, Unreleased, or On-hold status if a work definition is provided. You can create it in an Unreleased or On-hold status if a work definition is not provided. The rest of the behavior is similar to that of a standard or a nonstandard work order.

You must manually specify the Transform from Item as an item in any of the work order operations. Items with a negative quantity are inherited though the work definition explosion.

Additionally, the items with negative quantity can be assigned to the Transform work order operations as ad hoc items.

- **Note:** For an operation, an item can be defined with positive quantity and negative quantity in different item sequences.

- **Note:** Transform work order flow is currently supported for only discrete manufacturing.

How You Create Project-Specific Work Orders

You can create and update a work order with project details in an organization that's enabled for inventory tracking by project.

- For Discrete Manufacturing work method, you can create project-specific standard, nonstandard, rework, and transform work orders.

- For Process Manufacturing work method, you can create project-specific standard work orders.

You can create and update work orders with project details using the Edit Work Order user interface, File-Based Data Import (FBDI), or REST APIs. You can perform error corrections using Application Development Framework Desktop Integration (ADFdi).

In the Edit Work Order page, the Project Details region lists the project-related fields. You can see the Project Details region if the Enable inventory tracking by project check box is selected in the plant parameter of the inventory organization. The project-related fields are Project Number, Task Number, Expenditure Item Date, Expenditure Type, and Expenditure Organization. Here are some details about the project-related fields that you must know:

- **Note:** Project Number is an optional field. You can create a work order that's not associated with a project even though a plant is enabled for inventory tracking by project.

- **Note:** The default Expenditure Item Date is derived from the work order completion date while Expenditure Organization is set to the manufacturing plant. The manufacturing plant must be classified as a project expenditure organization.

- You can define the defaults for Expenditure Type and User-Defined Attributes in Functional Setup Manager. While creating a work order, after specifying a Task Number, the default values for Expenditure Type and User-Defined Attributes are based on the setup. Expenditure Type of a project-specific work order is used to calculate work center and plant overhead.
Project cost transaction validations are performed upon defining the defaults, saving, and releasing a work order. If the validations fail, you must fix the errors before the changes are saved. Project details can be updated only when the work order status is Unreleased.

In the Manage Work Orders page, Project Number and Task Number are available as search fields. These fields are also listed as column names in the search results. Searching by Project Number and Task Number returns the work orders with the corresponding project, task, or both.

**How You Update a Work Order**

You can use the **Edit Work Order** page to update a work order in the user interface. Additionally, multiple work orders can be updated using mass actions. To view or update work orders, you need the following privileges:

- **View Work Order**: Enables query and view of work order details.
- **Manage Work Order Headers**: Enables creation of work orders and update of work order header and general information, except status update for closing a work order.
- **Manage Work Order Operations**: Allows addition and update of work order operations and its entities.
- **Manage Work Order Serials**: Allows entry of work order serials and related actions.

During the lifecycle of the work order, it's updated by the user or the application to transition the statuses. You can update the attributes of a work order in any status with the certain exceptions. Certain attributes such as work order number, product, reservation details, and so on can't be updated once a work order is created. The following tabs are available in the **Edit Work Order** page:

- **General Information**: Work order header level information, such as product, work definition, work order status, attachments and so on.
- **Operations**: Work order operation information, such as operation name, work center, components and resources requirements.
- **Serial Numbers**: Product serial numbers which are associated with the work order for serial-tracked manufacturing.
- **Reservations**: Supplies from a work order that are reserved against one or more sources of demand.
- **History**: Work order execution history such as status, dates, and quantities.

You can update the release date of a work order in the **General Information** tab based on certain validations. If you're changing the work order from unreleased, or on hold status to released status, the release date will be defaulted with the current application date. You can update it to a previous date. You also can't change the release date to a future date. The release date of a work order is updated in the **History** tab accordingly. You can't change the release date when you change the work order from released status to on hold, completed, closed, or canceled status.

You can update the closed date of a work order in the General Information tab based on certain validations. If you're changing the work order from any status to closed status, the closed date will be defaulted with the current application date. You can update it to a previous date, not earlier than the last transaction date. You also can't change the closed date to a future date. The closed date of a work order is updated in the **History** tab accordingly.
How You Manage a Work Order Header

A work order header stores some of key attributes of the work order business object. The work order header uniquely identifies the work order, describes the nature of work being carried out, and captures the details of the item being manufactured, the required quantity, the work definition to be used, and the start and completion dates. The header attributes are displayed in the General Information tab of a work order.

The following table summarizes the attributes present in a work order header:

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Work Order Number</td>
<td>A work order number identifies the work order and is unique within a plant. During creation of the work order, a unique number is automatically assigned from the numbering scheme defined per 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.</td>
</tr>
<tr>
<td>Status</td>
<td>This represents the status of the work order during its lifecycle. The predefined statuses supported are Unreleased, Released, On Hold, Completed, Closed, and Canceled. In addition, you can update work order status work order status to predefined or user-defined statuses.</td>
</tr>
<tr>
<td>Start Date</td>
<td>Planned start date and time of the work order.</td>
</tr>
<tr>
<td>Completion Date</td>
<td>Planned completion date and time of the work order.</td>
</tr>
<tr>
<td>Description</td>
<td>Description of the work order.</td>
</tr>
<tr>
<td>Work Order Priority</td>
<td>Represents the work order execution priority.</td>
</tr>
<tr>
<td>Item</td>
<td>Also referred as product or assembly. It represents the primary item that's to be manufactured. The item attributes Build in WIP and Transactable indicators must be enabled to create a work order. After the work order is created, the item can't be updated. This is applicable to only discrete work orders.</td>
</tr>
<tr>
<td>Quantity</td>
<td>Quantity of the work order that's planned for and started with. This is applicable to only discrete work orders.</td>
</tr>
<tr>
<td>UOM</td>
<td>Represents the unit of measure of the quantity being manufactured. It is always the primary unit of measure of the item. This is applicable to only discrete work orders.</td>
</tr>
<tr>
<td>Process Name</td>
<td>It is a unique identifier for a specific process manufacturing work definition that can produce multiple outputs. It can't be updated after the work order is released</td>
</tr>
<tr>
<td>Name</td>
<td>Description</td>
</tr>
<tr>
<td>---------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td><strong>This is applicable to only process work orders.</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Batch Quantity</strong></td>
<td>It is the batch quantity of the process manufacturing work order. During work order creation, this is defaulted from the work definition and can be scaled up or down. The batch quantity moves through operations until work order completion. This is applicable to only process work orders.</td>
</tr>
<tr>
<td><strong>Batch Quantity UOM</strong></td>
<td>Represents the unit of measure of the batch quantity being processed. It is defaulted from the work definition and can't be updated on the work order. This is applicable to only process work orders.</td>
</tr>
<tr>
<td><strong>Primary Output</strong></td>
<td>The Primary Output item is the most intended output for the process name specified in the process work order. The item attributes Build in WIP and Transactable Indicators must be enabled to create a process manufacturing work order. Once the work order is created, the primary output item can't be updated. This is applicable to only process work orders.</td>
</tr>
<tr>
<td><strong>Version</strong></td>
<td>Represents the version of the primary output item. This is applicable to only process work orders.</td>
</tr>
<tr>
<td><strong>Primary Output Quantity</strong></td>
<td>It is the quantity of the primary output item. The primary output item and its quantity are displayed in both work order header and work order output items. Any change in quantity in one place will automatically update the other. The primary output quantity can't be updated in the work order header when the work order is released. This is applicable to only process work orders.</td>
</tr>
<tr>
<td><strong>Primary Output UOM</strong></td>
<td>Represents the unit of measure of the quantity of the primary output item. It is referred from the work definition and can't be updated. This is applicable to only process work orders.</td>
</tr>
<tr>
<td><strong>Work Definition Name</strong></td>
<td>Work definition name of the item being manufactured. In a discrete work order, the work definition is exploded to determine the operation, resource, and material requirements in the work order. It can't be updated after the work order is released. In a process work order, the work definition is exploded to determine the operation, resource requirements, material requirements, and expected outputs. It can't be updated in the work order.</td>
</tr>
<tr>
<td><strong>Work Definition Date</strong></td>
<td>Work definition date represents the effective date used to derive the work definition version.</td>
</tr>
<tr>
<td><strong>Work Definition Version</strong></td>
<td>Represents the version of the work definition. It is derived and displayed based on the work definition name and date specified.</td>
</tr>
<tr>
<td>Name</td>
<td>Description</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>--------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Production Priority</td>
<td>Production priority identifies the primary and alternate work definitions of an item. A production priority of 1 indicates the primary work definition. The production priority is derived and displayed based on the work definition name specified.</td>
</tr>
<tr>
<td>Serial-Tracking Production</td>
<td>This indicates if serial-tracking is enforced for the work order. This is derived from the work definition and you can't edit this attribute.</td>
</tr>
<tr>
<td></td>
<td>This is applicable to only discrete work orders.</td>
</tr>
<tr>
<td>Item Structure Name</td>
<td>Represents the item structure name that's referenced on the work definition selected on the work order.</td>
</tr>
<tr>
<td></td>
<td>This is applicable to only discrete work orders.</td>
</tr>
<tr>
<td>Item Structure Revision</td>
<td>Represents the revision of the item whose item structure is referenced on the work definition selected on the work order.</td>
</tr>
<tr>
<td></td>
<td>This is applicable to only discrete work orders.</td>
</tr>
<tr>
<td>Item Structure Version</td>
<td>Represents the version of the item whose item structure is referenced on the work definition selected on the work order.</td>
</tr>
<tr>
<td></td>
<td>This is applicable to only discrete work orders.</td>
</tr>
<tr>
<td>Work Order Type</td>
<td>Indicates whether the type of work order selected during creation is Standard, Nonstandard, Rework, or Transform.</td>
</tr>
<tr>
<td></td>
<td>For process work orders, only the standard work order type is supported.</td>
</tr>
<tr>
<td>Work Order Subtype</td>
<td>Represents the specific nature of work being performed such as Standard Production, Prototyping, or Repair. Costing can derive work order accounts based on this attribute.</td>
</tr>
<tr>
<td>Work Method</td>
<td>Refers whether the work order is Discrete Manufacturing and Process Manufacturing. If an organization is enabled for process manufacturing, then both the work methods are available during the creation of work orders. If the organization is enabled for only discrete manufacturing, then the work method is discrete by default.</td>
</tr>
<tr>
<td>Firm</td>
<td>Indicator to enable or prevent Planning from suggesting rescheduling recommendations for the work order.</td>
</tr>
<tr>
<td>Back-to-Back</td>
<td>Indicator that this work order is created as a supply for a back-to-back sales order. You can't edit this attribute.</td>
</tr>
<tr>
<td></td>
<td>This is applicable to only discrete work orders.</td>
</tr>
<tr>
<td>Contract Manufacturing</td>
<td>Indicates a contract manufacturing work order. You can't edit this attribute.</td>
</tr>
<tr>
<td></td>
<td>This is applicable to only discrete work orders.</td>
</tr>
</tbody>
</table>
### Name and Description

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supply Type</td>
<td>Represents the default supply types to be considered in the work order for operation items.</td>
</tr>
<tr>
<td>Overcompletion Tolerance Type</td>
<td>The tolerance type for overcompletion of the work order quantity. The overcompletion tolerance isn't applicable for Rework work orders.</td>
</tr>
<tr>
<td>Overcompletion Tolerance Value</td>
<td>The percent or quantity that's allowed to be completed over the work order quantity.</td>
</tr>
<tr>
<td>Completion Subinventory</td>
<td>Represents the default completion subinventory to be considered in the work order for product completion. This is applicable to only discrete work orders.</td>
</tr>
<tr>
<td>Completion Locator</td>
<td>Represents the default completion locator of the subinventory to be considered in the work order for product completion. This is applicable to only discrete work orders.</td>
</tr>
</tbody>
</table>

### 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. You can then update the status to **Released** once the work order is ready for execution. On executing the work order, when the last operation is complete, the work order is automatically updated to **Completed** status. You then update the status of the work order to **Closed**. You can also update the work order status to **On Hold** or **Canceled**.

**Note:** You can query work orders using the available predefined and user-defined statuses using a REST API.

The following table lists the valid status transitions allowed for a work order:

<table>
<thead>
<tr>
<th>From Status</th>
<th>To Status Unreleased</th>
<th>To Status Released</th>
<th>To Status On Hold</th>
<th>To Status Completed</th>
<th>To Status Closed</th>
<th>To Status Canceled</th>
</tr>
</thead>
<tbody>
<tr>
<td>From Status Unreleased</td>
<td>Not applicable</td>
<td>Allowed</td>
<td>Allowed</td>
<td>Not allowed</td>
<td>Allowed</td>
<td>Allowed</td>
</tr>
<tr>
<td>From Status Released</td>
<td>Conditionally allowed</td>
<td>Not applicable</td>
<td>Allowed</td>
<td>Allowed only by application</td>
<td>Conditionally allowed</td>
<td>Allowed</td>
</tr>
<tr>
<td>From Status On Hold</td>
<td>Conditionally allowed</td>
<td>Allowed</td>
<td>Not applicable</td>
<td>Not allowed</td>
<td>Conditionally allowed</td>
<td>Allowed</td>
</tr>
<tr>
<td>From Status Completed</td>
<td>Not allowed</td>
<td>Allowed only by application</td>
<td>Not allowed</td>
<td>Not applicable</td>
<td>Allowed</td>
<td>Not allowed</td>
</tr>
</tbody>
</table>
The following table summarizes the work order status change rules specific to supplier operations:

<table>
<thead>
<tr>
<th>From Status</th>
<th>To Status Unreleased</th>
<th>To Status Released</th>
<th>To Status On Hold</th>
<th>To Status Completed</th>
<th>To Status Closed</th>
<th>To Status Canceled</th>
</tr>
</thead>
<tbody>
<tr>
<td>From Status Closed</td>
<td>Conditionally allowed</td>
<td>Conditionally allowed</td>
<td>Not allowed</td>
<td>Conditionally allowed</td>
<td>Not applicable</td>
<td>Conditionally allowed</td>
</tr>
<tr>
<td>From Status Canceled</td>
<td>Conditionally allowed</td>
<td>Allowed</td>
<td>Allowed</td>
<td>Not allowed</td>
<td>Conditionally allowed</td>
<td>Not applicable</td>
</tr>
</tbody>
</table>

The following table summarizes the work order status change rules specific to supplier operations:

<table>
<thead>
<tr>
<th>From Status</th>
<th>To Status Unreleased</th>
<th>To Status Released</th>
<th>To Status On Hold</th>
<th>To Status Completed</th>
<th>To Status Closed</th>
<th>To Status Canceled</th>
</tr>
</thead>
<tbody>
<tr>
<td>From Status Unreleased</td>
<td>Not applicable</td>
<td>Purchase requisition creation initiated, if eligible.</td>
<td>Not applicable</td>
<td>Not applicable</td>
<td>Not applicable</td>
<td>Not applicable</td>
</tr>
<tr>
<td>From Status Released</td>
<td>Not applicable</td>
<td>Not applicable</td>
<td>Not applicable</td>
<td>Not applicable</td>
<td>Change Management Action: Attempt canceling the associated purchasing documents as appropriate. If not successful, report a work order exception.</td>
<td>Change Management Action: Attempt canceling the associated purchasing documents as appropriate. If not successful, report a work order exception.</td>
</tr>
<tr>
<td>From Status On Hold</td>
<td>Not applicable</td>
<td>PR creation initiated, if eligible.</td>
<td>Not applicable</td>
<td>Not applicable</td>
<td>Change Management Action: Attempt canceling the associated purchasing documents if open. If not successful, report a work order exception.</td>
<td>Change Management Action: Attempt canceling the associated purchasing documents as appropriate. If not successful, report a work order exception.</td>
</tr>
<tr>
<td>From Status Completed</td>
<td>Not applicable</td>
<td>Not applicable</td>
<td>Not applicable</td>
<td>Not applicable</td>
<td>Change Management Action: Attempt canceling the associated purchasing documents as appropriate. If not successful, report a work order exception.</td>
<td>Not applicable</td>
</tr>
<tr>
<td>From Status</td>
<td>To Status Unreleased</td>
<td>To Status Released</td>
<td>To Status On Hold</td>
<td>To Status Completed</td>
<td>To Status Closed</td>
<td>To Status Canceled</td>
</tr>
<tr>
<td>------------</td>
<td>----------------------</td>
<td>-------------------</td>
<td>------------------</td>
<td>---------------------</td>
<td>-----------------</td>
<td>-------------------</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>From Status Closed</td>
<td>Not applicable</td>
<td>Purchase requisition creation initiated for eligible quantity, if eligible.</td>
<td>Not applicable</td>
<td>Purchase requisition creation initiated for eligible quantity, if eligible.</td>
<td>Not applicable</td>
<td>Not applicable</td>
</tr>
<tr>
<td>From Status Canceled</td>
<td>Not applicable</td>
<td>Purchase requisition creation initiated, if eligible.</td>
<td>Purchase requisition creation initiated for eligible quantity, if eligible.</td>
<td>Not applicable</td>
<td>Not applicable</td>
<td>Not applicable</td>
</tr>
</tbody>
</table>

**Note:**

All the status change validations including the user-defined statuses are as per the predefined status to which the user-defined status is mapped.

**Update Work Order Quantity**

If you update the work order quantity of a work order, the required quantities of operation items and required usage of operation resources are recalculated. You are prompted to make a selection to either forward schedule from the start date or backward schedule from the completion date to schedule the work order based on the new quantity. The work order quantity can be reduced to the extent of the ready quantity available in the first count point operation. Work order quantity can be increased as required. However, for a work order in **Completed** status, the application automatically updates the work order to **Released** status. In the case of process work orders, the batch quantity will be considered as the work order quantity.

**Update Work Definition**

You can update the work definition name or work definition date only when the work order is in **Unreleased** status. When you update these two attributes, all the existing operations, operation items, and operation resources of the work order are deleted, and a re-explosion of the updated work definition is triggered. In the case of process work orders, the work definition name can't be updated. Instead, you can update the process name to achieve the same behavior.

**Update Work Order Date**

Update the following attributes in order to reschedule and calculate new dates of the work order:

- Start Date
- Completion Date
• Quantity
• Work Definition Name (applicable to only discrete work orders)
• Work Definition Date
• Process Name (applicable to only process work orders)
• Scaling Action (applicable to only process work orders)

**Note:** Performing scaling action by updating batch quantity, primary output quantity, input item quantity, or output item quantity can reschedule process work orders. Refer to the Scheduling of Work Orders section for more details.

### How You Manage Work Order Operations

The **Operations** tab provides a list view of all operations with its component and resource requirements. It helps you do the following:

- Displays the summary of the operations, operation items, operation resources, purchased items, and operation outputs of the work order along with operation attachments
- Displays the details of execution progress for the operations, operation items, operation resource, and operation outputs
- Add, Edit, and Delete Operations
- Edit Operation Items
- Edit Operation Resources
- Edit Operation Outputs (applicable to only process work orders)
- Reschedule an operation using midpoint scheduling

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:
<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operation Sequence Number</td>
<td>This is the sequence in which operations are performed in the work order. The starting sequence and increments in sequence are determined by the plant parameters Starting Operation Sequence and Operation Sequence Increment.</td>
</tr>
<tr>
<td>Operation Code</td>
<td>Represents the standard operation code that's used to define the operation. If an operation is created using a standard operation, the details of the operation and its resources are copied to the work order and aren't referenced thereafter.</td>
</tr>
<tr>
<td>Operation Type</td>
<td>Indicates if an operation is executed in-house or outsourced to suppliers. If the Operation Type is in-house, the following attributes apply.</td>
</tr>
<tr>
<td>Operation Name</td>
<td>Represents the name of the operation and it's mandatory to be specified when defining a nonstandard operation.</td>
</tr>
<tr>
<td>Description</td>
<td>Description of the operation.</td>
</tr>
<tr>
<td>Work Center</td>
<td>Work center where the operation is executed.</td>
</tr>
<tr>
<td>Count Point</td>
<td>Indicator of an operation being performed in the shop floor and reported manually in the application during execution.</td>
</tr>
<tr>
<td>Auto Transact</td>
<td>Indicator of an operation being performed in the shop floor and reported automatically in the application during execution. This may be the case when the operation transaction is insignificant to manually record it. Count point and auto transact indicators are mutually exclusive. Optional Operation: An operation is designated as optional if both the count point and auto transact indicators are unchecked. You can manually report component and resource usages at an optional operation</td>
</tr>
<tr>
<td>Start Date</td>
<td>Represents the planned start date of the operation and also referred as scheduled start date. The operation start date is generally calculated by the scheduling engine. This is a mandatory attribute. The operation start date must be encompassed within the work order start and completion date.</td>
</tr>
<tr>
<td>Completion Date</td>
<td>Represents the planned completion date of the operation and also referred as scheduled completion date. The operation completion date is generally calculated by the scheduling engine. This is a mandatory attribute. The completion date must be encompassed within the work order start and completion date.</td>
</tr>
<tr>
<td>Serialization indicator</td>
<td>Derived from the work definition and is a display only attribute in the work order. Indicates if the operation is enabled for Serialized production reporting.</td>
</tr>
<tr>
<td>Additional Manual Material Issue</td>
<td>Specifies if operators can manually issue additional materials that aren't defined in the work order with push supply type, or manually issue quantities greater than those specified in the work order. The possible values are Allow and Do not allow.</td>
</tr>
</tbody>
</table>
### Name and Description

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Completions with Under Issues</td>
<td>Specifies if operators can report operation completions when materials with push supply type haven’t been issued. The possible values are Allow, Allow with warning, and Do not allow.</td>
</tr>
<tr>
<td>Completions with Open Exceptions</td>
<td>Specifies if operators can report operation completions when there are open exceptions. The possible values are Allow, Allow with warning, and Do not allow.</td>
</tr>
</tbody>
</table>

A work order must have at least one count point operation in it. Additionally, the last operation of a work order has to be a count point operation.

When a work order is released, the work order quantity is placed in the ready state of the first count point operation of the work order. When the work order quantity is increased or decreased, the differential quantity is updated at the first count point operation.

The following table shows quantities of an operation as updated and displayed for the operation in the list view, during execution. The quantities are displayed in the primary unit of measure.

<table>
<thead>
<tr>
<th>Quantity</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ready quantity</td>
<td>Represents the quantity that’s ready for execution for the operation.</td>
</tr>
<tr>
<td>Completed quantity</td>
<td>Represents the quantity completed for the operation.</td>
</tr>
<tr>
<td>Scrapped quantity</td>
<td>Represents the quantity scrapped, if any, for the operation.</td>
</tr>
<tr>
<td>Rejected quantity</td>
<td>Represents the quantity rejected, if any, for the operation.</td>
</tr>
</tbody>
</table>

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.

**Note:** Operations with operation type Supplier can’t be added to work orders in a contract manufacturing organization.

The following table lists the values you must select for the different attributes of a supplier operation, in the Supplier Operation Details section:

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outside Processing Item</td>
<td>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.</td>
</tr>
</tbody>
</table>
**Field** | **Description**
--- | ---
|  | **Note:** The outside processing attributes (Outside Processing Item and Generate Shipment) of the supplier operation can be updated only if the Work Order Status is Unreleased, On Hold (without release date).
|  | **Note:** Outside Processing Item can't be added 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 supplier is an external party who provides specialized manufacturing services to manufacture a product. 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.

**Note:** If you check the Generate Shipment check box, Oracle Fusion Manufacturing sends a request to Oracle Fusion Supply Chain Orchestration. Supply Chain Orchestration creates a shipment line to ship the goods to the supplier once the goods are reported as completed, in the operation prior to the supplier operation. Supply Chain Orchestration automatically creates a shipment line and creates a supply order line based on the request sent by manufacturing.

**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 product 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.

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. For rework work order you can't add a count point operation prior to the existing first count point operation. 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 Manage Work Order Operation Items

The **Work Order Operation Items** are also referred to as materials or components. The **Work Order Operations Items** contain information about the operation item requirements for the **Work Order Operations**. The **Edit Operation Item** action helps you do the following:

- Add Operation Items
- Edit Operation Item Details
- Delete Operation Items

**Note:** Work order scaling for operation items is supported in process manufacturing.

The following table lists the attributes of the work order operation items:

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operation Sequence Number</td>
<td>Represents the operation sequence number where the operation item is required.</td>
</tr>
<tr>
<td>Material Sequence Number</td>
<td>Represents a unique sequence assigned to the operation item.</td>
</tr>
<tr>
<td>Operation Item</td>
<td>Identifies the item required to perform the operation.</td>
</tr>
<tr>
<td></td>
<td><strong>Note:</strong> For process work orders, an output item can't be referenced as an input item.</td>
</tr>
<tr>
<td>Quantity Per Product</td>
<td>Represents the quantity required to manufacture per unit of the product.</td>
</tr>
<tr>
<td></td>
<td><strong>Note:</strong> This attribute is currently supported for only discrete manufacturing.</td>
</tr>
<tr>
<td>UOM</td>
<td>Represents the unit of measure of the quantity. It is always the primary unit of measure of the item.</td>
</tr>
<tr>
<td>Inverse</td>
<td>Represents the inverse of the Quantity Per Product. This is applicable when the material Quantity Per Product is fractional but its inverse is an integer.</td>
</tr>
<tr>
<td>Name</td>
<td>Description</td>
</tr>
<tr>
<td>--------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Name</td>
<td>Description</td>
</tr>
<tr>
<td><strong>Note:</strong></td>
<td>This attribute is currently supported for only discrete manufacturing.</td>
</tr>
<tr>
<td>Basis</td>
<td>Quantity consumption can be either Fixed or Variable, indicating constant or proportional usage of the material with respect to the work order product quantity.</td>
</tr>
<tr>
<td>Yield</td>
<td>Represents the factor to calculate the required quantity of the operation item to accommodate component wastage. The value of yield must be 0 lesser than yield lesser than or equal to 1. However, yield value greater than 1 is allowed with a warning message. Based on the plant parameter Include component yield in material requirements, the yield is considered in the calculation of the required quantity.</td>
</tr>
<tr>
<td>Required Quantity</td>
<td>Represents the operation item quantity required to manufacture the work order quantity. This is calculated and defaulted from the Quantity Per Product depending on the Basis type as follows: If Basis is equal to Fixed, the Required Quantity is equal to Quantity Per Product divided by Yield. If Basis is Variable, the Required Quantity is Quantity Per Product multiplied by Work Order Quantity divided by Yield</td>
</tr>
<tr>
<td>Required Date</td>
<td>Represents the date when the materials are required to perform the operation. The required date must not be outside the operation start and completion dates.</td>
</tr>
<tr>
<td>Supply Type</td>
<td>Represents the method of consumption of the operation item. The various supply types are Assembly pull, Operation pull, Push, Bulk, Supplier.</td>
</tr>
<tr>
<td>Supply Subinventory</td>
<td>The default subinventory where material is drawn during assembly or operation pull.</td>
</tr>
<tr>
<td>Supply Locator</td>
<td>The default locator where material is drawn during assembly or operation pull.</td>
</tr>
<tr>
<td>Include In Planning</td>
<td>Indicates whether this operation item requirement must be considered by planning run for planning its supply.</td>
</tr>
<tr>
<td>Issued Quantity</td>
<td>Represents the net issued quantity of the operation item.</td>
</tr>
<tr>
<td>Open Quantity</td>
<td>Represents the quantity that is yet to be issued.</td>
</tr>
<tr>
<td>On Hand Quantity</td>
<td>Represents the quantity available in Inventory as on hand balance at plant level.</td>
</tr>
<tr>
<td>Allocated Quantity</td>
<td>Quantity of materials allocated to the work order during the picking process when a movement request is created for a work order operation item.</td>
</tr>
<tr>
<td>Picked Quantity</td>
<td>Quantity of materials that is picked when the pick slip is confirmed and is issued either directly to the work order or is moved to the staging subinventory.</td>
</tr>
</tbody>
</table>
How You Manage Work Order Operations Resources

The Work Order Operation Resources contain information about the resource requirements for the Work Order Operations. The Edit Operation Resources action enables you to do the following:

- Add Operation Resources
- Edit Operation Resource Details
- Delete Operation Resources

The following table lists attributes of the work order operation resources:

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resource Sequence Number</td>
<td>Resource Sequence Number is used to define the sequence in which resources work together in finishing the operation. When multiple resource lines have the same resource sequence number, it indicates that the resource is scheduled in parallel, such as simultaneous resource.</td>
</tr>
<tr>
<td>Resource Name</td>
<td>Represents the name of the resource.</td>
</tr>
<tr>
<td>Code</td>
<td>Represents the code of the resource.</td>
</tr>
<tr>
<td>Description</td>
<td>Represents the description of the resource.</td>
</tr>
<tr>
<td>Usage Rate</td>
<td>Represents the resource usage required to manufacture per unit of the product.</td>
</tr>
<tr>
<td>UOM</td>
<td>Represents the unit of measure of the resource usage.</td>
</tr>
<tr>
<td>Inverse</td>
<td>Represents the inverse of the Usage Rate. This is applicable when the resource usage rate is fractional but its inverse is an integer.</td>
</tr>
<tr>
<td>Required Usage</td>
<td>Represents the resource usage required to manufacture the work order quantity. This is calculated and defaulted from the Usage rate depending on the Basis type as follows: If Basis is Fixed, then the Required Usage is equal to Usage Rate If Basis is Variable, the Required Usage is equal to Usage Rate multiplied by Work Order Quantity</td>
</tr>
<tr>
<td>Scheduled</td>
<td>Indicates if the resource is scheduled or not. The resource can be scheduled, if the unit of measure of the resource belongs to the time unit of measure class specified in the profile SCM Common: Default Service Duration Class.</td>
</tr>
<tr>
<td>Charge Type</td>
<td>Represents whether the resources are charged manually by the user or automatically when completing the operation.</td>
</tr>
<tr>
<td>Assigned Units</td>
<td>Represents the number of resource units assigned to perform the operation.</td>
</tr>
</tbody>
</table>
### Name | Description
--- | ---
Start Date | Represents the planned start date of the resource and also referred as scheduled start date. The resource start date is generally calculated by the scheduling engine. This is a mandatory attribute. The resource start date must be encompassed within the operation start and completion date.
Completion Date | Represents the planned completion date of the resource and also referred as scheduled completion date. The resource completion date is generally calculated by the scheduling engine. This is a mandatory attribute. The resource completion date must be encompassed within the operation start and completion date.
Activity | Represents the activity of the resource in the operation such as setup, run, and tear down.
Principal | Represents a primary resource among the group of simultaneous resources. One of the simultaneous resources must be a principal resource.
Actual Resource Usage | Represents the net actual usage of the assigned resource.

#### Associating Work Order Operation Resource Instances
As a production supervisor, you can optionally assign resource instances to work order operation resources using the Edit Work Order Operation Resource dialog. If resource type is equal to Equipment, you can assign resource instances representing actual machines used on the shop floor. If resource type is equal to Labor, you can assign resource instances representing actual persons on the shop floor.

You can assign any number of resource instances to a resource and this doesn't affect scheduling of the resource. While assigning resource instances to the work order, by default you will be able to pick those resource instances whose primary work center is the same as the work order operation's work center. However, as a production supervisor, you can search for resource instances belonging to other primary work centers and assign them to this operation resource.

The following table lists attributes of the work order operation resource instances:

#### Name | Description
--- | ---
Resource Instance Name | Resource instance name is name of the person or equipment associated with the resource.
Identifier | Unique code identifying the resource instance.
Person Type | Represents the type of person associated to the labor resource instance.
Person Name | The name of the person associated to the labor resource instance.
Asset Number | The asset number associated to the equipment resource instance.
Work Order Operation Outputs

In a work order where the work method is process manufacturing, there can be many output items. The output items of such a work order are displayed in the output items user interface. The item on the header of the work order is the primary output item. This item is also displayed in the output items user interface with the output type Product. Each output item in the Output Items user interface is identified by the Output Type field as a product or by-product.

Note: Work order scaling for operation outputs is supported only for process work orders.

The following table displays the attribute name and the attribute description of the work order operation outputs:

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operation Sequence Number</td>
<td>Represents the operation sequence number where the output item is expected to be yielded.</td>
</tr>
<tr>
<td>Output Sequence Number</td>
<td>A unique sequence number which identifies the output item within an operation.</td>
</tr>
<tr>
<td>Output</td>
<td>The item which identifies the output item expected or actually yielded from one of the work order operations.</td>
</tr>
<tr>
<td>Output Description</td>
<td>The description of the output item.</td>
</tr>
<tr>
<td>Output Type</td>
<td>The output type identifies if the output item is a co-product or a by-product. One of the Output items with output type as product is the primary output item and the rest are considered as co-products.</td>
</tr>
<tr>
<td>Quantity</td>
<td>The quantity expected to be yielded from the work order operation. This can be zero or a positive number.</td>
</tr>
<tr>
<td>UOM</td>
<td>The unit of measure of the output item which is used to express the expected and actual completion quantities.</td>
</tr>
</tbody>
</table>
How You Scale Process Work Orders

In a work order where the work method is process manufacturing, you can scale up or scale down an unreleased work order using input item or output item. After selecting the operation input item or operation output item, you can scale based on percent or you can mention the new quantity of the item selected. Based on scaling percent, batch quantity, input, output, and resource quantity are recalculated.

1. To scale based on an input item or output item, select and item and click the Scaling button.
2. A separate window opens where you can enter the new quantity in the same UOM as mentioned in input item or output item or you can mention a percentage.
3. Choose the appropriate scheduling method to reschedule the work order.
4. Click the OK button to start the scaling process.

**Note:** Only proportional scaling is supported. You cannot perform scaling based on ad hoc components and ad hoc output items.

The following table displays the attribute name, the attribute description, and the attribute type of the work order scaling:

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Completion Type</td>
<td>The completion type identifies how the output item will be reported in work execution. It can be either Manual or Automatic.</td>
</tr>
<tr>
<td>Completion Subinventory</td>
<td>The completion subinventory where the output item is expected to be yielded.</td>
</tr>
<tr>
<td>Completion Locator</td>
<td>The completion locator where the output item is expected to be yielded.</td>
</tr>
<tr>
<td>Primary Output</td>
<td>An indicator identifying the primary output item of a work order. This indicator is automatically checked by the application for the output item specified in the work order header.</td>
</tr>
<tr>
<td>Cost Allocation Basis</td>
<td>The basis for cost allocation for output items in a process manufacturing work order. It can be either percentage or fixed value.</td>
</tr>
<tr>
<td>Cost Allocation Percentage</td>
<td>The percentage value that is associated if the cost allocation basis of the output item is percentage.</td>
</tr>
<tr>
<td>Actual Completion Quantity</td>
<td>The actual completion quantity of the output item. This is read only and is updated by work execution transactions in the unit of measure that is associated to the output item.</td>
</tr>
<tr>
<td>Attachments</td>
<td>Attachments associated to the output items.</td>
</tr>
<tr>
<td>Descriptive Flexfields</td>
<td>Additional information captured in the form of descriptive flexfields for output items.</td>
</tr>
</tbody>
</table>
### How You Manage Work Order Serials

If a work definition that is serial-tracked is referred in the work order, the preassigned serial numbers can be associated. You can transact serial components during work order execution for specific work order product serials. The following actions can be performed:

- **Generate and associate serials**: For the quantity specified, the application generates serial numbers for the work order product in the inventory, and associates them to the work order.
- **Manually associate serials**: You can search and select the serials that are already defined and associate them to the work order.
- **Delete serials**: You can select and delete a serial. This is applicable to serials that are in associated status.

**Note**: Work order serials is currently supported for only discrete manufacturing.

The following table lists the details of the serial numbers tab displayed:

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Associated Quantity</td>
<td>Represents the quantity of serial associated to the work order in the primary unit of measure.</td>
</tr>
<tr>
<td>Open Quantity</td>
<td>Represents the quantity of serial yet to be associated to the work order in the primary unit of measure.</td>
</tr>
</tbody>
</table>
## Name & Description

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Item Serial Number</td>
<td>Represents the serial number that is associated to the work order product.</td>
</tr>
<tr>
<td>Serial Status</td>
<td>Represents the internal work execution status of the serial number.</td>
</tr>
<tr>
<td>Last Transacted Operation</td>
<td>The operation sequence number where the serial was last transacted.</td>
</tr>
<tr>
<td>Operation Name</td>
<td>The name of the operation.</td>
</tr>
<tr>
<td>Work Center</td>
<td>The work center name of the operation.</td>
</tr>
</tbody>
</table>

The following table lists the serial statuses that are displayed when the work order is executed:

<table>
<thead>
<tr>
<th>Serial Status</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Associated</td>
<td>Serial is assigned in the work order.</td>
</tr>
<tr>
<td>In Process</td>
<td>When the first transaction is performed for the serial at the operation.</td>
</tr>
<tr>
<td>Rejected</td>
<td>Serial is rejected at any operation.</td>
</tr>
<tr>
<td>Scrapped</td>
<td>Serial is scrapped at any operation.</td>
</tr>
<tr>
<td>Completed</td>
<td>Serial is completed at the last operation into Inventory.</td>
</tr>
</tbody>
</table>

## How You Manage Work Order Reservations

The work order as a source of supply can be reserved against a sales order demand. The reservations are typically created by the application when a back-to-back sales order or a configured item sales order is reserved for the work order. The following table lists the attributes that are displayed if the work order has any reservation details:

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Work Order Quantity</td>
<td>Represents the quantity of the work order in its primary unit of measure.</td>
</tr>
<tr>
<td>Name</td>
<td>Description</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Total Reserved Quantity</td>
<td>Represents the work order that is reserved against one or more demand documents.</td>
</tr>
<tr>
<td>Reserved Quantity</td>
<td>Represents the quantity of the work order that is reserved against each demand document.</td>
</tr>
<tr>
<td>UOM</td>
<td>Primary unit of measure of the quantity reserved.</td>
</tr>
<tr>
<td>Document Type</td>
<td>Represents the document type of the demand. Typically, this is Sales Order.</td>
</tr>
<tr>
<td>Customer Number</td>
<td>Number identifying the customer of the demand.</td>
</tr>
<tr>
<td>Customer</td>
<td>Name identifying the customer of the demand.</td>
</tr>
<tr>
<td>Document Number</td>
<td>Number identifying the document of the demand.</td>
</tr>
<tr>
<td>Document Line Number</td>
<td>Number identifying the document line of the demand.</td>
</tr>
<tr>
<td>Due Date</td>
<td>Represents the due date of the demand document.</td>
</tr>
<tr>
<td>Line Quantity</td>
<td>Represents the quantity of the document line of the demand.</td>
</tr>
<tr>
<td>UOM</td>
<td>Unit of measure the demand quantity.</td>
</tr>
</tbody>
</table>

Note: An Attachments icon is conditionally displayed if there are any sales order header or sales order line attachments. You can click the icon to view the attachments in separate tabs.

When you reduce the work order quantity, the existing sales order reservations are reduced appropriately. Similarly, when you change the status of the work order to canceled or closed, the existing sales order reservations are removed.

Sales Order attachments from back-to-back sales orders for standard items and configured items are displayed in the Reservations tab of the work order. You can optionally control which attachments can be viewed by the production supervisor.

Attachments belonging to the Miscellaneous category are always displayed by default. However, other user-defined attachment categories may be configured and displayed based on the security setup. Security can be enabled using the standard attachment security framework provided in the Setup and Maintenance work area and the Security Console.

Note: Work orders can be manually reserved against sales orders in the inventory.
How You Manage Work Order History

When you create and execute the work order, the quantity, date and status information is displayed as work order history. This information is available for a work order throughout its life cycle.

The following table summarizes the work order attributes as displayed on the History tab:

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Remaining Quantity</td>
<td>Quantity of work order yet to be completed in the last operation.</td>
</tr>
<tr>
<td>Completed Quantity</td>
<td>Quantity of work order completed in the last operation.</td>
</tr>
<tr>
<td>Scrapped Quantity</td>
<td>Sum of scrapped quantities across all operations.</td>
</tr>
<tr>
<td>Released Date</td>
<td>Date when the work order is released.</td>
</tr>
<tr>
<td>Completion Date</td>
<td>Date when the work order is completed.</td>
</tr>
<tr>
<td>Closed Date</td>
<td>Date when the work order is closed.</td>
</tr>
<tr>
<td>Canceled Date</td>
<td>Date when the work order is canceled.</td>
</tr>
<tr>
<td>Canceled Reason</td>
<td>User specified reason for cancellation of the work order.</td>
</tr>
</tbody>
</table>

The following table provides details about work order status history:

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date</td>
<td>Date when the work order status is changed.</td>
</tr>
<tr>
<td>From Status</td>
<td>Work order status (includes predefined and user-defined) before the change</td>
</tr>
<tr>
<td>To Status</td>
<td>Work order status (includes predefined and user-defined) after the change.</td>
</tr>
<tr>
<td>Status Change Date</td>
<td>The actual date if specified by the user when the work order status is changed.</td>
</tr>
<tr>
<td>Reason</td>
<td>User-specified reason when the work order is canceled.</td>
</tr>
</tbody>
</table>
In addition, you can use the **Transaction History** link to view to the production transaction history for the work order. You can use the **Inspection History** link to view the production inspection history for the work order.

You can use the **IoT Insights** link to drill down to the work order view in IoT Production Monitoring Cloud to gain insights into the actual production progress of the work order.

### How You Manage Work Order Mass Actions

If you have the role of a production supervisor, you can perform work order mass actions such as update work order status and change work order priorities on the Manage Work Orders page in the Work Execution work area. You can update statuses for more than one work orders to release, unrelease, hold, cancel, and close them. You can select more than one work order from the search results list and perform these actions.

The following is a list of mass actions for work orders with their corresponding descriptions:

<table>
<thead>
<tr>
<th>Mass Action</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release</td>
<td>The selected work orders are set to released status.</td>
</tr>
<tr>
<td>Unrelease</td>
<td>The selected work orders are set to Unreleased status.</td>
</tr>
<tr>
<td>Hold</td>
<td>The selected work orders are set to on hold status.</td>
</tr>
<tr>
<td>Cancel</td>
<td>The selected work orders are set to canceled status and the cancellation reason is to be provided.</td>
</tr>
<tr>
<td>Close</td>
<td>The selected work orders are set to closed status. You can also set the closed date to a previous date than the application date, but not earlier than the last transaction date.</td>
</tr>
<tr>
<td>Change Priority</td>
<td>The selected work orders are updated with the new priority that is to be provided.</td>
</tr>
</tbody>
</table>

When the mass action is performed, a confirmation message is displayed with the count of work orders that were successfully processed. If there is an error, the individual work orders and their corresponding error details are displayed. You can choose to proceed with or cancel the mass action. If you choose to proceed with the mass action, the successfully validated work orders are processed, and the work orders with errors are discarded from the mass action.
Work Order Material Availability

Overview of Work Order Material Availability Workbench

In your manufacturing organization, you must ensure that all materials are available to execute a work order prior to its release. As a production supervisor you can use the material availability workbench to configure rules to recommend a prioritized list of work orders and assess the material availability for those prioritized work orders.

The work order material availability workbench helps you in the following manner:

- Configure material availability rules to
  - Prioritize work orders by specific attributes such as item, customer, or date criteria.
  - Include work orders on the basis of time fence, work order status, or work order subtype.
  - Exclude noncritical materials from material availability check.
  - Exclude work orders from material unassignment on manual adjustment.

- 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.
- Adjust material assignments for work order prioritization and preview the force assigned and unassigned work orders.
- Change work order status to release the prioritized work orders with critical materials available, and hold work orders with material shortages.

In the Work Execution work area, perform the tasks using the material availability workbench in the following order:

1. Create rules using the Material Availability Rules task.
2. Initiate the background process Calculate Material Availability.
3. View and assess the assignment priority sequence in the Material Availability Assignments task.
4. Change priority of work orders by force assigning or force unassigning materials based on expected supplies.
5. Release or hold work orders after you are satisfied with your changes.

How Work Order Material Availability Rules and Assignments Work Together

You can prioritize the work orders in your manufacturing organization for release to the shop floor based on certain parameters like availability of materials. Use the Work Execution work area in Oracle Fusion Manufacturing to create rules to assign materials to the work orders in your organization, and execute work orders based on the assignment priority sequence.

Note: In the Setup and Maintenance work area, you must set up your organization as a manufacturing plant or a contract manufacturing organization using the Manage Inventory Organizations task by specifying the Manage Inventory Organization parameters.
Material Availability Rules

In the Work Execution work area, select the Material Availability Rules task from the Manage Production section in the Tasks panel.

Create a set of rules and recommend a list of work orders based on those rules to assign and unassign materials to work orders of higher priority. Your recommendations determine which work orders are prioritized when materials are scarce or unavailable.

Perform the various actions to create a set of material availability rules in the following three tabs:

- **Work Order Assignment Priority**: Assign a rule sequence to various attributes of a work order such as work order type, scheduled start date, customer, and so on. The list can be also be sorted in an ascending or descending order based on attributes like planned start date or planned completion date of work orders.

The following table lists all the attributes that you can use to define the work order assignment priority and their corresponding descriptions:

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Item</td>
<td>It represents the work order output item, which is an assembly item.</td>
</tr>
<tr>
<td>Item Category</td>
<td>Name of the category that's used to group items for specific purposes such as reporting, usage, and so forth.</td>
</tr>
<tr>
<td>User Item Type</td>
<td>Indicator or classification for an item, such as finished or purchased.</td>
</tr>
<tr>
<td>Work Order Status</td>
<td>Current status (includes predefined and user-defined) of the work order during the manufacturing lifecycle.</td>
</tr>
<tr>
<td>Work Order Type</td>
<td>Classification of the nature of work being performed for standard, nonstandard, rework, and transform work orders.</td>
</tr>
<tr>
<td>Work Order Subtype</td>
<td>Attribute representing the specific nature of work being performed, such as standard production, prototyping, or repair</td>
</tr>
<tr>
<td>Work Order Priority</td>
<td>Attribute defined by the user to represent the priority of work order execution.</td>
</tr>
<tr>
<td>Planned Start Date</td>
<td>Date on which a work order is planned to start.</td>
</tr>
<tr>
<td>Planned Completion Date</td>
<td>Date on which a work order is planned to be complete.</td>
</tr>
<tr>
<td>Customer</td>
<td>Name of a customer for whom the product is being manufactured. In this case the work order is reserved as supply for a sales order.</td>
</tr>
<tr>
<td>Ship-to Country</td>
<td>Name of the country to which the final product will be shipped.</td>
</tr>
</tbody>
</table>
A mandatory header is here.

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scheduled Ship Date</td>
<td>Date on which the product is scheduled for shipment.</td>
</tr>
</tbody>
</table>

- **Inclusion Criteria:** Include work orders or materials in the assignment criteria based on specific attributes such as work orders within a specified time fence or materials of a specific supply type scale.

The following table lists the key criteria values based on which you can create the material availability inclusion criteria.

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Description</th>
<th>Default Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Work Order Date Type</td>
<td>Select the type of date criteria on the basis of which you want to classify work orders.</td>
<td>Start Date</td>
</tr>
<tr>
<td>Time Span</td>
<td>Specify the number of hours from the current time that you want to be considered for material availability calculations.</td>
<td>48 hours</td>
</tr>
<tr>
<td>Work Order Status</td>
<td>Select the type of status (includes predefined and user-defined) based on which you would like to plan for the work orders that must be included in material calculations.</td>
<td>Released, Unreleased</td>
</tr>
<tr>
<td>Work Order Type</td>
<td>Select the type based on which you would like to plan for the work orders that must be included in material calculations.</td>
<td>Standard</td>
</tr>
<tr>
<td>Work Order Subtype</td>
<td>Select the subtype based on which you would like to plan for the work orders that must be included in material calculations.</td>
<td>All</td>
</tr>
<tr>
<td>Component Supply Type</td>
<td>Select the supply type of the materials which you want to plan availability for.</td>
<td>All</td>
</tr>
<tr>
<td>Build in WIP Items</td>
<td>Check box you must select to determine whether or not to include in material calculations the component items that are internally manufactured.</td>
<td>Yes</td>
</tr>
</tbody>
</table>

- **Forced Assignment Criteria:** Manually adjust the material assignment criteria by creating a list of work orders for which materials can't be unassigned during material availability calculations.
Note: The attributes that you can use to define the forced assignment criteria are the same as the attributes you use to create the work order assignment priority.

Material Availability Assignments

In the Work Execution work area, select the **Material Availability Assignments** task from the Manage Production section in the Tasks panel.

You must click Calculate Material Availability to initiate the background process which will create the list of work orders and their corresponding assignment sequence based on the rules you have earlier defined.

View the list of work orders to which materials are assigned based on the rules you create and the applicable assignment criteria. You can also view the material availability indicator to understand if materials are completely assigned, partially assigned, or not assigned to a work order. You can also view Assignment Details to preview expected supplies of materials.

You can view the work orders and material assignment in the workbench in the following tabs:

- **Work Orders**: View all work orders in your manufacturing organization with their assigned prioritization sequence based on the rules that were enforced.
- **Materials**: View a list of all materials that are included in material availability calculations based on the inclusion criteria.

After you have assessed the assignment priority of the work orders and reassigned materials to work orders based on expected supplies of materials in the workbench, you can either release work orders or place work orders on hold. You can select work orders individually to change their status or select the **Mass Action** drop-down list and change the status of a set of work orders.

Defining Work Order Material Availability Rules: Worked Example

You're a production supervisor who wants to ensure that work orders of higher priority are released to the shop floor. Create a set of rules based on which materials are assigned to the various work orders. This example shows how you can perform the **Materials Availability Rules** task to set up the assignment criteria based on which materials are calculated and assigned to work orders.

Consider the following scenario where you're using the **Material Availability Rules** task to define the rules and create a material assignment for your manufacturing organization.

The following table summarizes key decisions and corresponding tasks for this scenario:
### Decisions to Consider

<table>
<thead>
<tr>
<th>How do you select certain work orders for which you can't deprioritize material availability calculations?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adjust the assignment criteria by defining work order attributes in the <strong>Forced Assignment Criteria</strong> tab, which ensures that materials can't be unassigned for those work orders in case of force assignment.</td>
</tr>
</tbody>
</table>

### Task to Perform

- **Note:** You can perform these tasks in any order. You can also choose to perform either one or two. In such a case, a default priority sequence will be assigned by the application considering only the parameters you have selected.

## Material Availability Rules: Work Order Assignment Priority

1. In the Material Availability Rules: Work Order Assignment Priority tab, set up the following attributes with the applicable rule sequence:

   This is a table that lists all the values of attributes and the corresponding rule sequences.

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Attribute Value</th>
<th>Sort Order</th>
<th>Rule Sequence</th>
<th>Consideration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Item</td>
<td>AB1</td>
<td>Not applicable</td>
<td>10</td>
<td>All work order operations that use the Item AB1 would fall in this category. This rule sequence gets a priority of 1. Work orders that don't use this item will follow in the assignment priority sequence based on the other rule sequence values defined by you.</td>
</tr>
<tr>
<td>Planned Completion Date</td>
<td>Not applicable</td>
<td>Ascending</td>
<td>20</td>
<td>All work orders will be sorted in an ascending order based on the planned completion date from the current date. This rule sequence will get a priority of 2.</td>
</tr>
<tr>
<td>Planned Start Date</td>
<td>Not applicable</td>
<td>Descending</td>
<td>30</td>
<td>All work orders will be sorted in an descending order based on the planned start date from the current date. This rule sequence will get a priority of 3.</td>
</tr>
<tr>
<td>Work Order Type</td>
<td>Standard</td>
<td>Not applicable</td>
<td>40</td>
<td>All standard work orders will fall in this category. This rule sequence gets</td>
</tr>
<tr>
<td>Attribute</td>
<td>Attribute Value</td>
<td>Sort Order</td>
<td>Rule Sequence</td>
<td>Consideration</td>
</tr>
<tr>
<td>-----------</td>
<td>----------------</td>
<td>------------</td>
<td>---------------</td>
<td>---------------</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>a priority of 4. Work orders that are nonstandard, rework, or transform will follow in the assignment priority sequence based on the other rule sequence values defined by you.</td>
</tr>
</tbody>
</table>

**Note:** If you don't define any assignment sequence, a default assignment priority sequence will be applied. The default assignment sequence is based on ascending order of work order planned completion date first, and planned start date next.

2. Click Save and select the tab Inclusion Criteria.

**Material Availability Rules: Inclusion Criteria**

1. On the Inclusion Criteria tab, specify the following values as described in the following table.

This is a table that specifies values for some of the parameters in the Inclusion Criteria tab.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
<th>Consideration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time Span</td>
<td>24</td>
<td>You want to plan for material availability only for work orders which will be completed in 24 hours as calculated from the current time.</td>
</tr>
<tr>
<td>Work Order Status</td>
<td>Released, Unreleased</td>
<td>You want to plan for material availability only for work orders which are currently in Released or Unreleased status (includes predefined and user-defined).</td>
</tr>
<tr>
<td>Build in WIP Items</td>
<td>Yes</td>
<td>You want to include in the material availability calculations those component items that are internally manufactured.</td>
</tr>
</tbody>
</table>

2. Click Add in the **Excluded Components** section to specify component items which you don't want to include in the material availability calculations.

You can exclude certain component items from material availability calculations by specifying the item name and item category of those component items. You can do this for certain component items that are noncritical in the manufacturing of a final assembly, or for items that are in abundance in the inventory.

**Note:** The Item Category list of values displays all categories of the catalog assigned to an item in the Inventory work area.

3. Click Save and select the tab Forced Assignment Criteria.
Material Availability Rules: Forced Assignment Criteria

1. Click Add in the Forced Assignment Criteria tab to exclude certain work orders from being lowered in priority on manual adjustment of the material assignment of other work orders.

   For example, if a work order WO123 is reserved against sales orders for a customer of high priority, you can specify the customer name in this tab and ensure that materials used to fulfill this work order aren’t distributed to other work orders, even though they might have a higher priority based on the assignment sequence and inclusion criteria.

   This is a table that provides certain attribute values that you can specify to create a criteria to exclude work orders from being lowered in priority.

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Attribute Value</th>
<th>Consideration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customer</td>
<td>ABC</td>
<td>All work orders reserved against sales orders for this customer will be excluded from being lowered in priority on manual adjustment of materials.</td>
</tr>
<tr>
<td>Item Category</td>
<td>Servers</td>
<td>All work orders that use items within the specified item category as their materials will be excluded from being lowered in priority on manual adjustment of materials.</td>
</tr>
</tbody>
</table>

2. Click Save and Close.

   You have successfully defined a set of rules that's used to calculate material availability assignments.

How You Manage Work Order Material Availability Assignments

Use the Material Availability Assignments task in the Work Execution work area to view the assignment priority sequence of all work orders in your manufacturing organization. This assignment is calculated based on how you define rules using the Material Availability Rules task.

You can perform the following tasks on the Material Availability Assignments page:

- View and adjust material assignments for work order prioritization.
- Identify work orders with material availability and shortages.
- Assign materials to work orders of higher priority, from the available-to-transact quantity in inventory.
- Run the material availability background process either at scheduled intervals or based on business need.
- View expected supplies of materials to address shortage.
- Manually adjust work orders assignments by performing a force assign or force unassign action.
- Change status of work orders based on material assignments.
- Export the data to a spreadsheet to analyze the material availability assignments.
Calculate Material Availability

In the Work Orders tab of the Material Availability Assignments page, you must first select the Calculate Material Availability background process to initiate the calculation engine. This identifies the work orders and work order materials for the material availability check. The calculations include materials for availability check based on the inclusion criteria rules you have specified earlier. The background process uniquely identifies the assignment priority for the list of work orders.

After the assignment priority is associated with the work orders, the material inventory available-to-transact quantity in the organization is retrieved as part of background processing, and assigned to the work order materials to arrive at the material shortage at the work order level.

For an organization that's enabled for inventory tracking by project, the material availability is calculated considering:

- The project and task referenced on the work orders, and
- The project and common inventory on-hand of the component items

View and Assess Material Assignment Priority

The Material Availability Assignments page helps you view and assess the material assignments in two separate tabs.

On the Work Orders tab you can view the list of recommended work orders in the order of the assignment priority. After the work orders are identified by the background process, the assignment priority is assigned to the work orders based on the unique rule sequence you defined for the various attributes of the work orders.

On the Materials tab you can view the various work orders that require materials and the corresponding availability and shortages pertaining to the materials. It must be noted that you can't run the Calculate Material Availability background process from the Materials tab.

After the assignment priority is associated with the work orders on completion of the background process, the following attributes are displayed:

- **Available-to-Transact Quantity**: The on-hand quantity of a material that's available for transaction in the subinventories and that has material status as nettable in the organization.
- **Projected Available Quantity**: The quantity of material available based on the work order assignment priority as defined by you.
- **Open Quantity**: The quantity of a material which is pending for issue against the final assembly of a work order.
- **Allocated Quantity**: The quantity of a material that's allocated to a work order during the picking process when a movement request is created for a work order operation item.
- **Picked Quantity**: The quantity of a material that's picked when the pick slip is confirmed and is issued either directly to the work order or is moved to the staging subinventory.
- **Shortage Quantity**: The difference of open quantity and projected available quantity of a material.
  
  Material shortage quantity = Open quantity - (Projected Available quantity + Allocated quantity - Picked quantity)

- **Materials Available**: This is a visual indicator that shows you if materials are completely available, partially available, or not available at the work order level. This is derived from the required quantity and shortage quantity of materials.
- **Expected Supplies**: In case of shortages, you can view the expected supplies of materials against various supply documents. The documents include purchase requisitions, purchase orders, interorganization transfers, transfer orders, and work orders.
The following three tables provide an explanation of how the calculation is derived for these various quantities:

This table shows you the calculation logic before the material pick release action has taken place. The available to transact quantity for the materials box, processor, and storage unit in the manufacturing organization M1 is 100 Ea. The allocated and the picked quantity is 0 for the materials.

<table>
<thead>
<tr>
<th>Work Order</th>
<th>Work Order Item</th>
<th>Start Quantity</th>
<th>Assignme Priority</th>
<th>Material</th>
<th>Available-to-Transact</th>
<th>Projected Available</th>
<th>Open Quantity</th>
<th>Allocated Quantity</th>
<th>Picked Quantity</th>
<th>Shortage Quantity</th>
<th>Material Available</th>
</tr>
</thead>
<tbody>
<tr>
<td>WO1</td>
<td>Box</td>
<td>70</td>
<td>1</td>
<td>Box</td>
<td>100</td>
<td>100</td>
<td>70</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>Available</td>
</tr>
<tr>
<td></td>
<td>Processor</td>
<td></td>
<td></td>
<td>Processor</td>
<td>100</td>
<td>100</td>
<td>70</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Storage Unit</td>
<td></td>
<td></td>
<td>Storage Unit</td>
<td>100</td>
<td>100</td>
<td>70</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>WO2</td>
<td>Box</td>
<td>40</td>
<td>2</td>
<td>Box</td>
<td>100</td>
<td>30</td>
<td>40</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>Partially Available</td>
</tr>
<tr>
<td></td>
<td>Processor</td>
<td></td>
<td></td>
<td>Processor</td>
<td>100</td>
<td>30</td>
<td>40</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Storage Unit</td>
<td></td>
<td></td>
<td>Storage Unit</td>
<td>100</td>
<td>30</td>
<td>40</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

This table shows you the calculation logic for when the materials for the Work orders WO1 and WO2 are pick released but are yet to be pick confirmed. In this case, the available to transact quantity is depleted by the allocated quantity for the component. So the total allocated quantity for box is 70+30=100. The available to transact quantity is 100-100=0.

The shortage quantity for the material box for WO1 is 0 if (projected quantity + allocated quantity - picked quantity) is greater than or equal to the open quantity.

The shortage quantity for box for WO2 = open quantity - (projected available quantity + allocated quantity - picked quantity) which is 40-(0+30+0)=10 Ea

<table>
<thead>
<tr>
<th>Work Order</th>
<th>Work Order Item</th>
<th>Start Quantity</th>
<th>Assignme Priority</th>
<th>Material</th>
<th>Available-to-Transact</th>
<th>Projected Available</th>
<th>Open Quantity</th>
<th>Allocated Quantity</th>
<th>Picked Quantity</th>
<th>Shortage Quantity</th>
<th>Material Available</th>
</tr>
</thead>
<tbody>
<tr>
<td>WO1</td>
<td>Box</td>
<td>70</td>
<td>1</td>
<td>Box</td>
<td>0</td>
<td>0</td>
<td>70</td>
<td>70</td>
<td>0</td>
<td>0</td>
<td>Available</td>
</tr>
<tr>
<td></td>
<td>Processor</td>
<td></td>
<td></td>
<td>Processor</td>
<td>0</td>
<td>0</td>
<td>70</td>
<td>70</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Storage Unit</td>
<td></td>
<td></td>
<td>Storage Unit</td>
<td>0</td>
<td>0</td>
<td>70</td>
<td>70</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>WO2</td>
<td>Box</td>
<td>40</td>
<td>2</td>
<td>Box</td>
<td>0</td>
<td>0</td>
<td>40</td>
<td>30</td>
<td>0</td>
<td>10</td>
<td>Partially Available</td>
</tr>
<tr>
<td></td>
<td>Processor</td>
<td></td>
<td></td>
<td>Processor</td>
<td>0</td>
<td>0</td>
<td>40</td>
<td>30</td>
<td>0</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Storage Unit</td>
<td></td>
<td></td>
<td>Storage Unit</td>
<td>0</td>
<td>0</td>
<td>40</td>
<td>30</td>
<td>0</td>
<td>10</td>
<td></td>
</tr>
</tbody>
</table>
This table shows you the calculation logic for when the materials for the Work orders WO1 and WO2 are pick released and also pick confirmed. In this case, the available to transact quantity is incremented with the picked quantity for the materials. So for the material box for WO2, the shortage quantity = open quantity - (projected quantity + allocated quantity - picked quantity) which is 40-(30+30+30)=10 Ea.

<table>
<thead>
<tr>
<th>Work Order</th>
<th>Work Order Item</th>
<th>Start Quantity</th>
<th>Assignme Priority</th>
<th>Material Priority</th>
<th>Available to Transact</th>
<th>Projected Available</th>
<th>Open Quantity</th>
<th>Allocated Quantity</th>
<th>Picked Quantity</th>
<th>Shortage Quantity</th>
<th>Material Available</th>
</tr>
</thead>
<tbody>
<tr>
<td>WO1</td>
<td>Server1</td>
<td>70</td>
<td>1</td>
<td>Box</td>
<td>100</td>
<td>100</td>
<td>70</td>
<td>70</td>
<td>70</td>
<td>0</td>
<td>Available</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Processor</td>
<td>100</td>
<td>100</td>
<td>70</td>
<td>70</td>
<td>70</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Storage Unit</td>
<td>100</td>
<td>100</td>
<td>70</td>
<td>70</td>
<td>70</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>WO2</td>
<td>Server1</td>
<td>40</td>
<td>2</td>
<td>Box</td>
<td>100</td>
<td>30</td>
<td>40</td>
<td>30</td>
<td>30</td>
<td>10</td>
<td>Partially Available</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Processor</td>
<td>100</td>
<td>30</td>
<td>40</td>
<td>30</td>
<td>30</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Storage Unit</td>
<td>100</td>
<td>30</td>
<td>40</td>
<td>30</td>
<td>30</td>
<td>10</td>
<td></td>
</tr>
</tbody>
</table>

You can then manually adjust the work order material assignments based on your assessment of which materials are more critical for work orders of higher priority.

**Force Assign and Force Unassign Materials**

You can manually change the material assignments from the list of prioritized work orders in the Work Orders tab.

You can force assign materials to a work order, which has a material shortage. The application reassigns materials by taking materials that are assigned to work orders of lower priority to satisfy the material requirement of a higher priority for which you're force assigning materials.

Similarly, you can force unassign materials from a work order, for which materials are either completely or partially available. The application reassigns the materials by taking materials from the work order you force unassigned, and assigns them to work orders which have a material shortage.

For an organization that's enabled for inventory tracking by project, you can force unassign project-specific inventory currently assigned to a work order. The unassigned components are assigned to other work orders considering the project and task details and the User from common item attribute for components.

*Note:* When you force assign a work order, the materials are taken from work orders in the descending order of assignment priority. When you force unassign a work order, the materials are released to work orders in the ascending order of assignment priority.

The following table illustrates an example of such a scenario:

<table>
<thead>
<tr>
<th>Work Order</th>
<th>Assignment Priority</th>
<th>Action Taken</th>
<th>Material Available</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>WO1</td>
<td>4</td>
<td>Force Assign</td>
<td>Partially Available</td>
<td>Materials are unassigned from WO2, WO3, and WO4</td>
</tr>
<tr>
<td>Work Order</td>
<td>Assignment Priority</td>
<td>Action Taken</td>
<td>Material Available</td>
<td>Result</td>
</tr>
<tr>
<td>------------</td>
<td>---------------------</td>
<td>--------------</td>
<td>-----------------------------</td>
<td>----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>respectively to fulfill the shortage required for the manufacturing of an assembly for the work order WO1.</td>
</tr>
<tr>
<td>WO2</td>
<td>3</td>
<td>Not applicable</td>
<td>Partially Available</td>
<td>Material quantity assigned to this work order is unassigned first by the application when you select force assign for WO1. As shortage isn’t yet satisfied, it keeps moving down the list of work orders.</td>
</tr>
<tr>
<td>WO3</td>
<td>2</td>
<td>Not applicable</td>
<td>Partially Available</td>
<td>Material quantity assigned to this work order is unassigned second by the application when you select force assign for WO1. As shortage isn’t yet satisfied, it keeps moving down the list of work orders.</td>
</tr>
<tr>
<td>WO4</td>
<td>1</td>
<td>Not applicable</td>
<td>Completely Available</td>
<td>Material quantity assigned to this work order is unassigned third by the application when you select force assign for WO1. Now shortage is satisfied for WO1.</td>
</tr>
</tbody>
</table>

While changing the material assignment, you can preview the changes affecting the selected work order and other impacted work orders that are prioritized or lowered in priority. A visual indicator of reassigned materials is also displayed in the list of work orders once you implement your changes.

**Change Status of Work Orders**

You can either change status of a single work order or status of multiple work orders in the Work Orders tab after you have previewed the material assignments and adjusted your changes accordingly.

Select one of the following mass actions to change status of multiple work orders simultaneously:

- Release: Release the prioritized work orders with all critical materials available to the shop floor for execution.
- Release and Pick Materials: Release the prioritized work orders and initiate the scheduled process for picking of materials that are required for the production on the shop floor.
- Unrelease: Unrelease the previously released work orders if they’re of a lower priority.
- Hold: Place work orders with material shortages on hold until expected supplies are available in the inventory.
• Cancel: Cancel work orders which are no longer required in your organization.

Related Topics
• How You Pick Materials for Work Orders

How Shortage Quantity Is Calculated

On the Manage Material Availability Assignments page in the Work Execution work area, you can view the assignment priority sequence of all work orders in your organization. You can also view the various work orders that require material and the corresponding availability and shortage pertaining to the material.

The following is the calculation logic for shortage quantity of a material:

Shortage quantity = Open quantity - (Projected available quantity - Allocated quantity - Picked quantity)

Related Topics
• How You Pick Materials for Work Orders

Direct Procurement of Materials for 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.
• 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 Review Purchased Item Details

In your organization, there might be a scenario where you need to ensure that you can 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 maintenance 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 is disabled by default.

The following table lists all the details that you can review and track on the Purchased Item Details page.

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operation Sequence</td>
<td>The specific operation that you selected on the Operations tab on the Edit Work Order page.</td>
</tr>
<tr>
<td>Item</td>
<td>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.</td>
</tr>
<tr>
<td>Item Description</td>
<td>The description of the item as defined in the item-organization setup.</td>
</tr>
<tr>
<td>Requisitioned Quantity or Amount</td>
<td>Total requested quantity in all approved purchase requisitions and in pending approval status for the item.</td>
</tr>
<tr>
<td></td>
<td>Requisition quantities in incomplete, rejected, withdrawn, canceled, and returned statuses are not considered.</td>
</tr>
<tr>
<td>Ordered Quantity or Amount</td>
<td>Total ordered quantity in all approved purchase order lines for the item. Only approved orders in open and closed statuses are considered.</td>
</tr>
<tr>
<td>Received Quantity or Amount</td>
<td>Total quantity delivered against all purchase order lines for the item. This also takes into account the quantity that is returned to supplier and to receiving.</td>
</tr>
<tr>
<td>Details</td>
<td>You can click on the Details icon to drill down into the purchasing and receiving details.</td>
</tr>
</tbody>
</table>

**How You Track Purchasing Details of Procured Items in Manufacturing**

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:

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Requisition Number</td>
<td>You can click on the specific requisition identification number to view the requisition document.</td>
</tr>
<tr>
<td>Requisition Line</td>
<td>The number of the requisition line for the purchased item.</td>
</tr>
<tr>
<td>Requisition Quantity or Amount</td>
<td>The quantity or amount of item that was specified in the requisition.</td>
</tr>
<tr>
<td>Requisition Requested Date</td>
<td>Date on which your organization requested for purchase of items, as specified in the requisition document.</td>
</tr>
<tr>
<td>Requisition Status</td>
<td>Status of a receipt line for a purchased item. The status can be approved or pending.</td>
</tr>
<tr>
<td>Purchase Order Number</td>
<td>You can click on the specific purchase order identification number to view the purchase order document.</td>
</tr>
<tr>
<td>Purchase Order Line</td>
<td>The number of the purchase order line for the purchased item.</td>
</tr>
<tr>
<td>Purchase Order Schedule</td>
<td>Number assigned by the application to track multiple schedules for the purchase order line</td>
</tr>
<tr>
<td>Purchase Order Quantity or Amount</td>
<td>Quantity or amount of item that was specified for the single line in the purchase order.</td>
</tr>
<tr>
<td>Purchase Order Requested Date</td>
<td>Date as specified on the purchase order on which the items were requested from the supplier.</td>
</tr>
<tr>
<td>Purchase Order Promised Date</td>
<td>Date as specified on the purchase order on which the items were promised by the supplier.</td>
</tr>
<tr>
<td>Purchase Order Status</td>
<td>Status of a purchase order line for the requisitioned item. The status can be closed, or open.</td>
</tr>
<tr>
<td>Received Quantity or Amount</td>
<td>Quantity of the purchased item that is finally delivered to you.</td>
</tr>
<tr>
<td>Supplier</td>
<td>Name of the supplier as specified in the purchase order, who supplies the item that has been requisitioned.</td>
</tr>
<tr>
<td>Supplier Site</td>
<td>Name of the supplier site as specified in the purchase order, from where the requisitioned item is supplied.</td>
</tr>
</tbody>
</table>
How You Track Receiving Details of Procured Items in Manufacturing

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.

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Receipt</td>
<td>You can click on the specific receipt identification number to view the document and track the received quantities of the purchased item.</td>
</tr>
<tr>
<td>Line Status</td>
<td>Status of a specific receipt line for the purchase order.</td>
</tr>
<tr>
<td>Quantity</td>
<td>Quantity of purchased item that has been delivered and received by your organization against the purchase order.</td>
</tr>
<tr>
<td>Transaction Date</td>
<td>Date on which the delivery transaction was carried out.</td>
</tr>
<tr>
<td>Transacted By</td>
<td>Name of the person who completed the delivery transaction.</td>
</tr>
</tbody>
</table>

If you are 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 cannot return the item to supplier or receiving.
How You Manage Work Orders for Contract Manufacturing

Contract Manufacturing refers to scenarios where an Original Equipment Manufacturer (OEM) outsources their manufacturing process to another organization commonly known as a Contract Manufacturer (CM).

A contract manufacturing flow can be initiated either to fulfill a sales order, or as a result of implementation of supply chain planning recommendations. In either case, supply orders are created in Supply Chain Orchestration, after which Supply Chain Orchestration initiates the creation of a work order in Manufacturing, to track the progress of manufacturing at the contract manufacturer's facility. Supply Chain Orchestration sends a request to Purchasing to create a purchase order on the contract manufacturer, for the contract manufacturing service item.

In a contract manufacturing plant:

- You can search for work orders based on purchase order header and line.
- You cannot create a standard work order.
- You cannot create a nonstandard order.
- You cannot update the work order. However, for serialized assemblies, you can edit the serial numbers.
- You cannot perform work order mass actions.
- You cannot create a rework or a transform work order.
- You should ensure that there is a one-to-one correlation between a contract manufacturing work order and the corresponding purchase order line.
- You should not group multiple requisition lines into a single purchase order line.

In a contract manufacturing plant, it is recommended to set the attribute **Autogenerate of Serials at Creation of Work Order at Plant Level** to **Yes** for serialized manufacturing. When Supply Chain Orchestration creates a work order in manufacturing, the serials are automatically generated, and the generated serials are automatically written to an .xml file. This .xml file is automatically attached to the work order with attachment type **To Supplier**. You can view the same attachment containing the serials in the Purchase Order line.

**Note:** You cannot import contract manufacturing work orders using the FBDI template or through REST services.

**Note:** Process work orders for contract manufacturing are currently not supported.

How You Import Discrete Work Orders

Work order import is a method of creating and updating work orders through the user interface. You can use the cloud import framework to import the work order using spreadsheets. You can also provide the descriptive flexfields information during the work order import. To import discrete work orders using the cloud import framework, you can download and use the WorkOrderTemplate.xlsm.template. The .xlsm template organizes the work order information in the following tabs:

- **Instructions and CSV Generation:** The procedure to import work orders using the .xlsm template.
- **Import Batch:** The batch identifies the group of work orders that are being imported.
• **Work Order Headers:** The work order header information is identified uniquely by a header number within a batch. You can import work orders across plants within a batch.

• **Work Order Operations:** You can optionally specify work order operation information against the batch code and header number.

• **Work Order Operation Materials:** You can optionally specify work order operation item information against the batch code, header number, and operation sequence.

• **Work Order Operation Resources:** You can optionally specify work order operation resources information against the batch code, header number, and operation sequence.

• **Work Order Serial Numbers:** You can optionally specify product serial information against the batch code and header number for serial-tracked work orders.

• **Work Order Operation Resource Instances:** You can optionally specify work order operation resource instances information against the batch code, header number, and operation sequence.

• **Material Lots, Serials, Lots and Serials:** Applicable only for rework work orders

Work orders can be imported in batches using create and update modes either by providing the basic work order header details or by providing the complete details of work order header, operation requirements, resource requirements, component requirements, and serial details.

The following table lists the various modes of import that enable you to create or update work orders:

<table>
<thead>
<tr>
<th>User Preference</th>
<th>Header Action</th>
<th>Operations Action</th>
<th>Items and Resources Action</th>
<th>Serials Action</th>
<th>High-Level Considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td>To create work order with header only (standard work order or nonstandard work order with work definition)</td>
<td>CREATE</td>
<td>Not Applicable</td>
<td>Not Applicable</td>
<td>Not Applicable</td>
<td>You must specify the following with other necessary details: Work Definition details Allow Explosion = Y Scheduling method = DEFAULT_SCHEDULER</td>
</tr>
<tr>
<td>To create work order with header and details, and to allow the scheduling engine to determine the dates.</td>
<td>CREATE</td>
<td>CREATE</td>
<td>CREATE</td>
<td>ASSOCIATE_SERIAL</td>
<td>You must specify the following with other necessary details: Work Definition details (for Standard work orders) Allow Explosion = N Scheduling method = DEFAULT_SCHEDULER</td>
</tr>
</tbody>
</table>
To create work order with header and details with dates specified.

**User Preference**

<table>
<thead>
<tr>
<th>User Preference</th>
<th>Header Action</th>
<th>Operations Action</th>
<th>Items and Resources Action</th>
<th>Serials Action</th>
<th>High-Level Considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td>CREATE</td>
<td>CREATE</td>
<td>CREATE</td>
<td>CREATE</td>
<td>ASSOCIATE_SERIAL</td>
<td>You must specify the following with other necessary details: Work Definition details (for Standard work orders) Allow Explosion = N Scheduling method = NO_SCHEDULING</td>
</tr>
</tbody>
</table>

To update the work order.

**Tip:** If the Plant parameter **Automatically associate serial numbers during work order import** is enabled during import, the serials are automatically generated and associated for serial-tracked work orders.

You can create, update, and query for a work order using a REST API.

The successfully imported work orders as well as the errors if any are displayed in the Schedule Process output.

**Correct Work Orders for Import**

You can use the **Correct Work Orders and Transactions for Import** task in the Work Execution work area to view all the file-based data import records that resulted in errors, and you can also export them into ADFdi spreadsheets to correct the errors. After you have corrected the errors in ADFdi, you can upload the spreadsheet to resubmit the records that returned errors for processing.

**Note:** You can use this task to correct errors only for transaction records where the mode of import was file-based data import. You cannot correct errors for import transaction records created through REST API.

Follow these steps to correct the errors and resubmit the completed data for work order import:

1. In the Work Execution work area, select the Correct Work Orders and Transactions for Import task from the Tasks panel.
2. Use the filters to search for specific import transaction entries. You can use a combination of the following filters to search for the work orders import transactions:
   - Select the import transaction type as **Work orders import**.
   - Search for the unique batch code identifier of your import batch.
Search for the transaction based on the batch status. If the batch completed but has some errors that you must redress, you can search with **Completed with errors**. If the batch is still in process due to server failure or any other application error, you can search with **In process**.

Search for the transaction record based on the request identifier of the corresponding import work orders scheduled process.

3. The search results displays a list of all the relevant import transaction records. Click **Manage in Spreadsheet** to initiate the correction process through ADFdi.

4. The Work Orders Import ADFdi has separate worksheets for its various attributes. You can manually correct the errors and then set the batch status of the individual rows to Ready.

5. After you have corrected all the errors and saved the statuses as ready, click **Upload** to resubmit the corrected records for processing. You have to upload each worksheet individually.

6. You can refresh your search on the Correct Work Orders and Transactions for Import or search on the basis of the batch status as Ready to view if the corrected records were successfully processed.

**Note:** For more information about file-based data imports to import or update legacy and other data into Supply Chain Management Cloud from external applications, refer to the File-Based Data Import for Oracle Supply Chain Management Cloud Development Guide.

**Note:** Correct work orders for import is supported for both discrete and process manufacturing.

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### How You Import Process Work Orders

Work order import is a method of creating and updating work orders through the user interface. You can use the cloud import framework to import the work order using spreadsheets. You can also provide the descriptive flexfields information during the work order import. To import work orders using the cloud import framework, you can download and use the **ProcessWorkOrderTemplate.xlsm** template. The .xlsm template organizes the work order information in the following tabs:

- **Instructions and CSV Generation**: The procedure to import work orders using the .xlsm template.
- **Import Batch**: The batch identifies the group of work orders that are being imported.
- **Work Order Headers**: The work order header information is identified uniquely by a header number within a batch. You can import work orders across plants within a batch.
- **Work Order Operations**: You can optionally specify work order operation information against the batch code and header number.
- **Work Order Operation Resources**: You can optionally specify work order operation resources information against the batch code, header number, and operation sequence.
- **Work Order Operation Resource Instances**: You can optionally specify work order operation resource instance information against the batch code, header number, and operation sequence.
- **Work Order Serial Numbers**: You can optionally specify product serial information against the batch code and header number for serial-tracked work orders.
- **Work Order Operation Resource Instances**: You can optionally specify work order operation resource instances information against the batch code, header number, and operation sequence.
- **Work Order Operation Materials**: You can optionally specify work order operation item information against the batch code, header number, and operation sequence.
- **Work Order Operation Outputs**: You can optionally specify work order operation output information against the batch code, header number, and operation sequence.
How You Close Work Orders

You can periodically close work orders after they have been executed by using the Close Work Orders program. Through this program, you can select multiple work orders using parameters such as work order number, dates, status, and items. The successfully closed work orders as well as the errors if any, are displayed in the scheduled process output. You cannot make any further updates to closed work orders.

Note: You cannot update the closed date for work orders when you close them using the scheduled process.

How You Create Configured Item Work Orders

Configure to Order (CTO) is the process of ordering and fulfilling configured products. Configured products are either procured or made to order, and can result in back-to-back purchase orders, drop ship purchase orders, back-to-back internal material transfers, or back-to-back production orders. Typically, Supply Chain Orchestration creates the work order for the parent Assemble to Order (ATO) model configuration. Work orders for child ATO model configuration are created by Supply Chain Planning.

A work order is created based on the configured item work definition. A configured item work definition is created dynamically by taking the base Assemble to Order (ATO) model work definition, selected options, Transactional Item Attributes (TIA), and applicability rules as entries. When the application automatically creates work orders for the configured items in the CTO flow, the application considers the primary ATO Model work definition. You can manually create work orders for a configured item, and you can choose any particular work definition of the related ATO model for work order creation.

Features of work execution and manufacturing execution, such as manually creating work orders in the user interface, are also available for configured items work order.

When configuring the order in Oracle Fusion Configurator, you can select and enable Transactional Item Attributes (TIA). The TIA based applicability rules defined in the ATO model work definition determine the operations to be included in the configured item work definition.

Configured item work orders and manufacturing execution user interfaces display the TIA information, if TIA application scope is enabled for Configuration Matching and Manufacturing Execution. The TIAs can be viewed for information purposes in:

- Work Order Header
- Work Order Operation
- Detail Complete-Product User Interface

When you create a work order either manually (through the user interface, web services or bulk load), or automatically (by the application in a CTO flow) for a configured item, the Configuration Transactional Item Attributes selected during order configuration are displayed.
How You Create Work Orders from Automatic Work Definitions

If the work definitions your enterprise uses are created automatically, your work orders incorporate certain characteristics.

If there are changes to the item structure in future, these changes are synchronized automatically to the work definition. These changes then reflect on the standard work order.

When you create a standard work order from an automatic work definition, the work order has only one operation, which is the standard operation selected as the default for the automatic work definition. All of the item structure components are assigned to this default standard operation.

The work definition effective date as displayed on the Create Standard Work Order dialog box determines which components are effective in the item structure on that date, and those are the components that are included as work order operation items.

Related Topics
- Considerations for Generating Automatic Work Definitions

Considerations for Creating Work Orders from Planning With Alternate Resources and Substitute Components

In your enterprise, there can be a scenario where your supplier is unable to deliver components timely, or there is an unexpected breakdown of a critical equipment resource. In such cases, Oracle Fusion Supply Chain Planning can create recommendations for alternate resources and substitute components from the work definition to support the execution of a standard work order.

When planning recommends alternate resources and substitute components for work orders, the following points must be considered:

- Components are replaced with their substitutes at the first level, and not at the phantom level.
- Resources are replaced with the alternates at the first level, and not at the phantom level.
- The required quantity of the substituted component is calculated based on aggregated yield if the same component is repeated at multiple levels.
- A standard item can only be substituted with another standard item.
- The replacement of alternate resources is always a full replacement.
- The replacement of substitute components can be a partial replacement.

Related Topics
- Guidelines for Using Alternate Resources and Substitute Components for Planned Orders
How You Manage Supplier Operations

Use the Manage Supplier Operations page in Work Execution work area 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 Manage Supplier Operations page serves as a single place for production supervisors to perform the following 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.

You can access the Manage Supplier Operations page by selecting the Manage Supplier Operations task in action panel tab in the Work Execution work area.

Note: You can access the Manage Supplier Operations page only if the role assigned to you has the Manage Supplier Operations privilege. For more information about privileges, refer to the Oracle Supply Chain Management Cloud Security Reference for Manufacturing and Supply Chain Materials Management guide.

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 plant time zone. However, named dates such as Today, Yesterday, and so on are interpreted in the user time zone.

Using the Manage Supplier Operations Page

The Manage Supplier Operations page displays work order operation records

The following table lists all the attributes of a supplier operation along with their descriptions:

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quantity</td>
<td>Refers to the quantity of the work order operation in a specific dispatch status.</td>
</tr>
<tr>
<td>Field</td>
<td>Description</td>
</tr>
<tr>
<td>------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>UOM</td>
<td>Represents the unit of measure of the quantity being manufactured.</td>
</tr>
<tr>
<td>Status</td>
<td>Represents the current dispatch status of quantities at any specific supplier operation, such as In Process, Ready, Completed, Scrapped, or Rejected.</td>
</tr>
<tr>
<td>Item</td>
<td>Refers to the item on the work order that must be manufactured.</td>
</tr>
<tr>
<td>Item Description</td>
<td>Refers to the description of the item that must be manufactured.</td>
</tr>
<tr>
<td>Work Order</td>
<td>Refers to the work order number suffixed with the operation sequence. The work order number is displayed as a link that enables you to navigate to the work order page to review the work order details.</td>
</tr>
<tr>
<td>Operation Name</td>
<td>Refers to the name of the operation.</td>
</tr>
</tbody>
</table>
| Attachments      | The Attachments icon is conditionally displayed beside the work order operation. The attachments from the following entities are displayed in separate tabs when you click the Attachments icon:  
  • Work order  
  • Work order operation  
  • Work order operation material  
  In addition, the attachments from the following are also displayed in separate tabs for work orders which are reserved as supply to back-to-back sales orders for standard and configured items:  
  • Sales order header  
  • Sales order line  
  If you are a production operator, you can also add new work order operation attachments from the dispatch list. |
| 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 Number  
  • Exception Type  
  • Description  
  • Severity  
  • Operation Sequence  
  • Exception Status  
  • 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. |
### Field | Description
--- | ---
Start Date | Refers to the scheduled start date and time of the work order operation.  
**Note:** The start date and time is displayed and with a warning icon if it is past due and the corresponding quantity is in Ready dispatch status.

 Completion Date | Refers to the scheduled completion date and time of the work order operation  
**Note:** The completion date and time is displayed and with a warning icon if it is past due and the corresponding quantity is in Ready or Reject dispatch status.

 Priority | Refers to the work order execution priority.

 Customer | Refers to the customer name on the sales order to which the work order is reserved as a supply. If there are multiple customers, then the page displays Multiple instead of the individual customer names.

 Report Material Transactions | Refers to the functional icon to navigate to the Report Material Transactions page to manually report the material used at a supplier operation.

 Report Resource Transactions | Refers to the functional icon to navigate to the Report Resource Transactions page to manually report resources used at a supplier operation.

 Supplier | Refers to the supplier name on the related outside processing purchase order. If the operation is outsourced to more than one supplier, then the page displays Multiple instead of the individual supplier names.

 Supplier Site | Refers to the supplier site on the related outside processing purchase order. If the operation is processed at more than one supplier site, then the page displays Multiple instead of the individual supplier site names.

 Outside Processing Item | Refers to the outside processing item that is associated with the supplier operation.

 Review Supplier Operation Details | Refers to the functional icon to navigate to the Review Supplier Operation Details page to review purchasing, shipping and receiving details related to the supplier operation and take supplier operation actions.

For any specific record displayed in the Manage Supplier Operations page, you can do the following:

- Report operation transactions at a supplier operation by quantity or serial number at a supplier operation by expanding the record and using the Quick Complete or Complete with Details action.

**Note:** Operation transactions can be reported only if the role assigned to you has the Report Operation transactions privilege associated to it. For more information on reporting operation transactions at a supplier operation, refer to the Report Operation Transactions topic in the Execute Production chapter.
• Print work order traveler and product labels by selecting the option from the Action menu.
• Review the related work order details by clicking the work order link.
• Review production exceptions if any, for a supplier operation if any by clicking on the exceptions icon displayed beside the work order and operation sequence.
• Report material usage at a supplier operation by clicking the report material transaction icon.
• Report resource usage at a supplier operation by clicking the report material transaction icon.
• Review the supplier operation details by clicking the review supplier operation details icon.
• Report a production exception by selecting the option from the Action menu.

How You Review Supplier Operation Details

Oracle Manufacturing Cloud enables you review the related details for a supplier operation in the Review Supplier Operation Details page. You can access the Review Supplier Operation Details page by clicking any of the following:
• Supplier Operation Details action for a supplier operation in the Work Order Operations tab.
• Review Supplier Operation Details functional icon in the Manage Supplier Operations 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 the Review Supplier Operation Details privilege. For more information on privileges, refer to the Oracle Supply Chain Management Cloud Security Reference for Manufacturing and Supply Chain Materials Management guide.

The Review Supplier Operation Details page does the following:
• Displays purchasing, shipping, and receiving details related to a supplier operation.
• Provides links to review additional details of purchase orders, shipments, and receipts.

The Review Supplier Operation Details page also provides several actions 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.
• 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.

How You Manage Demand and Supply Side Changes in Outside Processing

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 prior to the supplier operation which impacts the associated purchasing and shipping documents.
The following table details the demand side change events and the corresponding actions that are automatically initiated or performed by users to handle such changes:

<table>
<thead>
<tr>
<th>Event</th>
<th>Actions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Work order quantity change</td>
<td>The work order quantity changes are propagated to the Oracle Fusion Purchasing by automatically requesting Oracle Fusion Supply Chain Orchestration to create or update purchase requisitions for the differential quantity.</td>
</tr>
<tr>
<td></td>
<td><strong>Work order quantity increase:</strong></td>
</tr>
<tr>
<td></td>
<td>The Purchase Requisition Trigger plant parameter determines how work order quantity increase is propagated for supplier operations:</td>
</tr>
<tr>
<td></td>
<td>• If the Purchase Requisition Trigger plant parameter is set to Work order release, then a purchase requisition is created for the differential work order quantity for all the supplier operations of the work order.</td>
</tr>
<tr>
<td></td>
<td>• 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 only for the first supplier operation for the differential work order quantity.</td>
</tr>
<tr>
<td></td>
<td>In the above cases, if a requisition creation fails, the failed record can be viewed and resubmitted from Supply Chain Orchestration.</td>
</tr>
<tr>
<td></td>
<td><strong>Work order quantity decrease:</strong></td>
</tr>
<tr>
<td></td>
<td>The Purchase Requisition Trigger plant parameter determines how work order quantity decrease is propagated for supplier operations:</td>
</tr>
<tr>
<td></td>
<td>• If the Purchase Requisition Trigger plant parameter is set to Work order release, then the purchase requisitions or purchase orders belonging to all the supplier operations of the work order are updated to reflect the reduced work order quantity.</td>
</tr>
<tr>
<td></td>
<td>• 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 the purchase requisition or purchase order belonging to it is updated to reflect the reduced work order quantity.</td>
</tr>
<tr>
<td></td>
<td>In the above cases, if change propagation fails, a supplier operation exception is logged.</td>
</tr>
<tr>
<td>Work order status change</td>
<td><strong>Work order release:</strong></td>
</tr>
<tr>
<td></td>
<td>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.</td>
</tr>
<tr>
<td></td>
<td>• 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.</td>
</tr>
<tr>
<td></td>
<td>• 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</td>
</tr>
<tr>
<td>Event</td>
<td>Actions</td>
</tr>
<tr>
<td>------------------------------------------------</td>
<td>-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Released status, purchase requisitions are automatically triggered only for the eligible 'not executed' quantity.</td>
<td>In all the above cases, if a requisition creation fails, the failed record can be viewed and resubmitted from Supply Order Orchestration.</td>
</tr>
<tr>
<td>Work order unrelease:</td>
<td>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.</td>
</tr>
<tr>
<td>Work order cancellation:</td>
<td>When work order is updated to Canceled status for reasons such as upstream demand cancellation, 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.</td>
</tr>
<tr>
<td>Work order closure:</td>
<td>When work order is updated to Closed status for reasons such as upstream demand cancellation or decrease in demand, 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.</td>
</tr>
<tr>
<td>Work order supplier operation date changes</td>
<td>When the supplier operation completion date is either moved in or moved out due to changes in upstream demand, 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 has not yet been fully received, that is, receipt quantity is less than purchase order requested quantity.</td>
</tr>
<tr>
<td>Requested delivery date calculation logic:</td>
<td>If the change propagation fails, a supplier operation exception is logged.</td>
</tr>
<tr>
<td>Event</td>
<td>Actions</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td></td>
<td>The requested delivery date for supplier operations is calculated while creating and updating the associated purchasing document using the following logic:</td>
</tr>
<tr>
<td></td>
<td>• 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.</td>
</tr>
<tr>
<td></td>
<td>• 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.</td>
</tr>
<tr>
<td></td>
<td>• 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.</td>
</tr>
<tr>
<td>Overcompletion</td>
<td>When the quantity is over completed at the first count point operation, the following is applicable:</td>
</tr>
<tr>
<td></td>
<td>If the Purchase Requisition Trigger plant parameter is set to Work order release, then a request is automatically sent to Supply Chain Orchestration to create purchase requisitions for all the supplier operations of the work order by an amount equivalent to the over completed quantity.</td>
</tr>
<tr>
<td></td>
<td>If the Purchase Requisition Trigger plant parameter is set to Prior operation completion, then a request is automatically sent to Supply Chain Orchestration to create a purchase requisition only for the first supplier operation in sequence by an amount equivalent to the over completed quantity.</td>
</tr>
<tr>
<td></td>
<td>In the above cases, if requisition creation fails, the failed records can be viewed and resubmitted from Supply Chain Orchestration.</td>
</tr>
<tr>
<td>Scrap at prior count point operation</td>
<td>When a quantity at any count operation prior to a supplier operation is scrapped, the following is applicable:</td>
</tr>
<tr>
<td></td>
<td>If the Purchase Requisition Trigger plant parameter is set to Work Order Release, then a request is automatically sent to Supply Chain Orchestration to decrease the quantity on existing purchase orders for the supplier operation and all the subsequent supplier operations by an amount equivalent to the scrapped quantity.</td>
</tr>
<tr>
<td></td>
<td>If the change propagation fails, a supplier operation exception is logged.</td>
</tr>
<tr>
<td>Reversal of scrap at prior count point operation</td>
<td>When a scrapped quantity is reversed to ready at any count operation prior to a supplier operation, the following is applicable:</td>
</tr>
<tr>
<td></td>
<td>If the Purchase Requisition Trigger plant parameter is set to Work Order Release, then a request is automatically sent to Supply Chain Orchestration to create purchase requisitions for the supplier operation and all the subsequent supplier operations for an amount equivalent to the scrapped quantity that is reversed to ready.</td>
</tr>
<tr>
<td></td>
<td>In the above cases, if requisition creation fails, the failed records can be viewed and resubmitted from Supply Chain Orchestration.</td>
</tr>
<tr>
<td>Reversal of completion at prior count point operation</td>
<td>When a completed quantity is reversed to ready at a count operation immediately prior to a supplier operation, the following is applicable:</td>
</tr>
<tr>
<td></td>
<td>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 is reversed to ready. Subsequent supplier operations for which the supply creation is not yet initiated will not be impacted.</td>
</tr>
</tbody>
</table>
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 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:

<table>
<thead>
<tr>
<th>Event</th>
<th>Actions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Purchase order quantity change</td>
<td>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 Manufacturing. A supplier operation exception is automatically logged. A production supervisor 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.</td>
</tr>
<tr>
<td>Purchase order status change</td>
<td>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 Manufacturing. A supplier operation exception is automatically logged. A production supervisor 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.</td>
</tr>
<tr>
<td>Purchase order requested delivery date change</td>
<td>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 Manufacturing. A supplier operation exception is automatically logged. A production supervisor 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.</td>
</tr>
<tr>
<td>Overreceipt</td>
<td>In cases where the quantity received is more than the quantity requested on an outside processing purchase order, a production operator can use the Correct Overreceipt action in the Review Supplier Operations Details page to correct the overreceipt quantity.</td>
</tr>
<tr>
<td>Return to supplier</td>
<td>In cases where quantities need to be returned to the supplier for reasons such as bad quality, a production supervisor can use the 'Return to Supplier' action in the Review Supplier Operations Details page to return the quantities to the supplier.</td>
</tr>
</tbody>
</table>
Event | Actions
--- | ---
Return to receiving | In cases where quantities need to be returned to the receiving for reasons such as bad quality, a production supervisor can use the Return to Receiving action in the Review Supplier Operations Details page to return the quantities to the supplier.

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 production supervisor can use the Correct action in the Review Supplier Operations Details page to return the quantities to the supplier.

Note: You must use the Review Supplier Operations page to correct or return quantities after they are delivered to manufacturing. If you use the file-based data import process or web service to correct or return quantities after they are delivered to manufacturing, you must ensure that the requisite quantity exists in Ready status in the work order operation.

How You Enable Audit Trail for Manufacturing Work Orders

If you're an application administrator, you can enable audit trail for manufacturing work orders to comply with the US Code of Federal Regulations (CFR 21 Part 11) for electronic record and electronic signature requirements. By doing so, you let your internal and external auditors have more visibility of the work order change history.

Here's the list of work order entities for which you can enable audit trail:

- Work order
- Work order operation
- Work order operation material
- Work order operation resource
- Work order operation resource instance
- Work order operation material lot
- Work order operation material serial
- Work order product serial
- Work order operation output

What happens when you enable Audit Trail

- The work order updates if any, are automatically tracked in the audit tables.
- The audit records capture the attributes that got updated. The records also capture the old and new values for each update, the date of the update, and the user who performed the update.
- You can search the change history for a specific work order.

Here are the different modes of updates which are supported for audit trail:

- Work order create and update actions are performed in the Manage Work Order page.
- Work order update action is performed in the Edit Work Order page.
• Work order create and update actions are performed through work order REST services.

Important: Any other updates through the FBDI process, SCO, or work order transactions aren't supported for audit trail.
5 Production Supervisor Mobile Application

Overview of Production Supervisor Mobile Application

You can track and manage the work orders in your production plant through a mobile application. The production supervisor mobile application is available for installation on your device and is supported by Android and iOS.

This application enables you to control shop floor situations from a remote location. If you have the role of a production supervisor, with this application, you can do the following:

- Take immediate action for critical shop floor situations.
- Search for a specific work order by specifying attributes like work order number, item number, serial number.
- Use the camera of your mobile device to scan the barcode of the work order and search for it.
- View sets of work orders classified on the basis of the following:
  - work orders starting today
  - work orders completing today
  - work orders on hold
  - work orders past due
  - work order operations past due
  - work orders with open exceptions

  \[\text{Note: Today signifies the current date as reflected in the application.}\]

- Email the work order details or operation details to critical stakeholders to collaborate and take further action.
- Release work orders, cancel them, or put them on hold.
- Drill down to details like the items or components or resources associated with any particular work order and analyze the information.
- Close work order exceptions and email details to critical stakeholders.

Production Supervisor Mobile Application Configuration Settings

You can modify the settings in the mobile application to restrict the search to only work orders that are relevant to you or which require faster execution.

You can navigate to the Settings page from either the initial login page or the Actions menu on the global header of the Overview page. You must have the job role of a production supervisor to modify settings.

When you open the application for the first time, you must provide the URL of the server where the Oracle Fusion Manufacturing application is installed. You must then sign in using your login credentials.
Note: You must have the required production supervisor job role assigned to you by your enterprise to view the contents in the mobile application.

Selection of Organization
The first time you sign in the application using the initial login page, you are directed to the **Organization Selector** page in the Settings. Every other time that you sign into the application, you can find Settings on the springboard of the Overview page global header.

You can select the manufacturing inventory organization for which you want to track and manage work orders. Your selection of organization determines which work centers and work areas the application enables you to choose from. You can only select an inventory organization which is designated as a manufacturing plant.

Note: Contract manufacturing organizations are not included in this list of organizations.

You can view only the work order details pertaining to the organization you choose, at any given point of time.

After you select the organization, the **Next** button takes you to the **Work Area Selector** page.

Selection of Work Areas
You can select the work area in your manufacturing plant for which you want to track work orders. The work order search and the count of work orders for each infotile in the dashboard includes all work orders which have at least one operation in the selected work area.

Selection of a work area is optional. If you do not select a work area, the work orders pertaining to all the work areas in your manufacturing organization are visible to you when you search for them in the application.

After you select the work area, the **Next** button takes you to the **Work Center Selector** page. You can change the work area, by navigating to the Settings page from the Overview page, any time you use the application.

Selection of Work Centers
You can select the work center in your manufacturing plant for which you want to track work orders. The work order search and the count of work orders for each infotile in the dashboard includes all work orders which have at least one operation in the selected work center.

Selection of a work center is optional. If you do not select a work center, the work orders pertaining to all the work centers in your manufacturing organization are visible to you when you search for them in the application.

After you select the work center, click **Done** to save your settings.

After you click the **Done** button, you are redirected either to the Overview page if you had navigated to the settings from the initial login page, or to the Settings home page if you had navigated to the settings from the springboard on the Overview page. You can change the work center, by navigating to the Settings page from the Overview page, any time you use the application.

Selection of Work Order List Filter
The production supervisor mobile application further helps you to modify your search for work orders by applying the **Work Order List Filter**. The default value is 7 days but you can use the filter to specify any value between 0 and 30 days.
Suppose you choose a value of 15 days, this filter restricts the search capability of the application to only include the work orders which are 15 days past due from the current date. The filter also affects the count of work orders as reflected for the *Past Due* and *On Hold* infotiles.

**Note:** The work order list filter does not affect the count of work orders as reflected for the *Starting Today* and *Completing Today* infotiles.

### Selection of Past Due Tolerance

You can also choose a value for the field *Past Due Tolerance* in Settings. The default value is 0 but you can specify any value between 0 and 9999 hours.

You can choose a limit by which a work order can exceed the past due mark. For example, if you specify a past due tolerance limit of 2 hours, work orders past due for 2 hours or less are not treated as past due.

This value affects the count of work orders as reflected for the *Operations Past Due* and *Past Due* infotiles. The *Past Due Tolerance* value also affects the work order statuses as reflected on the Work Order List page and Operations page.

**Related Topics**

- [How You Manage Production Exceptions](#)

### Track and Manage Work Orders

If you perform the role of a production supervisor, you can use the mobile application to view, track, and manage your work orders. You can also collaborate with other stakeholders through email to act further on the work orders.

The following examples explain a few scenarios and what actions you can take in those scenarios.

The following examples are discussed:

1. Searching for work orders and sending them through email.
2. Releasing work orders using quick swipe action.
3. Reviewing operation, component, and resource details.
4. Reviewing customer information of work orders.

### Searching for Work Orders and Sending Them Through Email

You are reviewing the production status of your manufacturing plant shop floor as a production supervisor. Your production manager wants a report on a work order status which is reserved against a particular customer. The final assembly of the work order is serialized. Follow these steps to complete the task using the mobile application:

1. Sign in to the Supervisor Mobile Application using your production supervisor credentials.
2. Use your mobile camera to scan the bar coded serial number of the final assembly of the work order you want to report on.
3. Click the barcode scanner icon beside the Search field on the global header to upload the barcode. The search is automatically executed once you upload the barcode.
4. On the Work Order Details page, click the *Actions* menu and select the *Email* icon.
5. Select the work orders you want to send to the manager and click **Done**.

6. Select the email client of your choice and enter the recipient’s email and click **Send**.

> **Note:** The Subject field is automatically populated with the work order details you are sending to the client.

You have successfully completed the task.

### Releasing Work Orders Using Quick Swipe Action

You are monitoring the production status on your shop floor. The production operator informs you that a particular resource was not functioning for the past one week and now is back into operation. Follow these steps to quickly release the work orders affected by this operation, which were put on hold.

1. Sign in to the Supervisor Mobile Application using your production supervisor credentials.
2. Select the infotile **On Hold** from the key metrics on the Overview page.
3. On the Work Orders List page, select a work order you want to release.

On the Work Order Details page, you can review the following information:

- Work order status
- Completion status
- Assembly item
- Item description
- Customer information

4. Swipe left on the work order name. The **Release** action is displayed for the work order.

> **Note:** You can also release a work order from selecting the option in the Actions menu.

5. Tap or click the **Release** action and click OK.

> **Note:** You can navigate to the Work Orders List page and repeat the quick swipe action for multiple work orders.

You have successfully completed the task.

### Reviewing Operation, Component, and Resource Details

As a production supervisor you can track the work orders of your manufacturing plant which are starting today and are reserved against a sales order. Follow these steps to review various aspects of a work order and drill down to details.

1. Sign in to the Supervisor Mobile Application using your production supervisor credentials.
2. Select the infotile **Starting Today** from the key metrics on the Overview page.
3. On the Work Orders List page, select a work order that you would like to review.
On the Work Orders Details page, you can review the following information:

- Work order status
- Completion status
- Assembly item number
- Item description
- Customer information
- Work order description
- Work order type
- Serialized indicator
- Current operation
- Quantity
- Start date
- Completion date

4. Click the Operations tab. It shows a list of operations for the work order you have selected. Click any of the attributes to drill down further.

On the Work Order Operations Details page, you can review the following information:

- Operation sequence
- Operation code
- Operation name
- Scheduled start date
- Scheduled end date
- Work center of the operation
- Count point indicator
- Serialized indicator
- Operation type

If the operation type is specified as outside processing, you are able to view the operation details of the outside processing item and also the in-progress quantity for the operation.

You can drill down further from the Operations Details page to serial numbers, components, and resources specific to the operation.

5. Select the Components tab on the Work Orders Details page. Here you find the following information:

- Component item number
- Component item description
- Component issue status
- Operation sequence
- Operation code
- Operation name
6. Select the **Resources** tab on the Work Orders Details page. Here you find the following information:

- Resource name
- Applied quantity
- Total quantity
- Operation sequence
- Operation code
- Operation name
- Work center

You have successfully completed the task.

**Reviewing Customer Information of Work Orders**

As a production supervisor you can review the customer reservation details for any work order in your manufacturing plant. Follow these steps to review the assembly details for a work order completing on the current date.

1. Sign in to the Supervisor Mobile Application using your production supervisor credentials.
2. Select the infotile **Completing Today** from the key metrics on the Overview page.
3. On the Work Orders List page, select a work order that you would like to review.
4. Click the drill-down arrow beside the customer name displayed on the Work Order Details page. You are directed to the **Customer Reservation** page. Here you can view the following details:

   **Note:** The **Customer** field is visible only for work orders which have one or more sales orders reserved against them.

   - Customer name
   - Quantity reserved
   - Sales order number
   - Due date

5. On the Work Order Details page, the **Item Structures** section provides you the following information:

   - Work order item
   - Version
   - Subinventory
   - Locator
   - Tolerance

6. On the Reservations page, you can also find the following information, if the work order is serialized.

   - Item serial number
   - Operation sequence
   - Operation code
   - Operation name
Manage Exceptions Using the Mobile Application

As a production supervisor, you can use the mobile application to review and manage production exceptions of a work order. Depending on how you modify the settings of the mobile application to view metrics at the plant level or work area level, you can see the relevant exceptions.

After you have reviewed the work order exceptions, you can close the exception or close one or more work order operations linked to the exception. You can also send exception details through email to other stakeholders to collaborate on them.

An exception can be of the following types:

- Component
- Resource
- Work Area
- Work Center
- Miscellaneous

Note: Some work area, work center, or miscellaneous exceptions are not specifically tied to any particular work order operation. Such exceptions are not accounted for in the mobile application.

Follow these steps to close an exception against a work order operation:

1. Click the infotile **Open Exceptions** on the Overview page of the application. You are directed to the Work Order List page which displays a list of work orders. Work orders may have a warning icon displayed beside them in the following cases:
   - If the work order is on hold
   - If the work order has open exceptions
   - If the work order has one or more operations past due

2. Click any of the work orders. You are directed to the Work Order Details page. The **Exceptions** tab shows the number of all open exceptions linked to any operation of the work order.

3. Click the **Exceptions** tab. You are directed to the Work Order Exceptions List page. This shows a list of all open exceptions. Each exception has the following details mentioned:
   - Exception type
   - Exception description
   - Name of the person who has reported the exception
   - Severity of the exception.
   - Operation sequence to which the exception is associated.
   - Date on which the exception was reported.
**Note:** If you swipe left on any of the exceptions in Open status here, you can use the Quick Action to close the exception. If the exception is linked to more than one work order operation, you are directed to the Impacted Work Order Operations page. If the exception is linked to only one operation, the status will be changed to Closed after you receive a warning notifying the change in status of the exception.

4. Select any of the exceptions. You are directed to the Exceptions Details page. Click the **Actions** icon on the header of the page.

5. Two actions are available for your selection. Click the **Email** icon to send the exception details to other stakeholders. Click the **Close** icon to close the exception. You are directed to the Impacted Work Order Operations page. If the exception is linked to more than one work order operation, all of them are displayed here.

6. Click the **Select All** button to select all the impacted work order operations. If not, select them individually and click **Close** at the header of the page. You get a confirmation message after the exception is successfully closed.

Another way to close exceptions is from the Operation Details page. Whenever you drill down to an operation from the Operation List page, it displays a row **Exception** which shows the number of open exceptions associated with that operation. If you click that row, you are directed to the Exceptions List page and you can follow the steps as mentioned in this topic.
6 Execute Production

Overview of Production Execution Tasks

Oracle Fusion Manufacturing offers several features that facilitate the work order based and orderless production executions for discrete manufacturing. For process manufacturing, work order based execution is supported. The production reporting is simplified by enabling you to report the production transactions in just two clicks. You can also use the scanning devices for easy reporting.

If you have the role of a production operator and the required privileges, you can use the Work Execution work area to complete all tasks related to production execution.

For work order-based execution, you can use the dispatch list that provides all the information that a production operator requires to perform the tasks. You can use the dispatch list to report the material, operation, and resource transactions from one single location. You can review the work order details and attachments and print the work order travelers and product labels. For process work orders you can also report output transactions. You can also initiate inspections from the dispatch list for a work order operation.

You can report the material and resource usages automatically or manually. The material and resource transactions can be reported based on the work order requirements or actual usage. The serial tracked manufacturing supported for discrete manufacturing enables you to report material and operation transactions by product serials that are associated with the work order. The lean manufacturing is supported by enabling you to report orderless production activities without creating any work orders in discrete manufacturing. The orderless transactions are reported by referencing a discrete work definition. You can review the work order based and orderless transactions that are reported by the shop floor personnel. For process work orders the output items can be reported automatically or manually in any operation.

The import feature is supported by enabling you to import the material, resource, operation, and orderless transactions using the file-based data import infrastructure. You can use the predefined macro enabled spreadsheet templates for performing an import. Additionally, the external applications can record the material and operation transactions in Oracle Fusion Manufacturing by using the publicly available web services. You can also import output transactions for process work orders. There are separate FBDI templates that you can use to import material and operation transaction for discrete and process work orders.

You can automate operation completion transactions of a discrete manufacturing work order in real-time by integrating with IoT Production Monitoring Cloud. The shop floor data collected by the IoT devices connected to the equipment resource instances of a work order operation can be used to automatically report completed and rejected quantities of operation transactions.

How You Review a Dispatch List

Use the Review Dispatch List task in the Work Execution work area to view the work order operations to be worked on for a selected work area and one or more work centers. The dispatch list shows the in-house count point and optional operations of the released and completed work orders. It lists the quantities by the dispatch statuses in a tabular format with several visual cues highlighting the records that require attention.

The dispatch list serves as a single place for production operators to perform the following tasks:

- Report operation transactions by quantity or serial number associated to the work orders
• Report material transactions by quantity or serial number
• Report resource transactions
• Report output transactions (for process manufacturing)
• Enter inspection details
• Review work order details
• Print work order traveler and product labels

**Note:** The dispatch list does not display operations of the type Supplier.

You can access the Review Dispatch List page by clicking any of the following in the Overview page in Work Execution work area:

• Review Dispatch List task in action label tab in the Work Execution work area.
• Ready, Complete, Reject, and Scrap segments of the ring chart in the Operations Scheduled versus Actual infolet.
• Past Due, Scrap, or Reject count in the Operations infolet.

**Note:** You can access the Review Dispatch List page only if the role assigned to you has the Review Dispatch List privilege. For more information on privileges, refer to the Oracle Supply Chain Management Cloud Security Reference for Manufacturing and Supply Chain Materials Management guide.

Using the search feature in the review dispatch list page, you can do the following:

• You can search for the work order operations by using the most commonly used search attributes such as work method, work area, work center, status, work order, start date, completion date, item, and serial. In contract manufacturing plant, you can also search based on the purchase order and purchase order line.

  **Note:** Work method is part of the Advanced Search feature and not the basic search and is available only for process manufacturing organizations.

• You can use the application default search that retrieves the work order operations assigned to all the work centers belonging to the first work area in an alphabetic order (ascending) and have quantities in Ready status. By default the records are sorted by the earliest completion date.

• For process manufacturing-enabled organizations, the dispatch list supports an advanced search option. You can query work orders based on work method of Discrete Manufacturing or Process Manufacturing or both if you do not select any value from the work method drop-down list. However, there is no option as Both in the drop-down list. You can also use various search criteria for existing attributes in the advanced search.

• 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.

To generate the dispatch list for a specific work center every time you sign into the application, create a personalized saved search and set it as default to run automatically.

**Tip:** When querying the dispatch list based on start date or completion date, shift times are interpreted by the application in the plant time zone. However, named dates such as Today, Yesterday, and so on are interpreted in the user time zone.

You can query for a dispatch list using a REST API.

Using the Dispatch List:

The following table shows how the dispatch list displays work order operation records in a tabular format:
<table>
<thead>
<tr>
<th>Column</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quantity</td>
<td>Refers to the quantity of the work order operation in a specific dispatch status.</td>
</tr>
<tr>
<td>UOM</td>
<td>Represents the unit of measure of the quantity being manufactured.</td>
</tr>
<tr>
<td>Status</td>
<td>Represents the current dispatch status of quantities at any specific operation, such as Ready (that is, to be worked upon), Completed, Scrapped, or Rejected. This also represents the optional operations.</td>
</tr>
<tr>
<td>Work Order</td>
<td>Refers to the work order number suffixed with the operation sequence. The work order number is shown as a link that enables you to navigate to the work order page to review the work order details.</td>
</tr>
<tr>
<td>Attachments</td>
<td>The Attachment icon is conditionally displayed beside the work order operation. The attachments from the following entities are displayed in separate tabs when you click the Attachments icon:</td>
</tr>
<tr>
<td></td>
<td>• Work order</td>
</tr>
<tr>
<td></td>
<td>• Work order operation</td>
</tr>
<tr>
<td></td>
<td>• Work order operation material</td>
</tr>
<tr>
<td></td>
<td>• Work order operation resource</td>
</tr>
<tr>
<td></td>
<td>In addition, the attachments from the following are also displayed in separate tabs for work orders which are reserved as supply to back-to-back sales orders for standard and configured items:</td>
</tr>
<tr>
<td></td>
<td>• Sales order header</td>
</tr>
<tr>
<td></td>
<td>• Sales order line</td>
</tr>
<tr>
<td></td>
<td>If you are a production operator, you can also add new work order operation attachments from the dispatch list</td>
</tr>
<tr>
<td>Exceptions</td>
<td>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:</td>
</tr>
<tr>
<td></td>
<td>• Exception Type</td>
</tr>
<tr>
<td></td>
<td>• Exception Status</td>
</tr>
<tr>
<td></td>
<td>• Exception Number</td>
</tr>
<tr>
<td></td>
<td>• Severity</td>
</tr>
<tr>
<td></td>
<td>• Operation Sequence</td>
</tr>
<tr>
<td></td>
<td>• Description</td>
</tr>
<tr>
<td></td>
<td>• Reported On</td>
</tr>
<tr>
<td></td>
<td>• Reported By</td>
</tr>
<tr>
<td>Item</td>
<td>Refers to the item on the work order that needs to be manufactured.</td>
</tr>
<tr>
<td>Work Center</td>
<td>Refers to the work center in which the operation is processed.</td>
</tr>
<tr>
<td>Column</td>
<td>Description</td>
</tr>
<tr>
<td>------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Start Date</td>
<td>Refers to the scheduled start date and time of the work order operation.</td>
</tr>
<tr>
<td></td>
<td><strong>Note:</strong> The start date and time is displayed with a warning icon if it is past due and the corresponding quantity is in Ready dispatch status.</td>
</tr>
<tr>
<td>Completion Date</td>
<td>Refers to the scheduled completion date and time of the work order operation.</td>
</tr>
<tr>
<td></td>
<td><strong>Note:</strong> The completion date and time is displayed with a warning icon if it is past due and the corresponding quantity is in Ready or Reject dispatch status.</td>
</tr>
<tr>
<td>Start or stop operation</td>
<td>Refers to start and stop times for the work order operation.</td>
</tr>
<tr>
<td>Report Material Transactions</td>
<td>Refers to the functional icon to navigate to the Report Material Transactions page to manually report the material used at a supplier operation. The icon is enabled only if the role assigned to the user has the Report Material Transactions privilege associated to it.</td>
</tr>
<tr>
<td>Report Resource Transactions</td>
<td>Refers to the functional icon to navigate to the Report Resource Transactions page to manually report resources used at a supplier operation. The icon is enabled only if the role assigned to the user has the Report Resource Transactions privilege associated to it.</td>
</tr>
<tr>
<td>Priority</td>
<td>Refers to the work order execution priority.</td>
</tr>
<tr>
<td>Operation Name</td>
<td>Refers to the name of the operation.</td>
</tr>
<tr>
<td>Item Description</td>
<td>Refers to the description of the item that needs to be manufactured.</td>
</tr>
<tr>
<td>Customer</td>
<td>Refers to the customer name on the sales order to which the work order is reserved as a supply. If there are multiple customers, then the dispatch list displays Multiple instead of the individual customer names.</td>
</tr>
<tr>
<td>Report Output Transactions</td>
<td>Refers to the functional icon to navigate to the Report Output Items to manually report output items for a process manufacturing work order. The icon is enabled only if the role assigned to the user has the Report Operations Transactions privilege associated to it.</td>
</tr>
<tr>
<td>Report Inspection Details</td>
<td>Refers to the functional icon to navigate to the Report Inspection Results to initiate ad hoc inspection for a work order operation. This icon for inspection is provided in all organizations, both discrete and process manufacturing.</td>
</tr>
<tr>
<td>Work Method</td>
<td>Refers to the value populated based on the organization you have selected. If you select a manufacturing organization, you will see a list of two work methods, Discrete Manufacturing and Process Manufacturing.</td>
</tr>
<tr>
<td>Column</td>
<td>Description</td>
</tr>
<tr>
<td>------------------------</td>
<td>-------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Purchase Order Header</td>
<td>Refers to the purchase order header number associated with the contract manufacturing work order.</td>
</tr>
<tr>
<td>Purchase Order Line</td>
<td>Refers to the purchase order line number.</td>
</tr>
</tbody>
</table>

Sales Order attachments from back-to-back sales orders for standard items and configured items are displayed in work execution. You can optionally control which attachments can be viewed by the production operator. Attachments belonging to the Miscellaneous category are always displayed by default. However, other user-defined attachment categories may be configured and displayed based on the security setup. Security can be enabled using the standard attachment security framework provided in the Setup and Maintenance work area and the Security Console.

For any specific record displayed in the dispatch list, you can do the following:

- Print work order traveler and product labels by selecting the option from the Action menu.
- Review the related work order details by clicking the work order link.
- Report operation transactions by quantity or serial number at a count point operation by expanding the record and using the Quick Complete or Complete with Details action.

  Operation transactions can be reported only if the role assigned to the user has the Report Operation transactions privilege associated to it. Operation transactions cannot be reported at an optional operation.

- Report material transactions by quantity or serial number by clicking the report material transactions functional icon.

  If the plant parameter Material Reporting Level for Serialization Operations is set to Item Serial, material reporting is enabled for each item serial.

- Report resource transactions by clicking the report resource transactions functional icon.

- Report output items for process manufacturing work orders by clicking the report output transactions functional icon.

- Report inspection results by clicking the report inspection details functional icon.

- Indicate start or pause for the operation by clicking the start or pause icon.

  If the plant parameter Capture Level for Serialization Operations is set to Item Serial, you can indicate start or pause for each item serial by clicking the start or pause icons for the respective item serial.

Overview of Production Exceptions

One of the key execution capabilities that Oracle Fusion Manufacturing offers is that you can report and manage production exceptions. As a production operator or the production manager, you can report the problems that occur on the shop floor. These might be problems that can affect the smooth progress of a work order and are thus reported as production exceptions.

You can also associate other work orders to a particular exception. These might be work order operations that are impacted by the problems. For example, if 3 work orders use a particular component which is in short supply, an exception can be reported and all 3 work orders can be associated to it.
All users having the production supervisor role and required access to the manufacturing plant will be notified about the production exception.

After an exception has been reported, you can review the exceptions if you have the role of a production supervisor. You can also take specific actions to resolve the problems and then close the exception. You can collaborate with all interested stakeholders using the Oracle Social Network and resolve the exception accordingly.

An exception can be reported when progress cannot be made on a particular work order due to problems like shortage of a particular component. The following are the types of production exceptions reported in a plant:

- Work Area
- Work Center
- Resources
- Components
- Miscellaneous
- Supplier Operations

Note: Exceptions for supplier operations are automatically reported by the application. You cannot manually report an exception for a supplier operation.

The manufacturing issue types are predefined and you cannot extend these predefined issue type values.

Note: If Issue Types corresponding to Production Exception is set to the User-defined or Inherited from Parent options, the process of creating them will fail. So, ensure that you use these settings only for legacy data import, if at all. It is recommended to always set them to Sequence-generated.

Report Work Order Exceptions

You can create or report an exception if you are a production operator or a production manager in a manufacturing plant.

To create an exception, follow these steps:

1. Navigate to the Work Execution work area.
2. On the Overview page, click the Tasks panel.
3. Select the Review Dispatch List link.
4. Select the work order operation against which you want to report an exception.
5. Click Actions menu and select the option Report Production Exception.

A separate window opens where you can select the Exception Type from a list. If you select Resource as the exception type, the application automatically populates the Resource field only if there is one resource associated with the particular work order operation. Additionally, you can also select the resource instance if it is mentioned in the work order. The application dynamically displays the attribute based on the exception type you choose.

Note: As a production operator, you can report an exception with or without reference to a particular work order operation. Additionally, you can associate the same exception to other impacted work order operations.

Exception notifications are sent by default to users who have Edit or View Exception privileges, and who have the Data Role of the plant in which the exception was reported.

Note: Exceptions of type Supplier Operation are automatically generated. You cannot manually create them.
Associate Work Orders to an Exception

As a production supervisor you can review an existing exception that has been reported by the production manager. You can also choose to associate other work order operations to that exception which might be impacted by the problem. For this, you must be in the Work Execution work area.

For organizations tracked by project, you can search production exceptions by Project Number and Task Number and report the exceptions. Project and Task Numbers are also displayed for the impacted work order operations and in the Production Exception Notification.

To associate work order operations to an open exception, follow these steps:

1. On the Overview page, scroll over to the Tasks panel and select Manage Production Exceptions.
2. Click the Open Exceptions infotile which gives you a list of all exceptions reported in your manufacturing plant.
3. Select an exception from the list to which you want to associate work order operations. This directs you to a separate Exceptions tab.
   - This tab displays additional information regarding the exception such as its type, status, description, and so on.
4. Move to the Impacted Work Order Operations area and click the Add icon. This opens a dialog box Search for Work Order Operations.
5. Search for the operation you want to associate with the exception. Click the Add button.
6. The Impacted Work Order Operations area is automatically populated with details about the operation that you have added. Click the Save and Close button at the header of the page.

You can now choose to collaborate with all the stakeholders through the Oracle Social Network to resolve the exception. For this click the Social icon at the header of the page. You can add the work order operation on which you want to act as the social object and start a conversation.

Note: For more information about how to use the Oracle Social Network to collaborate and accomplish such tasks, refer to Chapter 6: Social Network in the Oracle Applications Cloud Using Common Features guide.

How You Manage Production Exceptions

When you receive a notification about an exception, as a production supervisor you can navigate to the Manage Production Exceptions page in the Work Execution work area and view the reported exceptions. You can also search for various work orders and review if they have any exceptions associated with them or not.

Analyzing Infotiles Related to Exceptions

There are a set of different infotiles which provide you various aspects of information about the open exceptions. They are as follows:

- **Open Exceptions**: This infotile shows you the total number of open exceptions you can act upon.
- **Exception Type**: This infotile groups the exceptions by the type such as component shortage, resource problems and so on. It is depicted in the form of a pie chart.
- **Reported On**: This infotile groups the exceptions by the various shifts during which they were reported.
- **Severity**: This infotile groups the exceptions by the level of criticality such as high or 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.

**Identifying Exceptions for Work Order Operations**

In the Review Dispatch List table, you can easily locate which of the work orders have exceptions associated with them. An icon is displayed beside the work order operation. When you hover over the icon, it shows the number of open exceptions. If you click the icon, it takes you to the Exceptions tab of the work order.

As a production supervisor you can also navigate to the Manage Work Orders page to search for the work orders which have exceptions associated with them. You can search for a particular work order here and if the icon is situated beside the work order in the Search Results area, you can follow the same steps to drill down further.

You can go to the Edit Work Orders page and select the Operations tab. If you open the Edit Operation Items, you find the same icon displayed beside the components that have associated with them. These are the components that have some shortage and are in turn affecting the progress of the work order operations they are a part of.

**Note:** You cannot edit exceptions of type Supplier Operation.

**Closing Work Order Exceptions**

As a production supervisor, once you have assessed all the open exceptions that were notified to you, you can now choose to close the exceptions that have been resolved. You can either close the entire exception or only one or a few work order operations associated with the exception.

On the Overview page of the Work Execution work area, select the task Manage Production Exceptions from the Tasks panel. If you drill down to the Open Exceptions infotile, you get a list of all open exceptions. You can choose to select the Close Exception button here by selecting a particular exception from the list. This closes the exception for all the work order operations associated with it.

You can also close an exception in the Exceptions tab. If you select an exception you are directed to the Exceptions tab. You can set the Exception Status to Closed by selecting that option from the list. Before closing an exception, you can also set the status of the work order to On Hold. After an exception is resolved, you can set the work order status to Released and then close the exception.

You can also close the exception only for particular work order operations and not on the whole. In the Exceptions tab, move to the Impacted Work Order Operations area. Select all the work order operations for which you have resolved the exception. Click the Close Exception button at the header of the table. Save and Close your changes.

**Note:** A work order consists of several operations. You associate an exception not to the whole work order but to certain operations which might be impacted by the exception. When an operation is deleted from a work order during the process of production, the application automatically disassociates the exceptions from that operation.

**Tip:** You can manually close exceptions of type Supplier Operation.
Overview of Electronic Signatures and Electronic Records for Production Exception Closure

You can enable the ability to capture electronic signatures and generate electronic records in a deferred mode while closing a production exception.

To capture electronic signatures and generate electronic records for Production Exception Closure in an organization, you need to set up the following:

- Enable E-Signature for Production Exception Closure as Required 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 E-Signature for Production Exception Closure transaction.
- Configure the Business Process Rules to Determine the Approvers for Production Exception Closure. 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 Production Exception Closure.

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.

How You Capture E-Signatures and Generate E-Records for Production Exception Closure

When you enable electronic signatures and electronic records for Production Exception Closure, the process to generate electronic records and capture electronic signatures is initiated in a deferred mode when you submit a production exception for closure in the following ways:

- From the Manage Production Exceptions page: On the Manage Production Exceptions page, click on the Open Exceptions infolet to display all open production exceptions. Select the specific production exception you want to close. Click the Close Exception button. You can also select more than one production exception.
- At the header level from the Edit Exception page: For a specific exception, on the Edit Exception page, you can change the Exception Status from Open to Closed and save the exception.
At the Work Order Operation level from the Edit Exception page: On the Edit Exception page, in the Impacted Work Order Operations area, select the specific Work Order Operation you want to close. Click the Close Exception button. You can also select more than one Work Order Operation.

From the Edit Work Order page, Exceptions tab: On the Edit Exception page, in the Impacted Work Order Operations area, select the specific Exception you want to close. Click the Close Exception button. You can also select more than one Exception.

From the Supervisor Mobile Application: On the Work Order Exception page, you can submit an exception for closure using the Close action. On the Impacted Work Order Operations page, select the specific Work Order Operation you want to close and submit the Exception for closure using the Close action. You can also select more than one Work Order Operation and more than one Exception to close.

The E-record for a Production Exception contains information about the following:

- Exception Information
- Attachment Details
- Impacted Work Order Operations

Note: If multiple exceptions are submitted for closure through a single action, then the process to generate electronic records and capture electronic signatures is initiated for every production exception that is submitted for closure.

When you submit a production exception for closure, the status of the exception is set to Pending Approval for Closure.

Notifications are sent to other approvers who can access them through bell notifications in the Oracle Cloud application. Approvers can review the electronic records before adding their electronic signature, enter their comments, indicate their approval or rejection and sign the electronic record by entering their password. The status of the exception remains as Pending Approval for Closure until all approvals are completed. Depending upon the outcome of the approval, the production exception is either closed or is set back to open status.

You can search and view the existing E-Records for Production Exceptions from the Electronic Records work area.

Note: For more information about capturing E-Signatures and generating E-Records, refer to the Oracle SCM Cloud Using E-Records, refer to the Oracle SCM Cloud Using E-Signatures and E-Records guide.

How You Report Operation Transactions

You can manually report the progress at a work order operation level by reporting operation transactions. You can report operation transactions such as complete, scrap, and reject from ready status at the in-house count point operation from the Review Dispatch List page in the Work Execution work area. You can report operation transactions, such as complete, scrap, or reject from the ready status at the supplier operation from the Manage Supplier Operations page in the Work Execution work area.

For in-house operations, a quantity or serial is placed in ready status when the work order is released and the operation is the first count point operation in sequence, or the quantity is completed at the prior count point operation when the operation is an intermediate or last operation in sequence. Discrete manufacturing has only one output, which is the last stage of the work order. Process manufacturing can have multiple outputs and can be at any stage. You can view the outputs for an operation in the process manufacturing work order. You can specify multiple output items as products or by-products for an operation. One of the output items in the work order is a primary output. The other output items are products or by-products. Process manufacturing work orders don’t have serial tracked operations.
For supplier operations, a quantity or serial is in in-process status when the work order is released and the supplier operation is the first operation in sequence, or the quantity is completed at the prior count point operation when the supplier operation is an intermediate or last operation in sequence. The in-process dispatch status represents quantities at supplier operations that have been completed at the prior count operation, but haven’t yet been received from the supplier after processing. Operation transactions can’t be reported when the quantity or serial is in in-process status. After receiving and delivering to manufacturing, the quantity at a supplier operation that’s not a serial-tracked operation is automatically reported as completed. In case of a serial-tracked supplier operation, the serial is automatically placed in ready status.

**Tip:** Supplier operations are displayed in the Manage Supplier Operations page and can only be transacted from this page. Supplier operations aren’t listed in the dispatch list.

There are two modes to manually report the operation transactions at an in-house or a supplier operation:

- **Quick Complete:** You can use the quick complete mode to create the operation transactions in two clicks. This mode can be used only if the work order has all the necessary data for the transaction setup and the transaction doesn’t require any additional inputs. The quick complete mode can also create multiple operation transactions to perform the complete, scrap, and reject transactions in one transaction cycle.
- **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 when you need 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. In discrete manufacturing, if the transaction is an operation completion at the last operation, the product is completed to the inventory. You can initiate the operation transaction for process work orders in the same way as that of discrete work orders. The process manufacturing work orders can have output items in any operation. Output items setup in work order as automatic will be automatically completed at the operation while performing complete with details. Use the complete with details mode to change the output item quantities and add and update output items or serials for process manufacturing work orders.

**Note:** This section is applicable for operations without inspections. For operations with inspections, refer to the Manage Inspections: Explained topic in this guide.

You can perform the following operation transactions:

- Complete a quantity in ready status at an operation.
- Complete a quantity in ready status at the last operation and inventory the product (for process work orders, output items can be inventoried during completion of any operation).
- Scrap a quantity in ready status at an operation. You must have the required scrap privilege to perform the transaction.
- Reject a quantity in ready status at an operation for further review to decide on the disposition action.
- Complete a rejected quantity if the rejected quantity is decided as acceptable.
- Scrap a rejected quantity if the rejected quantity is decided as unacceptable. You must have the required scrap privilege to scrap quantities.
- Complete to complete for overcompletions (allowed only in in-house count point operations).

Additionally, you can also correct any errors by performing a reverse transaction. The reverse transaction reverses the quantity transacted earlier. The forward and reverse transactions are recorded as separate transactions. The reverse transactions can be performed from the complete, scrap, or reject dispatch statuses. You can perform the following reverse transactions:

- Reverse a completed quantity to ready at an operation.
• Reverse the product at the last operation for discrete manufacturing work orders. (for process manufacturing work orders, it can be at any operation).
• Reverse a scrapped quantity to ready. You must have the WIP_REPORT_Scrap_TRANSACTIONS_PRIV privilege to perform the transaction.
• Reverse a rejected quantity to ready.

**Tip:** You can't manually reverse a quantity or a serial at a supplier operation from ready to in-process status. When you return quantities to either receiving or supplier, or perform a receipt or return correction, the quantity or a serial in ready status is automatically reversed to in-process.

The operation transactions 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 quantity is automatically reversed at the automatically transact operation if the quantity is manually reversed at the previous count point operation.

**Note:** The operation transactions aren’t supported for optional operations.

**Validate Operation Completion**

If operation attribute **Completions with Under Issues** is set to **Allow with warning** and all the required materials with push supply type aren’t issued, then operators will get a warning message giving them the option of whether or not they want to report the operation transaction.

If the operation attribute **Completions with Under Issues** is set to **Don't allow**, then operators won't be able report operation completions unless all the required material with push supply type are issued.

If operation attribute **Completions with Open Exceptions** is set to **Allow with warning** and if there are open exceptions, then operators will get a warning message giving them the option of whether or not they want to report the operation transaction.

If the operation attribute **Completions with Open Exceptions** is set to **Don't allow**, then operators can’t report operation completions unless all the exceptions are closed.

**Overcompletion**

The completing or scrapping of the quantity that’s over the work order quantity at the first in-house count point operation in the work order operations is called overcompletion. This is supported if the work order overcompletion tolerance is setup either at work order level or at the Default Overcompletion Tolerance Percentage plant parameter. At the work order level, the overcompletion can be set up as the percentage of the work order quantity or as the absolute quantity. However, the plant parameter is used to set up a default value for overcompletion in percentage. The overcompletion set up at the work order level always overrides the overcompletion set up in the plant parameter.

**Note:** Overcompletions can't be reported at supplier operations.

**Reporting Operation Transactions in a Contract Manufacturing Plant**

In a contract manufacturing plant, when you report the completion of the last operation, the application receives the contract manufacturing service item against the contract manufacturing plant into the inventory. The application then completes the last operation which backflushes the contract manufacturing service item and posts the assembly into inventory.

**Note:** Contract manufacturing is currently supported for only discrete manufacturing.
For successful completion of the last operation in a contract manufacturing plant, you must do the following:

- Set up the default item transaction for the inventory.
- Set up the default supply subinventory and locator in the contract manufacturing plant. You must ensure that the subinventory and locator in the contract manufacturing plant is same as that in the default item transaction.
- Set the receipt routing for the purchase order as Direct.

You should not report an operation transaction for a contract manufacturing work order if it's not linked to a purchase order. Reporting an operation transaction for a contract manufacturing work order that's not linked to a purchase order will result in negative inventory of the contract manufacturing service item. You can't reverse such an operation transaction.

In a contract manufacturing plant, you can't perform the following:

- Scrap a quantity at an operation
- Reject a quantity at an operation
- Reverse to Ready at the final operation

**Quick Complete**

The quick complete mode is available only if there's no lot or serial control enabled operation pull component in the work order operation.

**Note:** For process manufacturing work orders, there should not be any lot or serial-controlled output items for automatic reporting at the operation. There can be manual outputs that are lot and serial controlled and you can still quick complete at the operation.

Irrespective of the availability of the Quick Complete button, a transaction is eligible for quick complete only if:

- There's no lot or serial numbers to be entered for the product or automatic output items. The quick complete isn't supported if the transaction has to report the product or output items that are serialized at receipt, because you're required to enter the lot or serial number.
- There are no lot control or serial control enabled pull components to be backflushed. The backflush components can be assembly pull or operation pull. The scrap transactions that have lot-controlled or serial-controlled assembly pull components aren't eligible for quick complete.
- If in a set of multiple transactions, if one of the transactions isn't eligible for quick complete, all the transactions will fail.
- The default supply subinventories for all the pull components must be specified in the work order or in the Default Supply Subinventory plant parameter if there are pull components to be backflushed.
- The default subinventory for product completion must be specified in the work order or in the Default Completion Subinventory plant parameter if the transaction is a product completion. The plant parameters Default Completion Subinventory and Default Completion Locator are mandatory plant parameters.

**Note:** For manufacturing plants which are enabled to track inventory by the country of origin, when completions are performed using quick complete actions, the products are completed without the country of origin. Also, the materials are backflushed without country of origin.

**Complete with Details**

Using the complete with details mode, you can create only one type of operation transaction at a time, that's, you can either complete or scrap or reject in one transaction. You can't perform more than one transaction type in a transaction. The quantity entered should not exceed the quantity available for transaction. The quantity available for transaction is
the quantity that’s available in the current dispatch status. However, if the operation is the first count point operation and if any overcompletion quantity is set up in the work order, then the total transaction quantity can exceed the quantity in the current dispatch status to the extent allowed by over completion tolerance. Overcompletion is allowed only at the first count point operation in the work order operation from Ready status.

For transactions initiated from Reject dispatch status, you will have three attributes Complete, Scrap or Reverse to Ready to complete, scrap or reverse the quantity to ready status. The user can complete or scrap or reverse a quantity to ready. The total quantity entered should not exceed the quantity in the current dispatch status.

**Note:** If the operation has a required inspection setup, then multiple types of operation transactions can be created. Refer to the appropriate section on Manufacturing Inspections for details.

For transactions initiated from Complete or Scrap dispatch status, you will have only one attribute Reverse to Ready to enter the quantity that’s to be reversed to ready status. The total quantity entered should not exceed the quantity in the current dispatch status.

The flow for reporting an operation transaction consists of the following four train stops:

**Product Train Stop**

In the Product train stop, you can review the transaction. The following table lists the attributes in the Product train stop:

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transaction Date</td>
<td>The date of transaction. The field is set to the current date and time. However, you can update it to a past date and time.</td>
</tr>
<tr>
<td>Attachments</td>
<td>The list of attachments from the work order. You can add work order operation attachments. The attachments of the following types are displayed:</td>
</tr>
<tr>
<td></td>
<td>• Work order operation</td>
</tr>
<tr>
<td></td>
<td>• Work order header</td>
</tr>
<tr>
<td></td>
<td>• Work order operation material</td>
</tr>
<tr>
<td></td>
<td>• Work order operation resource</td>
</tr>
<tr>
<td></td>
<td>• Sales order header</td>
</tr>
<tr>
<td></td>
<td>• Sales order line</td>
</tr>
<tr>
<td>Note:</td>
<td>The last two attachment types are applicable only for work orders which are reserved as a source of supply for sales orders.</td>
</tr>
<tr>
<td>Available to Transact</td>
<td>The quantity that can be transacted with the dispatch status.</td>
</tr>
<tr>
<td>Transaction Type</td>
<td>The transaction type for the current transaction.</td>
</tr>
<tr>
<td>Quantity</td>
<td>The current transaction quantity. You can update this field up to the quantity specified in Available to Transact field. This field is read-only when you navigate back to the page from an upstream page.</td>
</tr>
<tr>
<td>Print Label</td>
<td>If selected, the labels will be printed as per the predefined template.</td>
</tr>
</tbody>
</table>
Field | Description
--- | ---
Transaction Note | The note for the transaction.

Operation Transaction Summary | The region has the following three attributes that show the current status of transacted quantity in the work order operation:
- Complete
- Reject
- Scrap

Additional Information Region | The additional information region is enabled for serial-tracked and nonserial-tracked operations.

Additional Serial Information Region | The additional serial information region is enabled for serial-tracked operations.

**Note:** If the descriptive flexfields attributes are set up, you can add additional information for operation transactions. If serial attributes flexfields are set up, you can add additional serial information in serial-tracked operations.

For serial-tracked operations, the serial numbers previously generated and associated in the work orders are displayed in the expanded region of the dispatch list row. The transaction is initiated by selecting the check box in the dispatch status region for a serial number and then clicking the Complete with Details action. Only one serial can be transacted at a time for this action.

**Backflush Materials Train Stop**

The Backflush Materials train stop is displayed if the Allow Quantity Changes During Backflush plant parameter is set as Both or Material. The following table lists the attributes in the Materials train stop:

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Status</td>
<td>Icon to show the status whether the required attributes have been entered for the row.</td>
</tr>
<tr>
<td>Operation Sequence</td>
<td>Operation sequence in the work order from which the material was derived. This can be the current operation or a previous automatically transact operation.</td>
</tr>
<tr>
<td>Component</td>
<td>Item number of the component. Component is for discrete work order user interface.</td>
</tr>
<tr>
<td>Material</td>
<td>Item number of the component. Material is for process work order user interface.</td>
</tr>
<tr>
<td>Basis</td>
<td>Basis type as defined in the work order operation materials for the component.</td>
</tr>
<tr>
<td>UOM</td>
<td>Unit of measure as defined in the work order materials or in organization item definition.</td>
</tr>
<tr>
<td>Field</td>
<td>Description</td>
</tr>
<tr>
<td>-----------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Required</td>
<td>Required quantity as defined in the work order for nonserial-tracked items. For serial-tracked 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 required for the transaction.</td>
</tr>
<tr>
<td>To Transact</td>
<td>Set to required quantity for nonserial-tracked items with minimum as 1.</td>
</tr>
<tr>
<td>Component Lot Number</td>
<td>Lot number for the item. Component Lot Number and Component Serial Number in the discrete manufacturing user interface.</td>
</tr>
<tr>
<td>Lot Number</td>
<td>Lot Number in the process manufacturing user interface.</td>
</tr>
<tr>
<td>Serial Number</td>
<td>Serial number for the item in the process manufacturing user interface.</td>
</tr>
<tr>
<td>Country of Origin</td>
<td>For manufacturing plants which are enabled to track inventory by the country of origin, operators can optionally specify the country of origin from the list of countries. When the country of origin is specified, the on hand balances for the country are updated. If the country of origin isn't specified, the on hand inventory tracked without the country of origin will be updated. When the required balances aren't available, negative balances are created if the organization allows negative balances.</td>
</tr>
<tr>
<td>Additional Information Region</td>
<td>The additional information region is enabled for serial-tracked and nonserial-tracked operations.</td>
</tr>
</tbody>
</table>

Lots can be defaulted or manually entered by the user, based on the setting of the plant parameter, Lot Selection During Backflush.

- If the parameter is set to Manual, the lots aren't defaulted and the user manually enters the lots.
- If the parameter is set to Lot FIFO, the lots are defaulted on the basis of first in first out, using the receipt date.
- If the parameter is set to Lot FEFO, the lots are defaulted on the basis of first expiration first out, using the expiration date.

**Autotransact Resources Train Stop**

The Autotransact Resources train stop is displayed only if the Allow Quantity Changes During Backflush plant parameter is set up as Both or Resources. The following table lists the attributes in the Resources train stop:

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Status</td>
<td>Icon to show the status whether the required attributes have been entered for the row.</td>
</tr>
<tr>
<td>Operation Sequence</td>
<td>Operation sequence in the work order from which the material was derived. This can be the current operation or a previous automatically transact operation.</td>
</tr>
<tr>
<td>Sequence</td>
<td>This is the resource sequence as in the work order operation resources.</td>
</tr>
</tbody>
</table>
### Field Description

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resource</td>
<td>Name of the resource.</td>
</tr>
<tr>
<td>Resource Instance</td>
<td>Name of the resource instance.</td>
</tr>
<tr>
<td>Resource Type</td>
<td>Resource type as defined in the work order resources or in resource definition.</td>
</tr>
<tr>
<td>Activity</td>
<td>Resource activity as defined in the work order resources or in resource definition.</td>
</tr>
<tr>
<td>Basis</td>
<td>Basis type as defined in the work order operation for the resource.</td>
</tr>
<tr>
<td>UOM</td>
<td>Unit of measure as defined in the work order resources or in organization item definition.</td>
</tr>
<tr>
<td>Required</td>
<td>Required quantity as defined in the work order resources.</td>
</tr>
<tr>
<td>To Charge</td>
<td>Set to Required quantity to make changes.</td>
</tr>
</tbody>
</table>

**Note:** Although resources can’t be associated to supplier operations on a work order, you can report specific resource usages at a supplier operation from the Autotransact Resources train stop.

### Inventory Train Stop

In discrete manufacturing work orders, the Inventory train stop is displayed only if the operation is a product completion or reverse at the last operation. For process manufacturing work orders the Inventory train stop is displayed for all operations. This page displays all output items setup as automatic in the work order output items.

The following table lists the attributes in the Inventory train stop:

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Status</td>
<td>Icon to show the status whether the required attributes have been entered for the row.</td>
</tr>
<tr>
<td>Output</td>
<td>Output item for process manufacturing work orders.</td>
</tr>
<tr>
<td>Description</td>
<td>Description of the output item.</td>
</tr>
<tr>
<td>Output Type</td>
<td>Output item type: can be product or by-product. This is for only process manufacturing work orders.</td>
</tr>
<tr>
<td>Operation Sequence Number</td>
<td>Operation sequence number can be the current operation sequence or the sequence number of a prior auto-transact operation.</td>
</tr>
<tr>
<td>Field</td>
<td>Description</td>
</tr>
<tr>
<td>------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>UOM</td>
<td>Unit of measure for the output item quantity</td>
</tr>
<tr>
<td>Expected</td>
<td>Expected quantity for output based on transaction quantity, work order output quantity and the work order quantity. It’s zero for ad hoc output items.</td>
</tr>
<tr>
<td>To Transact</td>
<td>The default transaction quantity. You can also update it to generate multiple rows for the transaction quantity. The total quantity in the rows must match the transaction quantity.</td>
</tr>
<tr>
<td>Lot Number</td>
<td>Lot number of the product.</td>
</tr>
<tr>
<td>Serial Number</td>
<td>Serial number of the product.</td>
</tr>
<tr>
<td>Subinventory</td>
<td>Completion subinventory as defined in the work order or in plant parameter Default Completion Subinventory.</td>
</tr>
<tr>
<td>Locator</td>
<td>Completion subinventory as defined in the work order or in plant parameter Default Completion Locator.</td>
</tr>
<tr>
<td>Country of Origin</td>
<td>For manufacturing plants which are enabled to track inventory by the country of origin, operators can optionally specify the country of origin from the list of countries. When the specific country of origin is specified, the on hand balances for the country of origin are updated. If the country of origin isn’t specified, the on hand inventory tracked without the country of origin will be updated.</td>
</tr>
<tr>
<td>Additional Info</td>
<td>The additional information region is enabled for serial-tracked and nonserial-tracked operations.</td>
</tr>
</tbody>
</table>

- For process manufacturing work orders, you can add and delete output items in the work order operation. You can use the icons for adding and deleting output items at the table level. There are two buttons Generate Lot and Generate Serial in the table level. They are displayed only if the item is lot or serial-controlled at receipt. For process manufacturing, the Generate Lot and Generate Serial buttons are always displayed.

- If the product is set up as **Full lot control** enabled in the Product Information Management work area, you can select the required number of rows and click **Generate Lot** in the Inventory train stop to automatically generate sequential lot numbers for your product. Generate Lot and Generate Serial buttons are always displayed for process manufacturing work orders.

- If the product is set up as serial control enabled, and it has the serial generation attribute set up as **Dynamic entry at inventory receipt** in the Product Information Management work area, you can select the required number of rows and click **Generate Serial** in the Inventory train stop to automatically generate sequential serial numbers for your product.

**Tip:** You can also enter lot and serial numbers manually.

If the product is lot control enabled or serial control enabled, the additional information captures lot and serial attributes.
Note: If you have enabled Electronic Signatures and Electronic Records, you can submit the operation transaction for approval. An E-Signature page opens where you can view the status of the approval process of the operation transaction.

Report an Operation Transaction for Discrete Work Orders

In this example, you can perform an operation transaction.

Steps to Perform for an Operation Transaction

The example discusses the steps required for completing the required quantities to the inventory for a work order operation for a discrete manufacturing work order.

1. In the Work Execution work area, verify the manufacturing organization on the page. If it is not the correct organization, click the Change Organization and set it to the required organization.
2. On the Work Execution Overview page, in the Tasks pane, click the Review Dispatch List link.
3. On the Review Dispatch List page, use the Search region to search for the work order for which you want to perform the transaction. You can also search for a work order in a specific status.

The following table lists the specific values if you want to search for a work order by its status:

<table>
<thead>
<tr>
<th>Field</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Work Area</td>
<td>Select the work area of the work order.</td>
</tr>
<tr>
<td>Work Center</td>
<td>Select the work center of the work order.</td>
</tr>
<tr>
<td>Status</td>
<td>Select the status of the work order. The valid values are: Complete, Optional, Ready, Reject, and Scrap.</td>
</tr>
<tr>
<td>Work Order</td>
<td>Enter the work order.</td>
</tr>
<tr>
<td>Work Method</td>
<td>Select the work method of the work order. The valid values are Discrete Manufacturing and Process Manufacturing. For discrete manufacturing work orders, select the Discrete Manufacturing work method. For process manufacturing work orders, select the Process Manufacturing work method.</td>
</tr>
</tbody>
</table>

4. Click the Search button. The records that fulfill the search criteria are displayed. Note that, you can also use the following fields to perform a search as per your requirement: Item, Start Date, Completion Date, and Serial Number.
5. Search 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.
6. Select the check box in the Complete column for the first serial number.
7. Click the Complete with Details button. Note that the Complete with Details option can be used only for Complete, Reject, or Scrap quantity, and not more than one quantity can be populated.
8. Leave the Transaction Date as system current date and time.
9. Enter any value in the Transaction Note field to indicate any information for the transaction.
10. Click Next. The Materials train stop is displayed.
11. In the Materials train stop, review the operation pull material requirements derived from the work order definition.
12. For the component that you want to perform the transaction, update the To Transact quantity. Note that the To Transact quantities are defaulted from the work order definition and can be updated to reflect actual usage quantities.
13. Click Next. The Resources train stop is displayed.
14. In the Resources train stop, for the resource that you want to perform the transaction, update the To Charge quantity. Note that the To Charge quantities are defaulted from the work order definition and can be updated to reflect actual usage quantities.
15. Click Next. The Inventory train stop is displayed.
16. In the Inventory train stop, leave the Subinventory as populated by the default value.
17. Click Generate Lot or Generate Serial in the following cases:
   - If the product is set up as Full lot control enabled in the Product Information Management work area, you can select the required number of rows and click Generate Lot to automatically generate sequential lot numbers for your product.
   - If the product is set up as serial control enabled, and it has the serial generation attribute set up as Dynamic entry at inventory receipt in the Product Information Management work area, you can select the required number of rows and click Generate Serial to automatically generate sequential serial numbers for your product.

   **Note:** You can also enter lot and serial numbers manually.
18. Click Save and Close. A confirmation message is shown to confirm that the required quantities have been completed to inventory for the work order operation.

**Report an Operation Transaction for Process Work Orders**

As a production operator, here are the steps you can perform to complete the required quantities to the inventory, for a work order operation of a process manufacturing work order.

1. In the Work Execution work area, verify the manufacturing organization on the Overview page. If it is not the correct organization, click **Change Organization** and set it to the required organization.
2. On the Work Execution Overview page, in the Tasks pane, click the **Review Dispatch List** link.
3. On the Review Dispatch List page, use the Search region to search for the work order for which you want to perform the transaction. You can also search for a work order in a specific status. Here are the listed attributes if you want to search for a work order by its status:

<table>
<thead>
<tr>
<th>Field</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Work Area</td>
<td>Select the work area of the work order.</td>
</tr>
<tr>
<td>Field</td>
<td>Value</td>
</tr>
<tr>
<td>--------------</td>
<td>----------------------------------------------------------------------</td>
</tr>
<tr>
<td>Work Center</td>
<td>Select the work center of the work order.</td>
</tr>
<tr>
<td>Status</td>
<td>Select the status of the work order.</td>
</tr>
<tr>
<td></td>
<td>The valid values are: Complete, Optional, Ready, Reject, and Scrap.</td>
</tr>
<tr>
<td>Work Order</td>
<td>Enter the work order.</td>
</tr>
<tr>
<td>Work Method</td>
<td>Select the work method of the work order.</td>
</tr>
<tr>
<td></td>
<td>The valid values are Discrete Manufacturing and Process Manufacturing.</td>
</tr>
<tr>
<td></td>
<td>For process manufacturing work orders, select the Process Manufacturing work method.</td>
</tr>
<tr>
<td></td>
<td>✏️ Note: The work method field is available only when you perform an advanced search.</td>
</tr>
</tbody>
</table>

4. Click **Search**.
The records that fulfill the search criteria are displayed.

   ✏️ Note: You can also use the following fields to perform a search as per your requirement: Item, Start Date, Completion Date, and Serial Number.

5. (Optional) Click **Advanced Search**.
The records that fulfill the search criteria are displayed.

   ✏️ Note: You can also use the following fields to perform an advanced search as per your requirement: Work Area, Work Center, Status, Work Order, Start Date, Completion Date, Serial Number, and Work Method.

6. Search 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.
7. Enter the quantity for the **Complete**, or **Reject**, or **Scrap**.
8. Click **Complete with Details**.
You can use the **Complete with Details** option only for **Complete**, **Reject**, or **Scrap** quantity, and not more than one quantity can be populated.

   The Product train stop is displayed.
9. In the Product train stop, leave the **Transaction Date** as system current date and time.
10. Enter any value in the **Transaction Note** field to indicate any information for the transaction.
11. Click **Next**.
   The Materials train stop is displayed.
12. In the Materials train stop, review the operation pull material requirements derived from the work order operation items.
13. For the material that you want to perform the transaction, update the To Transact quantity.

**Note:** The To Transact quantities are defaulted from the work order definition and can be updated to reflect actual usage quantities. You can change the quantity during Backflush. This change is allowed based on the plant parameter setup, which must be set as Materials or Both.

14. Click Next.

The Resources train stop is displayed.

15. In the Resources train stop, for the resource that you want to perform the transaction, update the To Charge quantity.

**Note:** The To Charge quantities are defaulted from the work order definition and can be updated to reflect actual usage quantities. You can change the quantity during Autotransact. This change is allowed based on the plant parameter setup, which must be set as Resources or Both.

16. Click Next.

The Inventory train stop is displayed.

For process manufacturing work orders, the Inventory train stop is displayed for all operations for operation completions but not for the Reject or Scrap transactions. For operation completions, the output items in the work order setup with completion type as Automatic for this operation will be defaulted in the page. You can add any ad hoc output items for this operation. You can add output items, delete defaulted output items, or change quantities.

17. In the Inventory train stop, for the output item that you want to perform the transaction, update the Output Type as product or by-product, and update the To Transact quantity.

**Note:** The default output item value of the To Transact quantity for process manufacturing work orders is the expected quantity. You can update the To Transact field manually. If the output item is serial controlled, then to transact quantity will be 1. The validation on the To Transact quantity is not possible.

18. Click Generate Lot or Generate Serial in the following cases:

- If the product is set up as Full lot control enabled in the Product Information Management work area, you can select the required number of rows and click Generate Lot to automatically generate sequential lot numbers for your product.
- If the product is set up as serial control enabled, and it has the serial generation attribute set up as Dynamic entry at inventory receipt in the Product Information Management work area, you can select the required number of rows and click Generate Serial to automatically generate sequential serial numbers for your product.

**Note:** You can also enter lot and serial numbers manually.

19. Click Save and Close.

A confirmation message is shown to confirm that the required quantities have been completed to inventory for the work order operation.
How You Report Material Transactions

The **Report Material Transactions** task enables a production operator to report materials for the work order operation. You can issue materials from the inventory to the work order operation and return the issued materials back to the inventory.

You can report a material transaction on the Report Material Transactions page. You can access this page from either of the following pages:

- On the Review Dispatch List page, click the **Report Material Transactions** icon for the work order operation. This link is enabled only if the role assigned to you has the Report Material Transactions privilege associated to it.
- On the Work Execution Overview page, in Tasks pane, click the Report Material Transactions link. Select the work order and work order operation.

The material transactions can also be imported through the Material Transaction Web Service or through the predefined XLSM templates.

**Tip:** The autotransact operations aren't shown in the dispatch list. Hence, the materials for the auto transact operations are reported by accessing the Report Material Transactions page from the Work Execution Overview page.

**Caution:** In a contract manufacturing plant, you must not report material transactions for the contract manufacturer owned components.

**Note:** For Rework or Transform work orders, negative issue and negative return transactions are supported. You can transact items with negative quantity.

Issuing Materials to the Work Order Operation

On the Report Material Transactions page, the materials are issued to the work order by specifying the transaction type as **Issue**. You can control the issuing of the materials using the Show Components option. The **Show Components** option is defaulted based on the setting of the Default Transaction Mode plant parameter. However, you can edit the Show Components option as per your requirement.

- When the Show Components option is set to All: All the material requirements as defined on the work order for the operation with Push supply type are defaulted. This mode is ideally used when all the required materials are issued at once and there are minimal or no changes to the material requirements. Also, based on whether the **Default Transaction Quantity** plant parameter is set to material or both, the materials are defaulted with required quantity. The ad hoc materials, that's, the materials not defined as required in the work order operation can be manually entered using the Add action.

- When the Show Components option is set to Manually entered: The material requirements as defined on the work order for the operation aren't defaulted. You can enter the required materials manually. This mode is ideally used when only few of the required materials are issued at once.

You can enter the transact quantity, serial number, and lot number for the material based on the material control setup. The subinventory and locator are defaulted based on setup at work order or plant level. However, you can edit the Subinventory and Locator fields. The material transactions can also be reported by using a scanner. You can scan multiple serial numbers by scanning the component number once. You can optionally scan component serial attributes for components that are serial controlled at issue. Serial attributes if configured can be entered or updated.
for components which are serial controlled. For lot controlled components, it’s possible to view lot attributes which have been entered in Oracle Inventory.

For the serial tracked manufacturing, in which the production is tracked using the serial numbers, the materials are issued with reference to the item serial number. For all the components, whether serial controlled, lot controlled, or uncontrolled, the issued quantities are tracked at the serial level.

If Additional Manual Material Issue is set to Do not allow, the operator can’t manually issue additional materials that aren’t defined in the work order with push supply type, or manually issue quantities greater than those specified in the work order.

For manufacturing plants which are enabled to track inventory by the country of origin, operators can optionally specify the country of origin from the list of countries. When the country of origin is specified, the on hand balances for the country are updated. If the country of origin isn’t specified, the on hand inventory tracked without the country of origin will be updated. When the required balances aren’t available, negative balances are created if the organization allows negative balances.

Returning Materials to the Inventory

On the Report Material Transactions page, the materials issued to the work order are returned to the 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 defaulted based on the setting of the Default Transaction Mode plant parameter. However, you can edit the Show components option as 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 defaulted.
- When the Show components option is set to Manually entered: The material requirements as defined on the work order for the operation aren’t defaulted and you can enter the required materials manually.

For the serial-tracked manufacturing, in which the production is tracked using the serial numbers, the materials are returned in reference to the item serial number.

Note: The material return for component at given operation can now be done only after the last issue of the component at the operation.

Note: If you have enabled Electronic Signatures and Electronic Records, you can submit the material transaction for approval. An E-Signature page opens where you can view the status of the approval process of the material transaction.

Report a Material Transaction

The example discusses reporting a material transaction in a serial tracked operation and the process of issuing materials to a work order operation. The steps in this example are applicable to discrete work orders.

Note: Serial tracked operations are currently supported for only discrete manufacturing. Process manufacturing supports only nonserial-tracked operations.
Steps to Report a Material Transaction

To issue materials to a work order operation, perform the following steps:

1. In the Navigator, click the Work Execution work area link.
2. Verify the manufacturing organization on the page. If it is not the correct organization, click the Change Organization and set it to the required organization.
3. On the Work Execution Overview page, in the Tasks pane, click the Review Dispatch List link.
4. On the Review Dispatch List page, use the Search region to search for the work order for which you want to perform the transaction.
   The following table lists the specific values you must choose to search for work orders based on their statuses:

<table>
<thead>
<tr>
<th>Field</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Work Area</td>
<td>Select the work area of the work order.</td>
</tr>
<tr>
<td>Work Center</td>
<td>Select the work center of the work order.</td>
</tr>
<tr>
<td>Status</td>
<td>Select the status of the work order.</td>
</tr>
<tr>
<td></td>
<td>The valid values are: Complete, Optional, Ready, Reject, and Scrap.</td>
</tr>
<tr>
<td>Work Order</td>
<td>Enter the work order.</td>
</tr>
</tbody>
</table>

5. Click the Search button. The records that fulfill the search criteria are displayed. Note that, you can also use the following fields to perform a search as per your requirement: Item, Start Date, Completion Date, and Serial Number.
6. Search for the row with the work order for which you want to perform the transaction. Click the Materials link to report the material transaction.
7. Retain the Transaction Type option as Issue for issuing the materials to the work order operation. For returning the materials to the inventory, you must select Return as the Transaction Type option.
8. Retain the default system date as the Transaction Date. You can update the field to a past date if required.
9. In the Show Components option, Select All to default all the material requirements defined on the work order for the operation with Push supply type. You can select Manually entered as the show components option so that the material requirements as defined on the work order for the operation are not defaulted and you can enter the required materials manually.
10. 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. In the new row, from the Component list, select the material. From the Component Serial Number list, select the serial number for the material.
11. 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 field when all the required data is entered for the component.
12. Click the expansion icon of each updated row to view more details. Verify the correct subinventory in the Subinventory list and update it if required.
13. Click the Save and Close button. A confirmation message is shown on the successful completion of the material transaction.
How You Report Resource Transactions

A resource transaction is an execution transaction that charges the work order operation for the resources that are consumed in the operation. The resource transactions are reported for performing the following two tasks:

- To manually charge a resource to the work order operation.
- To reverse the charges made earlier for a resource to a work order operation.

Both charging and reversal are recorded as two separate transactions.

You can report a resource transaction on the Report Resource Transactions page. You can access this page from either of the following pages:

- On the Review Dispatch List page, click the Report resource transactions icon for the work order operation.
- On the Work Execution Overview page, in Tasks pane, click the Report Resource Transactions link. Select the work order and work order operation.

The Report Resource Transactions page opens with the resources that are set up in the work order operation with the charge type as Manual.

The following table lists the fields along with their descriptions on the Report Resource Transactions page:

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Item</td>
<td>The product that’s being manufactured in the work order.</td>
</tr>
<tr>
<td>Work Order Quantity</td>
<td>The quantity of the item that’s being manufactured in the work order.</td>
</tr>
<tr>
<td>Work Center</td>
<td>The work center for the work order operation.</td>
</tr>
<tr>
<td>Transaction Type</td>
<td>The type of the resource transaction. The two options are:</td>
</tr>
<tr>
<td></td>
<td>• Charge: Select Charge for charging a work order operation with the resources consumed in the operation.</td>
</tr>
<tr>
<td></td>
<td>• Reverse: Select Reverse for reversing the charges to correct any clerical error.</td>
</tr>
<tr>
<td>Transaction Date</td>
<td>The date of the transaction. This is defaulted to the system date. You can update the transaction date as a past date.</td>
</tr>
<tr>
<td>Project Number</td>
<td>Enter the project number. This field is available only for organizations that are enabled for inventory tracking by project.</td>
</tr>
<tr>
<td>Task Number</td>
<td>Select the task number. This field is available only for organizations that are enabled for inventory tracking by project.</td>
</tr>
</tbody>
</table>
### Field Description

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Show Resources</td>
<td>The resources to be shown for the work order operation. The two options are:</td>
</tr>
<tr>
<td></td>
<td>- Manually Entered: When selected, only the manually entered resources are shown. The default resources from the work order aren't shown.</td>
</tr>
<tr>
<td></td>
<td>- All: When selected, all the resources including the resources that are defaulted from work order.</td>
</tr>
<tr>
<td></td>
<td>The Show Resources option is derived based on the setting of the Default Transaction Mode plant parameter.</td>
</tr>
<tr>
<td>Status</td>
<td>Icon that shows whether or not the mandatory attributes have been entered for the row. Also, a plus icon is shown for the newly added ad hoc resources.</td>
</tr>
<tr>
<td>Sequence</td>
<td>The resource sequence within the work order operation resources. For the ad hoc resources that aren't set up in the work order, a new sequence is generated when the resource is added.</td>
</tr>
<tr>
<td>Resource</td>
<td>The name of the resource.</td>
</tr>
<tr>
<td>Resource Instance</td>
<td>The name of the resource instance.</td>
</tr>
<tr>
<td>Type</td>
<td>The resource type as defined in the work order resources or in the resource definition.</td>
</tr>
<tr>
<td>Activity</td>
<td>The resource activity as defined in the work order resources or in the resource definition.</td>
</tr>
<tr>
<td>Basis</td>
<td>The basis type as defined in the work order operation for the resource.</td>
</tr>
<tr>
<td>UOM</td>
<td>The unit of measure as defined in the work order resources or in the resource definition.</td>
</tr>
<tr>
<td>Required</td>
<td>The resource quantity to charge the work order operation. The To Charge field is defaulted to the quantity specified in the Required field if the plant parameter Default Transaction Quantity is set as either Both or Resource.</td>
</tr>
<tr>
<td>To Charge</td>
<td>The resource quantity to charge the work order operation. The To Charge field is defaulted to the quantity specified in the Required field if the plant parameter Default Transaction Quantity is set as either Both or Resource.</td>
</tr>
</tbody>
</table>

### 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. Optionally you can also select the resource instance. 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...
it’s not zero, then the resource isn’t shown. This means that Fixed resources can be charged only once, and when charged, they won’t appear again. The application will check whether there is any net charge against a resource with Basis attribute as Fixed, which won’t show as it has already been charged.

Reversing Resource Charges 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.

Report a Resource Transaction

The following example illustrates reporting a resource transaction in an operation. The example discusses the process of charging resources to a work order operation.

Steps to Report a Resource Transaction

To charge resources to a work order operation, perform the following steps:

1. In the Navigator, click the Work Execution work area link.
2. Verify the manufacturing organization on the page. If it is not the correct organization, click the Change Organization and set it to the required organization.
3. On the Work Execution Overview page, in the Tasks pane, click the Review Dispatch List link.
4. On the Review Dispatch List page, use the Search region to search for the work order for which you want to perform the transaction.

You can also search for work orders by their statuses. The following table lists out all the search criteria on the basis of which you can query a work order:

<table>
<thead>
<tr>
<th>Field</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Work Area</td>
<td>Select the work area of the work order.</td>
</tr>
<tr>
<td>Work Center</td>
<td>Select the work center of the work order.</td>
</tr>
<tr>
<td>Status</td>
<td>Select the status of the work order. The valid values are: Complete, Optional, Ready, Reject, and Scrap.</td>
</tr>
<tr>
<td>Work Order</td>
<td>Enter the work order.</td>
</tr>
</tbody>
</table>

5. Click the Search button. The records that fulfill the search criteria are displayed. Note that, you can also use the following fields to perform a search as per your requirement: Item, Start Date, Completion Date, and Serial Number.
6. Look for the row with the work order for which you want to perform the transaction. Click the Report resource transactions icon to report the resource transaction.

7. 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.

8. Retain the default system date as the Transaction Date. You can update the field to a past date if required.

9. In the Show Resources option, select All to view all the resources including the ones set up on the work order operation. You can also view only the manually entered resources by selecting Manually entered as the Show Resources option.

10. 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. In the new row, from the Resource list, select the resource. You can also add resource instances associated with the resource. Optionally, from the Activity list, select the resource activity.

11. 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 defaulted from the work order definition and can be updated to reflect the actual usage quantity. A check mark is shown in the Status field when all the required data is entered for the resource.

12. Click the Save and Close button. A confirmation message is shown on the successful completion of the resource transaction.

Output Transactions Reporting for Process Work Orders

Process manufacturing work orders can have multiple outputs at any operation. However, one of the output items in the processing manufacturing work order must be a primary output and other output items can be products or by-products. A process manufacturing work order can have only one primary output and it must have a primary output. The output items defined in the process work order operation can be of type Automatic or Manual. Automatic outputs are completed to inventory when the operation completion is reported for the operation. You can report the output items with completion type as Manual as output transaction on the Report Output Items page. You can add output items manually in the work order as well as update or delete them.

As a production operator, you can manually report the output items for a process manufacturing work order operation from the Review Dispatch List page in the Work Execution work area:

- The progress at a work order operation level by reporting the output items that were setup in the work order for manual reporting.
- The output transaction types are complete and reverse.
- The output types are Product and By-product.

You can set up the output items in a work order with completion type Manual, or you may not set up in the work order at all.

Select the row for the work order operation in the Review Dispatch List page and click the Report Output Transactions action icon. The Report Output Items page appears. By default, the output items setup in the work order operation with completion type as Manual are reported in the Report Output Items page.

For manufacturing plants which are enabled to track inventory by the country of origin, operators can optionally specify the country of origin from the list of countries. When the specific country of origin is specified, the on hand balances for the country of origin are updated. If the country of origin isn't specified, the on hand inventory tracked without the country of origin will be updated.
Report an Output Transaction for Process Work Orders

As a production operator, here are the steps you can perform to complete the output items to inventory which are setup for manual completion in the process manufacturing work order.

1. In the Work Execution work area, verify the manufacturing organization on the Overview page. If it is not the correct organization, click Change Organization and set it to the required organization.
2. On the Work Execution Overview page, in the Tasks pane, click the Review Dispatch List link.
3. On the Review Dispatch List page, use the Search region to search for the work order for which you want to perform the transaction. You can also search for a work order in a specific status.
4. Click Search. The records that fulfill the search criteria are displayed.

   Note: You can also use the following fields to perform a search as per your requirement: Item, Start Date, Completion Date, and Serial Number.

5. (Optional) Click Advanced Search.
   The records that fulfill the search criteria are displayed.

   Note: You can also use the following fields to perform an advanced search as per your requirement: Work Area, Work Center, Status, Work Order, Start Date, Completion Date, Serial Number, and Work Method.

6. Search for the row with the work order for which you want to perform the output transaction and click the Report output transactions icon.
   Here are the listed attributes in the Report Output Items page.

<table>
<thead>
<tr>
<th>Field</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Status</td>
<td>Displays the status of the row entry.</td>
</tr>
<tr>
<td></td>
<td>If all required fields are entered for the row, the status displays a tick mark.</td>
</tr>
<tr>
<td>Output</td>
<td>Select the output item for process manufacturing work orders.</td>
</tr>
<tr>
<td>Description</td>
<td>Displays the description of the output item.</td>
</tr>
<tr>
<td></td>
<td>The description is defaulted from the selected output item definition.</td>
</tr>
<tr>
<td>Output Type</td>
<td>Select the output type.</td>
</tr>
<tr>
<td></td>
<td>The valid values are: Product and By-product.</td>
</tr>
<tr>
<td></td>
<td>The default value is By-product.</td>
</tr>
</tbody>
</table>
7. Click **Save and Close**.

A confirmation message is shown to confirm that the output items were reported to inventory for the work order operation on the Review Dispatch List page.

### How You Report Orderless Transactions

You can report the production transactions, such as reporting of completion or scrap of an item, without having to create a work order. These transactions can be reported with reference to a work definition that’s used to determine the material and resource usages. The reported production transactions can be reversed by reporting either Orderless Return or Return From Scrap transactions. The referenced work definition is used to return the materials back to inventory. The resource charges are also reversed based on the work definition.

You can report the orderless completion and scrap using the Report Orderless Completion page that’s accessible from the Work Execution Overview page. You can report the orderless return and return from scrap using the Report Orderless Return page that’s accessible from the Work Execution Overview page. You can also import the orderless transactions through the Material Transaction Web Service or Import Material Transaction file based import process.

**Note:** You can’t perform orderless transactions in a contract manufacturing plant.
Note: You can't report orderless transactions for configured items.

Note: You can't report orderless transactions for process manufacturing work definitions.

Specifying the Product Information

In the Product train stop, you must specify the following item information and the reference to the work definition.

- **Transaction Type:** In the Report Orderless Completion page, select the Transaction Type as Complete for reporting the production completions. Or select the Transaction Type as Scrap for reporting the production scraps. In the Report Orderless Return page, select the Transaction Type as Return for reversing the production completions. Or select the Transaction Type as Return from Scrap for reversing the production scraps. The Scrap and Return from Scrap transaction types are enabled only if you have the WIP_REPORT_SCRAP_TRANSACTIONS_PRIV privilege.

- **Transaction Subtype:** The Transaction Subtype field represents the specific nature of the work that's being performed, such as standard production, prototyping, or repair. The Costing can derive the transaction accounts based on the Transaction Subtype field.

- **Work Definition:** After selecting the item, the work definition with the production priority as 1 is defaulted. However, you can select another work definition that determines the correct material and resource usage as per your requirement.

- **Generate Serial:** If your product is serial control enabled and has the serialization attribute set up as Dynamic entry at inventory receipt in the Product Information Management work area, you can either manually enter serial numbers or click Generate Serial to automatically generate sequential serial numbers.

Reviewing the Backflush materials

In the Backflush Materials train stop, you can review the material requirements. If the Include component yield in material requirements plant parameter check box is selected, the yield is considered in the calculation of the required quantity. The material usages specified in the selected work definition with the supply types as push, operation pull, or assembly pull are displayed.

If the plant parameter Allow quantity changes during backflush is set as either Materials or Both, you can perform the following:

- Modify the transaction quantities for the materials.
- Delete the defaulted material transactions.
- Add new material transactions.

Lots can be defaulted or manually entered by the user, based on the setting of the plant parameter, Lot Selection During Backflush.

- If the parameter is set to Manual, the lots aren't defaulted and the user manually enters the lots.
- If the parameter is set to Lot FIFO, the lots are defaulted on the basis of first in first out, using the receipt date.
- If the parameter is set to Lot FEFO, the lots are defaulted on the basis of first expiration first out, using the expiration date.

Note: If the lot and serial attributes descriptive flexfields attributes are set up, you can add additional information for the lot and serial attributes in the Additional Lot and Serial Information region.
Reviewing the Autotransact Resources

In the Autotransact Resources train stop, you can review the resource requirements. The resource usages specified in the selected work definition are defaulted as resource transactions with the required quantity.

If the plant parameter Allow Quantity Changes During Backflush is set as either Resources or Both, you can perform the following:

- Modify the transaction quantities for the resources and optionally mention resource instances.
- Delete the defaulted resource transactions.
- Add new resource transactions.

Specifying the Inventory Details

In the Inventory train stop, you can specify the inventory information. This is only applicable for complete and return transactions. The Inventory train stop is disabled for the scrap and return from scrap transactions.

You can complete or return the transaction quantity from more than one subinventory or locator. You can complete the quantities to an existing lot or you can specify a new lot number.

Note: You can’t reference a work definition with supplier operations to perform an orderless transaction.

If your product is lot control enabled, you can either manually enter lot numbers, or you can click Generate Lot to automatically generate sequential lot numbers.

If the lot and serial attributes descriptive flexfields attributes are set up, you can add additional information for the lot and serial attributes in the Additional Lot and Serial Information region.

If you have enabled Electronic Signatures and Electronic Records, you can submit the orderless transaction for approval. An E-Signature page opens where you can view the status of the approval process of the orderless transaction.

For manufacturing plants which are enabled to track inventory by the country of origin, operators can optionally specify the country of origin from the list of countries. When the specific country of origin is specified, the on hand balances for the country of origin are updated. If the country of origin isn’t specified, the on hand inventory tracked without the country of origin will be updated.

Report an Orderless Transaction

This example illustrates how to report production completion for an item as an orderless transaction.

Steps to Report an Orderless Transaction

Perform the following steps to report an orderless transaction:

1. On the Work Execution Overview page, in the Tasks pane, click the Report Orderless Completion link.
2. Enter the item for which you want to perform the transaction.
3. The Work Definition field gets automatically defaulted to the work definition with the production priority set as 1. Retain the value or select another work definition as per your requirement. The work definition determines the material and resource usages.
When you enter the item first time, the work definition does not get automatically set to the default value. So, you must enter the item code again. The second time, the work definition is defaulted.
4. Retain the Transaction Type as Complete to report a production complete transaction. The Complete option is by default selected but you can select the Scrap option to report a production scrap.
5. Enter or select values for the fields on the page as required.

The following table lists the fields and their corresponding values that you must select on the page:

<table>
<thead>
<tr>
<th>Field</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transaction Subtype</td>
<td>Select the subtype for the transaction.</td>
</tr>
<tr>
<td>Quantity</td>
<td>Enter the quantity of item on which you want to perform the transaction.</td>
</tr>
<tr>
<td>Note</td>
<td>Enter a description for the transaction to be added as note.</td>
</tr>
</tbody>
</table>

6. For organizations enabled for inventory tracking by project, you can enter the Project Number and Task Number in the Product train stop. All other project-related attributes are derived per the setup.
7. Click Generate Serial to automatically generate sequential serial numbers.

   **Note:** You can perform this step only if your product is serial control enabled and has the serialization attribute set up as Dynamic entry at inventory receipt in the Product Information Management work area.

8. Click Next.
9. On the Orderless Complete: Backflush Materials page, review the material transactions defaulted from the work definition.
10. You can update the Transact Quantity field as required to reflect the usage quantities of the components.
11. Click Next.
12. On the Orderless Complete: Autocharge Resources page, review the resource transactions defaulted from the work definition.
13. You can update the To Charge field as required to reflect the usage quantities of the resources. You can optionally mention resource instance.
14. Click Next.
15. On the Orderless Complete: Inventory page, retain or update the value for the Subinventory field.
16. Click Generate Lot to automatically generate sequential lot numbers.

   **Note:** You can perform this step only if your product is set up with the attribute Full lot control in the Product Information Management work area.

17. From the Save and Transact Another menu, select: click and Close.
18. The transaction is completed and a message is shown to confirm that the orderless completion is reported.
How You Manage Inspections

Integration of manufacturing with quality management helps you to inspect at an operation and accordingly accept or reject the inspected transaction. The inspection results you enter and the specification limits set up in the inspection plan decide whether the serial or quantity of an operation can be accepted or rejected.

If you have the role of a production operator, and the required privilege of inspection, you can use an inspection plan already set up for particular work order operations to perform inspection. You can inspect the operations based on certain inspection criteria. Only after you inspect the operation, the inspection results help drive whether the quantity in the operation is completed, rejected, or optionally scrapped.

An inspection plan can be associated with an item or item category that is being manufactured in your organization. Inspections can be performed at intermediate operations for the subassemblies or at the final operation for the finished product. Currently, process manufacturing can operate in the same plant as discrete manufacturing, as determined by the work method for products being produced. This capability enables you to model, track, and cost for materials and processes using the appropriate manufacturing method for each stage of production. As with discrete manufacturing, process manufacturing supports similar capabilities for in-house manufacturing and outside processing of standard products with the option to enable electronic records and electronic signatures for critical business events. You can design your production process with work definitions, manage production with a material availability check and work order picking, execute production with quality inspection and production exceptions, and perform cost rollup and cost accounting.

Note: Inspections can be performed only for count point in-house operations. Supplier operations, autotransact operations, or optional operations cannot have inspections.

There are three different inspections pertaining to manufacturing that can be set up in quality management:

- Work in process Inspection
- Resource Inspection
- Inventory Inspection

Inspections for Work Order Operations

Navigate to the Review Dispatch List task to initiate inspection for an operation by selecting the required operation from the dispatch list. You can initiate the inspection and complete the operation transaction corresponding to the disposition based on inspection results. If the parent transaction succeeds, the inspection results are saved automatically.

Select the Inspections task from the Work Execution work area or the View Inspections History link from the Edit Work Order page to view the inspection results for specific work order operations.

Some steps must be completed in quality management before you can perform transactions for a work order operation. The following must be set up in quality management:

- Inspection Characteristics
- Approved inspection plans with appropriate criteria

When you navigate to the Review Dispatch List task, you can see a record of work order operations which are in Ready or Reject status. Inspection can be performed for both serial-tracked and nonserial-tracked operations. You can select Quick Complete or Complete with Details to enter the inspection results and complete the transaction.
Note: Transaction is eligible for the Quick Complete action based on certain existing criteria.

Once you enter the inspection results, the disposition is decided. Only quantities or serials that pass the inspection, can be completed. If some quantities or serials fail inspection, depending on your privileges, you can perform the reject or scrap transaction. You can also optionally move reject quantity to scrap.

Note: A nonconformance issue (NC) is issued automatically when there is any reject.

Rejected quantities can be reworked and inspected again from Reject status. A different inspection plan can be configured for inspection from Reject status.

For process manufacturing work orders, the output quantities will be calculated based on the transaction quantity approved by inspection.

Create Inspections

In case of standalone inspections, you can select the Create Inspection task to carry out an inspection for a work order operation, resource, or inventory. You must manually specify which work order operation, resource, or inventory you want to inspect and if a plan is already set up you can use that. Otherwise, you can specify your own characteristics or characteristic groups and inspect accordingly.

Select the Create Inspection task from the Work Execution work area and fill up the following fields:

- Select the Type as either Work in process, Resource, or Inventory based on the following considerations:
  - Select Inventory to inspect the inventoried items that may have been created through an orderless transaction. Select an inventoried item in case of Inventory type.
  - Select Resource to inspect a resource or the process such as the temperature at which an equipment is supposed to operate. Select the Resource in case of Resource type.
  - Select Work in process to inspect a serial-tracked or nonserial-tracked operation. Select the work order you want to inspect in case of a Work in process type.

- You can also fill in other details to make your search more efficient.

  Note: The fields dynamically change depending on what you specify as the value for Type.

Depending on what you choose as Type, certain fields are required.

- You can initiate a work in process inspection for a work order operation from the dispatch list by clicking the Report Inspection Details icon against the work order operation row. The work order and operation details are defaulted. If the operation has multiple output items, you can select one output item.

- Fill in the item or work center or operation fields depending on what you have specified.

- Fill in the required Inspection Quantity.

  If an approved inspection plan already exists, you can select that to enter the inspection results. Click OK.

- If no inspection plan is defined, proceed to the inspection and select the Add icon to specify a Characteristic or a Characteristic Group for inspection.

Once you have entered the inspection results, click Save to save your changes. You receive a confirmation message if your transaction was successfully completed.
**Note:** If issue types corresponding to Inspection is set to the User-defined or Inherited from Parent options, the process of creating them will fail. So, ensure that you use these settings only for legacy data import, if at all. It is recommended to always set them to Sequence-generated. You should use standalone inspections for process manufacturing work orders.

---

**Inspect Serial-Tracked In-House Operations**

Use the Work Execution work area to complete inspection for all your work order operations which have required inspection assigned to them in quality management.

Inspections can be initiated only when the dispatch status is Ready or Reject. It cannot be initiated from Scrap or Complete status.

You can enter inspection results during Quick Complete and Complete with Details. The primary purpose of these transactions is to report the progress of work as operation transaction. The inspection results decide the disposition as Complete, Scrap, or Reject.

**Note:** Serial-tracked operations are supported only for discrete work orders.

### Setups To Be Completed Before Inspection

This is a decision table that explains certain conditions that must be met before you continue this task:

<table>
<thead>
<tr>
<th>Setups</th>
<th>What Should Be Done?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inspection Characteristics</td>
<td>These must be set up in order to use them in inspection plan specifications or to add them directly to an inspection.</td>
</tr>
<tr>
<td>Inspection Plan</td>
<td>An inspection plan is defined and associated with an item or an item category in the work order.</td>
</tr>
<tr>
<td>Note: The plan must be WIP Inspection plan.</td>
<td></td>
</tr>
<tr>
<td>Inspection Criteria</td>
<td>The inspection criteria act as a trigger to initiate inspection either during operation completion from Ready or for Rework operations in Reject state.</td>
</tr>
<tr>
<td>Inspection Plan Status</td>
<td>The status of the plan you are associating with the item or item category must be set to Approved.</td>
</tr>
<tr>
<td>Inspection plan optional</td>
<td>The inspection plan is set up as a required attribute if you do not select this check box.</td>
</tr>
</tbody>
</table>
Quick Complete Action

Select the Review Dispatch List task and follow these steps to inspect the output of an operation which has mandatory inspection predefined in quality management:

1. Select a serial-tracked operation from the dispatch list which is Ready and expand the Details section.

   For serial-tracked operations in Ready state, an **Inspect and Complete** check box is displayed against each serial number of the operation you are trying to complete the required inspection for. Select one or more of the check boxes and click **Quick Complete** to inspect the serials.

2. On the Quick Complete: Inspection page, you can view the applicable inspection plan for entering inspection results.

   The page has certain context values populated corresponding to the inspection plan that is being used to inspect this particular operation. Those values are as follows:
   - The attribute **Serials** in the inspection plan is populated with the total number of serials selected for inspection. You have to enter the inspection result separately for each serial.
   - **Tip:** You can scan the serial for inspection. Scanning the serial makes it the first serial in the list.
   - Accept or Reject is displayed for each serial based on the results entered and is triggered by the logic in the inspection plan.
   - The accepted, rejected, and pending quantities are populated at the inspection plan header level.
   - Once the inspection result for every serial is processed and the disposition for each serial is displayed as Accept or Reject, you can click the **Save and Close** button.

   When you click the **Save and Close** button, you view a dialog box titled Quick Complete: Work Order Operation Sequence if:
   - There is at least one rejected serial.
   - You have scrap privilege.

3. In the Quick Complete: Work Order Operation Sequence dialog box you can select the **Scrap** check box for the serials in Reject state to discard the inspected serial for the operation.

4. Click **Complete** to receive a confirmation message for a successful transaction or click **Cancel** to cancel the transaction.

   If the transaction is canceled after inspection or if it fails, then all the transactions will be reset and the inspection results collected will not be saved.

Complete With Details Action

The Complete With Details action allows you to choose only one serial at a time in case of serial-tracked operations. Select the Review Dispatch List task and follow these steps to inspect an operation which has mandatory inspection predefined in quality management:

1. Select the required operation from the dispatch list which is Ready and expand the Details section.
For serial-tracked operations in Ready state, an **Inspect and Complete** check box is displayed against each serial number of the operation you are trying to complete required inspection for. Select one serial and click **Complete With Details** to initiate inspection.

2. On the Complete With Details: Inspection Plan page, you are able to enter inspection results for the selected serial.
   Accepted or Rejected is displayed based on the results entered and is triggered by the logic in inspection plan. Once you enter inspection results for the serial, and the disposition as Accepted or Rejected is done, the **Next** button is enabled.

3. Click **Next**. The Product page opens. You can view a summary of the current operation transactions you have inspected. Depending on the inspection results, the page is populated with the certain details:
   The following table shows attributes and corresponding values populated on the Complete With Details: Product page:

<table>
<thead>
<tr>
<th>Transaction Type</th>
<th>Values Populated</th>
</tr>
</thead>
<tbody>
<tr>
<td>Complete</td>
<td>If the serial has passed inspection, the completed serial is displayed.</td>
</tr>
<tr>
<td>Reject</td>
<td>If the serial did not pass inspection a different page is displayed where the Transaction Type is selected as Reject by default. You can choose the <strong>Scrap</strong> option only if you have scrap privilege.</td>
</tr>
</tbody>
</table>

   Depending on whether you choose to move the rejected serial to scrap or retain it as rejected, you must provide a Scrap reason or a Reject reason respectively.

   **Note:** If you navigate back to Product page from a subsequent page, none of the attributes except **Transaction Note** can be edited.

4. Click **Next**. The Backflush Materials page opens. You can view a list of all components which have items required for the transaction.
5. Click **Next**. The Resources page opens. You can view a list of all resources which have items required for the transaction.
6. Click **Next**. The Inventory page opens if the current operation is the last operation. You can view the serial for completion.
7. Click **Save and Close** to receive a confirmation message that your transaction has been successfully completed.

---

**Inspect Nonserial-Buffered In-House Operations**

Use the Work Execution work area to complete inspection for all your work order operations which have required inspection assigned to them in quality management.

Inspections can be initiated only when the dispatch status is Ready or Reject. It cannot be initiated from Scrap or Complete states.

For nonserial-buffered operations, you can either use the **Quick Complete** or the **Complete With Details** action to enter the inspection results. The inspection results decide the disposition as Complete, Scrap, or Reject.
### Setups To Be Completed Before Inspection

This is a decision table that explains certain conditions that must be met before you continue this task:

<table>
<thead>
<tr>
<th>Setups</th>
<th>What Should Be Done?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inspection Characteristics</td>
<td>These must be set up in order to use them in inspection plan specifications or to add them directly to an inspection.</td>
</tr>
</tbody>
</table>
| Inspection Plan               | An inspection plan is defined and associated with an item or an item category in the work order.  
                                 | **Note:** The plan must be WIP Inspection plan.                                         |
| Inspection Criteria           | The inspection criteria sets the trigger to initiate inspection at the required operation and dispatch status. |
| Plan Status                   | The status of the plan you are associating with the item or item category must be set to Approved. |
| Inspection plan optional      | The inspection plan is set up as a required attribute if you do not select this check box. |

### Quick Complete Action

Select the Review Dispatch List task and follow these steps to inspect the output of an operation which has mandatory inspection predefined in quality management:

1. Select a nonserial-tracked operation from the dispatch list which is in Ready state and expand the Details section.
   
   For nonserial-tracked operations in Ready state, **Inspect and Complete** is displayed against the operation you are trying to complete required inspection for.

2. Specify the quantity you want to inspect and complete and click **Quick Complete**.

3. On the Quick Complete: Inspection Plan page, you can view the applicable inspection plan for entering inspection results.

   The page has certain context values populated corresponding to the inspection plan that is being used to inspect this particular operation. Those values are:

   - The inspection plan displayed has the quantity populated as the quantity you specified for inspection.
   - The inspection plan automatically generates a sequential number. You can select each number from the side panel and enter inspection results against a quantity sample.
   - Accept or Reject is displayed for each sample based on the results entered and is triggered by the logic in inspection plan.
   - Accepted, Rejected, and Pending quantities are populated at the inspection plan header level.
Once the inspection results for every sample quantity and the disposition for each sample as Accepted or Rejected are done, the **Save and Close** button is enabled.

When you click **Save and Close** button, you can view a dialog box titled Quick Complete: Work Order Operation Sequence if:

- There is some rejected quantity.
- You have scrap privilege.

4. On the Quick Complete: Work Order Operation Sequence dialog box you can change the quantities from Reject to Scrap without altering the total quantity.

5. Click **Complete** to get a confirmation message for successful transaction or click **Cancel** to cancel the transaction.

If the transaction is canceled after inspection or if it fails, then all the transactions will be reset and the inspection results collected will not be saved.

### Complete With Details Action

The Close With Details action, allows you to complete, scrap and reject quantities in one transaction cycle. Select the Review Dispatch List task and follow these steps to inspect the output of an operation which has mandatory inspection predefined in quality management:

1. Select an operation from the dispatch list which is Ready and expand the Details section.

   For nonserial-tracked operations in Ready state, **Inspect and Complete** is displayed against the operation you are trying to complete required inspection for.

2. Specify the quantity you want to inspect and complete and click **Complete With Details**.

On the Complete With Detail: Inspection Plan page, you can view the applicable inspection plan for entering inspection results.

The page has certain context values populated corresponding to the inspection plan used to inspect this particular operation. Those values are:

- The inspection plan displayed has the quantity populated as the quantity you specified for inspection.
- The inspection plan automatically generates a sequential number for each sample quantity. Select each of them to enter results individually.
- Accept or Reject is displayed for each sample based on the results entered and is triggered by the logic in inspection plan.
- Accepted, Rejected, and Pending quantities are populated at the inspection plan header level.
- Once the inspection results for every sample quantity and the disposition for each sample as Accepted or Rejected are done, the **Next** button is enabled.

3. Click **Next**. The Product page opens. You can view a summary of the current operation transactions you have inspected.

The following table lists the attributes of the Complete With Details: Product page, depending on the inspection results:
<table>
<thead>
<tr>
<th>Attributes</th>
<th>Values Populated</th>
</tr>
</thead>
<tbody>
<tr>
<td>Complete</td>
<td>The accepted quantity by inspection is populated by default and cannot be edited.</td>
</tr>
<tr>
<td>Reject</td>
<td>The rejected quantity in inspection is the default value. It can be edited only if you have scrap privilege.</td>
</tr>
<tr>
<td>Scrap</td>
<td>The default value populated is zero. This can be edited only if you have scrap privilege.</td>
</tr>
<tr>
<td>Reject Reason</td>
<td>This is enabled only if the reject quantity is greater than zero.</td>
</tr>
<tr>
<td>Scrap Reason</td>
<td>This is enabled only if the scrap quantity is greater than zero.</td>
</tr>
</tbody>
</table>

**Note:** You cannot edit the total transaction quantity at any point in the flow. You can only choose to move the reject quantity to scrap. If you navigate back to Product page from a subsequent page, none of the attributes except **Transaction Note** can be edited.

4. Click **Next**. The Backflush Materials page opens. You can view a list of all components which have items required for the complete, reject and scrap transactions.

**Note:** When the component quantities are increased or decreased or if a new component is added, then the change in quantity is implemented for any one of the transactions.

5. Click **Next**. The Resources page opens. You can view a list of all resources which have items required for the complete, reject and scrap transactions.

**Note:** When the transaction quantity for the resource is increased or decreased or if a new resource is added, then the change in quantity is implemented for any one of the transactions.

6. Click **Next**. The Inventory page opens. You can view the quantity for completion. Scrap and Reject quantities are not included.

   The Inventory page is displayed only if the current operation is the last operation.

7. Click **Save and Close**. You receive a confirmation message if your transaction was successful.

---

**Overview of Electronic Signatures and Electronic Records for Production Transactions**

You can enable the ability to capture electronic signatures and generate electronic records inline while reporting the following in the Work Execution work area.

- Work Order Material Transaction
- Work Order Operation Transaction
• Work Order Output Transaction
• Orderless Transaction

To capture electronic signatures and generate electronic records for Work Order Material Transaction, Work Order Operation Transaction, and Orderless Transaction in an organization, you need to set up the following:

• Enable Work Order Material Transaction, Work Order Operation Transaction, and Orderless Transaction as Required 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 E-Signature for Production Transaction.

• Configure the Business Process Rules to Determine the Approvers for Work Order Material Transaction, Work Order Operation Transaction, and Orderless Transaction. 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 Production Transaction.

\[\text{Note: For more information about implementing E-Signatures and generating E-Records, refer to the Implementing E-Signatures and E-Records chapter of the Oracle SCM Cloud Implementing Manufacturing and Supply Chain Materials Management guide.}\]

How You Capture E-Signatures and Generating E-Records for Production Transactions Management

When you enable electronic signatures and electronic records for Work Order Material Transaction, the inline process to generate electronic records and capture electronic signatures is initiated when you submit a material issue or return transaction for approval through the Report Material Transactions page.

The E-record contains information about the following:

• Work Order Details
• Operation Details
• Material Transaction Details with Material Lot and Serial Details

\[\text{Note: The process is not initiated when a material transaction is imported through file-based data import or web service.}\]

If you enable electronic signatures and electronic records for Work Order Operation Transaction, the inline process to generate electronic records and capture electronic signatures is initiated. The process begins when you report quantities or serials as any of the following:

• Completed
• Scrapped
• Rejected or Reversed to Ready

You can start the process at a work order operation using Quick Complete or Complete with Details actions in the Review Dispatch List page or Manage Supplier Operations page.

The E-Record contains information about the following:

• Work Order Details
• Operation Details
• Inspection Details
• Attachment Details
• Operation Transaction Details
• Product Transaction Details with Product Lot and Serial Details
• Backflush Material Details with Material Lot and Serial Details
• Inspection Results Details
• Quality Issue Details
• Material Transaction Details

Note: If multiple transactions, such as complete, scrap, and reject are reported through a single action, then a single electronic record is generated which contains the details of all the transactions reported.

Note: The process is not initiated when an operation transaction is imported through file-based data import or web service.

Similarly, if you enable electronic signatures and electronic records for Orderless Transaction, the inline process to generate electronic records and capture electronic signatures is initiated. The process begins when you report an orderless completion transaction or an orderless scrap transaction through the Report Orderless Completion page, or an orderless return or an orderless return from scrap transaction through the Orderless Return page.

The E-Record contains information about the following:

• Orderless Transaction Details
• Attachment Details
• Inventory Transaction Details
• Backflush Material Details

Note: The process is not initiated when an orderless transaction is imported through file-based data import or web service.

When you submit a work order material transaction, work order operation transaction, or an orderless transaction for approval, you can also be an approver of the transaction. You can review the electronic records, enter comments, and indicate your approval or rejection and sign the E-Record in the E-Signature page.

Notifications are sent to other approvers who can access them through bell notifications in the Oracle Cloud application. Approvers can review the electronic records before adding their electronic signature, enter their comments, indicate their approval or rejection and sign the electronic record by entering their password. The transaction is not saved until all approvals are completed. Depending upon the outcome of the approval, the transaction is saved or rolled back.

You can search and view the existing E-Records for Work Order Material Transaction, Work Order Operation Transaction, and Orderless Transaction from the Electronic Records work area.
Review Production Transaction History

Using the Production Transaction History page, you can view all the production transactions that have been reported on the shop floor. The view is sorted in reverse chronological order to allow recent transactions to be displayed first. You can filter the production transactions based on a transaction date range, item serial number, work order, or item.

The Production Transaction History page, accessible from the Work Execution Overview page, enables you to view the production transaction history of a work order and the orderless transaction history of an item. The Production Transaction History page for the work order can also be accessed using the transaction history link in the work order History tab.

Reviewing Production Transaction History of a Work Order

You can view the material, resource (with resource instance details if mentioned during the transactions), and operation transactions for a work order execution. You can view the corresponding backflushed material and automatically charged resources for the operation transactions. Additionally, you can view the production completions into inventory for the operation transactions for the last operation sequence. For process work orders, manual output transactions are displayed as product completions without a parent transaction reference (operation transaction reference).

Note: Materials include components and products, or outputs in the case of process manufacturing work orders.

To review the production transaction history of a work order, perform the following steps:

1. On the Production Transaction History page, in the Search region, you can query by certain values.

   The following table lists the various values based on which you can query the production transactions:

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Search For</td>
<td>Retain the Work orders option.</td>
</tr>
<tr>
<td>Work Order</td>
<td>Enter the work order number for which you want to view the production transaction history.</td>
</tr>
</tbody>
</table>

2. Click the Search button. The production transactions reported for the work order are shown.
3. Review the production transaction history of the work order. This includes the operation transactions, automatically charged resource transactions, and backflushed material transactions reported for the work order. Also includes output items reported manually for process work order.
4. Click the Done button.

Reviewing Orderless Transaction History of an Item

You can view the orderless completion, scrap, return or return from scrap transactions for an orderless execution. You can view the corresponding backflushed materials and automatically charged resources for the orderless transactions.
To review the orderless transactions for an item, perform the following steps:

1. On the Production Transaction History page, in the Search region, you can query by certain values.

   The following table lists the various values based on which you can query the production transaction history:

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Search For</td>
<td>Select the Orderless option.</td>
</tr>
<tr>
<td>Item</td>
<td>Enter the item name for which you want to view the orderless transaction history.</td>
</tr>
</tbody>
</table>

2. Click the Search button. The orderless transactions reported for the item are shown.
3. Review the orderless transaction history of the item.
4. Click the Done button.

How You Pick Materials for Work Orders

In the Work Execution work area, use the Pick Materials for Work Orders scheduled process to pick materials for work orders that are in released status. This 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 production.

You can initiate the picking of materials for timely availability of materials during production from the following pages:

- Manage Work Orders page
- Manage Material Availability Assignments page
- Pick Materials for Work Orders page

**Note:** You can refer to the topics Work Orders: Overview and Work Order Material Availability Assignments: Explained in the Managing Production chapter of the Using Manufacturing guide for information about how to release and pick materials from the Manage Work Orders page and the Material Availability Assignments page.

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:
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value to be Specified</th>
<th>Considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organization</td>
<td>Specify the organization where you’re executing production.</td>
<td>The list of values displays all organizations that you have access to and you can select from the list.</td>
</tr>
</tbody>
</table>
| Work Method            | This value is populated based on the organization you select. Depending on the organization, the work method parameter takes one of these values:  
  - All  
  - Discrete Manufacturing  
  - Process Manufacturing  
  - Maintenance Management | If you have selected a manufacturing organization, the work method is defaulted as Discrete Manufacturing. |
| 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, you can choose the type of work order from the list of values:  
  - All  
  - Preventive  
  - Corrective |
| Hours Ahead            | The default value is 8. You can specify any value up to 500.                           | This is required. This represents the number of hours ahead of current time until which you want materials to be picked. |
| Pick Slip Grouping Rule| The list of values are defaulted from what’s specified in plant parameters in the Setup and Maintenance work area. | 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 check box **Print pick slips** is selected by default. The value is inherited from the plant parameters as defined in the Setup and Maintenance work area. If you don’t want to print the pick slip report you can deselect the check box.
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.

<table>
<thead>
<tr>
<th>Work Order Status</th>
<th>Impact on Picking</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canceled</td>
<td>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.</td>
</tr>
<tr>
<td>Closed</td>
<td>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.</td>
</tr>
<tr>
<td>Unreleased</td>
<td>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.</td>
</tr>
</tbody>
</table>

**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.

<table>
<thead>
<tr>
<th>Issue Push materials Directly</th>
<th>Work Order Operation</th>
<th>Material</th>
<th>Supply Type</th>
<th>Subinventory</th>
<th>Move Order</th>
<th>Move Order Line Type</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>Serialized</td>
<td>Serial-tracked</td>
<td>Pull</td>
<td>Derived from plant parameters or specified in the work order</td>
<td>Moved to subinventory</td>
<td>WIP Material Pick</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>Serialized</td>
<td>Nonserial-tracked</td>
<td>Pull</td>
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<tr>
<td>Yes</td>
<td>Serialized</td>
<td>Serial-tracked</td>
<td>Push</td>
<td>Not specified</td>
<td>Not picked</td>
<td>Not applicable</td>
<td></td>
</tr>
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<td>Nonserialized</td>
<td>Serial-tracked</td>
<td>Push</td>
<td>Specified in the work order</td>
<td>Directly issued to work order</td>
<td>WIP Material Issue</td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

**Related Topics**

- Assess Reports to Pick Materials for Work Orders
- 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 Work Execution work area, you are creating a movement request in the 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 production. There are a few points that must be considered. They are 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 cannot 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 cannot be less than the issued material quantity. You are 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 cannot be less than the issued material quantity. You are 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 are 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 cannot be an increase in the movement request quantity because overpicking is not 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
• Assess Reports to Pick Materials for Work Orders
• Overview of Work Orders
• How You Update a Work Order

Transfer Transactions from Production to Costing

The Transfer Transactions from Production to Costing action is used to transfer the manufacturing execution transaction details and work order status updates to costing for accurate costing of the work orders. Here is an example of a resource transaction. It transfers resource, operation, and work order status change data to costing. The application reads the records in the resource transaction table. If the Costing Interfaced attribute is set as No, the transaction record is transferred to the costing. On successful transfer, the Costing Interfaced attribute is set as yes for the transaction record. If the Costing attribute isn't enabled in the resource definition, the transaction records aren't considered for transferring to costing.

Note: Both discrete work order and process work orders are transferred.

As part of this transfer, the following are interfaced from Oracle Fusion Manufacturing to costing:

• Resource transaction for costed resources
• All the operation transactions
• Work order status updates

For executing project-specific manufacturing, the resources transactions are enriched with the following project details:

• Expenditure Type is set to the expenditure type associated to the resource. If an expenditure type isn't associated to the resource, then it's set to the expenditure type associated to the Labor/Nonlabor Transaction Type in the Manage Default Expenditure Types page.
• Expenditure Item Date is set to the resource transaction date and the Expenditure Organization is set to the manufacturing plant.
• Other project details such as the User Defined Attribute values are derived from the project-specific work order.

The Transfer Transactions from Production to Costing page, accessible from the Work Execution Overview page, enables you to run the program on demand or schedule the program to run at a specific interval of time.
To run the program on demand, perform the following steps:

1. On the Transfer Transactions from Production to Costing page, in the Parameters region, you must select certain values.

The following table lists the values you must enter for various parameters on the page:

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plant</td>
<td>The name of the manufacturing plant.</td>
</tr>
<tr>
<td>Source System</td>
<td>The source system that has generated the record. The default value is All.</td>
</tr>
</tbody>
</table>

2. Click the Submit button. A message is shown confirming that the process is submitted.

To schedule the program, perform the following steps:

1. On the Transfer Transactions from Production to Costing page, click the Advanced button. The Transfer Transactions from Production to Costing page is reloaded with two new tabs: Schedule tab and Notification tab.

2. On the Schedule tab, you must enter or select certain values.

The following table lists the values you must enter for various parameters on the page:

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Run</td>
<td>Select the Using a schedule option.</td>
</tr>
<tr>
<td>Frequency</td>
<td>Select the interval at which you want to program to run. You can also select a saved schedule.</td>
</tr>
<tr>
<td>Start Date</td>
<td>Select the date from which you want to start running the program as per the schedule.</td>
</tr>
</tbody>
</table>

3. Click the Submit button.

How You Import Production Transactions

You can import the production transactions, such as material transactions, resource transactions, and operation transactions, by using the file-based data import mechanism, or by using the REST web services. For process manufacturing work orders, you can also import output item transactions using FBDI and REST services. For more details on the FBDI, refer the File-Based Data Import for Oracle Supply Chain Management Cloud guide. For more details on the REST web services, refer the REST Web Services for Oracle Supply Chain Management Cloud guide. For a limited use, you can also use the SOAP web services for importing operation and material transactions.
Import Work Order Material Transactions
You can import the component transactions for work order execution and the product transactions in orderless execution. For the component transactions in work order execution, the component issues to the work order and the component returns to the inventory can be imported. For the product transactions in orderless execution, the product completion, return, scrap, and return from scrap transactions can be imported with reference to a work definition that is used to backflush the components and charge the resources.

There is a separate FBDI template to import material transactions for process manufacturing work orders. This template is used to import output item transactions. You can use the REST service materialTransactions to create output transactions through integration with external systems. Output items that are completed and reversed can also be reported.

Import Work Order Resource Transactions
You can import the resource transactions for work order execution. The resources charged to the work order and the resources reversed from the work order can be imported.

Caution: There is no SOAP web service to import resource transactions into Oracle Manufacturing Cloud.

Import Work Order Operation Transactions
You can import the operation transactions for work order execution. The operation or product completion or return, reject, return from reject, scrap and return from scrap transactions can be imported. There are separate FBDI templates to import operation transactions for discrete manufacturing and process manufacturing work orders. To import discrete manufacturing operation transactions, use the WorkOrderOperationTransactionTemplate.xlsm template. To import process manufacturing operation transactions, use the ProcessWorkOrderOperationTransactionTemplate.xlsm template.

You can create operation, material, and resource transactions using a REST API. However, you cannot update, delete, or query the production transactions using a REST API.

You can create start and stop times for an operation using a REST API. You can also query for the start and stop operations using a REST API.

You can query for a dispatch list using a REST API.

Correct Production Transactions for Import
You can use the Correct Work Orders and Transactions for Import task in the Work Execution work area to view all the file-based data import records that resulted in errors, and you can also export them into ADFdi spreadsheets to correct the errors. After you have corrected the errors in ADFdi, you can upload the spreadsheet to resubmit the records that returned errors for processing.

Note: You can use this task to correct errors only for transaction records where the mode of import was file-based data import. You cannot correct errors for import transaction records created through REST API.

You can correct errors and resubmit the completed data for the following types of production transactions:

- Work order operation transactions import
- Work order material transactions import
- Work order resource transactions import
Follow these steps to correct the errors and resubmit the completed data for any production transaction import record:

1. In the Work Execution work area, select the **Correct Work Orders and Transactions for Import** task from the Tasks panel.
2. Use the filters to search for specific import transaction entries. You can use a combination of the following filters to search for the import transactions:
   - Select the import transaction type based on whether you are correcting data for operation transactions, material transactions, or resource transactions.
   - Search for the unique batch code identifier of your import batch.
   - Search for the transaction based on the batch status. If the batch completed but has some errors that you must redress, you can search with **Completed with errors**. If the batch is still in process due to server failure or any other application error, you can search with **In process**.
   - Search for the transaction record based on the request identifier of the corresponding import work orders scheduled process.
3. The search results displays a list of all the relevant import transaction records. Click Manage in Spreadsheet to initiate the correction process through ADFdi.
4. Every ADFdi spreadsheet has separate worksheets for its various attributes. You can manually correct the errors and then set the batch status of the individual rows to Ready.
5. After you have corrected all the errors and saved the statuses as ready, click Upload to resubmit the corrected records for processing. You have to upload each worksheet individually.
6. You can refresh your search on the Correct Work Orders and Transactions for Import or search on the basis of the batch status as Ready to view if the corrected records were successfully processed.

**Note:** For more information about file-based data imports to import or update legacy and other data into Supply Chain Management Cloud from external applications, refer to the File-Based Data Import for Oracle Supply Chain Management Cloud Development Guide.

**Related Topics**

- Overview of External Data Integration Services for Oracle Cloud
7 Product Genealogy

Overview of Tracing Product Genealogy

The tracing product genealogy feature enables you to capture and view the genealogy data for various transactions related to lot control enabled and serialized products and components. The transactions can be inventory transactions, work order operation transactions, and work order material transactions.

You can track the product genealogy data throughout the complete life cycle starting from raw material to finished product and then to the customer. The genealogy data can help you get information and in turn help you solve problems by:

- Identifying the source and scope of a problem.
- Identifying the relevant pieces of information for the failure.
- Identifying the other items that may be impacted due to a relationship or common origin.
- Providing locations of the item during its life cycle.

To summarize, tracing product genealogy feature enables you to:

- Search and view the genealogy instances.
- View detailed information of item lot number and serial number.
- View relationship between the genealogy instances.
- View the transaction history of the genealogy instances based on lot number or serial number.

How You Review Product Genealogy

You can search and view the genealogy details of products on the Review Product Genealogy page. This page also serves as a starting point to view genealogy instances, their relationships, and transaction history.

Note: For a product or component to be tracked in genealogy, you must set the Enable Genealogy Tracking item attribute to Yes.

You can perform a basic keyword search or use the filters to perform an advance search. The filters enable you to perform the search based on a range of lot numbers, a range of serial numbers, or the item. Optionally, you can also provide the range of transaction dates to restrict the result to specific dates. 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 you set a default search, the search is automatically run and the results are displayed whenever the Review Product Genealogy page is opened.

For each product genealogy record, you can perform the following actions:

- Information: View detailed information such as lot number and serial number details.
- Genealogy Details: View the genealogy details such as relationship between the genealogy instances.
- Transaction History: View transaction history of the product genealogy record.
In the event of any failure during processing of genealogy transactions, you can resubmit the failed genealogy transactions for processing. The Retry in-Error Genealogy Transactions scheduled process enables you to retry the genealogy transactions that failed during previous data capture.

Note: You must have the Manage Asset Interface Errors privilege to run the Retry in-Error Genealogy Transactions scheduled process.

You can select or deselect the Review Errors Mode check box before running the scheduled process. If the Review Errors Mode check box is selected, the scheduled process lists the interface errors without reprocess the genealogy transactions. If the Review Errors Mode check box is deselected, the scheduled process reprocesses the genealogy transactions and then lists the remaining interface errors.

How You View Lot and Serial Number Information

For each product genealogy record, you can view the lot and serial number information of the product instance. On the Review Product Genealogy page, in the search results, select the record for which you want to view the lot or serial information. From the record menu, select: Information. The Information dialog box opens. The information is displayed based on the type of product instance of the record.

If the product instance is lot control enabled, then the Information dialog box is displayed with the following tabs:

- Lot Details: Displays the lot number-specific details of the product instance. The dialog box shows details such as the lot, item, lot status, material status, expiration date, and so on.
- On Hand: Displays lot quantities that are available in the warehouse.
- Issued: Displays lot quantities that are issued to the work orders.
- Shipped: Displays lot quantities that are shipped to the customers.

If the product instance is serial control enabled, then the Information dialog box is displayed with the serial number-specific details of the product instance. The dialog box shows details such as the serial number, item, usage, material status, organization, subinventor, and so on.

If the product instance is serial control and lot control enabled, then the Information dialog box is displayed with the following tabs:

- Serial Details: Displays the serial number-specific details of the product instance. The dialog box shows details such as the serial number, item, usage, material status, organization, subinventory, and so on.
- Lot Details: Displays the lot number-specific details of the product instance. The dialog box shows details such as the lot, item, lot status, material status, expiration date, and so on.

How You View Product Genealogy Details

For each product genealogy record, you can view the product genealogy details such as the relationship between the genealogy instances. On the Review Product Genealogy page, in the search results, select the record for which you want to view the lot or serial information. From the record menu, select: Genealogy Details. The Genealogy Details page opens.

The graphical view shows the genealogy hierarchy depicting the parent-child relationships between components and assembly. You can drill down to view additional details and related information.
Prior to this enhancement, when you transacted lot and serial-controlled input or output items with Enable Genealogy Tracking set to Yes, the application immediately ran the scheduled process Manufacturing Transactions to Genealogy Interface. The genealogy was built after the scheduled process was completed. When users performed large volume of transactions, the application automatically ran many Manufacturing Transactions to Genealogy Interface scheduled processes to build genealogy automatically. This reduced the performance of the overall application. Now you have a new profile option Genealogy Build Deferred During Execution which will help in addressing the issue quickly and efficiently.

Product Genealogy in Process Manufacturing

You can trace end-to-end lot genealogy of co-products and by-products. Visualize and analyze the parent-child relationships between input and output items under lot control, whether generated from in-house receiving, production, and shipping transactions, or imported through a spreadsheet from a supplier.

For all output lots completed in an operation, all of the material lots issued up to the operation have a child relationship in genealogy.

This will help in investigating and resolving product quality issues and customer complaints in a timely manner.

Caution: In a Process work order, if the input issue and output completion transactions happen simultaneously, the genealogy will not be built accurately.

How You View Product Genealogy Transaction History

You can view the transaction history of specific lot or serial number on the Transaction History page. On the Review Product Genealogy page, in the search result, from the Actions menu of the product genealogy record, select: Transaction History. The Transaction History page for the product instance opens.

The transaction history is displayed in form of map and can be filtered based on the following attributes:

- Source: Refers to the source of transaction.
- Source Transaction Type: Refers to the type of transaction from the specified source. You can click the transaction type link to review more details. For example, if you click the Product Completion link, the related work order transaction history details are searched and displayed.

While reviewing the transaction history details, you can zoom in and zoom out within a range of an hour to half years.
8 Reports and Analytics

How You Manage Work Definition Reports

You can access a work definition report from the Work Definition work area task panel. You can also access it from the Manage Work Definitions page. Using the Actions menu, you can print the work definition report in .pdf format instantly from the Manufacturing user interface in the following two ways:

- **Manage Work Definitions page**: Click the work definition version for which the report is to be generated.
- **Edit Work Definition page**: Generate a report for the edited version.

Additionally, from the work area task panel, the Scheduled Process Submission user interface for the report enables you to generate reports for various parameters. You can also access work definition report for multiple work definitions through a scheduled process.

A work definition report enables you to do the following:

- Provide the option for offline review, to ensure that the work definition has been set up correctly.
- Enable exchanging discrete work definition information offline, for example, with the contract manufacturer.

In a contract manufacturing organization, the work definition report has key milestone operations. The report is configured by default to print in a format most suitable for a Contract Manufacturer such as printing only milestone operations. This option is enabled by checking the Count Point Only indicator for the Operations. The report is attached to the Blanket Purchase Agreement and is communicated to the contract manufacturer.

The submission of the scheduled process can be performed through the Print Work Definition Report task in the Work Definition work area task panel.

Work Order Reports

Prebuilt reports are available in manufacturing and provide you with specific information for a given entity. The following are the work definition and work order reports available in manufacturing:

- Components List report
- Work Order Traveler report
- Product Label report

You can use the report to review the available details about work orders. You can also view, save, and print these reports.

You can access work orders from the Manage Work Orders page through the Print to PDF action. You can also access work order reports such as Print Components List and Print Work Order Traveler for multiple work orders through the separate scheduled processes available in the Work Execution work area. Another way to access the Print Work Order Traveler and Print Labels reports is from the Review Dispatch List page.
How You Print Components List

The Print Components List feature provides you the ability to generate and print the components list for the work order. It provides you the flexibility to view, save and print the report. As a production supervisor, you can print the components list during the production process when reviewing and managing the work orders.

As part of the components list report, details such as subinventory, locator, operation sequence, name, work center, required quantity, Unit of Measure (UOM), basis, supply type, required date are printed. In addition, details of the work order such as work order number, description, product, status, start and completion dates, quantity, project number, task number, and UOM are displayed.

In addition, details of the work order such as work order number, description, product, status, start and completion dates, quantity, and UOM are displayed.

The components list report is printed in the following ways:

- Select the required work order in the Manage Work Orders page and select the Print Components List action in the Print to PDF Table menu.
- Select the Print Components List to generate report in .pdf format.
- Select the Plant Parameters Configurability option to choose a user-defined template. This can be done through the Print Components List program by selecting multiple work orders using parameters like work order number, dates, product, work center, status, and component required dates.
- The list of components shown in the report can be grouped by work order and work center, sorted by subinventory and components.

After the successful completion of the scheduled process, the report is generated in .pdf format.

The scheduled process is launched for the selected work orders. The parameters for the scheduled process are:

- **From Work Order
- **To Work Order
- **From Work Order Start Date
- **To Work Order Start Date
- **Work Order Product
- **Item Category
- Work Center
- Work Order Status: Default is blank. The other statuses are Unreleased, Released, On Hold, Canceled, Completed, and Closed. In addition, the user-defined statuses of the work order are displayed.
- From Component Required Date
- To Component Required Date
- Project Number (if the organization is tracked by project)
- Task Number (if the organization is tracked by project)
- Group By: Values are Work Order and WorkOrder/Work Center
- Sort By: Values are Subinventory and Component

At least one of the fields marked ** must be entered.
Note: You have an option to enter Submission Notes before you submit the components list for printing.

Note: The .pdf format is available for you to print the document on a local printer.

Related Topics

- Overview of Manufacturing Plants
- How You Manage Work Areas

Assess Reports to Pick Materials for Work Orders

To ensure material-tracking and timely availability of materials to the staging area of production, you can initiate the Pick Materials for Work Orders scheduled process in the Work Execution work area. After the scheduled process runs and completes successfully, you can view the generated reports in the Scheduled Processes work area.

Follow these steps:

1. In the Scheduled Processes work area, search for Pick Materials for Work Orders. You can also use the Process ID as the basis for your search.
2. In the Search Results area, click the Attachment in the Log and Output area after the status of the scheduled process displays as succeeded.
3. Search for Print Materials Worker for the Work Orders which is a subordinate scheduled process. It displays the following information:
   - Scheduled process parameters
   - Movement request number
   - Details of work order
   - Operation number
   - Required date for the materials
   - Required quantity of materials
   - Previously picked quantity of materials
   - Remaining quantity for allocation
   - Allocation quantity
   - Unit of measure for materials
   - Error message if there are some materials that cannot be allocated due to shortage.

4. Search for Print Movement Request Pick Slip which is another subordinate scheduled process. It displays the following information:
   - Scheduled process parameters
   - Number of work orders selected
   - Number of work orders allocated for pick release
   - Number of work orders not allocated for pick release
   - Pick slip number
   - Movement request number
Source subinventory
- Destination subinventory
- Work order number
- Operation sequence
- Work area
- Work center
- Number of subordinate scheduled processes and their process identifiers

Note: The Print Movement Request Pick Slip Report is generated only if you had selected the Print pick slip parameter check box before submitting the picking request.

If you have the required access to the Inventory work area, you can select the Manage Movement Requests task and use the details in the Print Movement Request Pick Slip Report to query for your movement requests. The following details are common for all work order material picking movement requests:

- **Movement Request Type**: Shop floor
- **Transaction Type**: Work in Process Pick

In the Inventory work area, you can also select the Confirm Pick Slip task and query your pick slip based on the work order type and the work order number. You can then enter the picked quantity, select the pick slip lines, and perform the confirm pick slip action.

The picked quantity of the material is either directly issued to the work order or is transferred to the destination subinventory.

After you have assessed all the reports in the Scheduled Processes work area, and performed the Confirm Pick Slip action in the Inventory work area, you can check if the allocated quantity and the picked quantity values are updated for a work order operation.

The allocated quantity is updated and displayed when the movement request is created for the work order operation item. The picked quantity is updated and displayed when the pick slip is confirmed. You can view the updated values for these quantities on the following pages:

- **Edit Operation Items** tab on the Edit Work Orders page
- **Material Availability Details** tab on the Manage Material Availability Assignments page.

Related Topics
- How You Pick Materials for Work Orders
- Considerations for Picking Materials

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**How You Print Work Order Traveler**

The Work Order Traveler or shop packet is a set of documents associated with a work order that travels with the subassembly as it moves through the routing in the shop floor. It usually consists of the following information to assist you to complete the work order:

- Work order information
- Product serial information
• Configuration transactional item attributes
• Work definition details
• Work order operations, materials, resources and resource instances
• Reservation against sales orders
• Project and task number (if the organization is tracked by project)
• Attachments which can be of the following types:
  o Work order
  o Work order operation
  o Work order operation resource
  o Work order operation material
  o Work Order Operation Output (for process manufacturing work orders)
  o Sales order header
  o Sales order line

You can use the Print Work Order Traveler feature to print the work order traveler during production execution. The work order traveler contains work order details such as work order information, work definition details, work order operations, materials and resources, and reservations and attachments. For serialization enabled operations, the work order traveler also consists of product serial numbers.

In Manufacturing, you generate the work order traveler from the following pages:

• From the dispatch list by selecting the required work orders, and starting the action Print Work Order Traveler. The scheduled process is launched for the work order in the selected row.
  
  Note: You can select only one row at a time from the dispatch list. So the traveler can be printed only for a single work order at a time.

• From the Overview page by clicking the link Print Work Order Traveler.
  
  Note: This will open up the user interface to submit the scheduled process. You can print travelers for multiple work orders from here. Each work order traveler is in a separate .pdf.

• From the Manage Work Orders page by selecting the required work orders, and selecting the action Print Work Order Traveler.

The scheduled process is initiated for the selected work orders. The parameters for the scheduled process are:

• Work Method
• **From Work Order
• **To Work Order
• **From Work Order Start Date
• **To Work Order Start Date
• Work Order Type: Default is All. Options are Standard and Nonstandard
• **Work Order Product
• **Item Category
• Work Order Status: Default is blank. The other statuses are Unreleased, Released, On Hold, Canceled, Completed, and Closed. In addition, the user-defined statuses of the work order are displayed.
• Project Number (if the organization is tracked by project)
• Task Number (if the organization is tracked by project)
• Include Attachments: Default is Yes. The possible attachment types are:
  o Short text
  o Long text
  o Image File
  o URL
  o File attachments

At least one of the fields marked ** must be entered.

You can start the background process Print Work Order Traveler if you create the work order traveler from the mentioned pages.

The Work Order Traveler template can be configured to include additional attributes. The attributes from work order header, work definition, work order operations, work order product serial, work order reservations, work order Transactional Item Attributes (TIA) values, and attachments can be added to the work order traveler. These sections exist in the default template. You can remove any unwanted sections or add more attributes in some sections if these attributes are available in work order.

Note: Only one work order template is applicable for one organization. All travelers are printed with the same template. Multiple templates for the same organization aren’t supported.

How You Print Labels

The Print Product Label feature enables you to print product labels during production execution. Users can print product labels during the production process when reviewing work orders, reviewing the dispatch list, and reporting operation transactions.

The product label is printed in the following ways:

• Select the work order in the Manage Work Orders page, and click the Print Label action in the Print to PDF Table menu.
• Select the work order serials in the Serial tab of the Work Order page, and click the Print Label action in the table Actions menu.
• Select the work order operation in the Review Dispatch List page, and click the Print Label action in the table Actions menu.
• Select the work order operation in the Manage Supplier Operations page, and click the Print Label action in the table Actions menu.
• While reporting operation transactions, select the Print Label check box in the Product Details page.
• While reporting output items, select the Print Label check box.

The product label printing is determined by the selection of the Print product labels using external applications plant parameter:

• If the Print product labels using external applications is unchecked, the labels will be printed in native PDF rendering. The label content is generated in .pdf format based on the template layout specified in the Default Label Layout Template plant parameter. If a template is not specified at the plant level, the template specified
in the report definition of the BI publisher configuration is used for all plants. The .pdf format is automatically downloaded to the browser, and you can print the document on a local printer. As part of the predefined product label template, label content for the product such as item number, item description, work order number, and quantity are printed. For serialization enabled operations, product serial numbers are also printed. The label template can be modified to include additional attributes from item definition, work order, operation transaction, serial number, and lot number.

| Note: | The operation transaction attributes are included in the label content only when the label is printed when reporting operation transactions. |

- If the Print product labels using external applications is checked, native printing functionality into PDF is suppressed and a print product label business event is generated. External printing applications can listen to the business event to generate labels externally.

Related Topics
- Overview of Manufacturing Plants
- How You Manage Work Areas

OTBI for Oracle Fusion Manufacturing

Oracle Transactional Business Intelligence (OTBI) offers you real time, self-service reporting directly from Oracle Fusion Manufacturing. It is a dynamic reporting layer built keeping the business user in mind.

OTBI analysis can be created and viewed using Reports and Analytics from the panel drawer of the Work Execution work area within Manufacturing or using the native BI Analytics (Answers) application. The Reports and Analytics option can also be accessed from the Navigator by selecting it from Tools on the Home page.

If you have been assigned the Production Supervisor role by your enterprise, you can automatically access the manufacturing-related OTBI subject areas. The analysis can be performed only for those organizations that you have access to.

OTBI provides the following Manufacturing subject areas, which you can use to build modified analysis. These subject areas are:
- Manufacturing - Work Order Performance Real Time
- Manufacturing - Material Usage Real Time
- Manufacturing - Resource Usage Real Time
- Manufacturing - Actual Production Real Time
- Manufacturing - Production Exceptions Real Time
- Manufacturing - Purchased Item Usage Real Time

The previously mentioned subject areas support analysis of both in-house manufacturing and contract manufacturing-related work orders, their execution transactions, and operation start or stop metrics.

The dimensions and facts in these subject areas provide you visibility to work order management and work execution transactions.

You can use the common dimensions provided in the previously mentioned subject areas to cross join information between Manufacturing and subject areas belonging to other products such as Order Management, Inventory, Shipping.
and so on. For example, you can use the component item name information from manufacturing and join the on-hand balance information from inventory to create an analysis which provides visibility of work order components availability.

The following predefined transactional analysis samples are provided for your use:

- **Cycle Time Performance**: Can be used to analyze average total cycle time in addition to queue, run, and idle time components.
- **Work Orders Scheduled Today**: Can be used to analyze work orders scheduled in your plant for the current date of the application.

  **Note**: You can edit the predefined sample analyses provided to you and you can also create your own transactional sample analysis.

The following section explains each of the subject areas in detail.

**Manufacturing- Work Order Performance Real Time**

This subject area provides real time information about work order execution and operation cycle times. Some of the metrics in this subject area are:

- Quantity metrics related to work order, reservations, and work execution
- Count metrics related to work order
- Aging metrics of work order
- Operation cycle time metrics
- Supplier operation metrics

A few of the cross-subject area analysis that you can perform in this subject area are:

- Analyze demand details using the Order management - Fulfillment Line Real Time subject area for back-to-back sales orders where work order is the supply
- Analyze product on-hand balances
- Analyze receipt and shipment details of supplier operations

The descriptive flexfields supported in this subject area are:

- Work order header descriptive flexfields
- Work order operations descriptive flexfields
- Work order operations transactions descriptive flexfields
- Product serial descriptive flexfields
- Product serial attributes descriptive flexfields
- Work Center descriptive flexfields
- Work Area descriptive flexfields

**Manufacturing- Material Usage Real Time**

This subject area provides real time information about component usages in work execution. You can analyze component lot number and component serial number information either independently or with parent serial number. Some of metrics in this subject area are:

- Planned, actual, and variance quantity
- Issued and returned quantity
• Negative issued and negative returned quantity
• On hand balances of components

A few of the cross-subject area analysis that you can perform in this subject area are:
• Analyze demand details using the Order management - Fulfillment Line Real Time subject area for back-to-back sales orders where work order is the supply
• Analyze component on-hand balances
• Analyze manufacturing transactions for a project and task

The descriptive flexfields supported in this subject area are:
• Work order header descriptive flexfields
• Work order operations descriptive flexfields
• Work order operation material descriptive flexfields
• Component serial descriptive flexfields
• Component serial attributes descriptive flexfields
• Component lot descriptive flexfields
• Component lot attributes descriptive flexfields
• Work Center descriptive flexfields
• Work Area descriptive flexfields

**Manufacturing - Resource Usage Real Time**

This subject area provides real time information about resource usages in work execution. Some of the metrics in this subject area are:
• Planned quantity usage
• Actual quantity usage
• Usage quantity variance
• Usage quantity variance percentage

The descriptive flexfields supported in this subject area are:
• Work order header descriptive flexfields
• Work order operations descriptive flexfields
• Work order operation resource descriptive flexfields
• Work order resource transactions descriptive flexfields
• Work Center descriptive flexfields
• Work Area descriptive flexfields
• Resource descriptive flexfields
• Equipment Resource Instance descriptive flexfields
• Labor Resource Instance descriptive flexfields

**Manufacturing - Actual Production Real Time**

This subject area provides real time information about work order completion transactions. In case of process manufacturing, the output items can be yielded from any operation. You can use product dimension to analyze discrete
manufacturing and output dimension to analyze process manufacturing. You can also analyze product lot number and product serial number information that was completed into inventory. Some of the metrics in this subject area are:

- Completion quantity
- Return quantity
- Expected output quantity
- Actual output quantity
- Open quantity

Some of the cross-subject area analysis that you can perform in this subject area are:

- Analyze demand details using the Order management - Fulfillment Line Real Time subject area for back-to-back sales orders where work order is the supply
- Analyze Product on-hand balances
- Analyze manufacturing transactions for a project and task

The descriptive flexfields supported in this subject area are:

- Work order header descriptive flexfields
- Product serial descriptive flexfields
- Product serial attributes descriptive flexfields
- Product lot descriptive flexfields
- Product lot attributes descriptive flexfields

**Manufacturing - Production Exceptions Real Time**

This subject area enables you to create an analysis which provides visibility of production exceptions logged in your plant. Some of the metrics in this subject area are:

- Counts of open and closed exceptions
- Aging metrics for open exceptions
- Cycle time of closed exceptions
- Impacted work order operation metrics

The descriptive flexfields supported in this subject area are:

- Work order header descriptive flexfields
- Work order operations descriptive flexfields
- Product serial number descriptive flexfields
- Product serial attributes descriptive flexfields

**Manufacturing - Purchased Item Usage Real Time**

This subject area enables you to create an analysis which provides visibility of the purchase lifecycle of items procured directly against a work order. Some of the metrics in this subject area are:

- Quantities and Amounts for requisitions, purchase orders
- Quantities delivered, returned or corrected

The descriptive flexfields supported in this subject area are:

- Work order header descriptive flexfields
- Work order operations descriptive flexfields
- Work center descriptive flexfields
- Work area descriptive flexfields
Glossary

**ad hoc item**
A material that is used in the production process of an end item, but is not considered as an item component, such as lubricating oil. It is not included in the item structure.

**blanket purchase agreement**
A long term agreement for the purchase of goods and services from a supplier. It includes terms and conditions, details of the goods or services to be purchased from the supplier, and negotiated amounts. The blanket agreement does not contain delivery dates, individual delivery quantities, or amounts. Complete details necessary to supplier fulfillment are specified subsequently in purchase orders issued against the agreement.

**dispatch list**
A list displaying the work order operations sorted sequentially for a selected work area and one or more work centers.

**fulfillment line**
A request to fulfill an item. A fulfillment line contains details about the request, such as customer, sales order number, item, quantity, scheduled ship date, actual ship date, shipping method, and so on. To improve fulfillment, you can schedule a fulfillment line, reserve product for it, substitute an item for it, change the warehouse, change the shipping method, change the demand class, and so on.

**phantom**
A product that is physically built but not stocked, before being used in the next stage of manufacturing.

**sales order**
A contractual document between a sales organization and your customer. You create a sales order in the Order Management work area. Order management also transforms a source order it receives from a source system into a sales order that it can submit to order fulfillment.