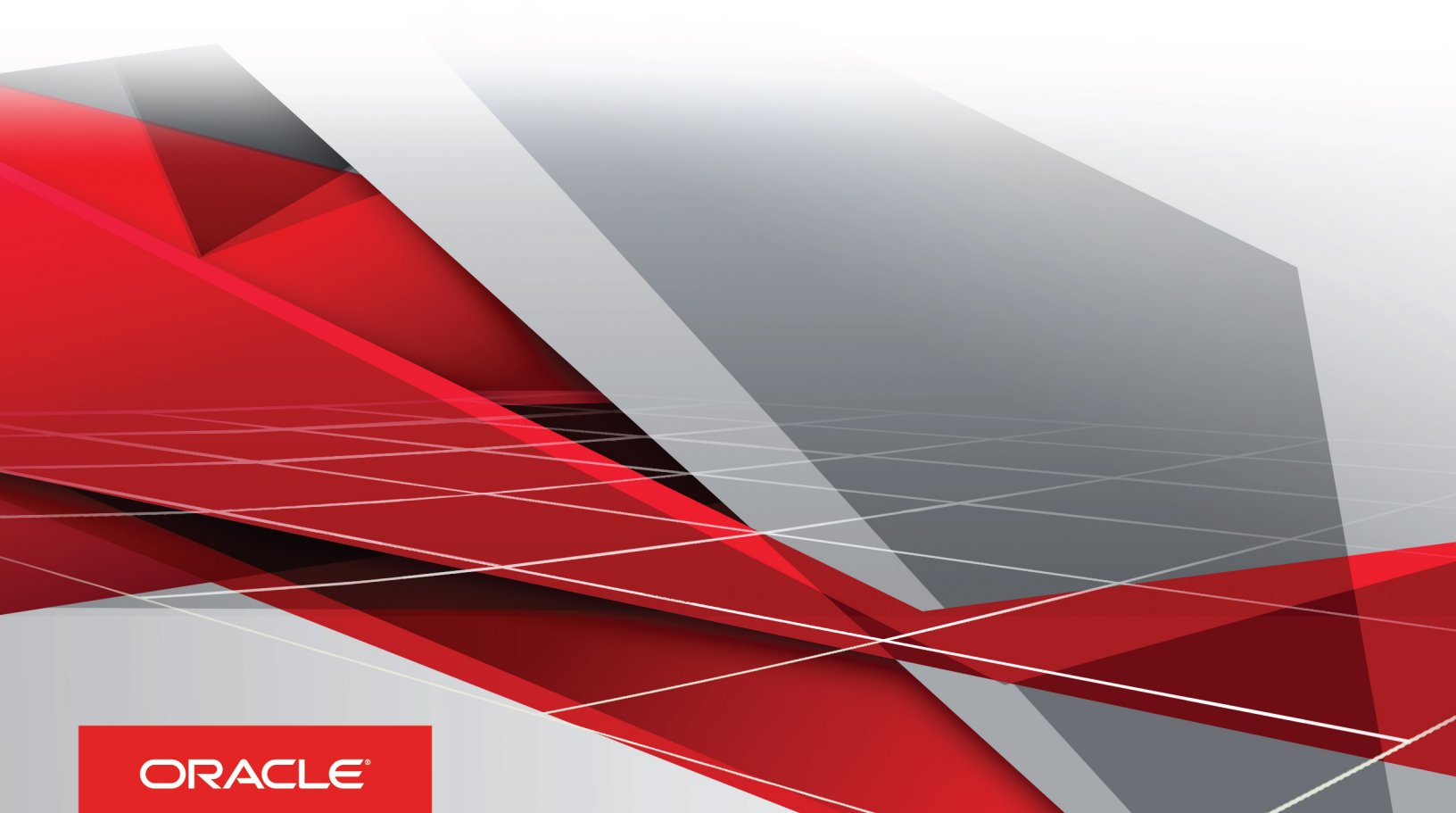
Oracle

SCM Cloud
Using Supply Chain Orchestration

Release 12

This guide also applies to on-premises implementations



Oracle® SCM Cloud Using Supply Chain Orchestration

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Preface

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

Oracle Applications Help

Use the help icon to access Oracle Applications Help in the application. If you don't see any help icons on your page, click the Show Help icon in the global header. Not all pages have help icons. You can also access Oracle Applications Help at https://fusionhelp.oracle.com.

Using Applications Help

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

Additional Resources

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- **Guides and Videos:** Go to the **Oracle Help Center** to find guides and videos.
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Documentation Accessibility

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Comments and Suggestions

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1 Introduction

Supply Chain Orchestration: Overview

Oracle Fusion Supply Chain Orchestration provides a business process-based interface to execute and manage complex supply-creation processes across multiple products. You can use Supply Chain Orchestration with Oracle Applications Cloud as well as third-party manufacturing and logistics applications to establish consistent and comprehensive supply execution processes.

Using Supply Chain Orchestration, you can:

- Receive supply requests from multiple Oracle Fusion applications, such as Planning Central, Inventory Min/Max Planning, Order Management, and Global Order Promising (GOP).
- Launch and manage complex business processes.
- Automate change management to match supply to demand.
- Observe a 360 degree view of the supply-creation process.
- Create rules for business process management.
- Enable central control and decentralized execution.
- Scale process monitoring and exception management.

Supply Chain Orchestration supports standard business processes to create supply in warehouse and fulfill demands. You can create supply through the predefined Back-to-back (make, buy, or transfer), Contract manufacturing, or Internal Materials Transfer business process.

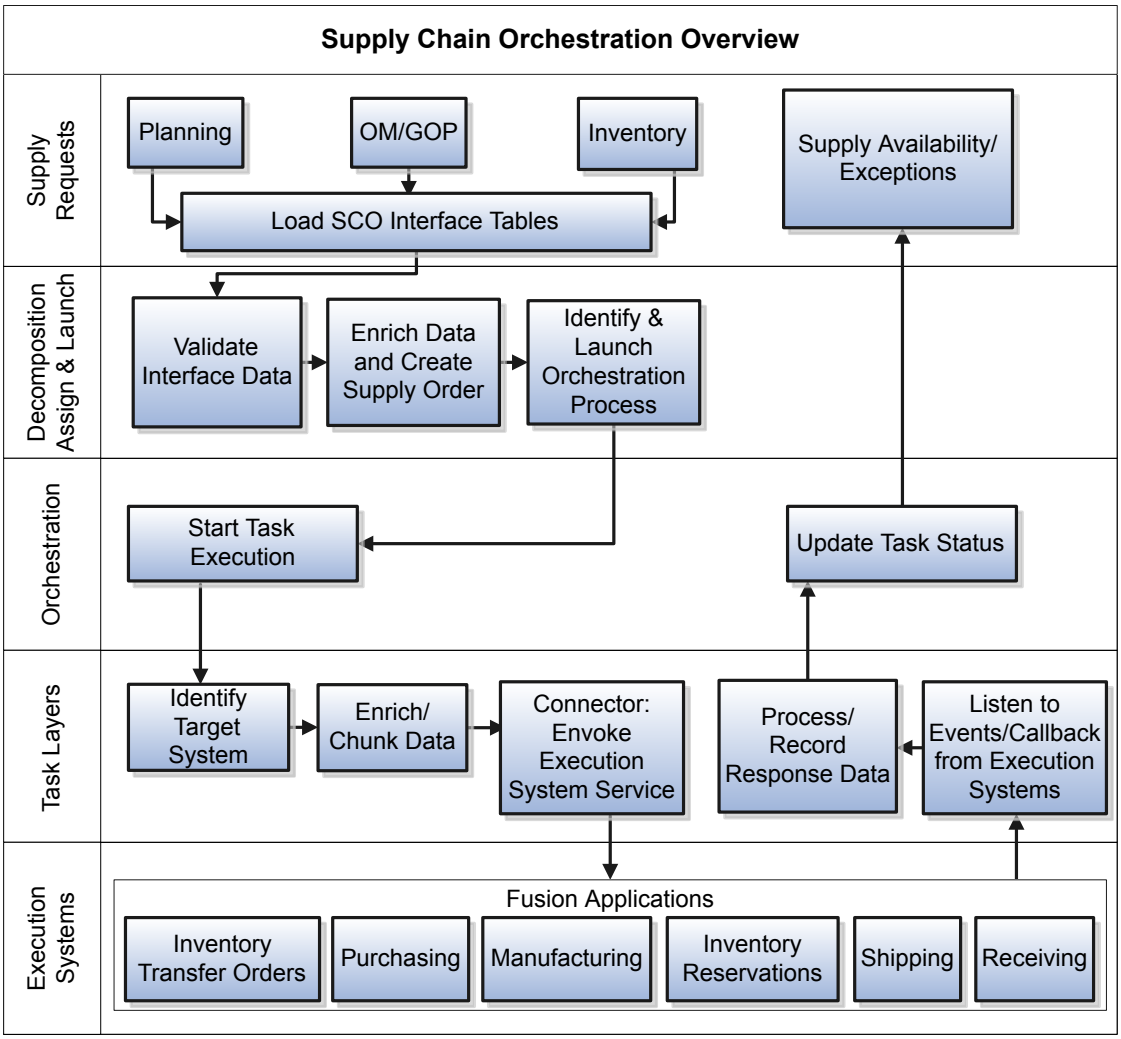
For demand-specific supply requests, such as back-to-back, Supply Chain Orchestration creates supply request documents by combining the demand details from Oracle Fusion Order Management with the supply suggestion from Global Order Promising (GOP).

Supply Chain Orchestration provides end-to-end visibility into the supply-creation process with status updates. Supplies at risk are characterized as errors, exceptions, and jeopardy. When changes occur in demand or supply, Supply Chain Orchestration uses automated change management to maintain balance of quantity and fulfillment dates. In case of a supply exception, predefined rules reduce excess inventory, and find alternate supply sources. Automated change management is used to manage:

- Changes in supply quantity by supply providers such as manufacturing plants and suppliers.
- Changes in supply completion date by supply providers.
- Changes in demand quantity of a sales order.
- Changes in need-by date of a sales order.
- Cancellation of a sales order, purchase order, transfer order, or work order.
- Splitting of a sales order, purchase order, or transfer order.

Supply Chain Orchestration also provides the ability to access supply execution documents, such as manufacturing work order or purchase order, to identify the cause of supply exceptions. After a supply risk is resolved, it is possible to resubmit a supply order. If a supply risk cannot be resolved, it is possible to cancel the supply flow.

The following process flow diagram provides an overview of the Supply Chain Orchestration processes. These processes are discussed in detail in a later topic.



Related Topics

- Supply Chain Orchestration Setup: Overview

Supply Chain Orchestration Components: How They Work Together

The Oracle Fusion Supply Chain Orchestration application forms a link between the applications requesting supply and those fulfilling supply.

Supply requests may be received from various applications, such as Planning, Global Order Promising (GOP), Order Management, and Inventory. Supply fulfilling applications can be third-party execution systems or Oracle applications, such as Purchasing, Manufacturing, Shipping, and Receiving.

Based on the process and actions performed, the Supply Chain Orchestration application components are:

- Decomposition
- Orchestration
- Enterprise Integration Layer (EIL)
- Task Layers

Supply Chain Orchestration Components	Internal Process	Actions
Supply Requesting Applications	Supply requests received: • Fusion Planning: Planned recommendations • GOP, OM: Back-to-back orders • Inventory: Internal Transfer Requests for Min/Max replenishment	Requests recorded in Supply Chain Orchestration interface tables.
Decomposition	Requests are processed: 1. Reads payloads from the interface table. 2. Creates a Supply Order document, used by Supply Chain Orchestration to create supply. 3. Transforms payload attributes to enterprise-specific attributes, if required. 4. Interprets execution rules to determine if special processing is needed for transfer order requests. 5. Applies defaulting rules 6. Assigns and launches orchestration process. The assigned process determines how supply is created, such as back-to-back or contract manufacturing.	• Supply Order documents created • Launches orchestration process
Orchestration	Orchestrates supply: • Executes the determined business process. • Uses business services layer (EIL) to launch tasks. • Manages the tasks. • Manages/calculates cost of change. • Runtime Process View.	• Each supply order tracking line sent to task layer for processing. • Enables run-time process viewing
EIL	As part of Orchestration layer, EIL: 1. Creates payload and invokes appropriate supply execution systems to request services.	

Supply Chain Orchestration Components	Internal Process	Actions
	2. Supply execution systems notify Supply Chain Orchestration in case of changes. EIL accepts notifications, processes them, and manages exceptions.	
Task Layers	1. Identifies target service or execution system that will fulfill current requests. 2. Transforms the data using connectors.	• Send request to execution systems. • Record status response from execution systems and process downstream tasks. • Record any exceptions in the execution systems and notify supply requesting applications.
Execution Systems	Execution systems: • Inventory Transfer Orders • Inventory Reservations • Purchasing • Manufacturing • Shipping • Receiving Processes execution document related create, cancel, or update requests received from Supply Chain Orchestration task layer.	Creates, updates or cancels supply execution documents in response to SCO requests to communicate request status and execution document fulfillment updates.

The various entities that are created and managed during supply orchestration are:

- Supply Order: Contains all supply order lines created to fulfill a specific supply request.
- Supply Order Line: Contains information about individual supply requests.
- Supply Order Tracking Line: The tracking line monitors the process needed to fulfill a supply request with a specific supply type.
- Supply Transfer Order Details: Contains information for transfer supply requests. Captures Transfer Order execution document details from Fusion Inventory when the tracking line supply type is Transfer.
- Supply Buy Order Details: Contains information for buy supply requests. Captures Purchase Order execution document details from Fusion Purchasing when the tracking line supply type is Buy.
- Supply Make Order Details: Contains information for make supply requests. Captures Work Order execution document details from Fusion Manufacturing when the tracking line supply type is Make.

Back-to-back Business Process

In back-to-back fulfillment, a supply request is created only after scheduling of a sales order. It is best suited for items that organizations choose not to stock. It offers organizations the flexibility to extend their product offerings even if they do not directly stock goods.

The essence of a back-to-back flow is a firm link between the demand document (sales order) and the supply document (purchase order, transfer order, or work order). This ensures that supply cannot be allocated incorrectly or diverted to fulfill another demand. The back-to-back flow is effective in ensuring on-time order fulfillment and a higher customer satisfaction.

Fulfillment decisions in back-to-back are controlled centrally. Organizations can designate an item to be back-to-back enabled in Product Information Management (PIM) and set up sourcing rules in GOP to determine supply creation options. The process provides visibility into demand, supply, and exceptions in the flow.

Contract Manufacturing Processing

For contract manufacturing fulfillment, a manufacturing work order is created in the enterprise and a matching purchase order is created in the contract manufacturer.

- The purchase order serves as an agreement between the enterprise and manufacturer.
- The work order in the enterprise is used to track progress of supply in the contract manufacturer's plant.
- The work order and purchase order documents are linked to ensure that the document parameters and progress are synchronized. This synchronization is facilitated by Supply Chain Orchestration.
- Supply Chain Orchestration provides visibility into the contract manufacturing processes. Automated exception management is used to balance supply and demand, and avoid excess or short supply.

Deviations in Supply Orchestration Process: Explained

In Supply Chain Orchestration, the supply processes are managed by tracking transactions associated with the supply life-cycle of buy, transfer, and make processes. It provides a complete view of supply request and supply execution status, and indicates any exceptions or potential issues.

Changes or delays may result in deviations in the supply chain orchestration process. Supply side changes that may result in deviations are canceled purchase, work, or transfer orders, items rejected due to quality issues, supplier unable to meet requested quantity or scheduled date, and reserved supply reassigned before shipment.

You can use automated change management to manage the changes in the supply side, and can create and manage alternate supply sources to meet demand. Automated change management supports the splitting of an existing supply tracking line into multiple tracking lines and the creation of parallel flows on a supply chain orchestration process instance for the split supply tracking lines.

For example, consider a buy supply request tracking line for 100 items. A supply request for 100 quantity is sent to a procurement system where a requisition and purchase order (PO) is created. If the procurement system returns the PO with three PO schedules of 50, 30, and 20 quantity, each PO schedule is tracked independently. To support this, the single tracking line of 100 items is split into three supply tracking lines of 50, 30, and 20 items respectively. The three tracking lines are also associated with unique supply orchestration process instances to track each PO schedule. The supply tracking lines are visible in the Supply Overview work area, and exceptions for each tracking line are managed independently.

2 Overview

Supply Lines Work Area: Overview

The Supply Lines Overview page is the landing page or dashboard that gives a comprehensive view of the supply lines being processed and their current status. To access the page, select **Supply Orchestration** in the Navigator in the Oracle Fusion application.

Supply orchestration is tracked and managed at the level of a supply line. The Supply Lines Overview page displays the following:

- The Overview table lists the supply lines being tracked and the exceptions recorded for each. It also indicates the supply lines that are on track. You can choose to display a list view or a hierarchical tree view.
- A sunburst chart depicting deviations by the Make, Buy, Transfer, or Available to Promise supply types.
- An analytics region that uses bar graphs to display supply data and deviations. You can use this view for analysis and optimization of the supply processes.

Supply Lines Overview Analytics: Explained

In the **Supply Lines Overview** page, the **Deviations by Supply Type** and **Current State: Analytics** sections provide visualization of the information in the **Overview** table.

Deviations by Supply Type

The **Deviations by Supply Type** sunburst chart in the **Supply Lines Overview** page contains segments that represent the number of supply tracking lines in deviation. By default, the chart represents the deviations for all supply tracking lines displayed in the **Overview** table.

The Deviations in Supply Type chart displays information at the following levels of granularity:

- Supply order type (Make, Buy, and Transfer)
- Deviation type (Jeopardy, Exceptions, and Errors)
- Deviation classification or reason

When you double-click a deviation type, you can drill down to any level to view more information about each deviation type. You can also click **Detach** to view an expanded view of the chart in a separate page and drill down further. The additional classification or reason that is displayed for each deviation is as follows:

- Jeopardy: Displays the tracking lines that are in the High jeopardy state.
- Exception: Displays the tracking lines in the Supply Date Pushed Out or Quantity Reduced states.
- Error: Displays the tracking lines in the Undefined state.

Current State Analytics

The **Current State: Analytics** section displays the following bar charts:

- **Deviations by Type**: Represents the kinds of deviations and the number of deviations in the open supply orders.
- **On Track by Supply Type**: Compares on-track supply types by organizations. You can identify and analyze the supply type that needs to be managed the most.
- **Status by Supply Type**: Compares Available to promise, Buy, Make, and Transfer supply types by status. You can identify and analyze each supply type by status, for example identify if supply lines are in a status for long or not being processed as expected.

Supply Lines Status: Explained

Supply orchestration is tracked and managed at the level of a supply line. If a supply line deviates from the expected date or item quantity, it is indicated on the dashboard or the Supply Lines Overview page.

Based on the severity of the change, the supply line is assigned the following status.

Supply Line Status	Reason
Error	Functional errors or technical errors. For example, purchase order not created in Oracle Procurement Cloud because of a missing charge account or because a web service is down.
Exception	Supply does not meet the requested quantity, the requested date, or both.
Jeopardy	Supply available after the due date.
On Track	Requested supply quantity expected on time.

Errors can be resolved using the following options:

- Resubmit: Supply line can be resubmitted for functional and technical errors.
- Mark as Inactive: Supply line can be marked inactive in case of missing or invalid data that cannot be corrected in application.

What's a Supply Line?

Supply requests are captured as supply lines and supply tracking lines. Supply lines capture key information that identifies the supply request, such as supply source, supply request type, item details, quantity details, and supply status.

What's a Supply Tracking Line?

Supply requests are captured as supply lines and supply tracking lines. Supply tracking lines capture key attributes and, in addition, also capture the attributes used in the supply request execution.

Attributes used in supply request execution include supply source details (such as organization, subinventory, location, and supplier), requesting source details (such as organization, subinventory, and location), supply dates, and status.

A supply tracking line is created for each supply order. Based on supply changes, more that one supply tracking line may be created for a supply order.

What's the difference between exception and jeopardy?

Exceptions are supply changes that affect quantity or supply dates. For example, a reduction in quantity, date change, or canceled supply.

Jeopardy occurs when supply is delayed beyond its need-by date.

Exceptions and jeopardy can be rectified using automated change management, and resubmitted for processing. Exceptions can also be rectified manually.

3 Manage Supply Lines

Manage Supply Lines: Overview

The Manage Supply Lines page displays detailed information about supply lines. You can use the search section to view the relevant supply lines. For example, you can view all back-to-back supply lines of the Buy supply type by selecting required criteria.

You can access the Manage Supply Lines page from the Supply Line Overview landing page as follows:

- Click the **Manage Supply Lines** task in the **Tasks** panel drawer.
- Or click the numbered links under the **Current State** columns in the **Overview** table.

In the Manage Supply Lines page, you can further drill down to view details about the supply lines in an order. To do so, click the numbered link under the **Supply Order Number** column. The **Supply Order Details** page opens and displays details of all supply lines in the order.

Internal Material Transfers: How They Are Processed in Supply Chain Orchestration

Internal material transfer (IMT) requests can be within an organization (intra-org) or between two organizations (inter-org). Supply Chain Orchestration manages both intra-org and inter-org internal material transfers.

How Internal Material Transfer Request Is Processed

Internal material transfer requests are processed as follows:

1. Supply requests are received in Supply Chain Orchestration.
2. Supply requests are processed in the decomposition layer, supply orders are created, and the task layer initiates request for creation of transfer order in Inventory.
3. Business rules govern how the internal material transfer request is processed. The document execution rules determine if an IMT request is to be executed using a transfer order or a purchase order. The supply order is processed as a transfer order or purchase order based on the following rules:

Document Execution Rule	Supply Type	Execution Document
A buy-sell relationship exists between the source and destination organizations	Buy	Purchase Order
The source and destination organizations are separate legal entities	Buy	Purchase Order
All other conditions	Transfer	Transfer Order

4. After a transfer order or purchase order is created, the inventory is shipped to the destination organization.
5. The transfer order details are reflected in the Supply Chain Orchestration work area.

The supply chain orchestration process also manages changes related to the update and cancellation of transfer orders. Changes include rescheduling a transfer order and changes in shipping method or date.

How are reservations managed in back-to-back processing?

Reservation refers to allocation of material against the specific demand of an Order Management order fulfillment line. Reservation is required to support back-to-back business flows for Inventory tasks that involve creating and managing material reservations.

Points to consider:

- One reservation is created for a demand and supply.
- Reservations can be created for back-to-back Buy, Make, Transfer, or On Hand supply orders.
- Reservation supplies that can be reserved are Purchase Orders, Transfer Orders, Work Orders, and On Hand inventory.
- Partial fulfillment of reservations is not supported.
- Changes to reservation in Oracle Logistics Cloud leads to exceptions, which are displayed in the Supply Chain Orchestration work area.

Make Flow: How It Is Processed in Supply Chain Orchestration

Make or manufacturing flows create work orders, which are internal documents that start a manufacturing process.

How Make Requests Are Processed

Make requests are processed as follows:

1. Supply requests are received in Supply Chain Orchestration.
2. Supply requests are processed in the decomposition Layer, supply orders are created, and the task layer initiates request for creation of work order in Oracle Manufacturing Cloud.
3. The External Interface Layer (EIL) directs the supply request to the manufacturing application. The Manufacturing task layer tracks the work order and indicates exceptions in the Supply Lines Overview page.

Supply Chain Orchestration creates work orders from Inventory Min-Max, Planning, and Order Management (back-to-back orders).

In case of back-to-back, there are two possible variants:

- The back-to-back contract manufacturing work order is used to track production in the contract manufacturer's facilities, and is created for and reserved against a specific sales order.

- The back-to-back work order is executed in the organization's own manufacturing facilities, and is created for and reserved against a specific sales order.

The supply chain orchestration process also manages changes related to update and cancellation of work orders. Changes include change in dates or quantity related to demand.

- To manage demand-side changes in back-to-back and contract manufacturing, multiple tracking lines may be created in Supply Chain Orchestration. The tracking lines are displayed in the Supply Chain Orchestration work area. The work order remains unchanged and is applicable as such.
- In case of rejected products, the original tracking line remains the same, and a new tracking line is created for the rejected quantity.
- In case of exceptions, a work order can be manually put on hold, while the exception is resolved.

Buy Flow: How It Is Processed in Supply Chain Orchestration

Buy flows create purchase orders, which are the internal supply documents that start a purchase process.

How Buy Requests Are Calculated

Buy order requests are processed as follows:

1. Supply requests are received in Supply Chain Orchestration.
2. Supply requests are processed in the decomposition Layer, supply orders are created, and the task layer initiates request for creation of purchase order in Oracle Procurement Cloud.
3. The External Interface Layer (EIL) directs the supply request to the purchasing application. The Purchasing task layer tracks the purchase order and indicates status and exceptions in the Supply Lines Overview page.

Buy flow purchase orders are created in Oracle Procurement Cloud. Buy requests can originate from Order Management, Planning, or Inventory.

The supply chain orchestration process also manages changes in back-to-back Buy flow. Changes include the following:

- Create, update, and cancel purchase orders in Oracle Procurement Cloud based on requests from the supply requesting applications.
- Record and respond to business events in Oracle Procurement Cloud due to supply-side changes. Responses include creating, canceling, and splitting purchase orders, purchase order lines, or purchase order line schedules.

4 Manage Supply Request Exceptions

Manage Supply Request Exceptions: Overview

The Manage Supply Request Exceptions page lists the supply requests that failed during processing. The listed supply requests are not processed, that is no supply orders are created. It is possible to recover some of these supply requests.

You can use the Manage Supply Request Exceptions page to view the supply requests in exception in a table view. The Exception Message column in the table displays exception details per batch of supply request lines.

You can perform the following actions for a supply request exception:

- If the issue can be resolved, you can resolve the issue and resubmit the supply request. You cannot edit the supply request data prior to resubmitting a supply request in error. Before resubmitting the supply request, you must resolve the cause of the exception in the source application (for example, a set up that was incomplete). After correction, the specific record is queried again in the Manage Supply Request Exceptions page and resubmitted.
- If the issue cannot be resolved, that is it involves missing or incorrect data, you must cancel the supply request. In such cases, the supply request needs to initiated again from the supply requesting application.

The Manage Supply Request Exceptions page also displays the number of times the selected supply request is resubmitted.

What happens if supply request exceptions are not resolved?

Unresolved exceptions, which are not resubmitted or marked inactive, continue to display on the Manage Supply Exceptions page. Supply orders are not created for these exceptions.

For performance and maintenance efficiency, avoid a build-up of unresolved exceptions.

Can I make changes to a supply request before resubmitting it?

You cannot make changes to a supply request from the Manage Supply Exceptions page. Use the exception message to view the cause of error, and correct it in the source application. After corrective action, refresh the Manage Supply Exceptions page, select the updated record, and resubmit it.

5 Manage Configured Item Exceptions

Manage Configured Item Exceptions: Explained

Configured items are assemble-to-order items, which are based on customer selections specified at the time of order capture.

The fulfillment process-related exceptions and resolutions applicable to standard items also apply to configured items, and are displayed on the **Manage Supply Request Exceptions** page.

The **Manage Configured Item Exceptions** page displays the specific exceptions caused during the creation of configured items. The page displays the configured items in exception in a table view. The **Exception Message** column in the table lists the exception messages for each configured item request.

You can perform the following actions in the page:

- Export to Excel: Downloads the exception search results as a Microsoft Office Excel file.
- Resubmit: Resubmits the configured item for processing. You can resubmit a configured item after the exception reported on it is resolved.
- Ignore Exception: Removes the exception record from the list.

Configured Item Exceptions

Configured item creation exceptions occur due to the following reasons:

- Error in new configuration item creation in Oracle Product Information Management (PIM) Cloud: If the new configuration item or its attributes are not successfully added to PIM, the order is rejected and the configured item is not processed further. After the cause of the error is corrected, the order must be submitted again.
- Error in processing of a configured item after it is added in PIM: Model item entities are copied to configured items and used in configured item processing. The entities include subinventories and locators, item transaction defaults, inventory consumption rules, and units of measure (both intra-class and inter-class). Errors are logged in case of any failures.

Configuration Item Processing in Supply Chain Orchestration

Configured items are processed as follows:

1. After confirmation of a configured item line, the order is matched with previous configurations to see if the configuration item name already exists.
2. The following outcomes are possible while matching with existing configurations:
    - If a match is found, the requested configuration selection is assigned the existing configuration item name.
    - If a match is not found, a new configured item is created in PIM and the new configuration item name is assigned to the configuration.
3. The organizations from which the item will be sourced are identified.
4. The configuration item name and organization are passed to the downstream applications.

6 View Configured Item Sales Structure

View Configured Item Sales Structure: Explained

You can use the View Configured Item Sales Structure page to view the configured item options selected during order entry.

The structure of a configured item is not visible in Oracle Product Information Management (PIM) Cloud. This is because the configured item bills of material are not stored in PIM but are constructed upon request using the configured item data and base model structure. The View Configured Item Structure page enables you to view the sales view of a configured item without having to go back to the sales order. The page displays dynamic configured item bills of material.

You can use the **Item** field in the **Search** section to search for a configured item. The search results are displayed in the **Item Structure Details** section. You can drill down to view the configured item components and related information. You can also use the **Export to Excel** option to download the configured item structure details as a Microsoft Office Excel file.