Oracle Fusion Cloud SCM

Integration Playbooks for SCM

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Thanks for helping us improve our user assistance!

1 Integration Playbooks for SCM

Overview of the Oracle Fusion Cloud Supply Chain & Manufacturing Integration Playbooks

The playbooks in this guide provide comprehensive integration options, use cases, best practices, and examples to help you extend and integrate your Oracle Fusion Cloud Supply Chain & Manufacturing (SCM) applications with any third-party system in your ecosystem.

What Playbooks Can I Find in the Guide?

Product-specific playbooks currently included in this guide are:

- *Supply Chain & Manufacturing (SCM)* (information common to all playbooks)
- *Cost Management*
- *Inventory Management*
- *Maintenance*
- *Manufacturing*
- *Order Management*
- *Pricing*
- *Product Lifecycle Management*
- *Service Logistics*
- *Supply Chain Orchestration*
- *Supply Chain Planning*
- *Transportation and Global Trade Management*
- *Warehouse Management*

> **Note:** The playbooks include links to additional information in My Oracle Support and are identified as such. To view this information, you must have a My Oracle Support subscription.

What Kind of Integration Information is Available?

You'll find integration information that's applicable to all playbooks in the Integration Basics chapter. Each playbook contains more integration information that's applicable only to that Oracle Fusion Cloud application.

Who Should Use the Playbooks?

Customers, system integrators, and independent software vendors can use this guide when extending Oracle Fusion Cloud SCM applications.

About Oracle Fusion Cloud Supply Chain & Manufacturing

Oracle Fusion Cloud Supply Chain & Manufacturing (SCM) encompasses an extensive array of applications focused on streamlining and enhancing a business's supply chain operations.

It's part of the full suite of Oracle Fusion Cloud Applications and includes:

- Cost Management
- Inventory Management
- Maintenance
- Manufacturing
- Order Management
- Pricing
- Product Lifecycle Management
- Service Logistics
- Supply Chain Orchestration
- Supply Chain Planning
- Transportation and Global Trade Management
- Warehouse Management

With Oracle Cloud SCM, organizations can respond quickly to changing demand, supply, and market conditions. It enables them make faster decisions to act on business changes with flexibility and resiliency through agile planning and coordinated supply chain execution.

Terminology for SCM

These terms are used throughout this guide.

Term	Definition
FBDI	File-Based Data Import. A method that allows users to load large volumes of data from external sources, such as spreadsheets or CSV files, into Oracle Fusion Cloud Applications using predefined templates. This method is particularly useful for migrating data from legacy systems or for bulk data uploads. It streamlines the data loading process and ensures data integrity by validating the data against predefined rules before importing it into the system.
Oracle WebCenter Content	Provides a comprehensive platform for managing digital content within an organization. It offers a range of features and functionalities to store, organize, secure, and retrieve various types of digital assets, including documents, images, videos, and web content.
Read-Optimized Data Store	A read-optimized data store and extraction foundation for Oracle Fusion Cloud Applications. It is a near-real-time replica of Fusion transactional data, designed to separate the analytical read workload from the system of record without compromising either. Fusion's OLTP database remains the system

Term	Definition
	of record for all business transactions. Read-Optimized Data Store supports everything that reads from it.
Data Extraction Tool	The Data Extraction tool leverages a read-optimized data store to ensure faster and more reliable data extraction. It is a replacement for BICC.
Business Intelligence Cloud Connector (BICC)	A bulk-data-extract tool that's built into Oracle Fusion Applications and is used to extract applications data and load it into an Oracle Cloud Storage Service or Universal Content Management server. It is a legacy tool and getting replaced by the Data Extraction tool.
Oracle ADF Desktop Integration (ADFdi)	One of the features of Oracle ADF is that it enables desktop integration with MS Excel spreadsheets to manage large volumes of data. It allows users to import data from Oracle ADF systems into Excel, manipulate the data using Excel's familiar interface, and then seamlessly upload the modified data back into the Oracle ADF application.
Application Domain/URL	It's created when an environment is provisioned and contains the environment system name and Oracle's subdomain. For example, **`cprabidqy-dev1.fa.ocs.oraclecloud.com`**.
Vanity URL	The format of the URL that a customer has customized either by adding a friendly name or by using their own subdomain. For example: • **`https://inspire-cprabidqy-dev1.fa.ocs.oraclecloud.com`** • **`inspire.fa.ocs.oraclecloud.com`** • **`apps.inspire.com`**
Vanity Domain	A type of Vanity URL that uses a customer-owned domain and doesn't include **`fa.ocs.oraclecloud.com`**. For example, **`apps.inspire.com`**.
Oracle Analytics Publisher	A reporting solution that's embedded in Oracle Fusion Applications, allowing customers to design, create, and run reports.
Oracle Integration Cloud	A PaaS service offered by Oracle Cloud Infrastructure as an integration platform that enables businesses to seamlessly connect applications, data sources, and systems across cloud and on-premises environments.
Oracle Visual Builder Cloud Service	A cloud-based service provided by Oracle that enables developers to rapidly build and deploy web and mobile applications without requiring extensive coding expertise.
EDI	Electronic Data Interchange. A specification for the communication of business documents, such as purchase orders or invoices, in a standard electronic format.
XSL	Extensible Stylesheet Language. A styling language for XML used to define the transformations between the XML generated by Oracle Fusion Cloud Applications and external XML message formats.
OAGIS	Open Applications Group Integration Specification. An XML messaging standard that provides a canonical set of business objects and messages for information integration. The XML-based B2B Message standard published by OAGi (Open Applications Group, Inc.) Open Applications Group Integration Specification. For more information, go to *http://www.oagi.org/*.
B2B Service Provider	An external agency that acts as an intermediary to deliver or receive messages. The service provider handles B2B protocols and partner-specific format transformations based on Trading Partner Agreements that are defined between the two partners involved in the message exchange.
UBL	Universal Business Language. A library of standard XML business documents that businesses can use to create and process business transactions.

SCM Integration Basics

Integration Methodology

Integrating Oracle Fusion Cloud Supply Chain & Manufacturing (SCM) with upstream or downstream third-party systems requires you to follow a comprehensive framework that helps you combine different systems or components into a cohesive whole.

This is an example of the integration steps you should follow.

1. Requirements Analysis

- Document the systems involved in integration.
- To serve business purposes, identify the data required for the integration.
- Define the integration type (inbound, outbound, or process)
- Identify data processing (real-time, near real-time, or batch)
- Identify transaction data volume involved (low, medium, or high).
- Identity any other nonfunctional requirements, such as data encryption.

2. Design and Development

- Based on data required for integration, analyze business objects available in Oracle Cloud SCM.
- Identify the “source of truth” for each data entity.
    - Avoid moving data in both directions unless necessary.
    - Always create data first on the identified source of truth and connect it with other systems.
- Before starting your journey, evaluate the previously built integrations available on Oracle Market Place.
- For available business objects, identify the best integration option based on:
    - Data shape and frequency.
    - Volume (identifies the use of web services versus file import).
    - Performance considerations.
    - End-to-end automation support.
    - Best practices and constraints of each option.
- Identify setup requirements:
    - Identify the authentication mechanism involved (basic authorization, OAuth, SAML, and so on).
    - Identify required roles for the integration user. Each business object needs a specific role before you can do CRUD operations on that object.
    - Server and network level configuration changes from external sources, for example, opening network ports and allow lists).
- Identify custom mappings, transformations, or any lookups that are required. Identify where you'd be doing that transformation or custom mappings, whether at the source, in the integration layer (such as Oracle Integration Cloud [OIC]), or at the target.

- Design for failure. Perform proper error handling and recovery. Be aware of the Oracle Cloud SCM maintenance window.
- Develop the integration solution according to the design specifications. This might involve coding, configuring existing tools, or a combination of both.

Note: It's recommended to use JSON Web Tokens (JWTs) for authentication from the integration layer to Oracle Fusion, especially for high-volume flows. Concurrent requests above the Oracle Identity Cloud Service (or Identity Domain) thresholds will cause requests to be rejected with HTTP-429 errors. For information about the thresholds for different tiers, see the API Rate Limits sections in the *Administering Oracle Identity Cloud Service* guide and in the *Oracle Cloud Infrastructure Documentation*.

3. Verification and Validation

- Build a verification checklist.
- Ensure the data is clean.
- Ensure prerequisites are set.
- Perform a test before migration using test data to cover all the use cases.
- Conduct rigorous testing to ensure the integrated system meets all specified requirements.
- Document each error and its resolution steps.
- Verify that graceful handling of errors is in place when reviewing edge cases, such as when Oracle Fusion SaaS is down for maintenance.
- During each quarterly update, make sure to check the verification list and run all test cases once the test pods have been migrated to the new release.

4. Production Transition and Monitoring

- Prepare for the transition to the production environment. This includes completing deployment plans, setting up the production environment, and planning for data migration, if necessary.
- If using OIC, ensure the integrations are exported from the test instance and deployed on production. For third-party integration platforms, ensure the same.
- Replicate all the setups that have been done in the test environment in the production environment.
- Do a smoke test for a single transaction before sending the entire load to production.
- Have a strategy in place to recover transactions in case of an outage. Perform a mock drill of each outage scenario.
- Continuously monitor integrations and check their health. Send notifications in case of errors. Generate reports of how many integrations fail daily and look for deviation from the standard.

Integration Types

Oracle Fusion Cloud Supply Chain & Manufacturing (SCM) supports four integration types.

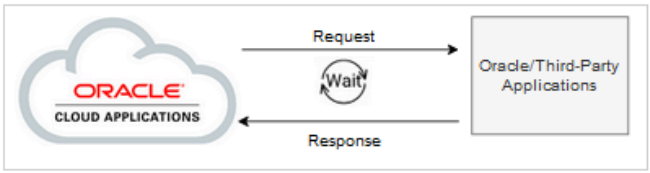
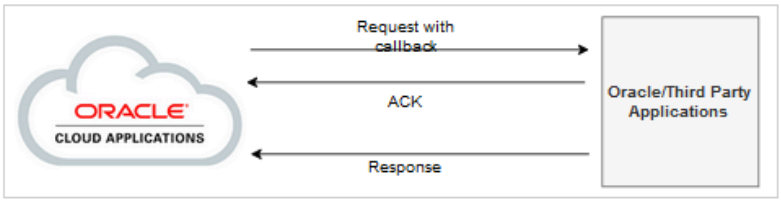
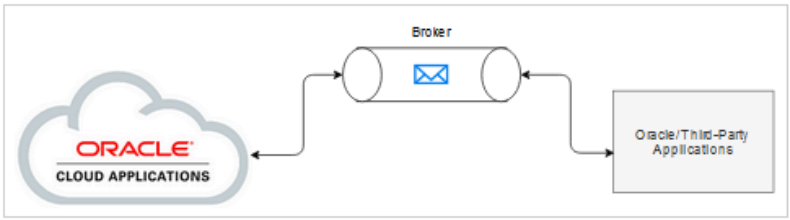
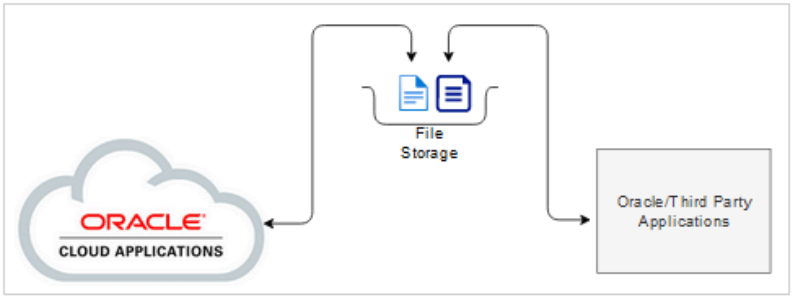
Type	Description
Inbound Integration	Imports data into Oracle Cloud SCM applications from upstream on-premise systems or third-party providers.
Outbound Integration	Exports data out of Oracle Cloud SCM applications to integrate with downstream on-premise systems and third-party providers.
Process Integration	Orchestrates an end-to-end business/transaction flow as a single business process where CRUD operations can be performed on multiple objects in Oracle Cloud SCM applications, along with third-party applications
Data Mashup	Extends the Oracle Fusion Cloud Applications user interface and fetches data from third-party applications to display in the interface. **Note:** Because this playbook focuses on back-end integrations, it doesn't include details of data mashups or user-interface extensions.

Integration Patterns

Choosing the best integration pattern depends on your requirements.

- Your need for transaction atomicity.
- If your uses cases are synchronous or asynchronous.
- Message size.
- If you require guaranteed delivery.

This diagram shows asynchronous and synchronous integration-pattern flows.

Synchronous		Blocking or near-real-time requests. The result is returned to the caller immediately. Recommended for use-cases where real-time response is expected.
Asynchronous		Non-blocking requests are invoked by a one-way operation. The results and any faults are returned by invoking other one-way operations. **Asynchronous API Call with Callback (Fire & Forget with callback)**- Recommended for use-cases with limited request message size and no real-time response expected.
		**Asynchronous Event-Based Communication** - Recommended for processing continuous stream of transactional data.
		**Asynchronous File-Based Communication** - Recommended for Ingestion or legacy system integrations use-cases.

Overview of SCM Integration Options

Depending on the integration type, various integration options are available. These standard options are supported across Oracle Fusion Cloud Supply Chain (SCM) & Manufacturing applications.

It's not unusual to use multiple integration options to achieve the desired outcome. For example, each product also might support other options that are discussed in this guide in product-specific playbooks. In addition, the system integrator can choose the appropriate integration option based on integration type, data volume, frequency, and business objects involved.

Oracle Cloud SCM integration options include:

- *File-Based Data Import (FBDI)*
- *Data Extraction Tool*
- *REST APIs*
- *SOAP Services*
- *Public Business Events Using Oracle Integration Cloud*
- *Collaboration Messaging*
- *Functional Setup Manager*
- *Redwood Application Extension*
- *Business Intelligence Cloud Connector*

File-Based Data Import (FBDI)

You can use FBDI to import data from external sources to interface tables and then to the application tables in Oracle Fusion Cloud Applications.

The import process includes:

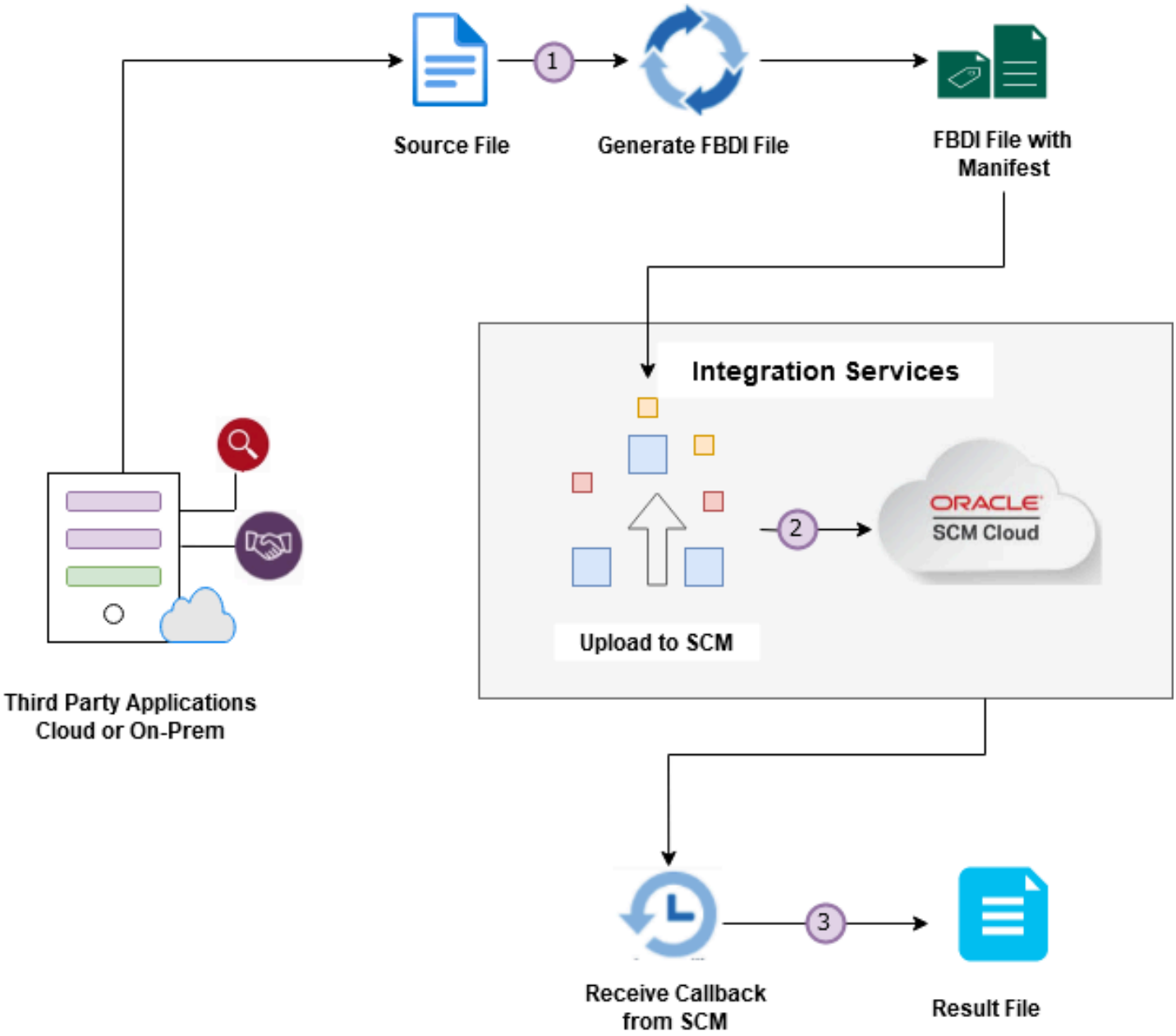
- Microsoft Excel templates that structure, format, and generate the data file according to the requirements of the target application tables.
- The FBDI load process that loads the data files into the interface tables.
- Application-specific data import processes to transfer data from interface tables to the application tables in Oracle Fusion Applications.

The steps for importing data into Oracle Fusion Applications using FBDI are:

1. Download the appropriate Microsoft Excel spreadsheet templates from your source and enter the required data.
2. Run macros in the template to generate the comma-separated values (CSV) files that are used during the import process.
3. Combine the CSV files into a compressed (ZIP) archive so that they can be imported together.
4. Upload the ZIP archive to the designated location.
5. *Load the data* into the application tables.

For more information, see *File-Based Data Import (FBDI) for SCM*.

This diagram shows how external data is imported into Oracle Fusion Applications tables.



Key Features

- Used only for inbound integration.

- Supported by most Oracle Fusion Cloud Supply Chain (SCM) & Manufacturing applications.
- Supports both automated and manual data import processes, providing user with flexibility based on their specific requirements and IT infrastructure.
- Supports Pretty Good Privacy (PGP) encryption for data at rest.
- Supports loading of complex hierarchical data, loading large volumes of records, handling iterative loads, and being able to manage records that have effective dates.
- FBDI data import using ERP Integration Service also provides callback or event subscription when all processes are complete with a detailed summary of execution.
- Supports bulk loading of attachments and associating them with the corresponding entities using the *Import Attachments* scheduled process.

Best Practices

- FBDI is the ideal way to import voluminous data into Oracle Cloud SCM.
- Useful for both initial data migrations when setting up Oracle Fusion Applications or for ongoing bulk data transfers.
- If possible, FBDI imports should be planned and scheduled during off-peak hours to minimize the impact on system performance and business operations.
- When using FBDI as an integration option, customers automate the generation of CSV and ZIP files uploaded in Oracle Cloud SCM applications. Because FBDI templates can change between releases, verifying the integration before each update is essential.
- To import special characters into the application, ensure encoding of the data file is UTF-8.

  If not encoded correctly, values containing special characters in the data file will appear as fuzzy data in the application or as a question mark sign within the value.
- Deleting or reordering columns will cause the load process to fail and results in an unsuccessful data load.
- Double quotes and commas are reserved characters in CSV files. If a particular field value contains double quotes commas, the values must be properly escaped when creating the CSV.
- To automate data import using FBDI customers can use:
  - Oracle ERP Integration Service: Single stop Operation: importBulkData (both REST/SOAP available)
  - Oracle Integration Cloud (OIC) ERP Adapter
- To achieve the best compression ratio, the uploaded file should be compressed using DEFLATE compression.
- Implement a routine purging mechanism to remove outdated data from interface tables. This approach helps manage storage efficiently, optimizing query execution and enhancing overall performance throughput. You can use the *Purge Interface Tables* scheduled process to purge the tables.

Constraints

- Not suitable for real-time data import.
- Uploading large batches of data using FBDI can cause performance issues, so it's important to find an optimal batch size that the system can handle efficiently.

  Each Oracle Cloud SCM application guide provides more details, but generally, it's recommended to split the data file logically into smaller files to avoid heavy volume processing in a single import.

  Restrict an import to up to 100,000 records in a single import or perform up to five concurrent import activities.

- Overall, the FBDI ZIP file should not exceed 250 MB in size.
- Individual files included as part of ZIP file should not exceed 1 GB in size.

Note: Like FBDI, many product teams provide an Excel template for manual data operation. With Oracle ADF Desktop Integration (ADFdi), users can create, update, delete, and download data from Oracle Fusion Applications with these Excel templates. However, because ADFdi templates are unsuitable for automation, this isn't recommended as an integration option.

Related Topics

- My Oracle Support: Using External Data Integration Services for Oracle ERP Cloud (Doc ID 2102800.1)
- My Oracle Support: White Paper on ERP Integration Callback Services Implementation Considerations (Doc ID 2824999.1)
- ERP Integration Service: Operation importBulkData
- Invoke a File-Based Data Import (FBDI) Job
- Learn About Importing File-Based Data to Oracle Fusion Cloud Enterprise Resource Planning

Data Extraction Tool

The Data Extraction tool leverages a read-optimized data store to ensure faster and more reliable data extraction.

By seamlessly integrating with Oracle Autonomous AI Lakehouse, the tool supports near real-time replication of data from Oracle Fusion Cloud Applications. Rather than extracting data directly from the transactional database of Oracle Fusion Applications, the tool performs data extracts against the replicated data. This approach significantly reduces the load on core applications by offloading data extraction to a read-optimized data store, improving overall performance and efficiency for both transactional activities and data extraction needs.

This innovative approach is designed as the long-term replacement for Business Intelligence Cloud Connector (BICC), offering a more modern, efficient, Redwood-based experience.

Key Features

- Select one or more business views or extraction views.
- Perform full and incremental extracts.
- Schedule extractions or run them on demand.
- Monitor and view extract statuses.
- Apply BICC column headers to the selected views and attributes to support migration from BICC for existing customers.
- Export extract data to Oracle WebCenter Content or Oracle Managed Storage.

Best Practices

- Use only for bulk extracts.
- Don't extract all columns. Extract only what's required.
- Don't schedule all extracts together. Create multiple jobs instead.

  For example, decouple heavy view-object (VO) extracts into separate jobs. Including them in common jobs might cause them to run late in the cycle and extend the extract window. Multiple jobs can run in parallel.

- Apply filters to your extraction queries to ensure that only relevant data is retrieved. Doing this will speed up the extraction process, reduces the volume of unwanted data, and makes the next processing and analysis more efficient.

Constraints

- Custom objects and analytic views aren't supported.
- Not suitable for real-time data extraction.

> **Note:** The Data Extraction tool is being extended to support data extraction for integration use cases, where SQL queries can be modeled as business object queries against the Read-Optimized Data Store. These extract queries can be defined across multiple entities and include filter conditions to produce the required data shape for integration requirements. An AI Agent, Data Extraction Query Transformer, is available to convert SQL statements into extract queries. These extract queries can be executed on demand in synchronous mode within integrations or included as part of the existing asynchronous data extracts. For data extraction from Oracle Fusion Applications, use Read-Optimized Data Store based data extraction instead of Oracle Analytics Publisher. For detailed implementation steps and guidance, refer to *My Oracle Support: RODS-Based Data Extraction for Integration Use Cases (Doc ID KB914540)*.

Related Topics

- Data Extraction Tool

REST APIs

Oracle Fusion Cloud Supply Chain (SCM) & Manufacturing provides customers and system integrators with a comprehensive set of REST APIs to view, create, update, or delete records for their real-time integration requirements.

In addition to using file-based data import (FBDI) and Business Intelligence Cloud Connector (BICC) to import and export large-volume data from Oracle Fusion Cloud Applications, REST APIs provide a robust and highly scalable tool for integration with Oracle Cloud SCM applications.

For more information, see *REST API for Oracle Fusion Cloud SCM*.

Key Features

- REST APIs are used for both inbound and outbound flow.
- Support for real-time integration requirements.
- Support for CRUD operations on both single-item and collection.
- Many product teams support BATCH operations on their objects, which allows them to execute multiple updates, insert, delete, and get operations in a single call.
- Along with CRUD operations, many Oracle Cloud SCM applications support custom actions.
- Extensive support across Oracle Cloud SCM applications
- End-to-end process orchestration can easily use REST APIs.
- Support only for JSON format.

Best Practices

- Always consult the REST documentation guide for various headers to pass while making a REST call, and review examples provided by Oracle Cloud SCM product teams.

- While retrieving data, use limit and offset for data pagination.
- When retrieving data, use the field URI parameter to restrict the response to only fields you're interested in.
- Use query parameter **q** to filter and restrict the results.
- Combine multiple API requests into a single request when possible.
- Use the onlyData=true directive to exclude all links from the response, thereby reducing the response size.
- Implement timeout handling and retry logic for HTTP error codes like 500 (Internal Server Error), 502 (Bad Gateway), 503 (Service Unavailable), and 504 (Gateway Timeout). While retrying, always use exponential back-off to avoid overwhelming the server.
- For the 503 (Service Unavailable) error, see if the response output has the word "Maintenance" retry. In such cases, consider a total delay of up to 8 hours because sometimes updates can take a long time.
- If you contact Oracle Support, ensure you log errors and important transaction details. To quickly resolve errors, Oracle Support would need the exact time for the REST call and input and output payloads.
- You can specify an Oracle Business Object REST API framework version for your web application to opt into new functionality offered by a later version of the REST API framework.
- You can use entity tags for APIs with a high Read/Write ratio needing frequent updates. To avoid conflicts and improve caching, entity tags can be used to validate data, detect stale data, and so on. It ensures better performance and efficiency.

Constraints

- Not suitable for large volumes of data import/export.
- None of the Oracle Cloud SCM REST APIs allow the return of more than 500 records in a single call. You can paginate through the entire set using offset and limit in REST parameters.
- The changes introduced in each framework version are backward incompatible. Therefore, assess your business requirements and use the framework version that supports them.

> **Note:** When building an integration with Oracle Cloud SCM applications, don't use an undocumented REST API. Oracle doesn't guarantee backward compatibility of undocumented REST APIs and they can be deprecated without formal notice.

Oracle Visual Builder Add-In for Microsoft Excel

You can use Excel as a REST client to retrieve, analyze, edit, and load data using the Oracle Visual Builder Add-in for Excel. For more information, see *Oracle Visual Builder Add-in for Excel, Version 3.2.0*.

Related Topics

- Working with ADF REST Framework Versions
- Data consistency checks using ETags

SOAP Services

Oracle Fusion Cloud Supply Chain (SCM) & Manufacturing provides customers and system integrators with a comprehensive set of SOAP APIs to execute CRUD operations on a business object or participate in a business process in real-time.

For more information, see *SOAP Web Services for SCM*.

Key Features

- SOAP services are used only for both inbound and outbound flow.
- Support for real-time integration requirements.
- Support for CRUD operations on both single-item and collection.
- Many product teams support BATCH operations on their objects, which allows them to execute multiple updates, insert, delete, and get operations in a single call.
- Along with CRUD operations, many Oracle Cloud SCM applications support custom actions.
- Extensive support across Oracle Cloud SCM applications.
- End-to-end process orchestration can easily use SOAP services.
- Support only for XML format.

Best Practices

- Review Oracle Cloud SCM SOAP Web Services documentation thoroughly to understand the available functionalities, operations, and data structures.
- When using SOAP services to retrieve data, always try to use the find operation rather than the simple get operation. You can use the find operation to specify a list of attributes to include or exclude in response.
- If parsing SOAP responses programmatically (like in Java), always use an XML parser instead of text parsers. Text parsing is error-prone, especially if the XML structure changes or if namespaces are involved.
- If you contact Oracle Support, ensure you log errors and important transaction details. To quickly resolve errors, Oracle Support would need the exact time for the SOAP call and input and output payloads.

Constraints

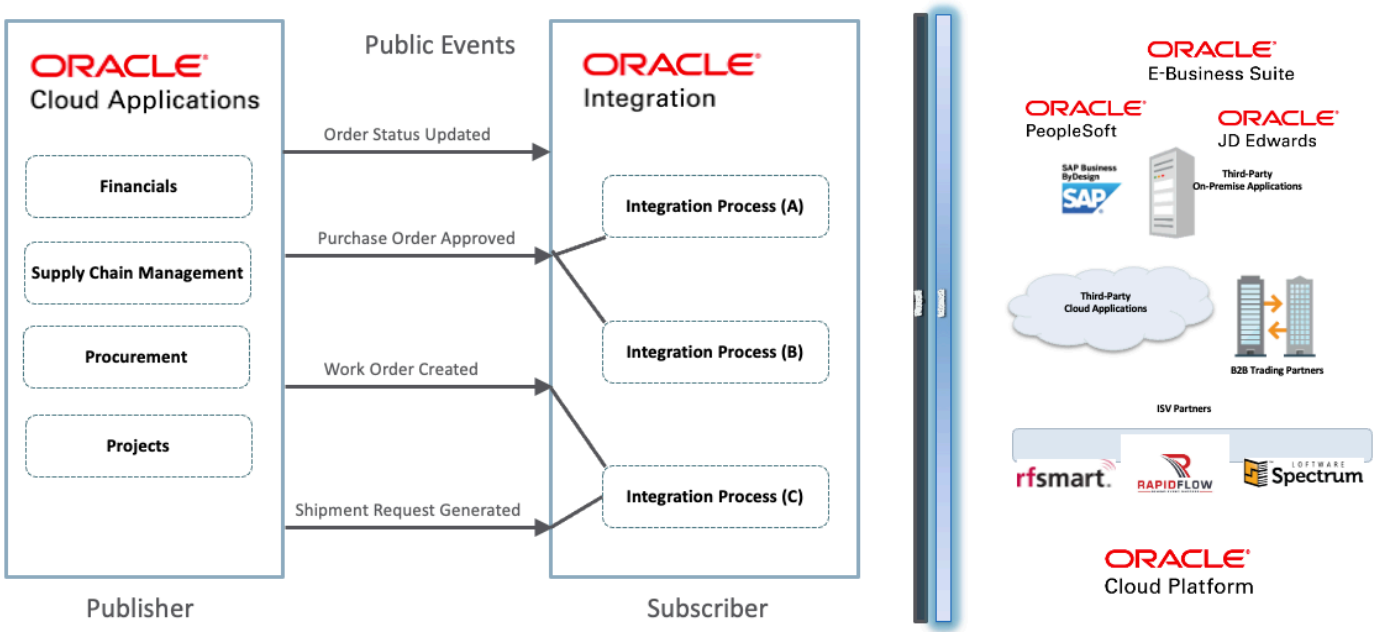
- Not suitable for large volumes of data import/export.
- SOAP services don't support pagination by default and might suffer from timeout for large volumes of data.
- When it comes to performance and scalability, REST APIs outperform SOAP APIs. Therefore, Oracle recommends that customers use REST APIs instead of SOAP services whenever equivalent REST APIs are available.
- Many SOAP APIs have been deprecated in favor of REST equivalents. Deprecated APIs might not be fully supported or enhanced. Check the documentation and don't use deprecated SOAP APIs.

Public Business Events Using Oracle Integration Cloud

A public business event is an outbound integration option supported by many Oracle Fusion Cloud Supply Chain (SCM) & Manufacturing applications.

Business events are raised at appropriate lifecycle phases by application and can be subscribed to in Oracle Integration Cloud (OIC) to integrate with third-party applications in an asynchronous model.

This diagram shows the integration between Public Business Events and the Oracle Cloud Platform.



Key Features

- Used only for outbound integration.
- Public events support near-real-time integration requirements.

- The public event payload contains specific information about the event. You can use callback services to retrieve more information from Oracle Cloud SCM.

Best Practices

- Most public business events aren't generated by default and must be enabled. Consult individual product guides to see which objects support public business events and how to enable them.
- Public business events can handle low-to-medium integration data loads and are suitable for scenarios where there are fewer than one thousand business events in an hour.
- Having a reconciliation strategy in place is important in case some events are missed because, generally, missed events can't be generated again.

Constraints

- Not suitable for large volumes of data.
- Many Oracle Fusion Cloud Applications don't raise business events during bulk creation/update of business objects. Consult each product integration guide for information about which objects support the business event and in what scenario.
- Business events can be subscribed to only in Oracle Integration Cloud (OIC). Customers can't use any other third-party platform for business event integration.

Additional Information

It's important for you to be aware of this information:

- There are other integration options that OIC supports. An example is defining schedule-based integration. You can define a schedule for running orchestrated integrations, such as the frequency at which to run the integration, if the schedule run should never expire, if the schedule should have a fixed expiration date, and so on. As part of these integrations you can use different adapters like SOAP services or REST APIs for integrating with Oracle Fusion Applications.

  OIC also supports Secure File Transfer Protocol (SFTP) integration, which is the best option to use to receive or send files.
- You can also use Oracle ERP Cloud Adapter within Oracle Integration Cloud (OIC) for importing bulk data using file-based data import (FBDI) into Oracle Fusion Cloud Enterprise Resource Planning (ERP). The adapter streamlines the process of connecting to Oracle Cloud ERP, enabling seamless data exchange and automating business processes across your cloud and on-premise applications. For more information, see *Oracle ERP Cloud Adapter Capabilities*.
- OIC might limit of total number of active integrations running on single instance. If you're hitting this limit, please work with Oracle Support to discuss the possibility of increasing the limit.

Related Topics

- Supported SCM and Procurement Business Events

Collaboration Messaging

Oracle Collaboration Messaging provides native messaging capability for the most widely used B2B messages in Oracle Purchasing, Oracle Fusion Cloud Supply Chain (SCM) & Manufacturing, and Oracle Fusion Cloud Financials.

Applications supporting Collaboration Messaging raise the collaboration event or invoke the Collaboration Messaging send document service to start sending B2B messages to partners.

Collaboration Messaging retrieves the message payload and, depending on the recipient (service provider or trading partner), delivers the payload in the external message format setup for the recipient.

It also receives B2B messages from service providers or partners in external message formats that are translated and delivered to the application by invoking application web services.

B2B messaging is normally handled by third-party service providers or B2B applications. Collaboration Messaging delivers ready-to-use connectivity with some service providers.

Collaboration Messaging provides the ability to configure what's delivered ready to use, and the ability for customers to create and connect to other B2B service providers, applications, or partners.

Key Features

- Exchange (send or receive) B2B messages with partners (suppliers or customers).
- Message sending triggered by application events or scheduled processes.
- Multiple options for sending messages:
  - Send directly to the partner
  - Send to a B2B service provider (partner or user defined).
  - Deliver to Oracle WebCenter Content or an SFTP file location.
  - Trigger an Oracle Integration Cloud (OIC) flow for later enrichment and delivery.
- Ready-to-use multiple message formats supported. For example, UBL, cXML, OAGIS, and Brazil SEFAZ.
- Multiple delivery methods for sending messages:
  - SOAP services or REST APIs (REST using Oracle B2B)
  - SFTP
  - UCM
  - AS2 (using Oracle B2B)
  - OIC (B2B Message Business Event)
- Multiple communication methods for receiving messages:
  - SOAP services
  - REST APIs (using Oracle B2B)
  - UCM folders
  - OIC (B2B Message Business Event)
  - Messages received are delivered to applications through interface tables, file-based data import (FBDI), or directly by calling an application SOAP service or REST API.
- Configuration supported for handling other data elements; value cross-referencing; and simple validations by changing the provided ready-to-use XSL stylesheets.
- Support for ready-to-use multiple third-party service providers, with an option for the user to add their own service providers.
- Support for ready-to-use multiple messaging standards, with an option for users to add their own.
- Error-handling capabilities, including automatic retry, error notification, and resending messages.
- Support for a set of ready-to-use documents (for example, Purchase Order Out, Invoice In). For each document, delivers a few external message formats.
- EDI support using OIC or third-party service providers.

Best Practices

- All business processes are enabled, ready to use. Disable the ones you're not using.
- Review the messaging configuration parameters, especially the ones related to message size and attachment handling.
- If you're using service providers for B2B, don't configure override message definitions for trading partners unless you have specific override requirements for those partners. This isn't common.
- If you perform a production-to-test, update your delivery method credentials, and verify the external delivery endpoints after the update.

Constraints

Users can implement new message formats for existing documents but can't add new documents.

Functional Setup Manager

Functional Setup Manager is a key integration option with export and import processes that help in migrating setup data from one instance to another.

Applications also provide comma-separated values (CSV) file export and import, which helps to enter or update a large volume of setup data but is insufficient for managing setup task UIs individually.

For more information, see *Using Functional Setup Manager*.

Key Features

- Used only for setup data.
- Supports exporting and importing an entire offering, functional area, or implementation project.
- Supports the filtering of setup data to limit the export that matches the criteria.
- Provides review of setup data before or after the export or import process using the Setup Data Reports and Comparison Reports.
- Supported by all Oracle Fusion Cloud Supply Chain (SCM) & Manufacturing applications.
- Supports both automated and manual data-export processes, giving flexibility to users based on their specific requirements and IT infrastructure.
- Supports only XML and CSV formats.

Best Practices

- Create and verify the setup data in a test instance.
- Ensure that the test and production instances are at the same release level.
- Use scope-filtering functionality to limit the data being exported when performing an incremental setup.
- Use comparison reports to review potential setup changes before submitting the import process.
- Review setup in the production instance once import completes.
- Implement only the offering required for the business need to prevent unnecessary data export.
- Export only one offering at a time.
- If you make any configuration changes in the production environment, ensure you make the same changes in the test environment so that the changes will be carried over during the next migration.
- Make sure the functional security associated with the roles exists in both source and target instance.

Constraints

- Not suitable for real-time data extraction.
- Import doesn't delete the records in the target instance if they don't exist in the configuration package. You must delete these records or make deprecate them manually, if necessary.
- Some setups are prerequisites for other setups and have data dependencies. Therefore, the sequence in which setup data is imported from a configuration package is important to prevent any failure due to data dependency.
- You can't combine the export and import processes of different methods. When an offering or functional area is exported, that setup data can only be imported using the same offering or functional area.

> **Note:** Functional Setup Manager isn't a typical integration option but is a way to move your setup data from a test instance to a production instance after your integration has completed end-to-end testing. It enables you to use export and import to quick-start functional setup at different instances and to validate a setup by reviewing setup data reports.

Redwood Application Extension

You can use the Redwood application extension to change and edit a Redwood page delivered by Oracle Fusion Cloud Applications or create a new Redwood application and deploy that with Oracle Fusion Applications.

Though this integration guide focuses on back-end integration, you can extend the Oracle Fusion Cloud Applications user interface using Oracle Visual Builder Cloud Service runtime, which comes default with every Oracle Fusion Applications instance.

A Redwood application has the same look and feel as existing Oracle Fusion Applications and is deployed on the same infrastructure. You can integrate with any Oracle Fusion Applications REST APIs or call external REST APIs. The only constraint is that external REST APIs can't accept any authentication. If you need to access protected external REST APIs, you must buy and provision your own Visual Builder Cloud Service instance. With the instance, you can call any Oracle Fusion Applications REST APIs, any protected REST APIs, or create your own custom objects. Both options are fully integrated with the Oracle Fusion Applications instance and are single sign-on (SSO) enabled.

Business Intelligence Cloud Connector

Business Intelligence Cloud Connector (BICC) is the legacy integration option to use when exporting bulk data from Oracle Fusion Cloud Applications for downstream integration with data warehouses or other third-party applications.

Oracle Fusion Applications provide optimized business objects for data extractions, packaged as offerings that customers can extract in an automated fashion. For more information, see *Creating a Business Intelligence Cloud Extract*.

> **Note:** BICC is getting replaced with the Data Extraction tool. You must use the Data Extraction tool for exporting bulk data to leverage your read-optimized data store for improved performance and to avoid unnecessary scheduled jobs on your transactional Fusion Application instance.

Key Features

- Used for outbound flow only.

- Provides previously built data extracts, called offerings, for Oracle Fusion Cloud Supply Chain & Manufacturing (SCM) applications. Each offering has associated business objects that are all extracted together. Review each offering for which you want to run an extract and configure if necessary.
- Allows customers to create custom offerings, adjust business objects in offerings, and even select the fields they're interested in. For the best experience, extract only the objects and fields necessary for your third-party integration.
- Valid for initial data extract when setting up third-party integration with Oracle Fusion Applications or for ongoing incremental data extracts.
- An ideal way to export voluminous data out of Oracle Cloud SCM.
- Supports both automated and manual data export processes, providing flexibility to users based on their specific requirements and IT infrastructure.
- Can be configured to write the extracted data files to Oracle WebCenter Content or Oracle Cloud Infrastructure (OCI) Object Storage.

Best Practices

- Jobs allow you to extract data from Oracle Fusion Applications to support multiple downstream integrations. Different jobs can be used for different requirements and run on whatever schedule is needed, including running different jobs with the same data stores running at the same time. It's a best practice to create and configure a job for your extraction.
- For same downstream requirement, it's also advisable to create multiple jobs. For example, decouple heavy view-object (VO) extracts into separate jobs. Having them included into common jobs could result in them running late in the cycle and extending the extract window. Multiple jobs can run in parallel.
- Jobs allow users to define priority groups and priority numbers within a job. Understanding job configuration and priorities management is essential to achieve the maximum extract orchestration and better performance.
- If you configure both data and primary key extracts, then create two separate jobs, one for data extract and the other one for primary keys. If you keep them in a single job, then BICC would first do the data extract and pause primary-key extracts until the very last data extract completion.
- Use the entity-specific ExtractPVOs for extracting data using BICC. Those public view objects (PVO) are designed for maximum efficiency of extracts. Other PVOs including Oracle Transactional Business Intelligence (OTBI) reporting PVOs, are available in BICC, but they can cause performance problems if used for integration purposes.
- Audit the list of extract attributes for every single VO and check the bare minimum of the extract columns to address your data integration business requirements.

  > **Note:** Important! By default, all the columns get extracted. You should select only the columns needed as per your use case and don't extract all unless you really need them.

- BICC has the default extract timeout of 10 hours per VO extract. Some large-volume VOs might require more than 10 hours to process initial volumes. You can overwrite the default value to accommodate your initial extract completion in Oracle BI Applications Configuration Manager by going to **Manage Offerings and Data Stores** > **Actions** > **Job Setting** > **Extract preference** > **Timeout in Hours: 10 Hours** (default).
- Plan to run your initial BICC extract jobs outside of normal business hours. Some initial extracts might require larger TEMP and UNDO tablespace to minimize the chance of running out of space during less busier times such as weekends.
- Apply filters to your extraction queries to ensure that only relevant data is retrieved. Not only does this speed up the extraction process, it also reduces the volume of unwanted data and makes the next processing and analysis more efficient.

- Ensure data dependencies across objects are maintained by setting a prune time. This identifies from which extract date to include incremental data, ensuring data consistency and completeness.
- Use broker mode to enhance the performance of data fetching. Broker mode helps parallel processing and efficient data transfer, which significantly improves the speed and reliability of large data extractions.
- Implement a regular purging mechanism to delete downloaded files from WebCenter Content. This practice helps in managing storage space effectively and prevents the accumulation of obsolete data files, thereby optimizing storage costs and maintaining a clean data environment. You can use the BICC Delete Expired UCM Files job for this action.

Constraints

- Not suitable for real-time data extraction.
- Frequent and concurrent large data extracts can impact system performance, so it's important to consult each Oracle Cloud SCM application guide for information about how to manage these situations.
- BICC itself doesn't support scheduling jobs more often (for example, every 5 minutes) directly through its native scheduling capabilities.
- Typically, Flex VOs are generated dynamically. Therefore, marking columns for extracts explicitly wouldn't work for Oracle Business Intelligence broker mode. These VOs should continue using Oracle Business Intelligence server mode.

Note: Using Oracle Analytics Publisher to extract data from Oracle Fusion Applications is an unsupported pattern and should not be used by customers. If alternatives such as BICC or REST APIs can't accomplish your use case and you need to use Oracle Analytics Publisher for extraction, we strongly recommend that you create a custom Oracle Enterprise Scheduler (ESS) job of type BIPJobType and use it to schedule and run your report. You can use the downloadEssJobExecutionDetails (synchronous) or exportBulkData (asynchronous) ERP Integration Service operations to fetch the generated report content.

Related Topics

- ERP Integration Service: Operation downloadEssJobExecutionDetails
- ERP Integration Service: Operation exportBulkData
- Extract Data Stores for SCM
- My Oracle Support: Oracle Fusion Transactional Business Intelligence and BI Cloud Connector Performance Recommendations (Doc ID 2679006.1)
- My Oracle Support: Fusion Applications BICC: How To Add Filter To Data Store (Doc ID 2657806.1)
- My Oracle Support: How To Set Prune Time In BICC PVO To Extract Hourly (Doc ID 2798851.1)
- My Oracle Support: BICC How Does the "Delete Expired UCM Files" Job Work? (Doc ID 2661193.1)

Which Integration Option Should You Choose?

Use the information in the table to help you choose what option to use for certain objectives in a specific integration project.

Category	Intent	REST	SOAP	FBDI	Business Event
Integration Frequency	One-time Process	o	o	x	o
	Recurring Process	x	x	x	x

Category	Intent	REST	SOAP	FBDI	Business Event
Transactions per Message	Single	x	x	o	x
	Multiple/Batch	x	x	x	–
Integration Pattern	Synchronous	x	x	–	–
	Asynchronous	x	x	x	x
Integration Scenario	Setup/Implementation	x	x	x	–
	B2B	o	o	o	o
	A2A (Internal)	x	x	x	x
	External 3rd Party	x	x	x	x
Response Pattern	Request/Reply	x	x	–	–
	Publish/Subscribe	–	–	–	x
x = Supported, Recommended; o = Supported, Conditional; – Not Supported					

Note: For all integrations, such as like REST API calls, SOAP calls, and Oracle Integration Cloud (OIC) connections, you must use Application URLs and not Vanity URLs.

2 Cost Management

Overview of Cost Management

About Oracle Cost Management

Oracle Cost Management is a cost accounting solution that helps companies to effectively manage their product costing, manufacturing, and inventory accounting business flows.

The solution enables companies to maintain multiple cost books and financial ledgers to better meet external regulatory reporting and internal management reporting needs. It reduces manual cost maintenance tasks by providing automated rules-based engines and efficient cost processors tuned for high-volume transaction environments.

Terminology for Cost Management

These terms are used throughout the Oracle Cost Management playbook.

Term	Definition
API	Application Programming Interface.
Average Cost Method	Assigns a cost to inventory items based on the total cost of goods purchased or produced in a period divided by the total number of items purchased or produced.
OIC	Oracle Integration Cloud.
REST	Representational State Transfer. Software architecture that imposes conditions on how an API should work.
Standard Cost	A predetermined cost, an estimated future cost, an expected cost, a budgeted unit cost, a forecast cost, or as the “should be” cost.

Integration Types and Options for Cost Management

Overview of Cost Management Integration Types and Options

Several integration types and options are available in an Oracle Cost Management integration.

Integration Types

Oracle Cost Management supports two integration types.

Inbound

This integration imports data into Oracle Cost Management applications from upstream on-premise systems or third-party providers.

Outbound

This integration exports data from Oracle Cost Management applications to integrate with downstream on-premise systems and third-party providers.

Integration Options

Use any of these options to import data into Oracle Cost Management.

Inbound

- *REST APIs for Cost Management (Inbound)*
- *File-Based Data Import (FBDI) for Cost Management*
- *Oracle ADF Desktop Integration for Cost Management (Inbound)*

Outbound

- *REST APIs for Cost Management (Outbound)*
- *SOAP Services for Cost Management*
- *Oracle ADF Desktop Integration for Cost Management (Outbound)*
- *Business Intelligence Cloud Connector for Cost Management*

Inbound

REST APIs for Cost Management (Inbound)

Consider using REST APIs if your business process imports a high volume of data into Oracle Cost Management.

For example, if the volume of purchase orders or freight invoices is high, then it's typical to use the REST APIs to import the landed cost charges in bulk, and then do the cost processing and cost distributions.

Key Features

Used for both inbound and outbound integrations.

Best Practices

Call the REST APIs in smaller sets of records if the data set is very high. A REST API can experience a 504 Gateway Timeout if a request runs for more than 5 minutes.

Constraints

None.

Related Topics

- REST API for Oracle Supply Chain Management Cloud

File-Based Data Import (FBDI) for Cost Management

Consider using FBDI to import standard cost data into Oracle Cost Management.

The standard cost data could be coming from:

- External sources.
- Users exporting the data from a prior period or quarter, making modifications in bulk, and then importing the changes.

Key Features

- Used only for inbound integration of data into Oracle Cost Management.
- Supports the import of large volumes of data into Oracle Cost Management.

Best Practices

- Use this option to import voluminous amounts of standard cost data into Oracle Cost Management during the initial migration stage, or on an ongoing basis in specific time intervals.
- You can also use this option to migrate standard cost data into Oracle Cost Management after transforming the data from legacy systems.
- Review the field/attribute level instructions provided in the templates before entering the data that needs to be imported.

Constraints

This option isn't suitable for importing data on a real-time basis.

Related Topics

- File-Based Data Import (FBDI) for SCM

Oracle ADF Desktop Integration for Cost Management (Inbound)

Consider using Oracle ADF Desktop Integration (ADFdi) if you need to import and manage cost data in Oracle Cost Management.

Key Features

- Enables desktop integration with Microsoft Excel spreadsheets to manage large-volume data downloads to Oracle Fusion Cloud Applications
- Provides the ability to search for valid values, perform validation during data entry, display error messages, and immediately submit data directly from Microsoft Excel.
- Can be used for both inbound and outbound integration of Oracle Cost Management data.

Best Practices

Use this option to mass create, update, or export costing data such as standard cost overheads and resource rates in Oracle Cost Management

Constraints

For best performance, limit the upload to about 2,000 rows.

Related Topics

- Developing Applications with Oracle ADF Desktop Integration

Outbound

REST APIs for Cost Management (Outbound)

Consider using REST APIs if your business process exports a high volume of data from Oracle Cost Management.

For example, if the volume of purchase orders or freight invoices is high, then it's typical to use the REST APIs to export the landed cost charges in bulk, and then do the cost processing and cost distributions.

Key Features

Used for both inbound and outbound integrations.

Best Practices

Call the REST APIs in smaller sets of records if the data set is very high. A REST API can experience a 504 Gateway Timeout if a request runs for more than 5 minutes.

Constraints

Use REST APIs only for Average Cost Method when exporting Item Costs.

Related Topics

- REST API for Oracle Supply Chain Management Cloud

SOAP Services for Cost Management

Use SOAP services to export Item Costs from Oracle Cost Management.

Key Features

Used for outbound integration.

Best Practices

- Use this option only if you need to export Item Costs from Oracle Cost Management.
- It's applicable for all types of cost methods.

Constraints

Low in performance and scalability compared to REST APIs.

Related Topics

- SOAP Web Services for SCM

Oracle ADF Desktop Integration for Cost Management (Outbound)

Consider using Oracle ADF Desktop Integration (ADFdi) if you need to export and manage cost data in Oracle Cost Management.

Key Features

- Enables desktop integration with Microsoft Excel spreadsheets to manage large-volume data uploads from Oracle Fusion Cloud Applications.
- Provides the ability to search for valid values, perform validation during data entry, display error messages, and immediately submit data directly from Microsoft Excel.
- Can be used for both inbound and outbound integration of Oracle Cost Management data.

Best Practices

Use this option to mass create, update, or export costing data such as standard cost overheads and resource rates in Oracle Cost Management

Constraints

For best performance, limit to about 2,000 rows per upload.

Related Topics

- Developing Applications with Oracle ADF Desktop Integration

Business Intelligence Cloud Connector for Cost Management

Using Oracle Cost Management's collection of public view objects (PVOs) exposed in Oracle Business Intelligence Cloud Connector (BICC), you can extract data out of your Fusion Cloud instances and load it into specified external storage areas.

You can use this information in your own data warehouse or use it to integrate with third-party applications or reporting solutions.

Key Features

- Used only for outbound integration.
- Extract data from the available Oracle Cost Management PVOs.

Best Practices

Recommended for bulk extraction of cost-accounting or receipt-accounting data to be used in outbound integrations with downstream applications.

Constraints

This option isn't suitable for extracting cost data on a real-time basis.

Related Topics

- Overview of Business Intelligence Cloud Connector

Business Objects for Cost Management

Inbound Cost Management Business Objects Available for Integration

Oracle Cost Management provides support for multiple business objects to help inbound integrations.

Business Object	Description	REST API	FBDI	ADFdi
Standard Cost	Import for Standard Costs. The costs could be coming from external sources or from a user's export from a prior period or quarter. Make modifications in bulk and upload again.	x	x	x ADFdi has two options: • Full validation with import. • Import to an interface table and then run a scheduled process (two worksheets). Use the second worksheet for very-high volumes.
Cost Scenario	Scenarios to support standard costs and resource and overhead rates.	x	-	-
Resource Rates	Rates for resources that are rolled up or factored into assembly costs.	x	-	x
Standard Cost Overheads	Overhead rates for assemblies and sub-assemblies to be applied during Cost Rollup.	x	-	x
Supply Chain Rollup Configurations	Rollup options to support sourcing-rules-based supply chain cost rollup. Rollup Groups, Transfer Charge Rule Sets, Transfer Charge Rules.	x	-	-
Cost Adjustments	Perpetual Avg, Receipt Cost, and Layer Cost Adjustments.	x	-	-
PAC Cost Adjustment	Periodic Average Cost (PAC) Adjustments: Value Adj and Opening Cost Adj.	x	-	-
Cost Accounting Overhead Rules	Overhead rules in Cost Accounting to be applied during cost processing.	x	-	-

Business Object	Description	REST API	FBDI	ADFdi
Landed Cost Purchase Order Schedules for Trade Operations	Purchase Order Schedules for Landed Cost Trade Operations.	x	-	-
Landed Cost Trade Operations	Trade Operations, Trade Operation Charges, Default Purchase Order Schedules, Trade Operation Shipments.	x	-	-
Trade Operation Charges	Charges for trade operations.	-	-	x
Inbound Fiscal Document Confirm Item Deliveries	Confirms item deliveries for inbound standard fiscal documents.	x	-	-
Fiscal Document Tolerance Rules	Defines and manages tolerance rules for fiscal document capture.	x	-	-
Transfer Pricing Rules	Details of the pricing options used to identify the accounting transfer price.	x	-	-
Documentation and Accounting Rule	Dictate the documents and trade accounting required in the financial route.	x	-	-
Financial Orchestration Source Transaction Events	Financial orchestration of external source transaction events.	x	-	-

Outbound Cost Management Business Objects Available for Integration

Oracle Cost Management provides support for multiple business objects to help outbound integrations.

Business Object	Description	REST API	FBDI	ADFdi	SOAP	BICC
Standard Cost	Export for Standard Costs. The costs could be coming from external sources or from a user's export from a prior period or quarter. Make modifications in bulk and upload again.	x	-	x	-	x

Business Object	Description	REST API	FBDI	ADFdi	SOAP	BICC
Cost Scenario	Scenarios to support standard costs and resource and overhead rates.	x	-	-	-	x
Resource Rates	Rates for resources that are rolled up or factored into assembly costs.	x	-	x	-	x
Standard Cost Overheads	Overhead rates for assemblies and sub-assemblies to be applied during Cost Rollup.	x	-	x	-	-
Supply Chain Rollup Configurations	Rollup options to support sourcing-rules-based supply chain cost rollup. Rollup Groups, Transfer Charge Rule Sets, Transfer Charge Rules.	x	-	-	-	x
Cost Accounting Overhead Rules	Overhead rules in Cost Accounting to be applied during cost processing.	x	-	-	-	-
Item Cost	Item Costs and Item Cost Details.	x Only for Average Cost Method.	-	-	x For all cost methods.	-
Landed Cost Trade Operations	Trade Operations, Trade Operation Charges, Default Purchase Order Schedules, Trade Operation Shipments	x	-	-	-	-
Trade Operation Charges	Charges for trade operations.	x	-	-	-	-
Inbound Fiscal Documents	View inbound fiscal documents for fiscal flow standard.	x	-	-	-	-
Inbound Fiscal Document Flows	View active fiscal flows for capturing inbound fiscal documents.	x	-	-	-	-
Financial Orchestration Transfer Prices	Transfer Prices resource gets information about the movement of goods, such as the	x	-	-	-	-

Business Object	Description	REST API	FBDI	ADFdi	SOAP	BICC
	parties involved in the transfer and the calculated transfer prices, for all steps of the financial flow.					
BICC - Cost Accounting	Objects in Cost Accounting for data extracts.	-	-	-	-	x Use BICC for extracting very-high-volume data.
BICC - Receipt Accounting	Objects in Receipt Accounting for data extracts.	x	-	-	-	x Use BICC for extracting very-high-volume data.

Use Cases and Patterns for Cost Management

Rapid Migration of Your Legacy System into Oracle Cost Management

In this use case your goal is to migrate item cost data from legacy systems into Oracle Cost Management.

Description	Integration Type	Integration Options	Notes
As a company, you've recently acquired a new business. This business brings along a suite of legacy systems that are currently responsible for managing an extensive collection of item cost data. Your objective is to migrate this data into Oracle Cost Management. Usually, this scenario demands: • Complex data preparation • Data transformation • Iterative data clean-up • Automated large-scale validation • Iterative performance tuning • Rapid cut-over	Inbound	Oracle ADF Desktop Integration (ADFdi) File-based data import (FBDI)	-

Ongoing Integration of Cost Changes and Freight Charges

In this use case your goal is to perform a manual or partially manual extraction of data from source systems to maintain cost changes and freight charges on an ongoing basis.

Description	Integration Type	Integration Options	Notes
Cost Adjustments are used for adjusting costs after the normal cost processing has been completed. Some use cases include: • Fine tuning the cost if the estimates coming through receipts or elsewhere aren't fully know at the time of initial processing. • Processing rebates. • Tracking additional costs to items instead of using standard features such as work order-based costs or overheads. Usually, this scenario demands: • Manual or partially manual extraction of data from source systems. • Frequent inflow of data. • Data transformation. • Mass update of data existing in Oracle Cost Management.	Inbound	REST APIs (Cost Adjustments)	-
Landed Costs are additional costs incurred in the acquisition of items so that a more accurate cost is reflected for items during cost processing. If the volume of purchase orders, freight, or additional invoices is high, then it's typical to use REST APIs to import the landed cost charges in bulk and then do the cost processing and cost distributions. Usually, this scenario demands: • Manual or partially manual extraction of data from source systems. • Frequent inflow of data. • Data transformation.	Inbound	REST APIs (Trade Operations, Charge Associations)	-

Description	Integration Type	Integration Options	Notes
• Mass update of data existing in Oracle Cost Management.			

Perform Complex Data Analysis Using Multidimensional, Multiple Source Data

In this use case your goal is to maintain item costs in Oracle Cost Management by using various data-analysis tools.

Description	Integration Type	Integration Options	Notes
You're a large multinational manufacturing company. You use Oracle Cost Management to maintain your item costs. Item costs are used for various reasons. Some common ones include exporting costs to spreadsheets or data warehouses for doing various types of analysis. Other use cases include importing transactions to calculate the actual or average costs in Oracle Fusion and then exporting for downstream analysis. Usually, this scenario demands: • Extraction of large volume of raw data from Oracle Cost Management in a very short time. • In an on-going mode, the Oracle Cost Management data extraction should be incremental, periodic, and automated. • The extracted file should be available in a secure storage for further processing.	Outbound	Business Intelligence Cloud Connector (BICC) can be used to perform data extraction by accessing the public view objects (PVOs).	• Publications isn't recommended for this use case. • Oracle Transactional Business Intelligence (OTBI) isn't recommended for this use case.

3 Inventory Management

Overview of Inventory Management

About Oracle Fusion Cloud Inventory Management

Oracle Fusion Cloud Inventory Management is a complete materials management solution that enables you to gain full visibility and control of the flow of goods across your organization and global supply networks.

It helps you increase customer satisfaction, decrease costs, and optimize inventory and working capital investment.

Terminology for Inventory Management

These terms are used throughout the Oracle Fusion Cloud Inventory Management playbook.

Term	Definition
WMS	Warehouse management system. Software that helps companies manage and control daily warehouse operations, from the moment goods and materials enter a distribution or fulfillment center until the moment they leave.
3PL	Third-party logistics. The outsourcing of e-commerce logistics processes to a third-party business, including inventory management, warehousing, and fulfillment.
ASN	Advanced shipment notice.

Integration Types and Options for Inventory Management

Overview of Inventory Management Integration Types and Options

Several integration types and options are available in an Oracle Fusion Cloud Inventory Management integration.

Integration Types

Oracle Inventory Management supports two integration types.

Inbound

This integration imports data into Oracle Inventory Management applications from upstream systems or third-party providers.

Outbound

This integration exports data from Oracle Inventory Management applications to integrate with downstream systems and third-party providers.

Integration Options

Use any of these options to import data into Oracle Inventory Management.

Inbound

- *REST APIs for Inventory Management (Inbound)*
- *File-Based Data Import (FBDI) for Inventory Management*

Outbound

REST APIs for Inventory Management (Outbound)

Inbound

REST APIs for Inventory Management (Inbound)

Use the REST APIs inbound integration option to import transactions into Oracle Fusion Cloud Inventory Management if your business process requires near real-time updates to your inventory data.

Using the REST API inbound integration option might be appropriate if your business process needs to integrate with 3PL or WMS systems or you need to import reservations from a third-party system.

Key Features

- Performs data updates in real time.
- Used for both inbound and outbound integrations.
- Used with Oracle Integration Cloud (OIC) to perform near real-time operations in Oracle Inventory Management.

Best Practices

- Use this option only if you need to perform near real-time mode operations in Oracle Inventory Management.
- If you're working with a high-volume data set:
  - Call the REST API in a smaller set of records. A REST API can experience a 504-gateway timeout if a request runs for more than 5 minutes.
  - Only use the REST API to stage the data to the staging tables. Then, process the data using the corresponding scheduled process. This can be done for REST APIs that support the separation of steps for staging and processing of data.
- Purge the staging records periodically. We also recommend that you review the staging table records for any errors and take the required actions to re-process the records.

- For Reservations processing, use the InventoryStagedReservations REST API. Allow the insert to happen in the interface. Schedule and run the *Manage Reservations Interface* scheduled process in the background every 30 minutes (or more often).

Constraints

- This option isn't suitable for importing a large volume of inventory data.
- Call the REST APIs in a smaller set of records if working with a high-volume data set.

REST APIs for Inbound Integration

Oracle Inventory Management provides several REST APIs for inbound integration.

Object	Description	REST API
Inbound Receipts	Receives and processes receipt confirmations to acknowledge the receipt of material, updates the source documents and available details for quantities and other related information, such as lots, serials, external packing units, and the return of rejected material.	ReceivingReceiptRequests - Creates a receipt of material ReceivingReceiptTransactionRequests - Performs inspect, put away, correct, and return for the received material.
Inbound Shipments	Confirms the shipments executed in the external system (3PL/WMS).	shipmentTransactionRequests (ActionCode: CreateAndConfirmShipment) shipmentLineChangeRequests (custom action: backorderLine)
Miscellaneous Inventory Transactions	Processes inventory adjustments from an external system.	inventoryStagedTransactions
Inbound Manufacturing Picks	Receives the details of the picked manufacturing or maintenance work order transactions from the external system.	interfacedPickTransactions
Synchronize Inventory Balances	Receives and processes inventory balance updates from an external system.	inventoryBalanceTransactions
Inbound Reservations	Receives Reservation requests from an external system.	InventoryStagedReservations

File-Based Data Import (FBDI) for Inventory Management

Consider using FBDI if you need to import high-volume data into Oracle Fusion Cloud Inventory Management.

Also consider using the FBDI integration option if you need to import transactional data in bulk into Oracle Inventory Management.

To use this option:

1. Download Microsoft Excel templates that are available for several inventory-management entities.
2. Provide the required data.
3. Generate a comma-separated values (CSV) file and upload it to the desired location.
4. Run processes to transfer the data to the interface tables.
5. Import the data to the target Oracle Inventory Management tables.

Key Features

- Used only for inbound integration of data into Oracle Inventory Management.
- Supports the import of large volumes of data into Oracle Inventory Management.

Best Practices

- Review the field/attribute level instructions provided in the Microsoft Excel templates before entering the data that needs to be imported.
- If the data size is very large, submit the data in a smaller set of records.
- If the scheduled process you use to process the data inserted using FBDI supports multiple child processes, identify the appropriate number of child processes to use to process the large data set in parallel.
- Purge the staging records periodically. We also recommend that you review the staging table records for any errors and take the required actions to re-process the records.

Constraints

This option isn't suitable for importing inventory data on a real-time basis.

Oracle Inventory Management Objects that FBDI Supports

Object	Description	FBDI Template
Inbound Receipts	Receives and processes receipt confirmations to acknowledge the receipt of material, updates the source documents and available details for quantities and other related information, such as lots, serials, external packing units, and the return of rejected material.	ReceivingReceiptImportTemplate.xlsm
Inbound Shipments	Confirms the shipments executed in the external system (3PL/WMS).	PerformShippingTransactionImportTemplate.xlsm
Miscellaneous Inventory Transactions	Processes inventory adjustments from an external system (3PL/WMS). Also used to import on-hand balances for the first time, along with their cost details.	InventoryTransactionImportTemplate.xlsm
Inbound Manufacturing Picks	Receives the details of the picked manufacturing or maintenance work order transactions from the external system.	InterfacedPickTransactionsImportTemplate.xlsm
Synchronize Inventory Balances	Receives and processes inventory balance updates from a 3PL/WMS external system. This synchronizes the balances between the two systems to ensure they're the same.	InventoryBalanceImportTemplate.xlsm
Inbound Reservations	Receives Reservation requests from an external system.	InventoryReservationImportTemplate.xlsm

Related Topics

- File-Based Data Import (FBDI) for SCM

Outbound

REST APIs for Inventory Management (Outbound)

Use the REST APIs outbound integration option to export outbound advanced shipment notices (ASNs), expected receipts, outbound shipments, and manufacturing pick requests work orders from Oracle Fusion Cloud Inventory Management.

Key Features

- Exports data in real time.
- Used with Oracle Integration Cloud (OIC) to perform near real-time operations in Oracle Inventory Management.

Best Practices

- Build a fault-tolerant integration. For example, one that would let customers perform multiple retries from Oracle Integration Cloud (OIC) custom integration layers to resend the request.
- Use pagination according to REST API performance.
- In previously built integrations, the default pagination size is 299. We recommend using the same size. If you wish to change it, review REST API performance with that pagination size before changing it.

Constraints

- This option isn't suitable for exporting large volumes of inventory data.
- In case of persistent failures, customers might need to correct the data set and resend or contact Oracle Support.
- A REST API can experience a 504 Gateway timeout if a request runs for more than 5 minutes. The OIC timeout is also 5 minutes.

REST APIs for Outbound Integration

Object	Description	REST API
Outbound ASN	Sends outbound ASN information to an external system (3PL/warehouse management).	inboundShipments
Expected Receipts	Sends expected receipts (receipt advice) to an external system for various documents, such as purchase orders (POs), ASNs, advanced shipment notices, and return material authorizations (RMAs).	receiptAdviceLines
Outbound Shipment	Sends outbound shipment requests to the external system for various documents, such as sales orders and transfer orders	shipmentLineChangeRequests (custom action: generateShipmentRequest) shipmentLines

Object	Description	REST API
Manufacturing Pick Request	Sends movement request lines to an external system for picking for an Oracle Fusion Cloud Manufacturing or Oracle Fusion Cloud Maintenance work order.	inventoryMovementRequests

Inventory Management Business Events for Outbound Integration

Oracle Fusion Cloud Inventory Management raises several business events that can be configured and used for outbound integration with third-party applications, including 3PL and warehouse management.

Business Event	Name	Payload	How to Enable the Event	How to Publish the Event
Receipt Advice	Outbound Receipt Advice	Receipt_Advice_ Payload.xml	1. Navigate to **Set Up and Maintenance** > **Manage Inventory Business Event Configurations**. 2. Create a new record with these details: o Event Type: Outbound Receipt Advice. o Event Name: Outbound Receipt Advice. 3. Do one of the following: o To enable events for a specific organization, select that organization's name from the **Organization** drop-down list. o To enable events for all organizations, leave the Organization drop-down list blank. 4. If not already selected, select **Yes** from the **Publish** list. 5. Click **Save** or **Save and Close**.	1. Navigate to **Tools** > **Scheduled Processes** work area. 2. Click **Schedule New Process** and search for **Generate Receipt Advice**. 3. Specify the appropriate values and then run the scheduled process. The event will be published when the process completes.
Inbound ASN	Create inbound ASN	ASN_Payload.xml	1. Navigate to **Set Up and Maintenance** > **Manage Inventory Business Event Configurations**. 2. Create a new record with these details: o Event Type: Create inbound ASN. o Event Name: Create inbound ASN.	1. Navigate to **Supply Chain Execution** > **Inventory Management** > **Receipts** > **Create ASN**. 2. Create the ASN. The Create ASN event will be published.

Business Event	Name	Payload	How to Enable the Event	How to Publish the Event
			3. Do one of the following: o To enable events for a specific organization, select that organization's name from the **Organization** drop-down list. o To enable events for all organizations, leave the **Organization** drop-down list blank. o If not already selected, select **Yes** from the **Publish** list. 4. Click **Save** or **Save and Close**.	
Shipment Request	Outbound Shipment Request	Shipment_Request_Payload.xml	1. Navigate to **Set Up and Maintenance** > **Manage Inventory Business Event Configurations**. 2. Create a new record with these details: o Event Type: Outbound shipment request. o Event Name: Outbound shipment request. 3. Do one of the following: o To enable events for a specific organization, select that organization's name from the **Organization** drop-down list. o To enable events for all organizations, leave the **Organization** drop-down list blank. 4. If not already selected, select **Yes** from the **Publish** list. 5. Click **Save** or **Save and Close**.	Perform one of these procedures: 1. Navigate to **Tools** > **Scheduled Processes** work area. 2. Click **Schedule New Process** and search for **Generate Shipment Request**. 3. Specify the appropriate values and then run the scheduled process. The event will be published when the process completes. 1. Navigate to **Supply Chain Execution** > **Inventory Management** > **Shipments** > **Create Outbound Shipment Request**. 2. Create the outbound shipment request. The event will be published.
Movement Request	Create Movement Request	Movement_Request_Payload.xml	1. Navigate to **Set Up and Maintenance** > **Manage Inventory Organizations**. 2. Search for the organization where you want to enable the event. 3. Select the record and click **Manage**	1. Navigate to **Supply Chain Execution** > **Manage Work Orders**. 2. Select the work order, then perform the Pick Release process. The Pick Release process will start a

Business Event	Name	Payload	How to Enable the Event	How to Publish the Event
			Organization Parameters. 4. In the **General** tab, under **Additional Usages**, select **Warehouse Management System** from the **Integrated System Type** list. 5. Select the **Integrated Manufacturing and Maintenance with WMS** checkbox to enable the movement-request event. 6. Click **Save** or **Save and Close**.	scheduled process. The scheduled process will create the movement requests and reservations for the work order. The event will then be published for the created work order.

Business Objects for Inventory Management

Inventory Management Business Objects Available for Integration

Oracle Fusion Cloud Inventory Management provides support for multiple business objects to help inbound and outbound integrations.

Inbound

Key Business Object	REST	FBDI	Business Event
Inbound Receipts from 3PL/WMS	x	x	-
Inbound Shipments from 3PL/WMS	x	x	-
Inbound Manufacturing Picks from 3PL/WMS	x	x	-
Synchronize Inventory Balances from 3PL/WMS	x	x	-
Miscellaneous Inventory Transactions from 3PL/WMS	x	x	-
Inbound Reservations	x	x	-

Outbound

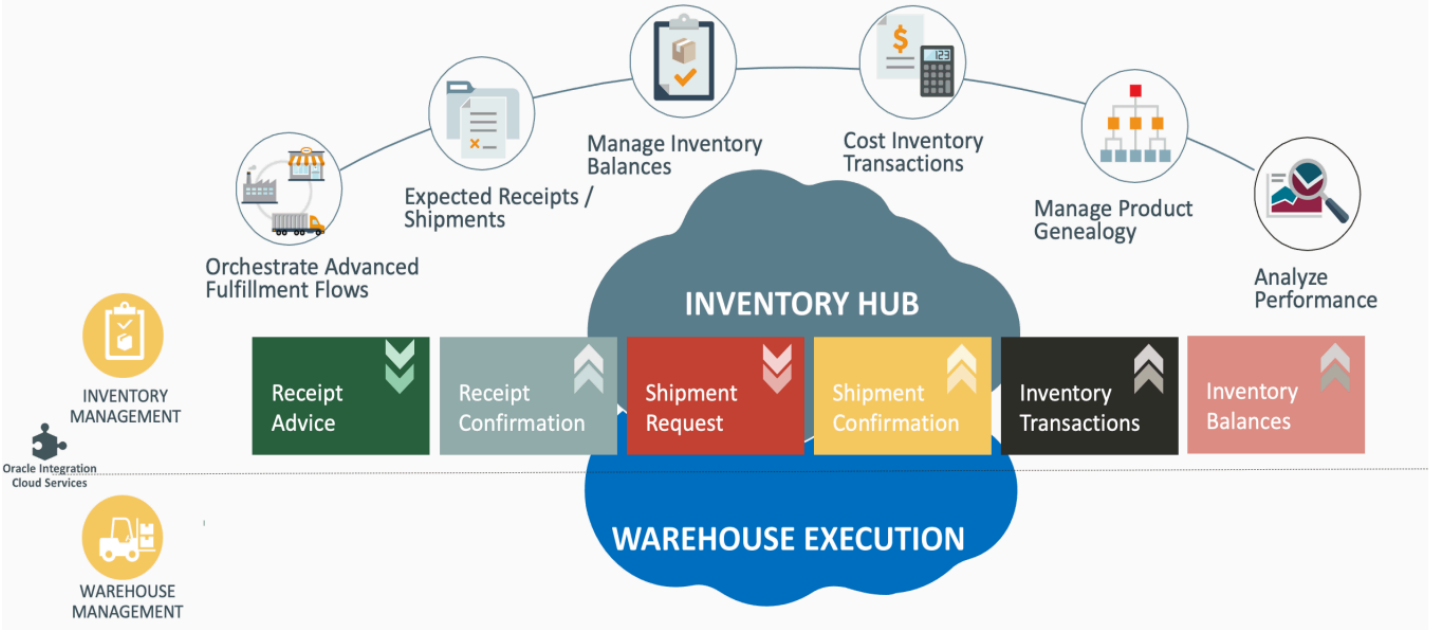
Key Business Object	REST	FBDI	Business Event
Outbound ASN to 3PL/WMS	x	-	Create Inbound ASN
Send Expected Receipts to 3PL/WMS	x	-	Outbound Receipt Advice
Send Outbound Shipment to 3PL/WMS	x	-	Outbound Shipment Request
Send Manufacturing Pick Request to 3PL/WMS	x	-	Create Movement Request

Use Cases and Patterns for Inventory Management

Integrating with Warehouse Management Systems and 3PLs

Oracle Fusion Cloud Inventory Management supports a central integration framework for working with warehouse management systems (WMS) and third-party logistics (3PL) providers.

The Oracle Inventory Management suite of products includes Oracle Receiving, Oracle Inventory Management, and Oracle Shipping.


Orchestrate Advanced Fulfillment Flows
Expected Receipts / Shipments
Manage Inventory Balances
Cost Inventory Transactions
Manage Product Genealogy
Analyze Performance
INVENTORY HUB
INVENTORY MANAGEMENT
Receipt Advice
Receipt Confirmation
Shipment Request
Shipment Confirmation
Inventory Transactions
Inventory Balances
Oracle Integration Cloud Services
WAREHOUSE EXECUTION
WAREHOUSE MANAGEMENT

What You Should Do:

- Review documentation carefully.
- Plan for reconciliation and error scenarios.
- Keep subinventories and material statuses simple:
  - Set up minimum number of subinventories.
  - Set up subinventories for:
    - Receiving
    - Staging
    - Each material status
  - No locator-level tracking.

What You Shouldn't Do:

- Don't assume it works the same as your legacy systems (including Oracle E-Business Suite).
- Don't execute transactions in Oracle Inventory Management outside of exception scenarios.
- Don't use pick release or form shipments in Oracle Inventory Management outside of exception scenarios.
- Don't use intraorganization transactions, such as movement requests, in Oracle Inventory Management.
- Use interorganizational transfers in Oracle Inventory Management.

Integrating Reservations from an External System

Inventory Reservation Import file-based data import (FBDI) enables you to create inventory reservations based on the information in any other system.

You might want to create specific lot-level reservations against Sales Orders or Transfer Orders or have specific fair-share allocation rules to control reservations processing.

Loading Initial Inventory Balances

For loading initial on-hand balances for your inventory items at cut-over, we recommend that you use the file-based data import (FBDI).

This supports parallel processing with a default of 200 transactions per worker.

It's recommended that you **not** exceed 100K inventory transactions in a single inventory transaction file-based data import.

Synchronizing Inventory Balances

When Oracle Fusion Cloud Inventory Management integrates to an external execution system, summary inventory balances are still maintained at a high level in Oracle Inventory Management.

These provide summary inventory availability (for example, available or unavailable) for each inventory bucket (Subinventory level summary) for inquiry/reporting, reservations, global order promising, and planning. Details such as zone/row/aisle/bin and how material is packed into license plate numbers (LPNs) are maintained in the warehouse management system.

If the available balance of the source warehouse management system or third-party logistics provider must be in sync with the available balance in Oracle Inventory Management, you must extract the inventory balances from the warehouse management system or 3PL to the same level of summarization as tracked in Oracle Inventory Management, along with all the details (such as lots and serial numbers). Then you can start the inventory balance message and use either the Inventory Balance Message Import file-based data import (FBDI) or the Inventory Balance Transactions REST resource to post inventory balance messages from the external source. Use the *Manage Inventory Balances* scheduled process to process the imported inventory balance messages in the interface tables.

When synchronizing inventory balances, the on-hand balances in the external execution system (3PL, warehouse management system) are assumed to be the source of truth. As an example, if Item A has an on-hand balance of 100 in the external execution system and Oracle Inventory Management has an on-hand balance of 98, the Oracle Inventory Management system will synchronize the two balances and perform a miscellaneous receipt of 2 so the on-hand balance will be 100 in both systems.

> **Note:** You should use an inventory-balances approach to find the root cause of on-hand inventory mismatches between Oracle Fusion Cloud Warehouse Management and Oracle Inventory Management and to rectify the operational/integration issues. Don't use inventory balances to quickly update the on-hand inventory in Oracle Inventory Management without addressing the underlying cause. We recommended approvals when running the *Manage Inventory Balances* scheduled process to review and resolve discrepancies.

Oracle Integration Cloud Accelerators for Inventory Management

Previously Built Oracle Integration Cloud (OIC) Recipes for Inventory Management

These previously built OIC integrations between Oracle Fusion Cloud Warehouse Management and Oracle Fusion Cloud Inventory Management are available.

Recipe/Flow Name	Source	Destination	Use Case/Description	Details/Links
• Oracle WMS INV Inventory Transactions • (Previously: WMS-INV Inventory Transactions)	Oracle Warehouse Management	Oracle Inventory Management	Takes cycle count adjustments and inventory adjustments from Oracle Warehouse Management and maps them to Inventory Transactions in Oracle Inventory Management. This includes some transactions that impact material and on-hand availability.	• *My Oracle Support: Pre-built Integration between Oracle Fusion Cloud Warehouse Management and Oracle Fusion Cloud Inventory Management (Doc ID 2404671.1)*. • *My Oracle Support: Fusion Integration.*

Recipe/Flow Name	Source	Destination	Use Case/Description	Details/Links
				Installation, Configuration and Examples (Doc ID 2944549.1).
• Oracle INV WMS RA PO_RMA as PO_TO as IB Shipment • (Previously: INV-WMS Receipt Advice)	Oracle Inventory Management	Oracle Warehouse Management	Takes Receipt Advice lines for the expected shipments from Oracle Inventory Management and maps them to Purchase Orders or Inbound Shipments in Oracle Warehouse Management. Supports document type PO, RMA through PO, and TO through Inbound shipment in Oracle Warehouse Management.	Same.
• Oracle INV WMS Supplier ASN as Inbound Shipment • (Previously: INV-WMS - Supplier ASN)	Oracle Inventory Management	Oracle Warehouse Management	Takes the Supplier ASN details from Oracle Inventory Management and maps them to Inbound Shipments in Oracle Warehouse Management.	Same.
• Oracle INV WMS RA for RMA as Inbound Shipment • (Previously: INV-WMS Receipt Advice for RMA as Inbound Shipment)	Oracle Inventory Management	Oracle Warehouse Management	Takes Receipt Advice lines for the expected RMA shipments from Oracle Inventory Management and maps them to Inbound Shipments in Oracle Warehouse Management.	Same.
• Oracle WMS INV Receipt Confirmation • (Previously: WMS-INV Receipt Confirmation)	Oracle Warehouse Management	Oracle Inventory Management	Takes Purchase Order, RMA & Transfer Order receiving transactions from Oracle Warehouse Management and maps them to Receipt Confirmations for respective document type in Oracle Inventory Management.	Same.
• Oracle INV WMS Shipment Request • (Previously: INV-WMS Shipment Requests)	Oracle Inventory Management	Oracle Warehouse Management	Takes Shipment Request lines for Sales Orders and Transfer Orders from Oracle Inventory Management and maps them to Orders in Oracle Warehouse Management.	Same.
• Oracle INV WMS Update Shipment Request • (Previously: INV-WMS Update Shipment Request)	Oracle Inventory Management	Oracle Warehouse Management	Takes updates to Shipment Request lines for Sales Orders and Transfer Orders from Oracle Inventory Management and receives those updates to the Orders in Oracle Warehouse Management.	Same.

Recipe/Flow Name	Source	Destination	Use Case/Description	Details/Links
• Oracle INV WMS Order Lock-Unlock • (Previously: INV-WMS Lock/Unlock Shipment Request)	Oracle Inventory Management	Oracle Warehouse Management	Takes holds that have been applied to and removed from sales orders and receives those requests from Oracle Inventory Management to Lock or Unlock the corresponding Order in Oracle Warehouse Management. This integration is also needed when implementing the Update Shipment Requests for Sales Orders Integration.	Same.
• Oracle WMS INV Shipment Confirmation • (Previously: WMS-INV Shipment Confirmation)	Oracle Warehouse Management	Oracle Inventory Management	Takes shipped loads from Oracle Warehouse Management and maps them to Shipment Confirmations for Sales Orders and Transfer Orders in Oracle Inventory Management.	Same.
• Oracle WMS INV Backorder for Shipment Line • (Previously: WMS-INV Backorder Shipment Lines)	Oracle Warehouse Management	Oracle Inventory Management	Communicates unfulfilled quantities for shipped Sales and Transfer Orders from Oracle Warehouse Management and maps them to Shipment Lines for Sales and Transfer Orders in Oracle Inventory Management allowing the remaining quantity to be backordered or canceled.	Same.
Oracle INV WMS MFG Movement Request	Oracle Inventory Management	Oracle Warehouse Management	Takes the Movement Request details from Oracle Inventory Management and maps them to Movement Requests in Oracle Warehouse Management.	Same.
Oracle WMS INV MFG Movement Request Pick Confirm	Oracle Warehouse Management	Oracle Inventory Management	Updates the movement request pick confirmation from Oracle Warehouse Management to the Movement Request in Oracle Inventory Management.	Same.
Oracle WMS INV MFG Movement Request Pick Cancel	Oracle Warehouse Management	Oracle Inventory Management	Updates the movement request short/cancel from Oracle Warehouse Management to the Movement Request in Oracle Inventory Management.	Same.

Related Topics

- My Oracle Support: Pre-built Integration between Oracle Fusion Cloud Warehouse Management and Oracle Fusion Cloud Inventory Management (Doc ID 2404671.1)
- My Oracle Support: Fusion Integration. Installation, Configuration and Examples (Doc ID 2944549.1)

Other Inventory Management Resources

Use these resources to get more information about Oracle Fusion Cloud Inventory Management integrations.

Product Documentation

- *Using Inventory Management: Third-Party Logistics and Warehouse Management Systems*
- *Using Inventory Management: Overview of Inventory Management Integration with 3PL and Warehouse Management Systems*

My Oracle Support Knowledge Articles (requires account registration)

- *My Oracle Support: Pre-built Integration between Oracle Fusion Cloud Warehouse Management and Oracle Fusion Cloud Inventory Management (Doc ID 2404671.1)* (summary information)
- *My Oracle Support: Fusion Integration. Installation, Configuration and Examples (Doc ID 2944549.1)* (detailed information)

Cloud Customer Connect (requires account registration)

Integrating Oracle Inventory Management Cloud with a 3PL/Warehouse Management System

Cloud Readiness

What's New: Oracle Inventory and Cost Management Cloud R13 (updates 17B - 17D)

Reference Architecture for Inventory Management

Publish Inventory On-Hand Balances to an External System for Reconciliation

Overview of the Architecture

You can use this suggested architecture that describes how to publish current inventory on-hand balance snapshots from Oracle Fusion Cloud Inventory Management to an external system, such as a warehouse management system (WMS) or third-party logistics provider (3PL), for reconciliation.

Maintaining synchronized inventory data across Oracle Inventory Management and external systems is essential for planning, fulfilment, and financial accuracy. Discrepancies can occur because of timing differences, transaction failures, or system misalignment. This integration provides a standardized file-based snapshot that can be consumed by the external system to compare balances and identify mismatches.

Use Cases

The reference architecture supports these flows:

- Publish inventory on-hand balance snapshot data from Oracle Inventory Management organizations.
- Publish balances for serial-controlled items, nonserial-controlled items, or both.
- Generate a pipe-separated values snapshot file and compress it into a ZIP file.
- Upload the generated ZIP file to Oracle WebCenter Content for external system consumption.
- Allow the external system to import the snapshot and reconcile its balances with Oracle Inventory Management.

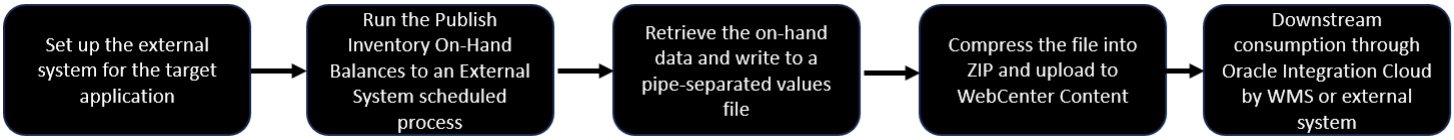
Required Applications

Ensure you have access to these applications:

- Oracle Fusion Cloud SCM
- Oracle Fusion Cloud Inventory Management
- Oracle WebCenter Content
- Oracle Integration Cloud
- External system such as WMS or 3PL

Process Overview

This flow diagram shows the main steps involved when designing and implementing the use case to publish the current inventory on-hand balance snapshots from Oracle Inventory Management to an external system.



Before You Begin

Before performing an integration, be aware of the following prerequisites and considerations:

- Oracle Warehouse Management is provided as the default seeded external system. Based on your requirements, you can configure other external systems by using the lookup ORA_INV_BALANCES_INV_EXTERNAL.
- Ensure that the user submitting the scheduled process has a configured job role that includes the following privileges:
  - Inventory Transaction Management (ORA_INV_INVENTORY_TRANSACTION_MANAGEMENT_DUTY)
  - Publish Inventory On-Hand Balances to External Systems (INV_PUBLISH_ONHAND_TO_EXT_SYSTEMS_PRIV)
- Ensure that the external system or Oracle Integration Cloud process can retrieve the generated ZIP file from WebCenter Content.
- Confirm the reconciliation scope, including organizations, item types, serial handling, and the expected publishing cadence.

Related Topics

- Publish Inventory On-Hand Balances to an External Execution System Using a File-Based Integration for Reconciliation

Publish Inventory On-Hand Balances to an External System

You can publish the inventory on-hand balance snapshots from Oracle Inventory Management to an external system.

Perform these steps in Oracle Inventory Management:

1. Configure the external system lookup.

   Use the **ORA_INV_BALANCES_INV_EXTERNAL** lookup to define the external systems that can receive inventory on-hand balance snapshots.

   Oracle Warehouse Management is the default external system. When adding another external system, use a numeric lookup code greater than 0.

Configuration	Details
Lookup name	ORA_INV_BALANCES_INV_EXTERNAL
Seeded external system	Oracle Warehouse Management
Reserved lookup code	0, reserved for Oracle Warehouse Management
New external system lookup codes	Numeric values only, for example 1 or 2

   After the lookup is configured, the external system appears in the **External System** parameter list for the scheduled process.
2. Submit the **Publish Inventory On-Hand Balances to an External System** scheduled process.

   Use the following parameters:

Parameter	Definition
External System	Select the external system to which the on-hand balances will be sent.
Organization	Select the organization for which the on-hand balance snapshot will be generated.
Publish from Date	Specify the date from which on-hand balances will be considered. Use this field to include the data from a period prior to the last successful publication date.
Items to Publish	Select Nonserial Controlled Items, Serial Controlled Items, or Both.
Full Publish	○ Yes: Select to publish all records regardless of the Publish from Date. ○ No: Select to publish only the changes in item balances since the last successful publication.

3. Generate the on-hand balance snapshot.

   After the scheduled process is submitted, Oracle Inventory Management retrieves the inventory on-hand data based on the selected parameters, writes the data to a pipe-separated values file, compresses the file into a ZIP file, and uploads the ZIP file to WebCenter Content.

   The generated output is a standardized flat-file snapshot. The PDF describes the output as a CSV .psv file, and the example file is pipe-separated. For implementation, treat the generated data file as a pipe-separated values file inside a ZIP archive.
4. Validate the scheduled process completion.

   Confirm that the scheduled process completes successfully and that the generated ZIP file is available on WebCenter Content for the selected external system.
5. Schedule the process as needed.

   Define the schedule based on reconciliation frequency, inventory volume, and downstream processing capacity. This is a snapshot-based reconciliation flow, so the cadence should align with the business reconciliation windows rather than the real-time transaction processing.

Reconcile External On-Hand Balances

The external system uses the inventory snapshot to compare balances and identify mismatches.

Here are the steps involved:

1. Retrieve and import the generated ZIP file from WebCenter Content.

   Oracle Integration Cloud identifies and downloads the correct ZIP file from WebCenter Content for the reconciliation cycle and the selected external system. The external system then imports the published on-hand balance snapshot generated by Oracle Inventory Management for the selected organization and item population.
2. Extract, validate, and prepare the pipe-separated values file.

   Oracle Integration Cloud extracts the snapshot file from the ZIP archive and validates that it is present, readable, and formatted as expected.
3. Transform and deliver the data to the external system.

   Oracle Integration Cloud transforms the published inventory on-hand data into the format required by the external system, then delivers it through the agreed mechanism, such as an API call, staged file, or downstream reconciliation process trigger.
4. Reconcile external balances against Oracle Inventory Management.

   The external system compares its local balances with the Oracle Inventory Management snapshot.
5. Identify and resolve discrepancies.

   The external system presents the mismatches, interface errors, and unprocessed records to users for review. Users investigate and resolve differences through the agreed customer-defined operational process. Oracle Inventory Management acts as the source for the published on-hand balance snapshot.
6. Handle errors and prevent duplicate processing.

   Capture failures for the WebCenter Content file download, ZIP extraction, file validation, transformation, delivery, import, and reconciliation. Include the scheduled process request, WebCenter Content file details, external system identifier, and reconciliation cycle in operational logs. Record processed file metadata or archive completed files so the same snapshot is not processed more than once.
7. Track reconciliation status.

Maintain status for each reconciliation cycle, including imported records, matched records, discrepancies, errors, unprocessed records, and completion status.

4 Maintenance

Overview of Maintenance

About Oracle Fusion Cloud Maintenance

Oracle Fusion Cloud Maintenance, part of the Oracle Fusion Cloud Supply Chain & Manufacturing (SCM) suite of applications, lets you efficiently create, manage, and maintain both internally owned and external customer assets over time.

With Oracle Maintenance you can:

- Create and manage the asset definitions.
- Set up organizations to support maintenance activities.
- Define consistent and reusable maintenance processes.
- Create and record maintenance activity for assets.
- Analyze and print reports using Oracle Transactional Business Intelligence (OTBI).

Terminology for Maintenance

These terms are used throughout the Oracle Fusion Cloud Maintenance playbook.

Term	Definition
Asset	An item, thing, or entity that has potential or actual value to an individual, customer, or organization. An asset definition is the data content representing an asset. When an asset is defined, the asset is available to be tracked, managed, maintained, and repaired efficiently, resulting in maximum utilization of the asset over its lifetime.
ERES	Electronic Records and Electronic Signatures. GMP (Good Manufacturing Practice) critical business transactions governed by the US Food and Drug Administration (FDA) that require electronic records and signatures to comply with 21 CFR Part 11.
Maintenance Program	Used to define, generate, and create preventative maintenance work orders for an asset over time.
Work Order	A document, group of documents, or schedule conveying authority for the repair of specified parts or products in specified quantities.

Related Topics

- Set Up Maintenance
- How You Import and Export Assets

Integration Types and Options for Maintenance

Overview of Maintenance Integration Types and Options

Several integration types and options are available in an Oracle Fusion Cloud Maintenance integration.

Before You Begin

Before starting any integration project, you should analyze your business processes and assess the options that make the most sense for your organization. The first step is to evaluate the asset and maintenance processes supported within Oracle Maintenance. You should have a compelling need to use your internal system to integrate with Oracle Maintenance. It's also recommended to review and evaluate the partner solutions listed in Oracle Cloud Marketplace that provide previously built and curated solutions to complement your current deployment of Oracle Fusion Cloud Supply Chain (SCM) & Manufacturing applications to meet your business or industry-specific requirements.

After your integration needs are established, you must analyze the following:

- Asset objects and their attributes in Oracle Maintenance.
- Maintenance planning and execution objects and their attributes in Oracle Maintenance and Oracle Fusion Cloud Manufacturing.
- Frequency and volume of information that needs to be synchronized.
- Integration mode: Synchronous vs. Asynchronous.
- Error handling and recovery.

You can use Oracle Help Center to find information on the integration assets that are available for specific objects and processes across Oracle Fusion Cloud, including those related to Oracle Cloud SCM and Oracle Manufacturing.

Integration Types

There are two integration types available in Oracle Maintenance.

Inbound

This integration imports data into Oracle Maintenance from external or third-party applications.

Outbound

This integration exports data from Oracle Maintenance to external or third-party applications.

Integration Options

These integration options are available in Oracle Cloud Maintenance.

Inbound

- *REST APIs for Maintenance (Inbound)*
- *SOAP Services for Maintenance*
- *File-Based Data Import (FBDI) for Maintenance*

- *Oracle ADF Desktop Integration (ADFdi) for Maintenance*

Outbound

- *REST APIs for Maintenance (Outbound)*
- *Maintenance Business Events for Outbound Integration*
- *Business Intelligence Cloud Connector for Maintenance*
- *Functional Setup Manager for Maintenance*
- *Reporting Tools for Maintenance*

Inbound

REST APIs for Maintenance (Inbound)

Use Oracle REST APIs to create, review, update, and sometimes delete data in Oracle Fusion Cloud Maintenance and Oracle Fusion Cloud Manufacturing.

Included in the data are setup, definition, and transactional entities.

Key Feature: Create and Manage Setup Data

Best Practices

- Certain entities can only be created and managed using a REST resource and not file-based data import (FBDI). An example is the Asset Condition Event Codes resource.
- Other entities might be created and managed using either a REST resource or FBDI. An example is the Installed Base Assets resource.

Constraints

- Several objects are supported using the REST API and FBDI integration methods.
- You should review the capabilities of each and decide on the best method for the implementation and ongoing management of the object data.

Key Feature: Perform Data Updates in Near Real Time

Best Practices

Use this option only if you need to perform near real-time mode operations. This can include creating or updating data.

Constraints

Because some objects have creation date/time validations that are unique per minute (for example, a meter reading), you should model your real-time updates to follow the validations of each object.

Key Feature: Retrieve Data for Custom Pages or External Systems

Best Practices

- You can perform GET operations to retrieve setup, lookup, and general object data.
- The queries can be by object id, query, or finder. To ensure good performance:

- Limit the attributes using the fields query parameter.
- Avoid OR conditions with LIKE clauses, where possible.
- Avoid querying master records using only child query criteria, where possible

Constraints

- Retrieving child records across multiple main records.
- Retrieving fetch child entity levels along with the main record.

Entities in Oracle Maintenance and Oracle Manufacturing with REST API Support

This table lists the Oracle Maintenance and Oracle Manufacturing entities with REST API support.

Asset Area	Entity	Resource Owner	Description
Asset Management	Asset Condition Event Codes	Oracle Maintenance	Manages the condition event code definitions. The codes are used in supplier warranty, failure capture, maintenance programs, and work order creation.
	Asset Diagnostic Symptoms	Oracle Maintenance	Manages the asset diagnostic symptoms. Symptoms are observations or diagnostic information related to anomalous asset behavior that might precede or occur along with a failure event.
	Asset Failure Events	Oracle Maintenance	Manages failure events for work orders. For an event, one or more failure instances might be created and associated with an event.
	Asset Failure Sets	Oracle Maintenance	Manages the failure sets. Failure sets define the rules around how failure data is captured, and in which conditions a technician is required to capture failure data on a work order. Failure sets use Condition event codes in their definitions.
	Asset Group Rules	Oracle Maintenance	Manages creating and updating of asset group rules. Group rules are used as the basis for creating an Asset Group.
	Asset Groups	Oracle Maintenance	Manages how to create and update asset groups, based on a group rule.
	Asset Logical Hierarchy Names	Oracle Maintenance	Manages the parent node in a logical hierarchy. Once defined, child nodes can be defined using Relationships.

Asset Area	Entity	Resource Owner	Description
	Asset Logical Hierarchy Relationships	Oracle Maintenance	Manages the logical relationships between a parent node and its child nodes.
	Asset Warranty Claims	Oracle Maintenance	Manages the warranty claims and their associated warranty entitlements. Claims are created and updated in the context of a maintenance work order.
	Asset Warranty Contracts	Oracle Maintenance	Manages the asset warranty contracts, including the meter durations.
	Asset Warranty Coverages	Oracle Maintenance	Manages the warranty coverage definitions, including associated items, meters, and repair transaction codes. Coverages are used as the basis for creating an asset Warranty Contract.
	Asset Warranty Entitlements	Oracle Maintenance	Manages the entitlements within a warranty claim for the reimbursement of work order or miscellaneous expenses using a Warranty Claim.
	Asset Warranty Provider Rates	Oracle Maintenance	Manages the warranty claim labor rates for a warranty provider. The rates will be used for a corresponding Standard Repair Time to create an Entitlement in a Warranty Claim.
	Asset Warranty Standard Repair Times	Oracle Maintenance	Manages the warranty claim standard rates for a warranty provider and standard operation. The times will be used for a corresponding Provider Rate to create an Entitlement in a Warranty Claim.
	Customer Asset Transactions	Oracle Maintenance	Manages sales order information about a customer asset by transaction type.
	Failure Instances	Oracle Maintenance	Manages failure instances across all failure events. One or more instances might be defined for an Event, referencing Condition Event Codes.
	Genealogy Objects	Oracle Maintenance	Manages the genealogy objects. A genealogy object is a lot or serial number that's flagged to be tracked by the Product Genealogy process.
	Genealogy Relationships	Oracle Maintenance	Manages the relationships between a parent genealogy object and its child components.

Asset Area	Entity	Resource Owner	Description
	Installed Base Assets	Oracle Maintenance	Manages the customer and enter prize asset and child entities, including: • Qualifications • Charges • Fixed asset associations • Meters • Notes • Parts list • Relationships • Descriptive flexfields (DFFs)
	Qualification Profiles	Oracle Maintenance	Manages qualification profiles used to assign or transact a qualified equipment resource instance for a work order operation.
	Qualification Requirements	Oracle Maintenance	Manages the qualification requirements. Qualification requirements are recorded for specific assets and are used during the work order transactions.
Work Setup	Work Area	Oracle Manufacturing	Manages the names of the work areas where maintenance is planned and executed.
	Work Center	Oracle Manufacturing	Manages the names of the work centers where maintenance is planned and executed.
	Resources	Oracle Manufacturing	Manages production resources used in maintenance. A resource can include labor, equipment, and tools that you allocate to a work center.
	Resource Instances	Oracle Manufacturing	A child resource of the Production Resource. A resource instance can include a person, equipment, or tools that are explicitly identified in a work order operation.
	Standard Operations	Oracle Manufacturing	Manages standard operations, including resource details.
	Work Definition Requests	Oracle Manufacturing	Manages only the creation of a work definition using a request payload. This includes the header, operations, materials, and resources. This resource supports only the POST creation, but not the PATCH update operation.

Asset Area	Entity	Resource Owner	Description
			Also, this resource doesn't support the GET operation. Instead, you must use the Work Definitions resource after creation.
	Work Definitions	Oracle Manufacturing	Manages the viewing of work definition details that are created by the Requests. You can view the header, operations, materials, resources, and attachments. This resource doesn't support the POST operation. Instead you must use Work Definitions Requests.
	Maintenance Programs	Oracle Maintenance	Used to define and update a maintenance program. Maintenance programs are used to define and generate a daily preventative maintenance forecast for one or more assets, based on a calendar pattern or meter utilization. The forecast is then used to create preventative maintenance work orders, using one or more work definitions.
	Maintenance Calendar Patterns	Oracle Maintenance	Manages the calendar patterns that are optionally defined for a maintenance program.
	Maintenance Organization Relationships	Oracle Maintenance	Manages the organization relationships that can be optionally defined between organizations that are and aren't maintenance.
	Maintenance Plant Parameters	Oracle Maintenance	Returns the plant parameters for an organization. To create or update the parameters, you must use the Inventory Organizations resource.
Work Execution	Work Requests (Help Desk)	Help Desk	Manages create and update of work requests using an Internal Service Request. A request can then be used as the basis for reporting an issue with an asset and creating a maintenance work order for resolution.
	Maintenance Work Orders	Oracle Maintenance	Manages the create and update of maintenance work orders, including the operation, material and resource entities.
	Maintenance Operation Transactions	Oracle Maintenance	Manages the status change of the maintenance operation.
	Maintenance Material Transactions	Oracle Maintenance	Manages the movement of an item or product between the shop floor

Asset Area	Entity	Resource Owner	Description
			and the subinventory or locator, including charges for the work order.
	Maintenance Resource Transactions	Oracle Maintenance	Stores resource charges for the work order.
	Meter Templates	Oracle Maintenance	Manages meter definitions, including item applicability. Meter templates are used to instantiate an Asset or Subscription meter for utilization tracking.
	Meter Readings	Oracle Maintenance	Manages the meter reading history of an asset- or subscription-based meter.
	Maintenance Forecasts	Oracle Maintenance	Manages the forecast due dates for a work requirement and asset in a maintenance program.
	Maintenance Work Order Service Histories	Oracle Maintenance	Returns work order details for an asset or item. You can also request repair history for the work order by finding the relevant completed or closed work orders based on a common problem description.
	Utilization Meters	Oracle Maintenance	Returns the utilization meters for an asset.

Related Topics

- REST API for Oracle Fusion Cloud SCM
- Oracle Visual Builder Add-in for Excel, Version 4.1.0

SOAP Services for Maintenance

You can use a Simple Object Access Protocol (SOAP) web service to import and manage data for a few entities in Oracle Fusion Cloud Maintenance and Oracle Fusion Cloud Manufacturing.

A SOAP service provides a standardized way of integrating two web-based applications.

Note: It's recommended to use REST APIs instead of SOAP web services when available for an object.

Key Features

- Perform data updates in real time.
- Use with Oracle Integration Cloud (OIC) to perform near real-time operations in Oracle Manufacturing.

Best Practices

- Use this option only if you need to perform near real-time mode operations in Oracle Maintenance and Oracle Manufacturing.
- Not recommended if a comparable REST API is available.

Constraints

- This option isn't suitable for importing voluminous manufacturing data.
- Low in performance and scalability compared to REST APIs.
- It can't be used to trigger Electronic Records and Electronic Signatures (ERES) events.

Oracle Manufacturing SOAP Services Applicable to Oracle Maintenance

Entity	Description
Work Definition and Work Definition Operation Attachments	Used to mass upload attachments.
Asset and Maintenance Program Attachments	Used to mass upload attachments.
Work Orders, Work Order Operations, Work Order Operation Materials, and Work Order Operation Resources Attachments	Used to mass upload attachments.

Related Topics

- Overview of Using A SOAP Service to Upload Attachments in Oracle Maintenance
- SOAP Web Services for SCM: Work Order Material Transaction Service
- SOAP Web Services for SCM: Work Order Operation Transaction Service

File-Based Data Import (FBDI) for Maintenance

Use FBDI to import data into Oracle Fusion Cloud Maintenance.

The steps for importing data into Oracle Maintenance using FBDI are:

1. Download the appropriate Microsoft Excel spreadsheet templates from your source and enter the required data.
2. Run macros in the template to generate the comma-separated values (CSV) files that are used during the import process.
3. Combine the CSV files into a compressed (ZIP) archive so that they can be imported together.
4. Upload the ZIP archive to the designated location.
5. *Load the data* into the application tables.

All the data is validated during the import to ensure its integrity. Review the field instructions for defining data based on the object type being defined or updated.

Key Feature: Create Object Data

Best Practices

File-based import is a great way to migrate data during implementation and to create incremental data over time.

You can get the best results and performance from your imports by adhering to these best practices:

- Review the data model design of each object, understanding the parent and child relationships of each entity. It's also important to understand the data model validations between parent and child entities. The spreadsheet column descriptions will generally provide guidance across columns and tabs.

- Identify the scope of data to be imported. Note that for each parent record, there might be one or more child records defined by each tab in the spreadsheet.
- Review examples in the spreadsheet template, if provided. Define and process test data sets to model each of the desired data combinations to verify the validations and allowed combinations of attributes.
- Create unique import batches to separate the processing and error handling of imports into logical groups. For example, when processing large volumes of data, grouping into unique batches of 10,000 records or less will be more efficient and will allow easier triage of import errors.
- Plan strategies for data migration and the ongoing update of each object over time

Constraints

Large volumes of records in a batch will have performance issues. Therefore, it's recommended to run one batch of 10,000 records at the time, confirm any errors, and then submit the next batch for processing.

Key Feature: Maintain Object Data

Best Practices

- Incremental updates to existing objects are generally supported. This includes updating/adding parent data and adding or updating child data.
- Note that some objects will only allow updates of certain attributes based on their use in downstream processes. For example, you only can disable a maintenance program, and not delete it, if it has created at least one work order.

Constraints

- Review each spreadsheet for guidance about the capabilities, validations, and dependencies of updating existing object data. For example, deleting of parent or child records might be supported sometimes, but not after related object data is created in the system. Therefore, a parent or child object might only be disabled sometimes.
- Take care when updating existing object data as it might fundamentally change the use of the object in downstream processes. For example, deselecting the **Allow work orders** checkbox in an asset will block work order creation. Changing a day-based maintenance forecast to a meter-based forecast, while allowed, might result in a different cadence of preventative maintenance work and confusing work order history.

Entities in Oracle Maintenance with FBDI Support

Entity	Description
Import Installed Base Assets	Imports the installed base assets details along with its child entities, including parts list, charges, and assets group associations. You also can create and update asset relationships.
Import Meter Readings	Imports the meter reading history for both asset and subscription-based meters. Incremental imports allow you to load new meter reading history routinely.

Entity	Description
Import Product Genealogy	Bulk import of genealogy instances and structures.
Maintenance Program Import	Efficiently imports the maintenance programs definitions, including item and asset. You also can update existing programs to add new work requirements, end date exiting work requirements, and include or exclude assets.
Work Definition Import	Import Work Definitions along with its child entities, including operations, materials, and resources.
Work Order Import	Import Work Orders along with its child entities, which includes operations, materials, and resources. **Note:** Work Order history for a preventative maintenance program can be imported, however, it won't be referenced or respected by the maintenance forecast.

Error Handling

During creation, the import process will generally start with parent entities and then move to child entities. If an error is encountered at the parent, the child entities are skipped, and the next parent record is processed. Depending on the object, the parent record might or might not be flagged for deletion at the end of the process.

Errors occurring in child entities, especially multiple level child entities like a maintenance program's work requirements, might error out either the entire requirement or create the requirement without creating its child entity (for example, a work definition). Check the error log for details.

Therefore, it's important to understand error handling and remediation for each import. You can use more imports or UX data entry to fix the errors and enrich existing data to correct import issues.

Import Record Purge

If errors occur at parent or child entity levels during import, then data for a common batch will be stuck for a batch in the interface tables and can't be reprocessed. Therefore, routine purging of these records is recommended to support the reprocessing of a batch and to generally empty the interface tables.

For more information about purging maintenance records, see the *Purge Maintenance Records from Interface* scheduled process in the Scheduled Processes for SCM guide.

Related Topics

- File-Based Data Import (FBDI) for SCM

Oracle ADF Desktop Integration (ADFdi) for Maintenance

Consider using Oracle Application Development Framework (Oracle ADF) Desktop Integration (ADFdi) if you need to import and manage data in Oracle Fusion Cloud Maintenance:

Key Features

- Enables desktop integration with Microsoft Excel spreadsheets to manage large-volume data downloads and uploads to Oracle Fusion Cloud Applications.
- Provides the ability to:
  - Search for valid values.
  - Perform validation during data entry.
  - Immediately submit transactions directly from Microsoft Excel.
- Can be used for inbound integration of data into Oracle Maintenance.

Best Practices

Use this option to mass create or update manufacturing setup data, such as standard operations.

Constraints

- This option isn't suitable for importing manufacturing data on a real-time basis.
- Use is limited to 2,000 rows per upload or download.
- This option can't be used to upload attachments.
- It can't be used to trigger Electronic Records and Electronic Signatures (ERES) events related to maintenance.

Entities in Oracle Maintenance with ADFdi Support

Entity	Description
Standard Operations	Mass create and update of standard operations and resource definitions.

Outbound

REST APIs for Maintenance (Outbound)

You can use most of the inbound REST APIs to export data from Oracle Fusion Cloud Maintenance to other systems deployed in your business.

Key Features

- Used for both inbound and outbound integrations.
- Export data in real-time.
- Used with Oracle Integration Cloud (OIC) to perform near real-time operations in Oracle Maintenance.

Best Practices

- You can perform GET operations to retrieve setup, lookup, and general object data.
- The queries can be by object id, query, or finder. To ensure good performance:
  - Limit the attributes using the fields query parameter.
  - Avoid OR conditions with LIKE clauses, where possible.
  - Avoid querying master records using only child query criteria, where possible

Constraints

- Not suitable for exporting large volumes of maintenance data.
- Can't fetch child entities at three or more levels along with main record.

Maintenance Business Events for Outbound Integration

Oracle Fusion Cloud Maintenance raises several business events that can be configured and used for outbound integration with third-party applications.

The Oracle Workflow Business Event System is an application service that leverages Oracle Advanced Queuing (AQ) infrastructure to communicate business events between systems. The Business Event System consists of the Event Manager and workflow process event activities. The Event Manager contains a registry of business events, systems, named communication agents within those systems, and subscriptions indicating that an event is significant to a particular system. Events can be raised locally or received from an external system or the local system through AQ.

Key Features

- Used only for outbound integration.
- Ability to use Oracle Integration Cloud (OIC)-based connectors to listen to these events and perform actions in any third-party applications that integrate with Oracle Maintenance

Best Practices

- Enable business events to integrate Oracle Maintenance with external applications.
- It's recommended to use Oracle Maintenance REST APIs with business events to get the details that the integrating application requires.

Constraints

- Not recommended for integrations with large volumes of data.
- Third-party platforms can't be used for business-event integration.

Business Events Available for Outbound Integration

Oracle Maintenance provides business events that external systems can use to perform specific actions.

Business Event	Description	Event Raise Points	Enrichment Service	Enabled by Using
Customer Asset Created	Signals that a customer asset is created.	An Enterprise asset is converted to a Customer asset using a Sales Order Shipment or Fulfillment.	SOAP service: AssetService Operation: getAsset	Always enabled

Business Event	Description	Event Raise Points	Enrichment Service	Enabled by Using
		A Customer asset is created from Sales Order Shipment or Fulfillment. A Customer asset is created from the user interface. A Customer asset is created using the REST API. A Customer asset is create using file-based data import (FBDI).		
Customer Asset Relationship Created	Signals that a customer asset relationship is created.	A new component is created as a child of the Customer asset.	SOAP service: AssetRelationshipService Operation: getAssetRelationship	Always enabled
Customer Asset Relationship Deleted	Signals that an asset relationship is deleted.	A component is removed from the Customer asset.	SOAP service: AssetRelationshipService Operation: getAssetRelationship	Always enabled
Customer Asset Updated	Signals that a customer asset is updated.	Changes in quantity, lot, serial, item, location, and the customer information of the Customer asset.	SOAP service: AssetService Operation: getAsset	Always enabled
Maintenance Asset Created	Signals that a maintenance asset is created.	A new Enterprise asset is created in the system from integrations, or using the user interface, REST APIs, and FBDI.	SOAP service: AssetService Operation: getAsset	Always enabled
Maintenance Asset Updated	Signals that a maintenance asset is updated.	When the Maintenance asset is updated for item, lot, serial, quantity, and location.	SOAP service: AssetService Operation: getAsset	Always enabled
Work Order Create	Signals that a work order is created.	When the Maintenance work order is created.	SOAP service: WorkOrderEnrichService Operation: getWorkOrderEnrich	Always enabled
Work Order Update	Signals that a work order is updated.	When the Maintenance work order is updated.	SOAP service: WorkOrderEnrichService Operation: getWorkOrderEnrich	Always enabled

Business Event Payloads

This table shows Oracle Maintenance business events and their corresponding payloads.

Business Event	Event Payload
Customer Asset Created	<xs:element name="CUSTOMER_ASSET_CREATEInfo"> <xs:complexType> <xs:sequence> <xs:element name="AssetId" type="LongValuePair" minOccurs="1"/> <xs:element name="AssetNumber" type="StringValuePair" minOccurs="1"/> <xs:element name="ItemId" type="LongValuePair" minOccurs="1"/> <xs:element name="ItemOrganizationId" type="LongValuePair" minOccurs="1"/> <xs:element name="SerialNumber" type="StringValuePair" minOccurs="1"/> <xs:element name="LotNumber" type="StringValuePair" minOccurs="1"/> <xs:element name="Quantity" type="DecimalValuePair" minOccurs="1"/> <xs:element name="CustomerId" type="LongValuePair" minOccurs="1"/> <xs:element name="CustomerSiteId" type="LongValuePair" minOccurs="1"/> </xs:sequence> </xs:complexType> </xs:element>
Customer Asset Relationship Created	<xs:element name="CUSTOMER_ASSET_RELATIONSHIP_ADDInfo"> <xs:complexType> <xs:sequence> <xs:element name="RelationshipId" type="LongValuePair" minOccurs="1"/> <xs:element name="SubjectId" type="LongValuePair" minOccurs="1"/> <xs:element name="SubjectAssetNumber" type="StringValuePair" minOccurs="1"/> <xs:element name="RelationshipTypeCode" type="StringValuePair" minOccurs="1"/ > <xs:element name="ObjectId" type="LongValuePair" minOccurs="1"/> <xs:element name="ObjectAssetNumber" type="StringValuePair" minOccurs="1"/> </xs:sequence> </xs:complexType> </xs:element>
Customer Asset Relationship Deleted	<xs:element name="CUSTOMER_ASSET_RELATIONSHIP_REMOVEInfo"> <xs:complexType> <xs:sequence> <xs:element name="RelationshipId" type="LongValuePair" minOccurs="1"/> <xs:element name="SubjectId" type="LongValuePair" minOccurs="1"/> <xs:element name="SubjectAssetNumber" type="StringValuePair" minOccurs="1"/> <xs:element name="RelationshipTypeCode" type="StringValuePair" minOccurs="1"/ > <xs:element name="ObjectId" type="LongValuePair" minOccurs="1"/> <xs:element name="ObjectAssetNumber" type="StringValuePair" minOccurs="1"/> </xs:sequence> </xs:complexType> </xs:element>
Customer Asset Updated	<xs:element name="CUSTOMER_ASSET_UPDATEInfo"> <xs:complexType> <xs:sequence> <xs:element name="AssetId" type="LongValuePair" minOccurs="1"/> <xs:element name="AssetNumber" type="StringValuePair" minOccurs="1"/> <xs:element name="ItemId" type="LongValuePair" minOccurs="1"/> <xs:element name="ItemOrganizationId" type="LongValuePair" minOccurs="1"/> <xs:element name="SerialNumber" type="StringValuePair" minOccurs="1"/> <xs:element name="LotNumber" type="StringValuePair" minOccurs="1"/> <xs:element name="Quantity" type="DecimalValuePair" minOccurs="0"/>

Business Event	Event Payload
	<xs:element name="ActiveEndDate" type="DateTimeValuePair" minOccurs="0"/> <xs:element name="CustomerId" type="LongValuePair" minOccurs="0"/> <xs:element name="CustomerSiteId" type="LongValuePair" minOccurs="0"/> </xs:sequence> </xs:complexType> </xs:element>
Maintenance Asset Created	<xs:element name="MAINTENANCE_ASSET_CREATEInfo"> <xs:complexType> <xs:sequence> <xs:element name="AssetId" type="LongValuePair" minOccurs="1"/> <xs:element name="AssetNumber" type="StringValuePair" minOccurs="1"/> <xs:element name="ItemId" type="LongValuePair" minOccurs="1"/> <xs:element name="ItemOrganizationId" type="LongValuePair" minOccurs="1"/> <xs:element name="SerialNumber" type="StringValuePair" minOccurs="1"/> <xs:element name="LotNumber" type="StringValuePair" minOccurs="1"/> <xs:element name="Quantity" type="DecimalValuePair" minOccurs="1"/> </xs:sequence> </xs:complexType> </xs:element>
Maintenance Asset Updated	<xs:element name="MAINTENANCE_ASSET_UPDATEInfo"> <xs:complexType> <xs:sequence> <xs:element name="AssetId" type="LongValuePair" minOccurs="1"/> <xs:element name="AssetNumber" type="StringValuePair" minOccurs="1"/> <xs:element name="ItemId" type="LongValuePair" minOccurs="1"/> <xs:element name="ItemOrganizationId" type="LongValuePair" minOccurs="1"/> <xs:element name="SerialNumber" type="StringValuePair" minOccurs="1"/> <xs:element name="LotNumber" type="StringValuePair" minOccurs="1"/> <xs:element name="Quantity" type="DecimalValuePair" minOccurs="0"/> <xs:element name="ActiveEndDate" type="DateTimeValuePair" minOccurs="0"/> </xs:sequence> </xs:complexType> </xs:element>
Work Order Create	<xs:element name="WorkOrderCreateInfo"> <xs:complexType> <xs:sequence> <xs:element name="WorkOrderNumber" type="StringValuePair" minOccurs="1"/> <xs:element name="WorkOrderId" type="LongValuePair" minOccurs="1"/> <xs:element name="OrganizationId" type="LongValuePair" minOccurs="1"/> <xs:element name="BackToBackFlag" type="StringValuePair" minOccurs="1"/> <xs:element name="ContractMfgFlag" type="StringValuePair" minOccurs="1"/> <xs:element name="SourceSystemType" type="StringValuePair" minOccurs="1"/> <xs:element name="SourceSystemId" type="DecimalValuePair" minOccurs="1"/> <xs:element name="SourceHeaderRef" type="StringValuePair" minOccurs="1"/> <xs:element name="SourceLineRef" type="StringValuePair" minOccurs="1"/> <xs:element name="ScoSupplyOrderId" type="LongValuePair" minOccurs="1"/> <xs:element name="InterfaceSourceCode" type="StringValuePair" minOccurs="1"/> <xs:element name="OrchestrationCode" type="StringValuePair" minOccurs="1"/> <xs:element name="Status" type="StringValuePair" minOccurs="1"/> <xs:element name="ManufacturingParametersDefinitionsP.OrganizationCode" type="StringValuePair" minOccurs="1"/> <xs:element name="StatusCode" type="StringValuePair" minOccurs="1"/> <xs:element name="BatchCode" type="StringValuePair" minOccurs="1"/> <xs:element name="BatchId" type="LongValuePair" minOccurs="1"/> <xs:element name="HeaderNumber" type="StringValuePair" minOccurs="1"/> <xs:element name="MessageName" type="StringValuePair" minOccurs="1"/> <xs:element name="WorkMethodId" type="LongValuePair" minOccurs="0"/>

Business Event	Event Payload
	<xs:element name="MntForecastId" type="LongValuePair" minOccurs="0"/> <xs:element name="SystemStatusCode" type="StringValuePair" minOccurs="0"/> <xs:element name="WorkOrderStatusId" type="LongValuePair" minOccurs="0"/> </xs:sequence> </xs:complexType> </xs:element>
Work Order Update	<xs:element name="WorkOrderUpdateInfo"> <xs:complexType> <xs:sequence> <xs:element name="WorkOrderNumber" type="StringValuePair" minOccurs="1"/> <xs:element name="WorkOrderId" type="LongValuePair" minOccurs="1"/> <xs:element name="OrganizationId" type="LongValuePair" minOccurs="1"/> <xs:element name="BackToBackFlag" type="StringValuePair" minOccurs="1"/> <xs:element name="ContractMfgFlag" type="StringValuePair" minOccurs="1"/> <xs:element name="SourceSystemType" type="StringValuePair" minOccurs="1"/> <xs:element name="SourceSystemId" type="DecimalValuePair" minOccurs="1"/> <xs:element name="SourceHeaderRef" type="StringValuePair" minOccurs="1"/> <xs:element name="SourceLineRef" type="StringValuePair" minOccurs="1"/> <xs:element name="ScoSupplyOrderId" type="LongValuePair" minOccurs="1"/> <xs:element name="InterfaceSourceCode" type="StringValuePair" minOccurs="1"/> <xs:element name="OrchestrationCode" type="StringValuePair" minOccurs="1"/> <xs:element name="WorkOrderStatusId" type="LongValuePair" minOccurs="1"/> <xs:element name="WorkDefinitionAsOfDate" type="DateTimeValuePair" minOccurs="1"/> <xs:element name="Status" type="StringValuePair" minOccurs="1"/> <xs:element name="ManufacturingParametersDefinitionsP.OrganizationCode" type="StringValuePair" minOccurs="1"/> <xs:element name="StatusCode" type="StringValuePair" minOccurs="1"/> <xs:element name="BatchCode" type="StringValuePair" minOccurs="1"/> <xs:element name="BatchId" type="LongValuePair" minOccurs="1"/> <xs:element name="HeaderNumber" type="StringValuePair" minOccurs="1"/> <xs:element name="MessageName" type="StringValuePair" minOccurs="1"/> <xs:element name="WorkMethodId" type="LongValuePair" minOccurs="0"/> <xs:element name="MntForecastId" type="LongValuePair" minOccurs="0"/> <xs:element name="SystemStatusCode" type="StringValuePair" minOccurs="0"/> </xs:sequence> </xs:complexType> </xs:element>

Related Topics

- Using the Oracle ERP Cloud Adapter with Oracle Integration Generation: Supported SCM and Procurement Business Events

Business Intelligence Cloud Connector for Maintenance

Using Oracle Fusion Cloud Maintenance's collection of public view objects (PVOs) exposed in Oracle Business Intelligence Cloud Connector (BICC), you can extract data out of your Fusion Cloud instances and load it into specified external storage areas.

You can use this information in your own data warehouse or integrate it with third-party applications or reporting solutions.

Key Features

- Used only for outbound integration.

- Extract data from the available Oracle Maintenance PVOs.

Best Practices

Recommended for bulk extraction of maintenance data (such as organizations, work centers, resources, shifts, work orders) to be used in outbound integration with downstream applications.

Constraints

This option isn't suitable for extracting maintenance data in real time.

Related Topics

- Overview of Business Intelligence Cloud Connector
- Extract Data Stores for SCM
- Tables and Views for SCM

Functional Setup Manager for Maintenance

When implementing Oracle Fusion Cloud Maintenance, you can use Functional Setup Manager when migrating setup data from one instance to another, such as from a test instance to a production instance.

Key Features

Used only for migrating setup data.

Best Practices

Ensure that your test and production environments are at the same revision level before you begin the export or import.

Constraints

This option isn't suitable for extracting maintenance data in real time.

Oracle Maintenance Set Up Entities that Support Functional Setup Manager Export/Import

These entities support Functional Setup Manager:

- Maintenance Plant Parameters
- Maintenance Plant Profiles
- Maintenance Lookups
- Maintenance Work Areas
- Maintenance Work Centers
- Maintenance Resources
- Maintenance Resource Instances
- Maintenance Descriptive Flexfields
- Maintenance Organizational Relationships
- Maintenance Value Sets
- Manufacturing and Maintenance Work Order Statuses
- Data Security Controls for Maintenance
- Maintenance Asset Tracking Descriptive Flexfields

- Failure Sets
- Asset Group Rules
- Condition Event Codes

Reporting Tools for Maintenance

You shouldn't use reporting tools like Oracle Transactional Business Intelligence (OTBI) and Oracle Analytics Publisher as integration methods.

Business Objects for Maintenance

Maintenance Business Objects and Technology Choices Available for Inbound Integration

Oracle Fusion Cloud Maintenance provides support for multiple business objects to help inbound integrations.

These business objects and their child objects are listed in the table.

Business Object	Object Owner	Business Object Details	SOAP	REST	FBDI	ADFdi	Business Events Available
Asset Condition Event Codes	Oracle Maintenance	Manages the condition event code definitions. The codes are used in supplier warranty, failure capture, maintenance programs, and work order creation.	-	x	-	-	-
Asset Diagnostic Symptoms	Oracle Maintenance	Manages the asset diagnostic symptoms. Symptoms are observations or diagnostic information related to anomalous asset behavior that might precede or occur along with a failure event.	-	x	-	-	-
Asset Failure Events	Oracle Maintenance	Manages failure events for work	-	x	-	-	-

Business Object	Object Owner	Business Object Details	SOAP	REST	FBDI	ADFdi	Business Events Available
		orders. For an event, one or more failure instances might be created and associated with an event.					
Asset Failure Sets	Oracle Maintenance	Manages the failure sets. Failure sets define the rules around how failure data is captured and the conditions in which a technician is required to capture failure data on a work order. Failure sets use Condition event codes in their definitions.	-	x	-	-	-
Asset Group Rules	Oracle Maintenance	Manages the creation and updates of asset group rules. Group rules are used as the basis for creating an Asset Group.	-	x	-	-	-
Asset Groups	Oracle Maintenance	Manages how to create and update asset groups, based on a group rule.	-	x	-	-	-
Asset Logical Hierarchy Names	Oracle Maintenance	Manages the parent node in a logical hierarchy. Once defined, child nodes can be defined using Relationships.	-	x	-	-	-
Asset Logical Hierarchy Relationships	Oracle Maintenance	Manages the logical relationships between a parent node and its child nodes.	-	x	-	-	-
Asset Warranty Claims	Oracle Maintenance	Manages the warranty claims and	-	x	-	-	-

Business Object	Object Owner	Business Object Details	SOAP	REST	FBDI	ADFdi	Business Events Available
		their associated warranty entitlements. Claims are created and updated in the context of a maintenance work order.					
Asset Warranty Contracts	Oracle Maintenance	Manages the asset warranty contracts, including the meter durations.	-	x	-	-	-
Asset Warranty Coverages	Oracle Maintenance	Manages the warranty coverage definitions, including associated items, meters, and repair transaction codes. Coverages are used as the basis for creating an asset Warranty Contract.	-	x	x	-	-
Asset Warranty Claim Entitlements	Oracle Maintenance	Manages the entitlements within a warranty claim for the reimbursement of work order or miscellaneous expenses using a Warranty Claim.	-	x	-	-	-
Asset Warranty Provider Rates	Oracle Maintenance	Manages the warranty claim labor rates for a warranty provider. The rates will be used for a corresponding Standard Repair Time to create an Entitlement in a Warranty Claim.	-	x	-	-	-

Business Object	Object Owner	Business Object Details	SOAP	REST	FBDI	ADFdi	Business Events Available
Asset Warranty Standard Repair Times	Oracle Maintenance	Manages the warranty claim standard rates for a warranty provider and standard operation. The times will be used for a corresponding Provider Rate to create an Entitlement in a Warranty Claim.	-	x	-	-	-
Customer Asset Transactions	Oracle Maintenance	Manages sales order information about a customer asset by transaction type.	-	x	-	-	-
Failure Instances	Oracle Maintenance	Manages failure instances across all failure events. One or more instances might be defined for an Event, referencing Condition Event Codes.	-	x	-	-	-
Genealogy Objects	Oracle Maintenance	Manages the genealogy objects. A genealogy object is a lot or serial number that's flagged to be tracked by the Product Genealogy process.	-	x	-	-	-
Genealogy Relationships	Oracle Maintenance	Manages the relationships between a parent genealogy object and its child components.	-	x	-	-	-
Installed Base Assets	Oracle Maintenance	Manages the customer and enter prize asset and child entities, including:	-	x	x	-	-

Business Object	Object Owner	Business Object Details	SOAP	REST	FBDI	ADFdi	Business Events Available
		• Qualificatio • Charges • Fixed asset associations • Meters • Notes • Parts list • Relationshi • Descriptive flexfields (DFFs)					
Qualification Profiles	Oracle Maintenance	Manages qualification profiles used to assign or transact a qualified equipment resource instance for a work order operation.	-	x	-	-	-
Qualification Requirements	Oracle Maintenance	Manages the qualification requirements. Qualification requirements are recorded for specific assets and are used during the work order transactions.	-	x	-	-	-
Work Area	Oracle Manufacturing	Manages the names of the work areas where maintenance is planned and executed.	-	x	-	-	-
Work Center	Oracle Manufacturing	Manages the names of the work centers where maintenance is planned and executed.	-	x	-	-	-
Resources	Oracle Manufacturing	Manages production resources used	-	x	-	-	-

Business Object	Object Owner	Business Object Details	SOAP	REST	FBDI	ADFdi	Business Events Available
		in maintenance. A resource can include labor, equipment, and tools that you allocate to a work center.					
Resource Instances	Oracle Manufacturing	A child resource of the Production Resource. A resource instance can include a person, equipment, or tools that are explicitly identified in a work order operation.	-	x	-	-	-
Standard Operations	Oracle Manufacturing	Manages standard operations, including resource details.	-	x	-	x	-
Work Definition Requests	Oracle Manufacturing	Manages only the creation of a work definition using a request payload. This includes the header, operations, materials, and resources. This resource supports only the POST creation, but not the PATCH update operation. Also, this resource doesn't support the GET operation. Instead, you must use the Work Definitions resource after creation.	-	x	-	-	-
Work Definitions	Oracle Manufacturing	Manages the viewing of work	-	-	x	-	-

Business Object	Object Owner	Business Object Details	SOAP	REST	FBDI	ADFdi	Business Events Available
		definition details that are created by the Requests. You can view the header, operations, materials, resources, and attachments. This resource doesn't support the POST operation. Instead you must use Work Definitions Requests.					
Maintenance Programs	Oracle Maintenance	Used to define and update a maintenance program. Maintenance programs are used to define and generate a daily preventative maintenance forecast for one or more assets, based on a calendar pattern or meter utilization. The forecast is then used to create preventative maintenance work orders, using one or more work definitions.	-	x	x	-	-
Work Requests (Help Desk)	Help Desk	Manages create and update of work requests using an Internal Service Request. A request can then be used as the basis for reporting an issue with an asset and creating a maintenance work order for resolution.	-	x	-	-	-

Business Object	Object Owner	Business Object Details	SOAP	REST	FBDI	ADFdi	Business Events Available
Maintenance Work Orders	Oracle Maintenance	Manages the create and update of maintenance work orders, including the operation, material and resource entities.	-	x	x	-	-
Work Order Statuses	Oracle Manufacturing	Work Order Statuses	-	x	-	-	-
Maintenance Operation Transactions	Oracle Maintenance	Manages the status change of the maintenance operation.	x	x	-	-	-
Maintenance Material Transactions	Oracle Maintenance	Manages the movement of an item or product between the shop floor and the subinventory or locator, including charges for the work order.	-	x	-	-	-
Maintenance Resource Transactions	Oracle Maintenance	Stores resource charges for the work order.	-	x	-	-	-
Meter Templates	Oracle Maintenance	Manages meter definitions, including item applicability. Meter templates are used to instantiate an Asset or Subscription meter for utilization tracking.	-	x	-	-	-
Meter Readings	Oracle Maintenance	Manages the meter reading history of an asset- or subscription-based meter.	-	x	x	-	-
Maintenance Forecasts	Oracle Maintenance	Manages the forecast due dates for a work requirement and asset in a	-	x	-	-	-

Business Object	Object Owner	Business Object Details	SOAP	REST	FBDI	ADFdi	Business Events Available
		maintenance program.					
Import Product Genealogy	Oracle Maintenance	Import Product Genealogy	-	-	x	-	-
Calendar Patterns	Oracle Maintenance	Manages the calendar patterns that are optionally defined for a maintenance program.	-	x	-	-	-
Maintenance Organization Relationships	Oracle Maintenance	Manages the organization relationships that can be optionally defined between organizations that are and aren't maintenance.	-	x	-	-	-

Maintenance Business Objects and Technology Choices Available for Outbound Integration

Oracle Fusion Cloud Maintenance provides support for multiple business objects to help outbound integrations.

These business objects and their child objects are listed in the table.

Business Object	Object Owner	Business Object Details	SOAP	REST	BICC	Business Events Available
Asset Condition Event Codes	Oracle Maintenance	Manages the condition event code definitions. The codes are used in supplier warranty, failure capture, maintenance programs, and work order creation.	-	x	x	-
Asset Diagnostic Symptoms	Oracle Maintenance	Manages the asset diagnostic symptoms.	-	x	-	-

Business Object	Object Owner	Business Object Details	SOAP	REST	BICC	Business Events Available
		Symptoms are observations or diagnostic information related to anomalous asset behavior that might precede or occur along with a failure event.				
Asset Failure Events	Oracle Maintenance	Manages failure events for work orders. For an event, one or more failure instances might be created and associated with an event.	-	x	x	-
Asset Failure Sets	Oracle Maintenance	Manages the failure sets. Failure sets define the rules around how failure data is captured and the conditions in which a technician is required to capture failure data on a work order. Failure sets use Condition event codes in their definitions.	-	x	x	-
Asset Group Rules	Oracle Maintenance	Manages the creation and updates of asset group rules. Group rules are used as the basis for creating an Asset Group.	-	x	x	-
Asset Groups	Oracle Maintenance	Manages how to create and update asset groups, based on a group rule.	-	x	x	-
Asset Logical Hierarchy Names	Oracle Maintenance	Manages the parent node in a logical hierarchy. Once defined, child nodes can be defined using Relationships.	-	x	-	-
Asset Logical Hierarchy Relationships	Oracle Maintenance	Manages the logical relationships between a parent	-	x	-	-

Business Object	Object Owner	Business Object Details	SOAP	REST	BICC	Business Events Available
		node and its child nodes.				
Asset Warranty Claims	Oracle Maintenance	Manages the warranty claims and their associated warranty entitlements. Claims are created and updated in the context of a maintenance work order.	-	x	x	-
Asset Warranty Contracts	Oracle Maintenance	Manages the asset warranty contracts, including the meter durations.	-	x	x	-
Asset Warranty Coverages	Oracle Maintenance	Manages the warranty coverage definitions, including associated items, meters and repair transaction codes. Coverages are used as the basis for creating an asset Warranty Contract.	-	x	x	-
Asset Warranty Claim Entitlements	Oracle Maintenance	Manages the entitlements within a warranty claim for the reimbursement of work order or miscellaneous expenses using a Warranty Claim.	-	x	x	-
Asset Warranty Provider Rates	Oracle Maintenance	Manages the warranty claim labor rates for a warranty provider. The rates will be used for a corresponding Standard Repair Time to create an Entitlement in a Warranty Claim.	-	x	-	-
Asset Warranty Standard Repair Times	Oracle Maintenance	Manages the warranty claim standard rates for a warranty provider and standard operation.	-	x	-	-

Business Object	Object Owner	Business Object Details	SOAP	REST	BICC	Business Events Available
		The times will be used for a corresponding Provider Rate to create an Entitlement in a Warranty Claim.				
Customer Asset Transactions	Oracle Maintenance	Manages sales order information about a customer asset by transaction type.	-	x	x	-
Failure Instances	Oracle Maintenance	Manages failure instances across all failure events. One or more instances might be defined for an Event, referencing Condition Event Codes.	-	x	x	-
Genealogy Objects	Oracle Maintenance	Manages the genealogy objects. A genealogy object is a lot or serial number that's flagged to be tracked by the Product Genealogy process.	-	x	x	-
Genealogy Relationships	Oracle Maintenance	Manages the relationships between a parent genealogy object and its child components.	-	x	x	-
Installed Base Assets	Oracle Maintenance	Manages the customer and enter prize asset and child entities, including: • Qualifications • Charges • Fixed asset associations • Meters • Notes • Parts list • Relationships	-	x	x	-

Business Object	Object Owner	Business Object Details	SOAP	REST	BICC	Business Events Available
		• Descriptive flexfields (DFFs)				
Qualification Profiles	Oracle Maintenance	Manages qualification profiles used to assign or transact a qualified equipment resource instance for a work order operation.	-	x	-	-
Qualification Requirements	Oracle Maintenance	Manages the qualification requirements. Qualification requirements are recorded for specific assets and are used during the work order transactions.	-	x	-	-
Work Area	Oracle Manufacturing	Manages the names of the work areas where maintenance is planned and executed.	-	x	x	-
Work Center	Oracle Manufacturing	Manages the names of the work centers where maintenance is planned and executed.	-	x	x	-
Resources	Oracle Manufacturing	Manages production resources used in maintenance. A resource can include labor, equipment, and tools that you allocate to a work center.	-	x	x	-
Resource Instances	Oracle Manufacturing	A child resource of the Production Resource. A resource instance can include a person, equipment, or tools that are explicitly identified in a work order operation.	-	x	x	-

Business Object	Object Owner	Business Object Details	SOAP	REST	BICC	Business Events Available
Standard Operations	Oracle Manufacturing	Manages standard operations, including resource details.	-	x	x	-
Work Definition Names	Oracle Manufacturing	Work Definition Names	-	x	x	-
Work Definitions	Oracle Manufacturing	Manages the viewing of work definition details that are created by the Requests. You can view the header, operations, materials, resources, and attachments. This resource doesn't support the POST operation. Instead you must use Work Definitions Requests.	-	x	x	-
Maintenance Programs	Oracle Maintenance	Used to define and update a maintenance program. Maintenance programs are used to define and generate a daily preventative maintenance forecast for one or more assets, based on a calendar pattern or meter utilization. The forecast is then used to create preventative maintenance work orders, using one or more work definitions.	-	x	x	-
Work Requests (Help Desk)	Help Desk	Manages create and update of work requests using an Internal Service Request. A request can then be used as the basis for reporting an issue with an asset and creating a maintenance	-	x	x	-

Business Object	Object Owner	Business Object Details	SOAP	REST	BICC	Business Events Available
		work order for resolution.				
Maintenance Recommendations	Oracle Maintenance	Manages recommendations for maintenance programs.	-	x	x	-
Maintenance Work Orders	Oracle Maintenance	Manages the create and update of maintenance work orders, including the operation, material and resource entities.	-	x	x	-
Maintenance Operation Transactions	Oracle Maintenance	Manages the status change of the maintenance operation.	-	x	x	-
Maintenance Material Transactions	Oracle Maintenance	Manages the movement of an item or product between the shop floor and the subinventory or locator, including charges for the work order.	-	x	x	-
Maintenance Resource Transactions	Oracle Maintenance	Stores resource charges for the work order.	-	x	x	-
Meter Templates	Oracle Maintenance	Manages meter definitions, including item applicability. Meter templates are used to instantiate an Asset or Subscription meter for utilization tracking.	-	x	x	-
Meter Readings	Oracle Maintenance	Manages the meter reading history of an asset- or subscription-based meter.	-	x	x	-
Maintenance Forecasts	Oracle Maintenance	Manages the forecast due dates for a work requirement and asset in a maintenance program.	-	x	x	-

Business Object	Object Owner	Business Object Details	SOAP	REST	BICC	Business Events Available
Production Exceptions	Oracle Manufacturing	Production Exceptions, Impacted Operations	-	x	x	-

Use Cases and Patterns for Maintenance

Overview of Maintenance Use Cases and Patterns

Oracle Fusion Cloud Maintenance provides a wide range of integration options to support your complex business needs.

Before You Begin

You should review the use cases for Oracle Maintenance in the *REST API for Oracle Fusion Cloud SCM* guide. They include:

- Create and Update Maintenance Programs
- Create Enterprise Assets and Part List Components
- Create Customer Assets and Charges
- Create Assets Using Location Types
- Create Assets Structure Relationships
- Create a Condition Event
- Create a Failure Event
- Get a Failure Event Instance
- Create a Failure Set
- Create Asset Diagnostic Symptoms
- Create and Update Supplier Warranty
- Create a Recommendation
- Create and Update Qualification Profiles
- Create and Update Qualification Requirements

These Oracle Maintenance use cases and patterns are also included as examples:

- *Asset Meter Readings*
- *Maintenance Programs*

Asset Meter Readings

In this use case, a fleet manager wants to ensure that delivery trucks have their mileage meters updated daily with the latest odometer readings.

Description	Integration Type	Integration Options	Notes
As a fleet manager, you want to ensure that your delivery trucks have their mileage meters updated daily with the latest odometer readings. The updated meters will then be used to update the preventative maintenance forecast, which will provide updated due dates for routine maintenance like oil changes and inspections. To update each asset meter you can: • Manually search and update the odometer meter with the latest reading for each asset. • Use the Meter Readings REST API to create a new reading for each asset's odometer meter. Readings can be manually processed or passed through an integration with the asset's data source. • Use Meter Readings in Oracle Transactional Business Intelligence (OTBI) to create meter readings for each asset's odometer meter in one upload batch. This option is useful if you have a small or medium number of assets and a manual recording and update process.	Inbound	OTBI - Meter Readings	To help create a Meter Reading OTBI spreadsheet, you can search for the list of assets and use the **Export Meters** action. The exported file will list the asset, meter, and latest active reading value and date.

Related Topics

- REST API for Oracle Fusion Cloud SCM

Maintenance Programs

In this use case, a maintenance manager needs to ensure that routine forecast and preventative maintenance are performed successfully.

Description	Integration Type	Integration Options	Notes
As a maintenance manager, you need to ensure that routine forecast and preventative maintenance are performed successfully. During implementation, you'll need to define new maintenance programs and work requirements to model each of your existing preventative maintenance plans from your legacy system. This effort requires: • Translating the existing preventative maintenance work scope and cadence in your legacy system to the appropriate forecast method, work definitions, and intervals in a work requirement. • Grouping similar work requirements into common programs, by location, asset type, or category of maintenance. • Defining each level of a program and work requirement to ensure all required attributes are defined during implementation. • Verifying each combination of forecast method and upload validations between columns in the spreadsheet.	Inbound	OTBI - Maintenance Programs	Start by defining a few different combinations of programs to ensure you understand the validations between columns, forecast options, and outcome after the forecast is generated.

Related Topics

- REST API for Oracle Fusion Cloud SCM

Other Maintenance Resources

Use these resources to get more information about Oracle Fusion Cloud Maintenance integrations.

- *Tables and Views for SCM*

  Documentation related to database tables and views in Oracle Fusion Cloud Supply Chain & Manufacturing. Included are diagrams, schematics, and links to other technical documentation.

- *Oracle Business Intelligence Publisher*

  Documentation about Oracle BI Publisher.

- *Subject Areas for Transactional Business Intelligence in SCM*

  Documentation about Oracle Transactional Business Intelligence subject areas.

5 Manufacturing

Overview of Manufacturing

About Oracle Fusion Cloud Manufacturing

Oracle Fusion Cloud Manufacturing, part of Oracle Supply Chain & Manufacturing (SCM) applications, provides core discrete and process manufacturing capabilities in the cloud that enable you to set up, manage, and execute your production operations efficiently.

Some application highlights:

- Enables mix-mode manufacturing execution in the same plant.
- Supports in-house manufacturing activities of standard products for both discrete and process manufacturing.
- Enables configured products to be executed to plan or to order for discrete manufacturing and supports contract manufacturing of standard products executed to plan or to order.
- 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.
- Supports project-specific manufacturing execution.

Terminology for Manufacturing

These terms are used throughout the Oracle Fusion Cloud Order Management playbook.

Term	Definition
Dispatch List	A listing of manufacturing work order operations to be executed in the order of priority.
Discrete Manufacturing	The production of distinct items such as automobiles, appliances, or computers.
ERES	Electronic Records and Electronic Signatures. GMP (Good Manufacturing Practice) critical business transactions governed by the US Food and Drug Administration (FDA) that require electronic records and signatures to comply with 21 CFR Part 11.
MES	Manufacturing Execution System. Systems that provide real-time visibility into the production process, enabling manufacturers to optimize production and ensure on time delivery.
Process Manufacturing	Production that adds value by mixing, separating, forming, and/or performing chemical reactions. It might be done in either batch or continuous mode.
Work Order	A document conveying authority for the manufacture of specified parts or products in specified quantities.

Integration Types and Options for Manufacturing

Overview of Manufacturing Integration Types and Options

Several integration types and options are available in an Oracle Fusion Cloud Manufacturing integration.

Before You Begin

Before starting any integration project, you should analyze your business processes and assess the options that make the most sense for your organization. The first step is to evaluate the manufacturing processes supported within Oracle Manufacturing. You should have a compelling need to use your internal system to integrate with Oracle Manufacturing. It's also recommended to review and evaluate the partner solutions listed in Oracle Cloud Marketplace that provide previously built and curated solutions to complement your current deployment of Oracle Fusion Cloud Supply Chain (SCM) & Manufacturing applications to meet your business or industry-specific requirements.

After your integration needs are established, you must analyze the following:

- Manufacturing objects and their attributes in Oracle Manufacturing and third-party applications.
- Identifying the source of truth for each of the manufacturing business objects.
- Frequency and volume of information that needs to be synchronized.
- Integration mode: Synchronous vs. Asynchronous.
- Error handling and recovery.

You can use Oracle Help Center to find information on the integration assets that are available for specific objects and processes across Oracle Fusion Cloud, including those related to Oracle Cloud SCM and Oracle Manufacturing.

Integration Types

There are two integration types available in Oracle Manufacturing.

Inbound

This integration imports data into Oracle Manufacturing from external or third-party applications.

Outbound

This integration exports data from Oracle Manufacturing to external or third-party applications.

Integration Options

These integration options are available in Oracle Cloud Manufacturing.

Inbound

- *REST APIs (Inbound)*
- *SOAP Services for Manufacturing*
- *File-Based Data Import (FBDI) for Manufacturing*
- *Oracle ADF Desktop Integration (ADFdi) for Manufacturing*

Outbound

- *REST APIs for Manufacturing (Outbound)*
- *Manufacturing Business Events for Outbound Integration*
- *Business Intelligence Cloud Connector (BICC)*

Inbound

REST APIs for Manufacturing (Inbound)

Use the REST APIs inbound integration option to import work order transactions into Oracle Fusion Cloud Manufacturing if your business process requires near real-time updates to your manufacturing data.

For example:

- If you have a coexistence manufacturing execution scenario where your Manufacturing Execution System (MES) is integrated with Oracle Manufacturing for manufacturing execution.
- You need near real-time updates of material and resource usage recorded in the MES in Oracle Manufacturing.

Key Features

- Performs data updates in real time.
- Used for both inbound and outbound integration.
- Used with Oracle Integration Cloud (OIC) to perform near real-time operations in Oracle Manufacturing.

Best Practices

- Use this option only if you need to perform near real-time mode operations in Oracle Manufacturing.
- Call the REST API in a smaller set of records if the data set is very high. A REST API can experience a 504-gateway timeout if a request runs for more than 5 minutes.

Constraints

- This option isn't suitable for importing a large volume of manufacturing data.
- It can't be used to trigger Electronic Records and Electronic Signatures (ERES) events related to manufacturing.
- There might be instances of inconsistent performance in near real-time implementations.

REST APIs for Inbound Integration

Oracle Manufacturing provides several REST APIs for inbound integration.

Note: Not all REST APIs are shown in the table.

Entity	Description
Discrete Work Orders	Creates, updates, reschedules, or resequences discrete work orders.
Process Work Orders	Creates, updates, reschedules, or resequences process work orders.

Entity	Description
Production Resources	Creates, updates, or deletes production resources.
Production Reports	Manages the operation and material transactions for a contract manufacturing work order.
Standard Operations	Creates, updates, or deletes standard operations
Work Areas	Creates, updates, or deletes work areas.
Work Centers	Creates, updates, or deletes work centers.
Work Order Material Transactions	Creates work order material transactions, transactions with no orders, and output transactions for discrete and process work orders.
Work Definition Requests	Create work definition headers, operations, resources, alternate resources, materials, and outputs.
Work Order Operation Start Stops	Creates, updates, or deletes work order operation starts and stops.
Work Order Operation Transactions	Creates work order operation transactions.
Work Order Resource Transactions	Creates work order resource transactions.
Work Order Statuses	Creates work order statuses.

Oracle Visual Builder Add-In for Microsoft Excel

You can use the Oracle Visual Builder Add-in for Excel that enables Excel users to edit and manage business data using REST APIs. For more information, see *Oracle Visual Builder Add-in for Excel, Version 3.8.0*.

Related Topics

- REST API for Oracle Fusion Cloud SCM
- Get all system options: REST API for Oracle Fusion Cloud SCM

SOAP Services for Manufacturing

You can use SOAP services to import and manage data for a few entities in Oracle Fusion Cloud Manufacturing in near real time.

Key Features

- Perform data updates in real time.
- Use with Oracle Integration Cloud (OIC) to perform near real-time operations in Oracle Manufacturing.

Best Practices

- Use this option only if you need to perform near real-time mode operations in Oracle Manufacturing.
- Not recommended if an equivalent REST API is available.

Constraints

- This option isn't suitable for importing large volumes of manufacturing data.
- Low in performance and scalability compared to REST APIs.
- It can't be used to trigger Electronic Records and Electronic Signatures (ERES) events.

SOAP Services for Inbound Integration

Oracle Manufacturing provides several SOAP services for inbound integration.

Entity	Description
Work Definition and Work Definition Operation Attachments	Mass uploads attachments for discrete and process manufacturing work definitions.
Work Order Material Transaction	Creates component transactions for work order execution.
Work Order Operation Transaction	Creates operation transactions for work order execution.

Related Topics

- How You Upload Work Definition and Work Definition Operation Attachments Using a SOAP Service
- SOAP Web Services for SCM
- Work Order Material Transaction Service
- Work Order Operation Transaction Service

File-Based Data Import (FBDI) for Manufacturing

Consider using the FBDI integration option if you need to import or migrate setup and transactional data in bulk into Oracle Fusion Cloud Manufacturing.

To use this option:

1. Download Microsoft Excel templates that are available for several manufacturing entities.
2. Provide the required data.
3. Generate a comma-separated values (CSV) file and upload it to the desired location.
4. Run processes to transfer the data to the interface tables.
5. Import the data to the target Oracle Manufacturing tables.

Key Features

- Used only for inbound integration of data into Oracle Manufacturing.
- Supports the import of large volumes of data into Oracle Manufacturing.

Best Practices

- Use this option to import large volumes of data, such as work orders, operation, material, and resource transactions, into Oracle Manufacturing during the initial migration stage, or on an ongoing basis in specific time intervals.
- You also can use this option to migrate setup data, such as work definitions, into Oracle Manufacturing after transforming the data from legacy systems.
- Review the field/attribute level instructions provided in the Microsoft Excel templates before entering the data that needs to be imported.

Constraints

- This option isn't suitable for importing manufacturing data on a real-time basis.
- It can't be used to upload attachments for work definitions and work orders.

- It can't be used to trigger Electronic Records and Electronic Signatures (ERES) events related to manufacturing.

Oracle Manufacturing Entities that FBDI Supports

Entity	Description
Import of Production Reports	Imports production reports with operations and material transactions.
Process Work Definition Import	Imports process work definitions along with their child entities.
Process Work Order Import	Imports process work orders along with their child entities
Process Work Order Material Transaction Import	Imports process work order material transactions along with their child entities.
Process Work Order Operation Transaction Import	Imports process work order operation transactions along with their child entities.
Work Definition Import	Imports work definitions along with their child entities.
Work Order Import	Imports work orders along with their child entities.
Work Order Material Transaction Import	Imports work order material transactions along with their child entities.
Work Order Material Transaction Import	Imports work order material transactions along with its child entities.
Work Order Operation Transaction Import	Imports work order operation transactions along with their child entities.
Work Order Resource Transaction Import	Imports work order resource transactions along with their child entities.

External data can be extracted and formatted into a source file for transfer, and then imported into Oracle Manufacturing. For more information, see *File-Based Data Import (FBDI) for SCM*.

Oracle ADF Desktop Integration (ADFdi) for Manufacturing

Consider using Oracle Application Development Framework (Oracle ADF) Desktop Integration (ADFdi) if you need to import and manage manufacturing data in Oracle Fusion Cloud Manufacturing.

Key Features

- Enables desktop integration with Microsoft Excel spreadsheets to manage large-volume data downloads and uploads to Oracle Fusion Cloud Applications.
- Provides the ability to:
  - Search for valid values.
  - Perform validation during data entry.
  - Immediately submit transactions directly from Microsoft Excel.
- Can be used for inbound integration of data into Oracle Manufacturing.

Best Practices

Use this option to:

- Mass create or update manufacturing setup data such as standard operations and work definitions in Oracle Manufacturing.

- Manage work orders, operation transactions, material transactions, and resource transactions that fail to be imported into Oracle Manufacturing.

Constraints

- This option isn't suitable for importing manufacturing data on a real-time basis.
- Use is limited to 2,000 rows per upload or download.
- This option can't be used to upload attachments for manufacturing entities.
- It can't be used to trigger Electronic Records and Electronic Signatures (ERES) events related to manufacturing.

Oracle Manufacturing Entities that ADFdi Supports

Entity	Description
Standard Operations	Mass create and update standard operations and resources.
Work Definitions	Mass create and update work definitions and their operations, items, and resources. **Note:** Currently, managing work definitions using ADFdi is supported only for discrete manufacturing.
Work Orders and Transactions	• View and modify unprocessed records. • Correct and resubmit all the work order, operation, material, and resource transaction records that produced errors while importing through file-based data import (FBDI) and REST APIs. • Process the modified or corrected records by re-running the appropriate scheduled processes.

Outbound

REST APIs for Manufacturing (Outbound)

Use the REST APIs outbound integration option to export master data entities, work orders, and dispatch lists from Oracle Fusion Cloud Manufacturing for use by other existing systems deployed at your facility.

Key Features

- Used for both inbound and outbound integration.
- Exports data in real time.
- Used with Oracle Integration Cloud (OIC) to perform near real-time operations in Oracle Manufacturing.

Best Practices

Use this option only if you need to export data from Oracle Manufacturing in near real-time mode.

Constraints

- This option isn't suitable for exporting large volumes of manufacturing data.
- Can't fetch child entities at three or more levels along with the main record.

REST APIs for Outbound Integration

Entity	Description
Discrete Work Orders	Gets discrete work orders.
Process Work Orders	Gets process work orders.
Production Resources	Gets production resources.
Production Exceptions	Gets production exceptions.
Standard Operations	Gets standard operations.
Work Areas	Gets work areas.
Work Centers	Gets work centers.
Work Definition Names	Gets work definition names.
Work Definitions	Gets work definitions.
Work Order Dispatch Lists	Gets the work order operations of a dispatch list.
Work Order Metrics	Gets work order metrics.
Work Order Operation Start Stops	Gets work order operation starts and stops.

Manufacturing Business Events for Outbound Integration

Oracle Fusion Cloud Manufacturing raises several business events that can be configured and used for outbound integration with third-party applications.

Key Features

- Used only for outbound integration.
- Ability to use Oracle Integration Cloud (OIC)-based connectors that listen to the events and perform actions in any third-party applications that integrate with Oracle Manufacturing. For example, Manufacturing Execution System (MES).

Best Practices

- Enable Oracle Manufacturing business events so that they can be subscribed by OIC.
- It's recommended to use REST APIs with business events to get other details required by the integrating application.

Constraints

- Not recommended for integrations with large volumes of data.
- Third-party platforms can't be used for business-event integration.
- Only OIC can subscribe to Fusion business events.

Business Events Available for Outbound Integration

Business Event	Description	Event Raise Points	Payload #Attributes#	Enrichment Service	Enabled by Using
Create Work Order	Informs a subscriber that a work order is created either through the user interface, REST API, or file-based data import (FBDI).	Raised when a work order is created either through the user interface, REST API, or FBDI.	WorkOrderNumber WorkOrderId OrganizationCode OrganizationId EventType	SOAP Service: WorkOrderEnrichServic Operation: getWorkOrderEnrich	NA
Update Work Order	Informs a subscriber that work order header attributes or attributes of the work order child entities are updated either through the user interface, REST API, or FBDI.	Raised when work order header attributes, or any of the attributes of the following child entities, are updated either through the user interface, REST service or FBDI **Work Order Header** Attributes: Quantity, Planned Start Date, Planned Completion Date, Status Child Entities, Actions, and Attributes **Work Order Operations** Create, Delete, Completion or reversal at the last operation, Quantity rejected or scrapped at an operation **Work Order Operation Materials** Create, Delete, Replace with Substitute, Update Required Quantity **Work Order Operation Resources** Create, Delete, Update Required Usage **Work Order Operation Resource Instances**	WorkOrderNumber WorkOrderId OrganizationCode OrganizationId EventType	SOAP Service: WorkOrderEnrichServic Operation: getWorkOrderEnrich	NA

Business Event	Description	Event Raise Points	Payload #Attributes#	Enrichment Service	Enabled by Using
		Create, Delete **Work Order Operation Outputs** Create, Delete, Update Output Quantity **Work Order Operation Material Serials** Create, Delete **Work Order Operation Material Lots** Create, Delete **Work Order Product Serials** Create, Delete			
Print Product Label	Informs a subscriber that the Print Label Button is clicked in Manage Work Orders, Review Dispatch List, Manage Supplier Operations.	Raised when the Print Label Button is clicked in Manage Work Orders, Review Dispatch List, Manage Supplier Operations. Raised when performing Operation transactions or Orderless transactions if the Print Label check box is selected.	WorkOrderNumber WorkOrderId OrganizationCode OrganizationId ItemNumber InventoryItemId OperationTransactionId InvTransactions • InvTransactionId SerialNumbers • SerialNumber LotNumbers • LotNumber OutputLotInformation • Outputs o OutputItemNumbe o OutputLotNumber	NA	NA

Related Topics

- Manufacturing Business Events

Business Intelligence Cloud Connector for Manufacturing

Using Oracle Fusion Cloud Manufacturing's collection of public view objects (PVOs) exposed in Oracle Business Intelligence Cloud Connector (BICC), you can extract data out of your Fusion Cloud instances and load it into specified external storage areas.

You can use this information in your own data warehouse or integrate it with third-party applications or reporting solutions.

Key Features

- Used only for outbound integration.
- Extract data from the available Oracle Manufacturing PVOs.
- Persist the Oracle Manufacturing data extract files in Oracle WebCenter Content or Oracle Cloud Infrastructure (OCI) Object Storage.

Best Practices

Recommended for bulk extraction of manufacturing data (such as plants, work centers, resources, shifts, work orders) to be used in an outbound integration with downstream applications.

Constraints

This option isn't suitable for extracting manufacturing data in real time.

Related Topics

- Overview of Business Intelligence Cloud Connector
- Oracle Manufacturing data stores for Common Work Setup
- Oracle Manufacturing data stores for Common Work Execution

Business Objects for Manufacturing

Manufacturing Business Objects and Technology Choices Available for Integration

Oracle Fusion Cloud Manufacturing provides support for multiple business objects to help inbound and outbound integrations.

These business objects and their child objects are listed in the table.

Inbound

Business Object	Business Object Details	SOAP	REST	FBDI	ADFdi
Work Areas	Work Areas, Flexfields for Work Areas	-	x	-	-

Business Object	Business Object Details	SOAP	REST	FBDI	ADFdi
Work Centers	Work Centers, Flexfields for Work Centers, Production Calendars, Resource Shifts, Subinventories, Work Center Resources, Shifts for Work Center Resources	-	x	-	-
Production Resources	Production Resources, Flexfields for Resources, Equipment Instances, Flexfields for Equipment Instances, Labor Instances, Flexfields for Labor Instances, Program File Names	-	x	-	-
Standard Operations	Standard Operations, Attachments, Flexfields, Resources, Alternative Resources, Attachments for Resources, Flexfields for Resources	-	x	-	x
Work Definition Requests	Work Definition Requests, Work Definition Headers, ATO Materials, Materials, Operations, Outputs, Resources, Alternate Resources	-	x	-	-
Work Definitions	Work Definitions, Attachments for Work Definitions, Work Definition Materials, Attachments for Materials, Flexfields for Materials, Substitute Materials, Work Definition Operations, Attachments for Operations, Flexfields for Operations, Materials for Operations, Outputs for Operations, Resources for Operations, Work Definition Outputs, Attachments for Outputs, Flexfields for Outputs, Work Definition Resources, Alternate Resources, Attachments for	x	-	x	x

Business Object	Business Object Details	SOAP	REST	FBDI	ADFdi
	Resources, Flexfields for Resources				
Work Order Statuses	Work Order Statuses	-	x	-	-
Discrete Work Orders	Discrete Work Orders, Flexfields for Process Work Orders, Flexfields for Project Details, Active Operations for Work Orders, Attachments for Work Orders, Flexfields for Project Details, Flexfields for Work Order, Status History, Work Order Assemblies, Lots for Assemblies, Serials for Assemblies, Work Order Exceptions, Work Order Lots, Work Order Materials, Attachments for Materials, Exceptions for Materials, Flexfields for Operation Materials, Substitute Materials, Work Order Operations, Attachments for Operations, Exceptions for Operations, Flexfields for Operations, Materials for Operations, Attachments for Materials, Exceptions for Operation Materials, Flexfields for Operation Materials, Substitute Materials, Outputs for Operations, Attachments for Outputs, Flexfields for Outputs, Operation Attachments, Outputs, Flexfields for Operation Outputs, Output Attachments, Output Lot Numbers, Resources, Exceptions for Operation Resources, Flexfields for Resources, Resource Attachments, Work Order Resource Instances, Serials for	-	x	x	x

Business Object	Business Object Details	SOAP	REST	FBDI	ADFdi
	Operations, Work Order Reservations, Work Order Statuses				
Process Work Orders	Process Work Orders, Flexfields for Process Work Orders, Flexfields for Project Details, Active Operations for Work Orders, Attachments for Work Orders, Exception Counts for Operations, Flexfields for Operations, Materials, Exception Counts for Material, Flexfields for Materials, Material Attachments, Substitute Materials, Operation Attachments, Outputs, Flexfields for Operation Outputs, Output Attachments, Output Lot Numbers, Resources, Exceptions for Operation Resources, Flexfields for Resources, Resource Attachments, Resource Instances, Work Order Reservations	-	x	x	x
Production Exceptions	Production Exceptions, Impacted Operations	-	x	-	-
Work Order Material Transactions	Work Order Material Transactions, Material Transaction Details, Component Transaction Details, Lot Details for Component Transactions, Serial Details for Component Transactions, Flexfields for Orderless Transactions, Transaction Lots, Flexfields for Material Transaction Lots, Transaction Serials, Flexfields for Material Transaction Serials	x	x	x	x
Work Order Resource Transactions	Work Order Resource Transactions,	-	x	x	x

Business Object	Business Object Details	SOAP	REST	FBDI	ADFdi
	Resource Transaction Details, Flexfields for Resource Transactions				
Work Order Operation Transactions	Work Order Operation Transactions, Operation Transaction Details, Flexfields for Operation Transactions, Transaction Lots, Flexfields for Operation Transaction Lots, Transaction Serials, Flexfields for Operation Transaction Serials	x	x	x	x
Work Order Operation Start Stops	Work Order Operation Start Stops	-	x	-	-

Outbound

Business Object	Business Object Details	SOAP	REST	BICC	Functional Setup Manager	Business Events
Work Areas	Work Areas, Flexfields for Work Areas	-	x	x	x	-
Work Centers	Work Centers, Flexfields for Work Centers, Production Calendars, Resource Shifts, Subinventories, Work Center Resources, Shifts for Work Center Resources		x	x	x	-
Production Resources	Production Resources, Flexfields for Resources, Equipment Instances, Flexfields for Equipment Instances, Labor Instances, Flexfields for Labor Instances, Program File Names	-	x	x	x	-
Standard Operations	Standard Operations, Attachments,	-	x	x	-	-

Business Object	Business Object Details	SOAP	REST	BICC	Functional Setup Manager	Business Events
	Flexfields, Resources, Alternative Resources, Attachments for Resources, Flexfields for Resources					
Work Definition Names	Work Definition Names	-	x	x	-	-
Work Definitions	Work Definitions, Attachments for Work Definitions, Work Definition Materials, Attachments for Materials, Flexfields for Materials, Substitute Materials, Work Definition Operations, Attachments for Operations, Flexfields for Operations, Materials for Operations, Outputs for Operations, Resources for Operations, Work Definition Outputs, Attachments for Outputs, Flexfields for Outputs, Work Definition Resources, Alternate Resources, Attachments for Resources, Flexfields for Resources	-	x	x	-	-
Work Order Statuses	Work Order Statuses	-	-	x	x	-
Discrete Work Orders	Discrete Work Orders, Flexfields for Process Work Orders, Flexfields for Project Details, Active Operations for Work Orders, Attachments for Work Orders, Flexfields for Project Details,	x	-	x	-	x

Business Object	Business Object Details	SOAP	REST	BICC	Functional Setup Manager	Business Events
	Flexfields for Work Order, Status History, Work Order Assemblies, Lots for Assemblies, Serials for Assemblies, Work Order Exceptions, Work Order Lots, Work Order Materials, Attachments for Materials, Exceptions for Materials, Flexfields for Operation Materials, Substitute Materials, Work Order Operations, Attachments for Operations, Exceptions for Operations, Flexfields for Operations, Materials for Operations, Attachments for Materials, Exceptions for Operation Materials, Flexfields for Operation Materials, Substitute Materials, Outputs for Operations, Attachments for Outputs, Flexfields for Outputs, Operation Attachments, Outputs, Flexfields for Operation Outputs, Output Attachments, Output Lot Numbers, Resources, Exceptions for Operation Resources, Flexfields for Resources, Resource Attachments, Work Order Resource Instances, Serials					

Business Object	Business Object Details	SOAP	REST	BICC	Functional Setup Manager	Business Events
	for Operations, Work Order Reservations, Work Order Statuses					
Process Work Orders	Process Work Orders, Flexfields for Process Work Orders, Flexfields for Project Details, Active Operations for Work Orders, Attachments for Work Orders, Exception Counts for Operations, Flexfields for Operations, Materials, Exception Counts for Material, Flexfields for Materials, Material Attachments, Substitute Materials, Operation Attachments, Outputs, Flexfields for Operation Outputs, Output Attachments, Output Lot Numbers, Resources, Exceptions for Operation Resources, Flexfields for Resources, Resource Attachments, Resource Instances, Work Order Reservations	-	-	x	-	x
Production Exceptions	Production Exceptions, Impacted Operations	-	x	-	-	-
Work Order Material Transactions	Work Order Material Transactions, Material Transaction Details, Component Transaction Details, Lot Details for Component Transactions,	-	-	x	-	-

Business Object	Business Object Details	SOAP	REST	BICC	Functional Setup Manager	Business Events
	Serial Details for Component Transactions, Flexfields for Orderless Transactions, Transaction Lots, Flexfields for Material Transaction Lots, Transaction Serials, Flexfields for Material Transaction Serials					
Work Order Resource Transactions	Work Order Resource Transactions, Resource Transaction Details, Flexfields for Resource Transactions	-	-	x	-	-
Work Order Operation Transactions	Work Order Operation Transactions, Operation Transaction Details, Flexfields for Operation Transactions, Transaction Lots, Flexfields for Operation Transaction Lots, Transaction Serials, Flexfields for Operation Transaction Serials	x	-	x	-	x
Work Order Dispatch Lists	Work Order Dispatch Lists, Product Serials for Work Order Operations	-	x	-	-	-
Work Order Metrics	Work Order Metrics	-	x	-	-	-
Work Order Operation Start Stops	Work Order Operation Start Stops	-	x	x	-	-
Production Reports	Production Reports, Error Messages, Material Transactions, Error Messages for Material Transactions, Transaction Lots, Error Messages for	-	x	-	-	-

Business Object	Business Object Details	SOAP	REST	BICC	Functional Setup Manager	Business Events
	Transaction Lots, Transaction Serials, Error Messages for Transaction Serials Operation Transactions, Transaction Lots, Transaction Lots, Error Messages for Transaction Lots, Transaction Serials, Error Messages for Transaction Serials					

Use Cases and Patterns for Manufacturing

Integrate Legacy Manufacturing Execution Systems with Oracle Fusion Cloud Manufacturing

In this use case, your goal is to integrate a legacy MES with Oracle Manufacturing.

Description	Integration Type	Integration Options	Notes
As a manufacturing company, you've recently expanded by acquiring a new business. This business brings along a legacy MES that's currently deployed at one of its factories. As part of your coexistence strategy, your aim is to integrate this MES with Oracle Manufacturing. Usually, this scenario demands: • Real-time, bi-directional synchronization of data • Determination of source of truth for business objects • Complex data preparation • Data transformation • Iterative data clean-up • Automated large scale validation • Iterative performance tuning • Rapid cut-over	Inbound	• Oracle Integration Cloud (OIC) using Oracle ERP Cloud Adapter • REST APIs (Operation, Material, Resource Transactions) Assumption: MES is the source of truth for Operation, Resource, and Material Transactions.	As part of the data migration strategy, consider using file-based data import (FDBI) as a tool to migrate existing data from MES to Oracle Manufacturing.
	Outbound	• OIC using Business Events • Business Events (Work Orders) • REST Services (Work Definitions. Work Orders) • BICC Assumption: Oracle Fusion Cloud is the source of truth for Work Definitions, Work Orders.	As part of the data migration strategy, you can use Business Intelligence Cloud Connector (BICC) or REST APIs as options to migrate existing master data and work orders, from Oracle Manufacturing to MES.

Rapid Migration of Your Legacy System to Oracle Fusion Cloud Manufacturing

In this use case, your goal is to sunset a legacy application and migrate the data to Oracle Manufacturing,

Description	Integration Type	Integration Options	Notes
As a manufacturing company, you've recently expanded by acquiring a new business. This business brings along a legacy application that's currently used for managing, executing, and reporting manufacturing activities. Your objective is to sunset this legacy application and migrate the data into Oracle Manufacturing, which will serve as the single source of truth for all your manufacturing activities. Usually, this scenario demands: • Complex data preparation • Data transformation • Iterative data clean-up • Automated large scale validation • Iterative performance tuning • Rapid cut-over	Inbound	File-based data import (FBDI)	Oracle Integration Cloud (OIC) and Web Services aren't recommended for this use case.

Integrate Oracle Fusion Cloud Manufacturing with Third-Party Label-Printing Software

In this use case, your goal is to integrate Oracle Manufacturing with leading third-party label-printing software that provides the features and functionality your customers require.

Description	Integration Type	Integration Options	Notes
Your manufacturing company's complex label-printing requirements must comply with your customers' standards and specifications. Your objective is to integrate Oracle Manufacturing with leading third-party label-printing software that provides	Outbound	• Oracle Integration Cloud (OIC) • Business Events • Work Order REST APIs (GET)	For more information, see *My Oracle Support: White paper on Label Printing using Oracle Manufacturing Cloud (Doc ID 2471760.1)*.

Description	Integration Type	Integration Options	Notes
the features and functionality that fulfill the business needs of your customers. Usually, this scenario demands: • Real-time printing of product labels upon production completion. • Capturing customer-specific content on the product labels.			

Oracle Integration Cloud Accelerators for Manufacturing

Previously Built Oracle Integration Cloud (OIC) Recipes for Manufacturing

You can use these previously built OIC integrations between Oracle Fusion Cloud Inventory Management and Oracle Fusion Cloud Warehouse Management to pick materials for manufacturing work orders.

Recipe/Flow Name	Source	Destination	Use Case/Description	Details/Links
Oracle INV WMS MFG Movement Request	Oracle Inventory Management	Oracle Warehouse Management	Takes the Movement Request details from Oracle Inventory Management and maps them to Movement Requests in Oracle Warehouse Management.	• *My Oracle Support: Pre-built Integration between Oracle Fusion Cloud Warehouse Management and Oracle Fusion Cloud Inventory Management (Doc ID 2404671.1)*. • *My Oracle Support: Fusion Integration. Installation, Configuration and Examples (Doc ID 2944549.1)*.
Oracle WMS INV MFG Movement Request Pick Confirm	Oracle Warehouse Management	Oracle Inventory Management	Updates the movement request pick confirmation from Oracle Warehouse Management to the Movement Request in Oracle Inventory Management.	Same.

Recipe/Flow Name	Source	Destination	Use Case/Description	Details/Links
Oracle WMS INV MFG Movement Request Pick Cancel	Oracle Warehouse Management	Oracle Inventory Management	Updates the movement request short/ cancel from Oracle Warehouse Management to the Movement Request in Oracle Inventory Management. Management.	Same.
Oracle INV WMS Work Order Direct Transactions	Oracle Inventory Management	Oracle Warehouse Management	Takes the Work Order Direct Transactions created in Oracle Inventory Management and sends them to Oracle Warehouse Management.	Same.

Other Manufacturing Resources

Use these resources to get more information about Oracle Fusion Cloud Manufacturing integrations.

- *My Oracle Support: Using External Data Integration Services for Oracle ERP Cloud (Doc ID 2102800.1)*

  Paper describing how to use External Data Integration Services for Oracle Fusion Cloud Enterprise Resource Planning to load data into Oracle Fusion Cloud Applications from external sources, such as legacy systems and third-party applications.
- *Tables and Views for SCM*

  Documentation related to database tables and views in Oracle Fusion Cloud Supply Chain (SCM) & Manufacturing. Includes diagrams, schematics, and links to other technical documentation.
- *File-Based Data Import (FBDI) for SCM: External Data Integration Services for Importing Data*

  Documentation related to FBDI for Oracle Fusion Cloud SCM.
- *REST API for Oracle Fusion Cloud SCM*

  Documentation related to REST APIs in Oracle Fusion Cloud SCM.
- *SOAP Web Services for SCM*

  Documentation about REST web services in Oracle Fusion Cloud SCM.
- *Oracle Integration*

  Documentation about Oracle Integration Cloud (OIC).
- *My Oracle Support: Integration And Extensibility Options For Oracle Fusion Cloud Manufacturing (Doc ID 2218040.1)*

  Technical brief that explains options for extending and integrating Oracle Manufacturing with your existing systems.

- *My Oracle Support: White paper on Label Printing using Oracle Manufacturing Cloud (Doc ID 2471760.1)*

  Technical brief that explains how you can integrate Oracle Manufacturing with specialized label-printing applications that cater to industry or customer-specific label-printing needs.

- *Oracle Cloud Marketplace*

  Online store where you can shop for business applications and professional services that complement existing Oracle Fusion Cloud products.

6 Order Management

Overview of Order Management

About Oracle Fusion Cloud Order Management

Oracle Fusion Cloud Order Management is an Oracle Fusion Cloud Supply Chain & Manufacturing (SCM) application designed to improve order capture and fulfillment execution across the order-to-cash process providing increased customer satisfaction and order profitability.

The application provides the ability to capture, price and configure orders through direct order entry. Orders can also be received from external sources, changed and then processed for fulfillment. The application also provides previously built integrations with other Oracle Cloud services, centrally managed orchestration policies, global availability, and fulfillment monitoring.

It can serve as your central hub for sales orders. Application also provides you capabilities of orchestrating fulfillment process as per your business needs. It's highly configurable and enables you integrate with multiple fulfillment systems

Terminology for Order Management

These terms are used throughout the Oracle Fusion Cloud Order Management playbook.

Term	Definition
GTM	Oracle Fusion Cloud Global Trade Management.
OTM	Oracle Fusion Cloud Transportation Management.
CPQ	Oracle Configure, Price, Quote.
Business Object Family: Sales Order	A business object with a required child object (Sales Order Lines) and optional child objects (Sales Credits, Price Adjustments).
Business Events	An event published by Oracle Order Management when an applicable business object is updated. Use Oracle Integration Cloud (OIC) to subscribe to these events. **Note:** OIC might require extra licensing.
Custom Task (Template Task)	Oracle Order Management provides a flexible and extensible framework for orchestrating sales orders. The orchestration process enables the customer to define various predefined tasks that can be used to integrate with external systems.

Integration Types and Options for Order Management

Overview of Order Management Integration Types and Options

Several integration types and options are available in an Oracle Fusion Cloud Order Management integration.

Integration Types

These integration types are available in Oracle Order Management.

Inbound/Outbound	Integration Type	Description
Inbound	Upstream/Channel Applications	In this integration, orders are imported from external systems/channels and submitted for fulfillment/orchestration. Several order-import integration options are available.
Inbound	Downstream External	Task-layer inbound integration enables customers to respond back for the progress of the orchestration if a specific orchestration task is carried out in the external application. This typically happens during long-running tasks when the external application sends periodic progress notifications or for communicating the completion of the task in the external application. Pausing the orchestration process lets customers perform custom business functions.
Outbound	Downstream External	Task-layer outbound integration. During orchestration of the orders, the tasks in the orchestration process can integrate with an external application for order fulfillment. Pausing the orchestration process lets customers perform custom business functions. Use a web service to resume the process.

Integration Options

These integration options are available in Oracle Order Management.

Inbound Channel Upstream

- *File-Based Data Import (FBDI) for Order Management*
- *REST Stage Order for Order Management*
- *REST Create Order for Order Management*
- *SOAP Create Order for Order Management*

Downstream External

- *SOAP Services for Order Management*
- *Pause the Fulfillment Process for Order Management*
- *OTM/GTM Integration for Order Management Using Oracle Integration Cloud*
- *Business Intelligence Cloud Connector Extract for Order Management*
- *Order Management and Order Fulfillment State Events*

Inbound Channel/Upstream

File-Based Data Import (FBDI) for Order Management

Use the FBDI option to import sales orders from multiple source systems.

The input item data file is a comma-separated values (CSV) file that's uploaded to Oracle WebCenter Content using either an Oracle Fusion Cloud Enterprise Resource Planning (ERP) integration service or a SOAP or REST API to stage the data in interface tables.

> **Note:** This integration option is recommended for customers who can batch orders and import them at predetermined intervals.

Key Features

- Enables the import of a large volume of orders that are priced in the channel or priced using Oracle Fusion Cloud Order Management.
- Enables asynchronous automated integration between systems.

Best Practices

- Recommended for large volumes of orders. For example, anything more than 1,000 order lines per hour.
- Also recommended if an order contains large number of lines. Typically, this is more than 50 lines in an order.
- Increase number of child jobs to improve throughput.

Constraints

None.

Related Topics

- Manage Order Management Parameters
- Use REST API with FBDI to Import Large Volumes of Sales Orders
- Overview of Importing Orders Into Order Management

REST Stage Order for Order Management

Use this integration option to stage orders in real time.

Key Features

- Stages orders in real time, order by order, into the interface tables.
- Use with Oracle Integration Cloud (OIC) to perform near real-time staging of orders from channels/upstream applications. For example, use this integration if the upstream application doesn't have persistent data store of its own.
- Customers can use the *Import Sales Order* scheduled process to import staged orders.

Best Practices

- Use this option only to stage orders in the interface tables or if the upstream application doesn't have a persistent data store.
- Recommended for large-order creation scenarios if the customers needs an API-based integration instead of a file-based data import (FBDI).

Constraints

- If a REST API call to stage the order runs for more than 5 minutes, it might produce a 504-gateway time-out error. The request might still be processed after the gateway time out if there are no other validation failures while the request processes.
- No asynchronous support is currently available.

Related Topics

- Sales Orders for Order Hub Requests REST Endpoints

REST Create Order for Order Management

Use this integration option to create orders in real time.

Key Features

- Creates orders in real time, order by order (Inbound).
- Customers can create draft or submitted orders.

Best Practices

Recommended for orders with less than 50 lines.

Constraints

- If an order request is to run for more than 5 minutes, the REST API might produce a 504-gateway time-out error. The request can still be processed after the gateway time out if there are no other validation failures while the order processes. You might need to run a `GET` action to validate that the order is created.

  > **Note:** As this might change in future releases, we think it's best that you don't rely on the behavior of the request getting processed even after the 504 gateway time-out error.

- No asynchronous support is currently available. For large orders, either the file-based data import (FBDI) or the REST stage order option is recommended.

SOAP Create Order for Order Management

As there are plans to deprecate SOAP services, we recommend that customers use one of the other integration options to create and import orders.

Downstream External

SOAP Services for Order Management

Use the SOAP service integration option to perform custom business processes during order processing flows.

SOAP service is an external service integration used for fulfillment processing. With the Oracle Fusion Cloud Order Management external interface layer, both inbound and outbound external integrations that use the orchestration engine are supported.

Key Features

- Custom tasks let customers perform custom business functions by calling their external services.
- The OrderFulfillmentResponse service lets customers send deferred responses from the external integration layer to Oracle Order Management to advance the process.
- Provides custom business functions that can perform processing outside of the native order-processing flow.
- Supports both synchronous and asynchronous automated integration between Oracle Order Management and external integrations.
- Supports events-based integration.

Best Practices

- Recommended for performing custom business processes during order processing flows. For example:
  - Compliance checks using an external system.
  - Calculate shipping charges and then return to loop back to Oracle Order Management.
  - Customer confirmation after shipment.
- Use the asynchronous pattern if a business function has processing delays.
- Use the synchronous pattern when processing is guaranteed to be completed within few seconds.

  > **Note:** This method is best for minor updates or for triggering another processing unit with a simple confirmation. It's also best in cases where the final outcome of the external application's processing isn't pertinent or necessary.

- An events-based approach is recommended when a feedback loop, such as FYI or fire-and-forget mode, isn't needed.
- Oracle Order Management always recommends that customers read the delayed responses through the Oracle ADF-based OrderFulfillmentResponse service when called in asynchronous mode before performing the next Oracle Order Management operation.
- Build a fault-tolerant integration. For example, one that would let customers perform multiple retries from Oracle Integration Cloud (OIC) custom integration layers to resend the request on Oracle Order Management when a transient failure is received.

> **Note:** In case of persistent failures, customers might need to correct the data set and resend or Contact Oracle Support.

Constraints

None.

Notes

- Customers can choose to use their proprietary system to build these custom business functions.
- Customers can choose to use Oracle Integration Cloud (OIC).
- When building these services, it's required to conform to Oracle's abstract Web Services Description Language (WSDL), which guarantees the handshake contracts between Oracle Order Management and external systems. For specific information, see *Connect Order Management to Your Fulfillment System*, Step 13 in the Create Connection section.

Pause the Fulfillment Process for Order Management

Use the pause task in an orchestration process to pause order lines during fulfillment processing.

Key Features

- Enables customers to pause the order-processing flow to perform custom external or internal business functions.
- Customers can resume the flow manually in the Oracle Fusion Cloud Order Management work area or by running the *Release Pause Tasks* scheduled process.
- Customers can use Oracle Business Rules to configure a time-based pause or one that's based on a particular event. The rule can be reevaluated when certain conditions are met.

Best Practices

- Oracle Order Management provides customers with sample rules that let them perform most business functions during a pause with minimum changes. These rules are continually reviewed, expanded, and made available to the customer.
- Customers can use interprocess communication to perform pause use cases. For example, one that lets all lines in an order to ship independently but pauses the process before going to billing unless all lines are shipped.

Constraints

For information about constraints, see *My Oracle Support: Master Note - Defining and Using Order Orchestration Pause Rules (Doc ID 2699001.1)*.

OTM/GTM Integration for Order Management Using Oracle Integration Cloud

You can use Oracle Integration Cloud (OIC) to integrate Oracle Fusion Cloud Order Management with Oracle Transportation Planning (OTM), or some other transportation management system that resides outside of Oracle, and to integrate with Oracle Global Trade Compliance (GTM).

When you integrate Oracle Order Management with OTM, or some other transportation management system that resides outside of Oracle, it sends sales orders for transportation planning, and receives updates at fulfillment milestones, such as plan complete or proof of delivery.

Use Oracle Order Management with your trade management solution to create and manage trade transactions that comply with global import trade rules, export global trade rules, and other trade regulations that the country or region requires.

OTM/GTM are supported through the following integration options:

- Use the service-oriented architecture (SOA) event-handling framework (PublicEventHandler and SOA event subscription methodology) to call the Oracle Integration Cloud (OIC) connector.
- Use the Oracle Order Management external interface layer to call the OIC connector directly.
- It supports both synchronous and asynchronous operations.

Key Features

- Can use baseline integration available in the marketplace and extend it for custom requirements.
- Can use Oracle Transportation Planning (OTM)/Oracle Global Trade Compliance (GTM) integration with Oracle Order Management template task layer (custom task) support.

Best Practices

- It's recommended that the customers use predefined, event-based OTM/GTM integrations and predefined OIC accelerators when conforming to these states:
  - OTM/GTM acknowledgment is required to confirm that OTM/GTM has received order line details.
  - OTM acceptance is required to confirm that OTM has successfully processed order line details and has converted them to an OTM release order.
- Using predefined OTM/GTM integrations, the customer might choose to make a direct call to the OIC connector by changing the setup in the Oracle Order Management external interface layer to call the synchronous/asynchronous service directly.
- It's recommended that customers use the Oracle Order Management template task layer (custom task) to integrate with OTM/GTM in these situations:
  - They're not conforming to the acknowledgment and acceptance states for OTM/GTM integration.
  - They want to use custom solutions with any third-party OTM/GTM solutions.
- It's always recommended that customers read the delayed responses in these situations:
  - When either an acknowledgment or acceptance is sent to Oracle Order Management using the OrderFulfillmentResponse service when called in asynchronous mode.
  - To confirm a successful transaction before performing the next operation in Oracle Order Management.
- Build a fault-tolerant integration. For example, one that would let customers perform multiple retries from Oracle Integration Cloud (OIC) custom integration layers to resend the request on Oracle Order Management.
- Previously built OIC accelerators and samples provided to customers through support notes have a built-in delay to avoid concurrency issues caused by back-to-back requests submissions. Customers are expected to do the same.

Constraints

- Predefined OTM/GTM integrations are time bound to receive an acknowledgment within 30 minutes. If the acknowledgment isn't sent, Oracle Order Management will make the order lines eligible to be resent.

  > **Note:** Customers can override this constraint in the Oracle Order Management setup for external interface layer rules.

- We don't recommend building an OIC integration in fire-and-forget mode with the assumption that all inbound service calls on Oracle Order Management will always be successful.
- Customers must accept the asynchronous response as a final confirmation of a successful transaction.
- We also recommend that customers implement multiple retries from OIC or custom integration layers to resend requests when transient failures are received from Oracle Order Management. This will help move the transaction forward.

Business Intelligence Cloud Connector Extract for Order Management

Oracle Fusion Cloud Order Management provides optimized business objects for data extractions. Oracle Business Intelligence Cloud Connector (BICC) extracts the data in bulk and loads it into designated external storage areas.

BICC should be the only tool customers use for all bulk retrieval of data to create integrations to downstream systems.

Key Features

- The BICC extract can get fulfillment data at any stage during fulfillment processing or performing any custom business function.
- The extraction process takes place outside Oracle Fusion Cloud Applications.

Best Practices

Recommended for performing peripheral business operations based on the extracted data. For example, quality checks and coverage confirmation information.

Constraints

If the requirement is for order-by-order processing rather than by bulk, Oracle recommends that customers use the salesOrdersForOrderHub REST resource to perform custom business functions. BICC is recommended only for bulk processing. For more information, see *Sales Orders for Order Hub*.

Order Management and Order Fulfillment State Events

Oracle Fusion Cloud Order Management raises business events that customers can configure and use at the various states of order booking and fulfillment when performing custom business operations.

The recommended Order Information Service (REST) lets customers gather more information about orders, order lines, and order lines children and use it based on subscriptions to these events.

Key Features

- The integration can raise events at various states of an order during its lifecycle.
- The integration can use Oracle Integration Cloud (OIC)-based connectors or any customer layer to listen to events and perform any peripheral business operations that are external to order processing.

Best Practices

- Recommended for performing peripheral business operations. For example, to follow up with a customer about the state of an order (before and after shipping, billing, and so on).
- Customers should use these events only if needed. They must define a listener service with high availability.

> **Note:** Stale integrations might cause performance overhead if an integration is down.

- Order updates events must not be configured for header or fulfill line attributes unless required.
- Customers can use the Order Information Service (getOrderDetails REST API) during an order's lifecycle to gather details about the order and perform any peripheral functions.

Constraints

None.

Business Events for Order Management

When a sales order goes through its lifecycle, business events are automatically raised if configured to do so.

Oracle Integration Cloud (OIC) has native capabilities to subscribe to these business events.

Event Name	Description	Constraints	Notes
Order Status Updated	Informs a subscriber that an order status or status of a fulfillment line that's part of an order was updated.	None.	Automatic enrichment available.
Sales Order Notification	Informs a subscriber about a significant development on a sales order. This event occurs when the order status changes, the line status changes, the value of an attribute changes, a fulfillment line splits, or an exception occurs, such as a jeopardy or hold.	None.	–
Sales Order Trade Compliance Screening	Communicates screening requests to a system that manages trade compliance.	None.	–
Sales Order Transportation Planning	Communicates fulfillment requests to a transportation planning system.	None.	–

Business Objects for Order Management

Order Management Business Objects Available for Integration

Oracle Fusion Cloud Order Management provides support for multiple business object families to help inbound and outbound integrations.

The families and their child objects are listed in the tables. During the integration process, you either can either transact the data for the entire business object family as a single unit or for a specific member business object (based on the data dependency rules). For example, you can import an item with all its structures and attachments at once or import only the item attachments if the item is already present in the system.

Inbound

Business Object Family	Key Business Objects	SOAP	REST	FBDI	Smart Spreadsheet/ Import Map	Business Events
Sales Orders	Sales Orders, Sales Order Lines, Extensible Flexfields, Attachments, and so on. See *Get one sales order* for a complete list of business objects.	x	x	x	–	x

Outbound

Business Object Family	Key Business Objects	SOAP	REST	Publication	BICC Data Extraction	Business Events
Sales Orders	Sales Orders, Sales Order Lines, Extensible Flexfields, Attachments, and so on. See *Get one sales order* for a complete list of business objects.	x	x	x	x	x

Key Order Management Integration Features by Business Object Families

This table provides a list of key integration features available for each business object.

Use case	SOAP	REST	FBDI	Extension & Transformation Rules	BICC Data Extraction	Business Events
Order Creation (Create, Update, Cancel Order operations)	X	X	X	X		
Order Fulfillment (Read Operation)	Existing but will be depreciated	X			X	X
Order Fulfillment (Update Operation)	X	X				
Proactive, pre-upload, preliminary validation - Stage Order		X	X			
Complete validation	X	X	X	X		
Data transformation	X	X		X		
Bulk Data upload			X			
Real-time upload	X	X	X			
Real-time data extraction	X	X			X	X
Bulk Data extraction					X	
Supported File Types (CSV, XML)					X CSV only	

Use Cases and Patterns for Order Management

Overview of Order Management Use Cases and Patterns

Oracle Fusion Cloud Order Management provides a wide range of integration options to support your complex business needs.

These Oracle Order Management use cases and patterns are included as examples:

- *Import a Large Volume of Orders*
- *Integrate with Cloud Systems Other than Oracle Fusion Cloud Systems*
- *Integrate with Third-Party Systems*
- *Order Information APIs*
- *Pause Orchestration*

Import a Large Volume of Orders

In this use case the customer imports a large volume of orders.

Description	Integration Type	Integration Options	Notes
A customer imports a large volume of orders from order capture, quoting system or electronic data interchange (EDI) transaction.	Inbound	File-based data import (FBDI)	Oracle Integration Cloud (OIC), SOAP, and ADF web services aren't recommended for this use case.

Integrate with Cloud Systems Other than Oracle Fusion Cloud Systems

In this use case a customer wants to get an order screened for compliance using global trade compliance (GTM) and implement transportation planning (OTM) for sales orders.

Description	Integration Type	Integration Options	Notes
A customer wants to get an order screened for compliance using global trade compliance (GTM) and implement transportation planning (OTM) for sales orders. These two Oracle products can be implemented independently. In this integration, these systems will send transportation plans or screening results back to Oracle Fusion Cloud Order Management.	Outbound	• Business events • SOAP service	• Business events are raised and subscribed to in OIC. • Customers can configure previously built OIC accelerators (preferred option). • Connectors that get called from Oracle Order Management for SOAP service integration must be defined.
	Inbound	SOAP service	Customers must implement a call to the inbound ADF service to send responses to Oracle Order Management.
Oracle E-Business Suite integration Some existing Oracle E-Business Suite customers might want to retain some fulfillment functions in Oracle E-Business Suite rather than switch to Oracle Order Management for all their order-to-cash flows.	Inbound/Outbound	SOAP service	User wants to integrate with Oracle E-Business Suite for part or all fulfillments.

Integrate with Third-Party Systems

In this use case a customer wants to integrate with a third-party fulfillment system.

Description	Integration Type	Integration Options	Notes
A customer wants to notify third-party fulfillment systems or send order data to in-house applications. This is a one-way communication (fire and forget). For example, send sales order fulfillment progress including status updates.	Outbound	• Business events • SOAP services	• Business events are raised and subscribed to in Oracle Integration Cloud (OIC). • (Optional) The customer can also define connectors for business events that will get called. • Connectors that get called from Oracle Fusion Cloud Order Management for SOAP service integration must be defined.
A customer wants to integrate with a third-party fulfillment system that can send responses back to Oracle Order Management. For example, to send orders to a third-party system for credit checks or to apply or release a hold on an order or line.	Inbound/Outbound	• SOAP services • REST APIs	• Connectors that get called from Oracle Order Management must be defined. • Customers must implement a call to the inbound ADF/SOAP service to send responses back to Oracle Order Management. • Customers can use an available REST API from Oracle Order Management to perform functions, such as apply or release a hold and update a fulfillment.
A customer wants to send consolidated data to a fulfillment system periodically. For example, to send all the scheduled lines in an order together to a warehouse-management system (WMS).	Outbound	Business Intelligence Cloud Connector (BICC) extract	Customers query data periodically and send the data to a fulfillment system through web services.

Related Topics

- Using Custom Task - Integration Development
- Convert Shipment Costs to Freight Charges

Order Information APIs

In this use case a customer wants to query orders and order lines.

Description	Integration Type	Integration Options	Notes
A customer wants to query orders and order lines.	Outbound	REST API	Customers can use REST APIs to get order and line details.

Pause Orchestration

In this use case a customer wants to pause an order workflow for external event or for a period of time.

Description	Integration Type	Integration Options	Notes
A customer wants to pause an order workflow for external event or for a period of time.	Process integration	• SOAP service • Oracle Enterprise Scheduler	Customers can use a SOAP service or Oracle Enterprise Scheduler to release a pause and move order lines forward.

Oracle Integration Cloud Accelerators for Order Management

Previously Built Oracle Integration Cloud (OIC) Recipes for Order Management

Oracle Fusion Cloud Order Management has previously built business integrations for Oracle Transportation Management, Oracle Global Trade Management, and Oracle Configure, Price, Quote.

Integration	Source System	Target System	Function Details
OM-GTM	Oracle Order Management	Oracle Global Trade Management	Screens a sales order pre or post booking.
GTM-OM	Oracle Global Trade Management	Oracle Order Management	Sends a screening response to Oracle Order Management.

Integration	Source System	Target System	Function Details
OM-OTM	Oracle Order Management	Oracle Transportation Management	Creates an order release in Oracle Transportation Management from the fulfillment line.
OTM-OM	Oracle Transportation Management	Oracle Order Management	Communicate Order Release/ Shipping information to Oracle Order Management.
CPQ-OM	Oracle Configure, Price, Quote	Oracle Order Management	Interface a quote from Oracle Configure, Price, Quote as a sales order in Oracle Order Management.

Other Order Management Resources

Use these resources to get more information about Oracle Fusion Cloud Order Management integrations.

- *REST API documentation for Sales Orders for Order Hub REST Endpoints*
- *Order Fulfillment Response Service*
- *Convert Shipment Costs to Freight Charges*
- *My Oracle Support: Sample Integration with Transportation and Global Trade Management (OTM/GTM) Using OIC (Doc ID 2209248.1)*
- *My Oracle Support: Order Management REST-Based Integration (Doc ID 2075213.1)*
- *My Oracle Support: Master Note - Order Orchestration (Doc ID 2705447.1)*
- *Overview of Sending Notifications from Order Management to Other Systems*

7 Pricing

Overview of Pricing

About Oracle Pricing

Oracle Pricing, a module that's part of the Oracle Fusion Cloud Maintenance product, enables you to plan, manage, apply, and enforce pricing so it's consistent and profitable throughout your order-to-cash process.

Oracle Pricing lets you:

- Plan pricing strategies so they align with your business objectives by using the characteristics of the customer, the item, and the buying context to identify market segments.
- Manage the pricing rules that control how Oracle Pricing applies price changes. For example, to administer a discount on the list price of an item.
- Achieve consistent and correct pricing throughout the order-to-cash process by applying common pricing logic across all sales channels.
- Enforce correct pricing to meet your corporate revenue and margin objectives.

Terminology for Pricing

These terms are used throughout the Oracle Pricing playbook.

Term	Definition
Price List	Used to set up standard pricing for items.
Discount List	Used to set up discounts and price overrides for items.
Cost List	Used to set up various charges, such as item cost, sales commission, and labor cost.
Pricing Basis	References a single price element, such as List Price or Invoice Price, to calculate the discount that it applies on an item. The price element is one of the components on the pricing charge.
Tiers	Aggregates the level of discount depending on the amount or quantity that's bought.
Pricing Strategy	A set of pricing rules that you create to achieve a profitability goal for selling and pricing an item.
Customer Pricing Profile	Describes the buying characteristics of a customer.
Pricing Segment	Used to categorize a set of customers, to understand their business motivations, and offer a pricing solution.

Integration Types and Options for Pricing

Overview of Pricing Integration Types and Options

Several integration types and options are available in an Oracle Pricing integration.

Integration Types

Oracle Pricing supports three integration types.

Inbound

In this type of integration, pricing data is uploaded into Oracle Pricing as the single source of truth.

Outbound

In this type of integration, data stored in Oracle Pricing is exported to various external systems.

Process Integration

In this type of integration:

- The *Document Prices REST resource* calculates prices for documents in Oracle Pricing and includes specific services to:
  - Calculate sales totals.
  - Get sales pricing strategies.
  - Price sales transactions.
- The *Context Services REST resource* supports various aspects of transactional pricing and enables the different predefined and user-defined context-specific services:
  - Get rate plans.
  - Price usages.
  - Program eligibility.
  - Validate sales prices.

Integration Options

These integration options are available in Oracle Pricing.

Inbound

- *REST APIs for Pricing (Inbound)*
- *File-Based Data Import (FBDI) for Pricing*
- *Oracle ADF Desktop Integration (ADFdi) for Pricing (Inbound)*

Outbound

- *REST APIs for Pricing (Outbound)*
- *Oracle ADF Desktop Integration (ADFdi) for Pricing (Outbound)*

Inbound

REST APIs for Pricing (Inbound)

Use the REST APIs inbound integration option if some of your business processes require near real-time updates to your pricing master data.

For example, you'd use this integration option if your business must update or add prices in near real time.

Key Features

- Create and maintain price lists for items, subscriptions, models, and coverages. Includes more actions on price list access sets, items, covered items, component items, rate plans, and flexfields.
- Create and maintain discount lists for items, subscriptions, models, and coverages. Includes more actions on discount list access sets, items, discount rules, matrixes, tiers, and flexfields.
- Create and maintain matrixes to apply specific results or rules dynamically based on attributes. Includes more actions on matrix dimensions and matrix rules to support rate tables and attribute-based pricing adjustments.
- Create and maintain the rules for pricing segments.
- Create and maintain pricing strategies that include additional actions on allowed override currencies, associated discount lists, associated segment price lists, and flexfields.
- Create and maintain pricing strategy assignments including additional actions on pricing matrixes to assign a strategy based on a set of attributes.
- Create and maintain tiers rules including more actions for tier lines and flexfields.

Best Practices

- Use for maintenance.
- Allows integration of data with external systems
- To improve performance, limit the operations to a smaller set of records at a time.

Constraints

- Subsidiary actions on child entities can't be taken in the absence of the header.
- Copy price list isn't supported.

Related Topics

- Price Lists REST Resource
- Discount Lists REST Resource
- Pricing Matrixes REST Resource
- Pricing Segments REST Resource
- Pricing Strategies REST Resource
- Pricing Strategy Assignments REST Resource
- Pricing Bases REST Resource
- Pricing Tiers REST Resource

File-Based Data Import (FBDI) for Pricing

Use the FBDI integration option to import price list, discount list, and cost list data from other source systems into Oracle Pricing.

The input data file is a comma-separated values (CSV) file that's uploaded to Oracle WebCenter Content with either Oracle ERP Integration Web Services or data staged into the interface tables.

Import Price Lists and Price List Batches

Key Features

Import a large volumes of price list data from secure content-management servers (for example, Oracle WebCenter Content) that provide controlled access to external systems.

Best Practices

- Recommended for large-volume price lists with more than 5,000 lines.
- Review the Commit Point parameter in the *Import Your Price List* table.
- Increase the number of child jobs to improve throughput.
- Delete the interface data periodically for better performance.
- You can use the Update operation with PriceListsImportBatchTemplate.xlsm but not with PriceListImportTemplate.xlsm.
- PriceListsImportBatchTemplate.xlsm is faster, even if you're importing a single price list.

See *Troubleshoot Importing Price Lists* for more information.

Constraints

None.

Import Discount Lists

Key Features

Import a large volumes of discount list data from secure content-management servers (for example, Oracle WebCenter Content) that provide controlled access to external systems.

Best Practices

- Recommended for large-volume discount lists with more than 5,000 lines.

- Increase the number of child jobs to improve throughput.
- Delete the interface data periodically for better performance.

See *Troubleshoot Importing Batches of Discount Lists* for more information.

Constraints

Discount List Tiers aren't available through Import Discount Lists.

Import Cost Lists

Key Features

Import large volumes of cost list data from secure content management servers (for example, Oracle WebCenter Content) that provide controlled access to external systems.

Best Practices

- Recommended for large-volume cost lists with more than 5,000 lines.
- Increase the number of child jobs to improve throughput.
- Delete the interface data periodically for better performance.

See *Guidelines for Importing Cost Lists* for more information.

Constraints

You can't use this feature with configured items, coverages, or subscriptions.

Related Topics

- Import Price Lists
- Import Batches of Price Lists
- Import Batches of Discount Lists

Oracle ADF Desktop Integration (ADFdi) for Pricing (Inbound)

You can use Oracle ADF Desktop Integration (ADFdi) to create and update Price Lists, Discount Lists, and Customer Pricing Profiles with spreadsheets.

Key Features

Maintain data in spreadsheets for prices and adjustments on price lists, discount adjustments on discount lists, and attributes that drive customer pricing on the customer pricing profile.

Best Practices

To improve performance, limit the operations to a smaller set of records at one time.

Constraints

Requires the Microsoft Windows operating system.

Outbound

REST APIs for Pricing (Outbound)

Use the REST APIs outbound integration option to export pricing data for price lists, discount lists, pricing matrixes, pricing matrix classes, pricing bases, pricing segments, pricing strategies, pricing strategy assignments, pricing, pricing parameters, and pricing tiers.

You can

For example, you'd use this integration option if your business must update or add prices in near real-time.

Key Features

- Access the database data in real-time (outbound).
- Export a single record or all records for a given pricing entity.

Best Practices

- Use this option only if you need to perform near real-time mode operations in Oracle Pricing.
- Use for maintenance and to provide documents for internal discussion.
- Allows integration of data with external systems.
- Protects proprietary data after exporting.
- To improve performance:
  - Limit the operations to a smaller set of records at one time.
  - Limit the attributes using the fields query parameter when performing GET operations.
  - Avoid OR conditions with LIKE clauses.
  - Use only child query criteria to avoid querying master records.

Constraints

Limited to a smaller set of records.

Related Topics

- Price Lists REST Resources
- Discount Lists REST Resources
- Pricing Matrixes REST Resources
- Pricing Matrix Classes REST Resources
- Pricing Matrix Types REST Resources
- Pricing Bases REST Resources
- Pricing Segments REST Resources
- Pricing Strategies REST Resources
- Pricing Strategy Assignments REST Resources
- Pricing Parameters REST Resources
- Pricing Tiers REST Resources

Oracle ADF Desktop Integration (ADFdi) for Pricing (Outbound)

You can use Oracle ADF Desktop Integration (ADFdi) to export price lists, discount lists, and customer pricing profiles.

Key Features

Use ADFdi and spreadsheets to modify price lists, discount lists, or customer pricing profiles to reflect changes to your pricing policies.

Best Practices

- Don't use ADFdi if processing more than 200 price-list or discount-list records. Use Import Price List Batch or Import Discount List Batch instead.
- To ensure the data in the workbook is synchronized with the data on the server, refresh the search each time the workbook finishes processing your action.
- Keep your ADFdi plug-in up to date. The workbook usually let you know you when an update is available. If the plug-in isn't current, then your results won't be correct.

Constraints

Requires the Microsoft Windows operating system.

Related Topics

- Guidelines for Using Pricing Spreadsheets

Process Integration for Pricing

In this type of integration, the Document Prices REST resource calculates prices for documents in Oracle Pricing.

Key Features

The Document Prices REST resource includes specific services to:

- Calculate sales totals.
- Get sales pricing strategies.
- Price sales transactions.

Best Practices

- **Calculate sales totals:**
  Computes the pricing document total that was previously priced using the *Price Sales Transaction REST API.*
- **Get sales pricing strategies:**
  Derives the pricing strategy for a pricing document that represents a sales quote or a sales order.
- **Price sales transactions:**
  Prices a document according to the pricing strategy and pricing rules defined in Oracle Pricing.

Constraints

All require sign in privileges.

Business Objects for Pricing

Pricing Business Objects Available for Integration

Oracle Pricing provides support for multiple inbound and outbound business objects to help inbound and outbound integrations.

Business Object Category	Key Business Objects	Inbound	Outbound	Business Events
Price List	Price List	x	x	–
	Pricing Basis	x	x	–
	Pricing Tier	x	x	–
	Pricing Matrix Class	x	x	–
Discount List	Discount List	x	x	–
	Pricing Basis	x	x	–
	Pricing Tier	x	x	–
	Pricing Matrix Class	x	x	–
Cost List	Cost List	x	–	–

Business Object Category	Key Business Objects	Inbound	Outbound	Business Events
Pricing Parameter	Pricing Parameter	x	x	–
Pricing Strategy	Pricing Strategy	x	x	–
	Pricing Segment	x	x	–
	Pricing Strategy Assignment	x	x	–
Customer Pricing Profile	Customer Pricing Profile	x	x	–

Pricing Integration Options Available by Business Objects

This table provides a list of Oracle Pricing integration options available for each business object.

Business Object	Description	REST	FBDI	ADFDI
Price List	Standard pricing for items	X	X	X
Pricing Basis	References a price element, such as List Price or Invoice Price, to calculate the discount that it applies on an item	X		
Pricing Matrix Class	Use to create or modify a template to specify the structure of the pricing matrix	X		
Pricing Parameter	Use to manage behavior that applies across Oracle Pricing	X		
Pricing Segment	Used to categorize a set of customers, to understand their business motivations, and offer a pricing solution	X		
Pricing Strategy	Set of pricing rules that you set up to achieve a profitability goal for selling and pricing an item	X		
Pricing Strategy Assignment	Assigns pricing strategies to customers	X		
Pricing Tier	Aggregates the level of discount depending on the amount or quantity that is purchased	X		
Discount List	Used to set up discounts, profit margins, and price overrides for items	X	X	X
Cost List	List of charges, such as item cost, sales commission, and labor cost		X	
Customer Pricing Profile	Describes the buying characteristics of a customer			X

Use Cases and Patterns for Pricing

Overview of Pricing Use Cases and Patterns

Oracle Pricing provides a wide range of integration options to support your complex business needs.

These use cases and patterns are included as examples:

- *Import a Large Number of Cost Lists*
- *Import a Large Number of Discount Lists*
- *Import a Large Number of Price Lists*
- *Export Price Lists*

Import a Large Number of Cost Lists

In this use case, you maintain the costs that you use to identify price or margin outside of Oracle Pricing.

Description	Integration Type	Integration Options	Notes
You can import a large number of cost lists and then use them to identify cost plus pricing or to calculate margin in the price breakdown on the order line in Oracle Fusion Cloud Order Management.	Inbound	File-based data import (FBDI) (CostListsImportTemplate.xlsm)	Ensure you have these privileges: • Import Cost Lists (QP_COST_LIST_IMPORT_PRIV). Import cost lists that are in progress. • Import Approved Cost Lists (QP_COST_LIST_APPROVED_IMPORT_PRIV). Import cost lists that are approved.

Import a Large Number of Discount Lists

In this use case, you import a batch of discount lists instead of importing them individually to save time and work more efficiently.

Description	Integration Type	Integration Options	Notes
• Manage data for more than one discount list in a single batch. • Reuse your batch during the next import.	Inbound	File-based data import (FBDI) (DiscountListImportTemplate.xlsm)	You use the same procedure that you use when you import a single discount list, but with a few important differences. For details, see the *Import Discount Lists* scheduled process.

Description	Integration Type	Integration Options	Notes
• Use output files and error logs to examine details about the number of records imported and records that are in error, and to get suggestions on how to fix errors.			

Import a Large Number of Price Lists

In this use case, use the Price List Import Batch template to import price lists from your external source system into Oracle Pricing.

Description	Integration Type	Integration Options	Notes
If you have many price lists to import and none of them reference a coverage item or configure option, then import them in a batch. You can import: • Price list headers and access sets. • Price list items and charges.	Inbound	File-based data import (FBDI) (PriceListsImportBatchTemplate.xlsm)	See the *Import Price Lists Batch* scheduled process for more information.

Export Price Lists

In this use case, export your price lists from Oracle Pricing into comma-separated-values (CSV) files that you can import into external systems.

Description	Integration Type	Integration Options	Notes
You can export entities from each price list that you specify. These include the list header, items on the list, charges for items, pricing tiers, matrix rules, and other associated data.	Outbound	CSV export	• Multiple exported CSV files are merged into a compressed (ZIP) file. • Download the exported CSV file from the Scheduled Processes work area.

8 Product Lifecycle Management

Overview of Product Lifecycle Management

About Oracle Fusion Cloud Product Lifecycle Management

Oracle Fusion Cloud Product Lifecycle Management helps your supply chain and development teams unify processes and effectively manage data so they can prioritize and agree on the requirements needed to continuously innovate and commercialize new products and services.

Terminology for Product Lifecycle Management

These terms are used throughout this Oracle Fusion Cloud Product Lifecycle Management playbook.

Term	Definition
Business Object Family: Items	A business object with a few required child objects, for example, Catalogs, and a large collection of optional child objects, for example, User Defined Attributes.
Business Object Family: Item Class	A business object that has a few required child objects and a large collection of optional child objects, for example, Pages and Attribute Groups.
Business Object Family: Item Structure	A business object that's associated with Items, for example, Component, and a large collection of optional child objects, for example, Substitute components and Reference Designators.
Business Object Family: Change Orders	A navigable business object to which items are added and routed for enrichment of data. It's then reviewed then approved.
Business Events	An event published by Oracle Product Lifecycle Management when an applicable business object is updated. Use Oracle Integration Cloud (OIC) to subscribe to these events. **Note:** OIC might require extra licensing.

Integration Types and Options for Product Lifecycle Management

Overview of Product Lifecycle Management Integration Types and Options

Several integration types and options are available in an Oracle Fusion Cloud Product Lifecycle Management integrations.

Integration Types

These integration types are available in Oracle Product Lifecycle Management.

Inbound

In this integration, product data is sourced from external systems and uploaded into Oracle Product Hub and Oracle Product Development, which is considered the single source of truth.

Outbound

In this integration, the data stored in Oracle Product Hub and Oracle Product Development considered the single source of truth, is disseminated to various external systems.

End-to-End

In this integration, Oracle Product Hub and Oracle Product Development might propagate data and receive data updates from external systems in an orchestrated manner in a single transaction. You can build a well-coupled, end-to-end automated process by stringing the inbound and outbound integration processes and leveraging the business events and APIs with the Oracle Integration Cloud (OIC) functionalities.

For example:

1. Oracle Product Hub publishes product data of Item-A to an external system, which in turn generates its own matching Marketing-SKU-ID-A.
2. The external system feeds the Marketing-SKU-ID-A back to Oracle Product Hub so that the Marketing-SKU-ID-A becomes the Item Cross Reference attribute value for Item-A.

For more information, see *Application Integration*.

Integration Options

These integration options are available in Oracle Product Lifecycle Management.

Inbound

- *Item Import for File-Based Data Import (FBDI) and Smart Spreadsheet for Product Lifecycle Management*
- *Import Map for Product Lifecycle Management*
- *REST APIs and Soap Services for Product Lifecycle Management (Inbound)*

Outbound

- *Item Publication for Product Lifecycle Management*
- *Change Order Publication for Product Lifecycle Management*
- *REST APIs and SOAP Services for Product Lifecycle Management (Outbound)*
- *Large-Scale Raw Data Extraction Using Product Lifecycle Management and Business Intelligence Cloud Connector (BICC)*

End-to-End

- *End-to-End Integration Using Product Lifecycle Management Business Events*

Inbound

Item Import for File-Based Data Import (FBDI) and Smart Spreadsheet for Product Lifecycle Management

Use this import option to import items and related entities, such as structures, packs, category assignments, and trading partner item references, from multiple product source systems.

While FBDI is a set of predefined, unchangeable template for importing your business objects, the smart spreadsheet is a user-defined, flexible mapping between the input data file and the business objects. To download the FBDI template, see *File Links* in the File-Based Data Import (FBDI) for SCM guide. For information about creating smart spreadsheets, see *Create or Edit an Import Map* in the Using Product Master Data Management guide.

The input item data file can be in comma-separated values (CSV) or XML format. For a complete list of business objects and item-related business objects that can be imported, see *Overview of Manage Imports* in the Using Product Master Data Management guide. For more objects, such as Change Orders, see *Import Agile PLM Data*.

Key Features

- Import large volumes of data from secure content management servers. For example, Oracle WebCenter Content provides controlled access to external systems.
- Asynchronous automated integration between systems.
- Import data from a collection of input data files and attachments using a manifest file.
- It can be used to build an orchestrated integration process with Oracle Integration Cloud (OIC) and business events.

Best Practices

Common for all use cases, including low-volume data import:

- Assign the profile options choices that best suit your business requirements. For more information see the Set the Profile Options table in the *Best Practices for Item Import Performance* section.
- For the use case for importing items:
  - Complete the upload items and their master organizations records first. Then upload the child organization records.
  - Upload attachments only after the relevant item-organization records have been uploaded.

    - For more strategies you can use to achieve the best performance, see *Best Practices for Item Import Performance*.

- For the use case to import item structures:
    - For structure import, first import the items and revisions that are going to be part of the structure, including substitute parts.
    - In the case to create common structures, associate the items to the child organizations first and then create the common structures.
    - The component, reference designator, and substitute parts must be imported in the same batch. In case you've already imported the components, you must have the component details in the input file while importing reference designators and substitutes parts.
    - For more strategies you can use to achieve performance, see *Import Item Structures*.

- For the use case to import change orders:
    - Before you import change-order data, you first must import this data:
        - Items and attributes
        - Item revisions
        - Manufacturer parts
        - Item attachments
        - Item structures
    - For more information, see *Import Changes*.
    - For more strategies you can use to achieve performance, see *Best Practices for Item Import Performance*.

- For the use case to import change orders with redlines:
    a. Use the ItemImportTemplate.xlsm template to import the latest released revisions (current revision) of the item, including standard attributes, extensible flexfields, AMLs, and attachments.
    b. Use the ItemStructureImportTemplate.xlsm template to import the structure entities of the latest revision on the item.
    c. Use the ChangeOrderImportTemplate.xlsm template and the change import process to import the redlines on the completed change order, which will also populate the revision-specific data on the items, attachments, and structures.

    > **Note:** Execute Steps 1 and 2 before go live. Execute Step 3 after go live.

For very large volumes of data import (usually at cut-over):

- Limit the count of records in a single batch to 4 million records. To estimate the record count, see *Determine the Scope Of Data To Be Imported*.
- If a single batch exceeds 1 million records, work with Oracle Support to improve the throughput. For more information, see *Request a Performance Analysis*.

For medium-to-large volumes of data import (usually at cut-over):

- Limit the number of records in a single batch to less than 4 million. To estimate the record count, see *Determine the Scope Of Data To Be Imported* .
- If a single batch exceeds 1 million records, work with Oracle Support to improve the throughput. For more information, see *Request a Performance Analysis*.

Constraints

Don't run multiple item batches in parallel except for low data volume. This can be done by setting the Process Sequentially spoke system option to **Yes**. The item import process already contains logic to process the workload in parallel. You gain no advantage by submitting parallel batches and might cause record-locking issues. However, **Process Sequentially** should be set to **No** only when the number of records in the batches is low (in the hundreds) and when there are no large batches being imported during the same time period.

Related Topics

- Item Import
- My Oracle Support: How To Import Items And Change Orders From Another PLM System Using FBDI (Doc ID 2820202.1)
- Security Reference for Product Management
- How You Can Schedule File Uploads in Product Hub Portal
- My Oracle Support: Item Import Management White Paper (SaaS Cloud FBDI, Maps, Web Services) (Doc ID 1960116.1)
- My Oracle Support: Importing Item Attachments White Paper (Doc ID 2238241.1)
- Manage Item Attachments by Import
- My Oracle Support: Using External Data Integration Services for Oracle ERP Cloud (Doc ID 2102800.1)
- Cloud Customer Connect: Sample payload for submitting Item Import Process (ESS job) using ERP Integration Service

Import Map for Product Lifecycle Management

Use the import map integration option to build a reusable mapping that provides details about the relationship between the input data element and the Oracle Fusion Cloud Product Lifecycle Management Item Master attribute.

Import map integration is helpful when the input data file layout from your external data sources might not correspond to the master data for Oracle Product Hub. With the mapping that the integration builds, you can import data from the source system.

> **Note:** To use import map functionality, you must have an Oracle Fusion Cloud Product Management license.

Key Features

- UI-based mapping.
- CSV, XML, or nested XML used as input source data files.
- Map source-data elements to target data elements.
- Preview the resultant data.
- Generate multiple Smart Spreadsheet templates specific to input data profile. For example, computer hardware, plumbing supplies, and so on.
- Generate supplier-specific downloadable Smart Spreadsheet templates to closely match a specific supplier's data map.

Best Practices

- Import map template usage guidelines:

- Before uploading the data, ensure to validate by explicitly clicking on the validate button.

- Import map file-upload guidelines:
  - Limit the number of rows in the data file to 10,000 if you're uploading the file from **Manage Item Batches** > **Add Items to Batch** UI flow.
  - If you're going to upload more than 10,000 rows, use the *Schedule Item Import* scheduled process.
  - Ensure the date and date time formats match the import map setup to minimize errors during upload.
  - Note that the numeric decimal separator and grouping separator are adhered to based on the user's locale. The application user preferences aren't considered.

Constraints

For Smart Spreadsheet:

- The maximum number of rows that you can upload is 10,000.
- If an attribute has a value set with more than 10,000 values, the attribute isn't shown as a drop-down list of values (LOV). The values will be treated as free text and validated only at the time of item import.
- For descriptive flexfield (DFF) attributes, valid values aren't shown as a drop-down LOV. The values will be treated as free text and validated only at the time of item import.
- Dependent value sets don't show dependent values in the template. All values from the value set are shown in the drop-down list of the template.

Related Topics

- How You Import Item Data Using Import Maps

REST APIs and Soap Services for Product Lifecycle Management (Inbound)

Use the REST APIs and SOAP services inbound integration option if some of your business processes require near real-time updates to your product master data.

For example, you'd use this integration option if your business needs to inactivate an item near real-time.

Key Features

- Perform data updates in real time (**Inbound**).
- Use with Oracle Integration Cloud (OIC) to perform near-real-time operations in Oracle Fusion Cloud Product Lifecycle Management (**Inbound/Outbound/Process Integration**).

Best Practices

- Use this option only if you need to perform near real-time mode operations in Oracle Cloud PLM.
- To enhance performance:
  - Avoid querying master records using only child query criteria. For example, querying an item record based on a particular catalog-category or EFF attribute value.
  - See *Overview of the Oracle Fusion Cloud Supply Chain & Manufacturing Integration Playbooks* and the SCM sections that follow it.
- Use REST APIs wherever possible to capitalize on future improvements in REST technology.

Constraints

REST APIs can't fetch child entities at three or more levels together with the main record.

For example, in the Items context, Items BO is the first-level object while its child, item Revisions BO, is the second-level object. The revision-level attachment BO is the third-level object. Therefore, if, you want to fetch any object that's lower than the third level then, you perform a separate GET operation.

Related Topics

- Items Version 2 REST Endpoints
- Item Batch Maintenance

Outbound

Item Publication for Product Lifecycle Management

You can publish item data from Oracle Fusion Cloud Product Lifecycle Management to external systems on a periodic basis using item rules to limit the data set that's published for each external system.

Key Features

- Publish data to secure content-management servers that provide controlled access to external systems.
- Publish at frequencies that are appropriate for each external system.
- Make incremental publications (updates made since the previous publication) for each external system.
- Use filters to limit the entities to be published for each external system.
- Build an orchestrated integration process with Oracle Integration Cloud (OIC).

Best Practices

- Assign the profile options that best suit your business requirements. For more information, see *Define Profile Options to Publish Items*.
- Control user access.
- Purge the staging records at each spoke system UI periodically or use the purge option during the publication process.

Related Topics

- Publish Item Objects
- Security Reference for Product Management
- My Oracle Support: Fusion Product Hub Publication Process Technical Brief (Doc ID 1933240.1)
- My Oracle Support: Product Hub Publication XML File Format Details White Paper (Doc ID 2061518.1)

Change Order Publication for Product Lifecycle Management

Use this integration option to publish engineering change-order data from Oracle Fusion Cloud Product Lifecycle Management to external systems periodically.

Change-order data can include changes made to Change Order Header, and redlines of Affected Items, which include Item Structures, Attachments, and Approved Manufacturer List (AML). For more information, see *Publish Change Orders from Supplier Portal*.

Key Features

- Publish data to secure content-management servers that provide controlled access to external systems.
- Publish at frequencies that are appropriate for each external system.
- Make incremental publications (updates since the previous publication) for each external system.
- Use filters to limit the entities to be published for each external system.
- Build an orchestrated integration process with Oracle Integration Cloud (OIC).

Best Practices

- Control user access and restrict content manipulation.

Related Topics

- Security Reference for Product Management

REST APIs and SOAP Services for Product Lifecycle Management (Outbound)

Use the REST APIs and SOAP services outbound integration option if some of your business processes require near real-time updates to your product master data.

Key Features

- Perform data updates in real time (**Outbound**).
- Use with Oracle Integration Cloud (OIC) to perform near real-time operations in Oracle Product Lifecycle Management (**Inbound/Outbound/Process Integration**).

Best Practices

- Use this option only if you need to perform near real-time mode operations in Oracle Product Lifecycle Management.
- To enhance performance:
  - Avoid querying master records using only child query criteria. For example, querying an item record based on a particular catalog-category or EFF attribute value.
  - See *Overview of the Oracle Fusion Cloud Supply Chain & Manufacturing Integration Playbooks* and the SCM sections that follow it.
- Use REST APIs wherever possible to capitalize on future improvements in REST technology.

Constraints

REST APIs can't fetch child entities at three or more levels together with the main record.

For example, in the Items context, Items BO is the first-level object while its child, item Revisions BO, is the second-level object. The revision-level attachment BO is the third-level object. Therefore, if, you want to fetch any object that's lower than the third level then, you perform a separate GET operation.

Related Topics

- Items Version 2 REST Endpoints
- Item Batch Maintenance

Large-Scale Raw Data Extraction Using Product Lifecycle Management and Business Intelligence Cloud Connector (BICC)

Oracle Product Lifecycle Management offers a large collection of public view objects (PVOs) that provide read-only access to the raw data that's stored in the business objects.

Using Business Intelligence Cloud Connector (BICC) functionality, you can extract the raw data into a compressed (ZIP) file that you can upload to external systems, such as data warehouses, for specialized analysis.

Key Features

- Extract data from all the Oracle Product Lifecycle Management PVOs.
- Use *standard features available in BICC*.
- Extract data in full or in increments to suit your business needs.

Best Practices

- Periodic extraction leads to near real-time extraction by producing smaller data chunks.
- Control user access.

Constraints

Conditional data extraction isn't supported. That is, the data rows from a PVO can't be extracted based on a specific data condition.

Related Topics

- Overview of Business Intelligence Cloud Connector
- Data Stores (PVOs) available for Product and Catalog Management
- Data Stores (PVOs) available for Product Model

End-to-End Integration Using Product Lifecycle Management Business Events

You can build a complex process integration using supported Oracle Fusion Cloud Product Lifecycle Management business events, and Oracle Integration Cloud (OIC) orchestration functionality.

The process includes these steps:

1. When an Oracle Cloud PLM business object is updated, Oracle Product Lifecycle Management automatically raises a business event associated with that specific business object.
2. After listening to this event, OIC calls the relevant enrichment service to fetch more details from Oracle Cloud PLM about the updated business object.
3. OIC then performs complex actions, including:

- Using File Transfer Protocol (FTP) to transfer output files.
- Calling other APIs.
- Submitting scheduled processes in Oracle Fusion Cloud Applications.

Note: No enrichment service is available for deletion activity on a business object.

For more information about OIC adapters, see *OIC Adapters*. For a complete list of business events and their features, see *Supported SCM and Procurement Business Events*.

Related Topics

- My Oracle Support: White paper on integration 'Oracle Fusion Product Hub' and 'Oracle EBS' using 'Oracle Integration Cloud Services'. (Doc ID 2228954.1)

Business Objects for Product Lifecycle Management

Product Lifecycle Management Business Objects and Technology Choices Available for Integration

Oracle Fusion Cloud Product Lifecycle Management provides support for multiple business object families to help inbound and outbound integrations.

The families and their child objects are listed in the tables. During the integration process, you can transact the data for the entire business object family as a single unit, or for a specific member business object based on the data dependency rules. For example, you can import an item with all its structures and attachments all at once, or import only the item attachments if the item is already present in the system.

Inbound

Business Object Family	Key Business Objects	SOAP	REST	FBDI	Smart Spreadsheet/ Import Map	Business Events
Items	Items, Operational Attributes, Extensible Flexfields, Attachments, and so on. See *Overview of Manage Imports* for a complete list of business objects.	x	x	x	x	x
Item Structure	Component, Substitute components, Reference Designators,	x	x	x	x	x

Business Object Family	Key Business Objects	SOAP	REST	FBDI	Smart Spreadsheet/ Import Map	Business Events
	Attachments, and so on. See *Overview of Manage Imports* for a complete list of business objects.					
Change Order	Change Orders, Change Order Attributes, Affected Items, Extensible Flexfields, Attachments, and so on. See *Overview of Manage Imports* for a complete list of business objects.	x	x	x	–	x

Outbound

Business Object Family	Key Business Objects	SOAP	REST	Publication	BICC Data Extraction	Business Events
Items	Items, Operational Attributes, Extensible Flexfields, Attachments, and so on. See *Overview of Manage Imports* for a complete list of business objects.	x	x	x	x	x
Item Class	Item Class and child item class.	x	–	x	x	–
Item Structure	Component, Substitute components, Reference Designators, Attachments, and so on. See *Overview of Manage Imports* for a complete list of business objects.	x	x	–	x	x
Change Order	Change Orders, Change Order Attributes,	x	x	–	x	x

Business Object Family	Key Business Objects	SOAP	REST	Publication	BICC Data Extraction	Business Events
	Affected Items, Extensible Flexfields, Attachments, and so on. See *Overview of Manage Imports* for a complete list of business objects.					

Related Topics

- Overview of Manage Imports

Product Lifecycle Management Integration Features and Options for Business Objects

This table provides a list of key integration features available for each business object.

Integration Feature	SOAP	REST	FBDI	Smart Spreadsheets/ Import Maps	Publication Framework Support	BICC Data Extraction	Business Events
Proactive, pre-upload, preliminary validation (Example: value sets used)				X			
Complete validation	X	X	X	X	X		
Data transformation				X			
Custom templates				X			
Bulk Data upload			X	X			
Near Real-time upload	X	X					
Near Real-time data extraction	X	X					
Bulk Data extraction				X	X	X	
Item Rules-based bulk data extraction					X		
Spoke system specific Automatic-increment based extraction					X		
Supported File Types (CSV, XML)			X	X	X XML only	X CSV Only	

Use Cases and Patterns for Product Lifecycle Management

Overview of Product Lifecycle Management Use Cases and Patterns

Oracle Fusion Cloud Product Lifecycle Management (PLM) provides a wide range of integration options to support your complex business needs.

These Oracle Cloud PLM use cases and patterns are included as examples:

- *Rapid Migration of a Legacy System into Oracle Fusion Cloud Product Lifecycle Management*

- *Add a Large Volume of New Data to Oracle Fusion Cloud Product Lifecycle Management*
- *Periodic Medium/High Volume Updates from External Systems to Oracle Fusion Cloud Product Lifecycle Management*
- *Frequent Low-Volume Updates from External Systems to Oracle Fusion Cloud Product Lifecycle Management*
- *Large-Scale Update to a New External System from Oracle Fusion Cloud Product Lifecycle Management*
- *Automated Incremental Medium/High Volume Update to External Systems from Oracle Fusion Cloud Product Lifecycle Management*
- *Automated Near Real-Time Low-Volume Update to External Systems from Oracle Fusion Cloud Product Lifecycle Management*
- *Use Data from External Systems to Automate Data Embellishment in Oracle Fusion Cloud Product Lifecycle Management*

Rapid Migration of a Legacy System into Oracle Fusion Cloud Product Lifecycle Management

The objective of this use case is to migrate legacy-system data from a newly acquired company into Oracle Cloud Product Lifecycle Management, which is your single source of truth.

Description	Integration Type	Integration Options	Notes
Scenario 1: As a company, you've recently expanded by acquiring a new business. This business brings along a suite of legacy systems, such as Oracle E-Business Suite, that manage an extensive collection of item data, including details about product structures, catalogs, and associated attachments. Your objective is to migrate this data into Oracle Product Lifecycle Management, which is your single source of truth. This scenario usually demands: • Complex data preparation. • Data transformation. • Iterative data clean-up. • Automated large-scale validation. • Iterative performance tuning. • Rapid cut over.	Inbound	• Smart Spreadsheet • File-based data import (FBDI) (recommended only for non Oracle Product Lifecycle Management customers).	Web Services and Oracle Integration Cloud (OIC) aren't recommended for this use case.
Scenario 2: As a company, you're migrating from an on-premise Oracle Product Lifecycle Management system, such as Oracle Agile PLM (A9 change controlled data) to Oracle Product	Inbound	• File-based data import (FBDI) for Item, Item Structure, Changes, Approved Manufacturer List (AML), and Attachments.	

Description	Integration Type	Integration Options	Notes
Lifecycle Management, which is managing an extensive collection of item data, including details such as Items, Item structures, associated attachments, redlines, revisions, and change-order information. Your objective is to migrate this data into Oracle Product Lifecycle Management, which is your source of truth. This scenario usually demands: • Complex data preparation. • Data transformation. • Iterative data clean-up. • Automated large-scale validation. • Iterative performance tuning. • Rapid cut over. For more information, see *Import Data Using FBDI*.		• Oracle Web Services for Item, Item Structure, and Change REST APIs.	

Add a Large Volume of New Data to Oracle Fusion Cloud Product Lifecycle Management

In this use case the objective is to build an item data file manually by collecting data from multiple sources and maintaining it in Oracle Fusion Cloud Product Lifecycle Management.

Description	Integration Type	Integration Options	Notes
Scenario 1: Often, you might decide to add a new product line to your trading business. Maintaining your manually built item data file in Oracle Product Lifecycle Management, which could contain spreadsheets, product brochures, and web sites, usually requires these demands: • Manual/partially manual extraction of data from source systems. • Frequent inflow of data. • Data transformation. • Mass update of data existing in Oracle Product Hub.	Inbound	• Smart Spreadsheet • File-based data import (FBDI) (recommended only for non Oracle Product Hub customers).	Oracle Integration Cloud (OIC) and Item web services aren't recommended for this use case.

Description	Integration Type	Integration Options	Notes
Scenario 2: Integrating design systems like CAD for creating and updating the item and its structure using change orders. This scenario usually demands: • Create/ Update the item structure, attributes, and item attachments from Design Systems (CAD) o Frequent Inflow of data. o Data transformation. • Mass update of data existing in Oracle Product Lifecycle Management.	Inbound	• Import • Oracle Web Services for Item, Item Structure, and Change services.	You can use OIC to create an integration by configuring the events based on the existing web services from external system.

Periodic Medium/High Volume Updates from External Systems to Oracle Fusion Cloud Product Lifecycle Management

In this use case you might have multiple external sources that post updates to Oracle Fusion Cloud Product Lifecycle Management at a set time.

An example of an external source might be a bespoke system that your R&D division uses to maintain an item and its structure.

Description	Integration Type	Integration Options	Notes
This use-case scenario usually demands: • Automated pre validated data. • Data transformation. • Frequent inflow.	Inbound	• Web Services (Item Batch Maintenance Service). • Oracle Integration Cloud (OIC) can be used with file-based upload if an orchestrated integration is needed.	Item web services aren't recommended for this use case.

Frequent Low-Volume Updates from External Systems to Oracle Fusion Cloud Product Lifecycle Management

In this use case you might have multiple external sources that update often and post the updates to Oracle Fusion Cloud Product Lifecycle Management.

An example of an external source might be your compliance system.

Description	Integration Type	Integration Options	Notes
This use-case scenario usually demands: • Automated pre validated data. • Data transformation. • Low volume. • Frequent inflow. • Immediate update.	Inbound	• Item Web Services. • Oracle Integration Cloud (OIC) can be used with item web services if an orchestrated integration is needed.	–

Large-Scale Update to a New External System from Oracle Fusion Cloud Product Lifecycle Management

In this use case you might authorize a new external system and populate it by quickly extracting a large volume of items that are eligible for E-commerce.

An example of an E-commerce system might be Shopify.

Description	Integration Type	Integration Options	Notes
This use-case scenario usually demands: • Data is available in Oracle Product Hub. • Complex selection condition for item data.	Outbound	• Publications. • Oracle Business Intelligence Cloud Connector (BICC). • Oracle Integration Cloud (OIC) can be used with Publications or BICC if an orchestrated integration is needed.	Item web services aren't recommended for this use case.

Related Topics

- Product Management - Related Item Real Time

Automated Incremental Medium/High Volume Update to External Systems from Oracle Fusion Cloud Product Lifecycle Management

In this use case you might have an external system where you periodically need to cascade the changes made in Oracle Fusion Cloud Product Lifecycle Management.

An example of this use case might be the addition of a new accessory on Shopify.

Description	Integration Type	Integration Options	Notes
This use-case scenario usually demands: • Data is available in Oracle Product Hub. • Complex selection condition for item data. • Automated/manual periodic data extraction. • Incremental data extraction.	Outbound	• Publications. • Oracle Business Intelligence Cloud Connector (BICC). • Oracle Integration Cloud (OIC) can be used with Publications or BICC if an orchestrated integration is needed.	Item web services aren't recommended for this use case.

Automated Near Real-Time Low-Volume Update to External Systems from Oracle Fusion Cloud Product Lifecycle Management

In this use case you might have an external system where you need to cascade the changes made in Oracle Fusion Cloud Product Lifecycle Management.

An example of this use case is recalling an existing product on an E-commerce system such as Shopify.

Description	Integration Type	Integration Options	Notes
This use-case scenario usually demands: • Item data update is performed in Oracle Product Hub. • It's critical that the external system is kept in sync with Oracle Product Lifecycle Management in near real-time	Outbound	Oracle Integration Cloud (OIC) can be used by leveraging the business events raised by Oracle Product Lifecycle Management.	Neither Publications nor Oracle Transactional Business Intelligence (OTBI) is recommended for this use case.
You can integrate Oracle Product Lifecycle Management with Oracle Fusion Cloud Enterprise Resource Planning (ERP) systems like Oracle E-Business Suite or SAP products for syndicating the Items and Item structure redlines. These include change orders and other details like change header attributes, item attributes, attachments, and revisions. This scenario usually demands:	Outbound	• Oracle Integration Cloud (OIC) can be used with Publications or OTBI if an orchestrated integration is needed. • Item, Item Structure, and Change Order REST APIs can also be used. • Publications. • OTBI.	–

Description	Integration Type	Integration Options	Notes
• Data is available in Oracle Product Lifecycle Management. • Based on OIC events, such as change orders: a. The status is changed to scheduled. b. The data is syndicated using Oracle Web Services and pushed to ERP systems.			

Use Data from External Systems to Automate Data Embellishment in Oracle Fusion Cloud Product Lifecycle Management

After an item is added to Oracle Fusion Cloud Product Lifecycle Management, there's a critical need for the item data to be embellished further by getting more data elements from external systems.

For example, if an item "Chemical" is added to Oracle Product Lifecycle Management then the data element might be a "HAZMAT" classification.

Description	Integration Type	Integration Options	Notes
This use-case scenario usually demands: • Item data update is performed in Oracle Product Hub. • External systems furnish extra data elements for the item based on the attributes available in Oracle Product Lifecycle Management. • For the item data to be transaction-ready, it must be updated with the data furnished by the external system.	• Process integration • Outbound	Item web services, along with Oracle Integration Cloud (OIC), can be used to build this orchestrated flow of information to achieve an end-to-end business process. Here's an example solution: 1. OIC detects an item update in Oracle Product Hub by listening to the business events and then extracts the item attributes of interest, for example, chemical composition. 2. OIC provides the external system with the extracted data and collects the data element the external system furnishes, for example, HAZMAT. 3. OIC uses Item or Change web services to update (or redline) the item in Oracle Product Hub and Oracle Product Development with the data element's (HAZMAT) data.	–

Perform Complex Data Analysis Using Data with Multiple Dimensions and Sources

The objective of this use case is to ensure that the item data in the data warehouse synchronizes with Oracle Fusion Cloud Product Lifecycle Management.

The scenario includes these conditions:

- You're a large multinational manufacturing company and use Oracle Product Lifecycle Management (your single source of truth) to maintain your item and change order data.
- You source your components in multiple currencies and maintain the sourcing information in your legacy material requirements planning (MRP) system.
- You also receive daily the foreign-exchange (forex) rate from your third-party data provider.
- Your data warehouse, where the item data (including change order data), your MRP data, and the daily forex rate are uploaded regularly.
- Your forex risk forecast model factors in the change order schedules.

Therefore, the item data in the data warehouse must be synchronized with Oracle Product Lifecycle Management for the forex risk forecast to closely reflect reality.

Description	Integration Type	Integration Options	Notes
This use-case scenario usually demands: • Extraction of large volume of raw data from Oracle Product Lifecycle Management should be performed often. • In an on-going mode, the Oracle Product Lifecycle Management data extraction should be incremental, periodic, and automated. • The extracted file should be available in secure storage for further processing.	Outbound	You can use Oracle Business Intelligence Cloud Connector (BICC) to perform data extraction by accessing the public view object (PVO).	Neither Publications nor Oracle Transactional Business Intelligence (OTBI) is recommended for this use case.

Oracle Integration Cloud Accelerators for Product Lifecycle Management

Previously Built Oracle Integration Cloud (OIC) Recipes for Product Lifecycle Management

You can use this previously built OIC integration between Oracle Fusion Cloud Supply Chain & Manufacturing and Oracle Health EHR.

Recipe/Flow Name	Source	Destination	Use Case/Description	Details/Links
Oracle Fusion Cloud SCM — Oracle Health EHR | Sync Items	Oracle Fusion Cloud SCM	Oracle Health EHR	Synchronizes Oracle Fusion Cloud SCM item master, item location, and item cost information with Oracle Health EHR	*Sync Items From Oracle Fusion Cloud SCM to Oracle Health EHR*

Reference Architectures for Product Lifecycle Management

Synchronize Item Information with External Enterprise Resource Planning Systems and E-Commerce Applications

Overview of the Architecture

You can use these suggested architectures that describe how to synchronize item information to guide you through the design and implementation of your own integrations.

Use Cases

These use cases serve as examples of how you might architect and implement an integration with specific requirements.

Synchronize Item Information with On-Premise Enterprise Resource Planning (ERP) Systems

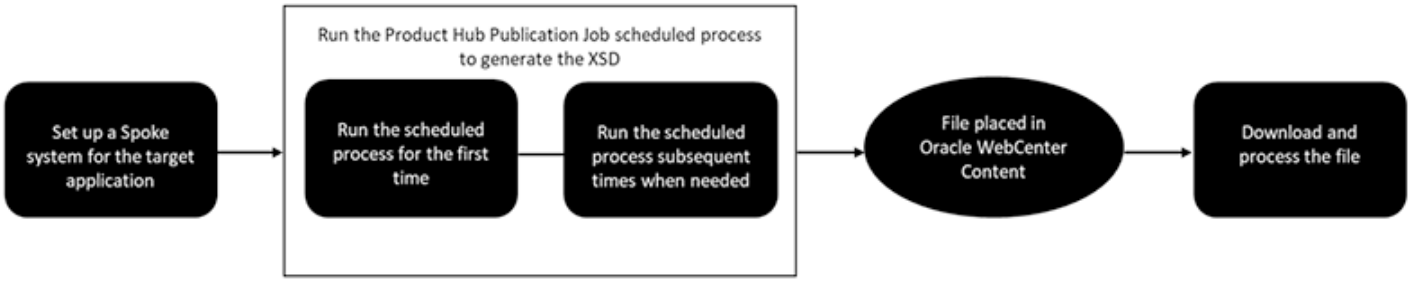
In this use case, you're using Oracle Fusion Cloud Product Lifecycle Management as the item master and you need to synchronize items with customers' on-premise ERP systems for transactions. The synchronized information contains core item information such as descriptions, units of measure, and operational attributes. Other information, such as trading partners and global trade item numbers (GTINs), are also included.

Synchronize Item Information with E-Commerce Applications

In this use case, you're using Oracle Product Lifecycle Management as the item master and you need to synchronize items with e-commerce applications. The synchronized information contains item information such as descriptions, units of measure, product classifications, product characteristics, and GTINs.

Process Overview

This flow diagram shows the steps you take when designing and implementing the use cases.



Details of these steps are described in these topics:

- *Create a Spoke System for Each Integrating Application*
- *Generate an XML Schema Definition for Deployed Data Models*
  - *Run the Product Hub Publication Job Scheduled Process for the First Time*
  - *Run the Product Hub Publication Job Scheduled Process Subsequent Times When Needed*
- *Download the Files from Oracle WebCenter Content*

Before You Begin

Ensure that you've set up the item data model in Oracle Product Lifecycle Management. See *Item Attributes Reference* for more information.

Create a Spoke System for Each Integrating Application

Spoke systems (also called source systems) enable you to identify the source of data imported into or published from the Oracle Fusion Cloud application.

Data Selections

Use Spoke system filters to manage item entities and data that are published. The information in the table will help you set the scope of your integration by describing the entities and data you should select.

Data Selections	Options
Item entities	• Publication Maps: Let you filter the attributes that are needed for downstream applications. They're preferred because they generate a smaller payload only for the applicable attributes. See *Set Up Publication Options for a Spoke System* for information about the options that control the publication of item objects.

Data Selections	Options
	• Entities Selector: Lets you publish system IDs that are usually required for data-warehouse applications but aren't usually applicable to other integrations. See *Rules and Rule Sets* for information about selecting entities.
Data criteria	• Selection Criteria: Let you filter items based on business entities, such as item class and item organization. See the Publish Options section in *Product Spoke Systems* for more information about defining publication options, such as item class, trading partner item, and catalog publication criteria. • Item Validation Rules: Let you filter items using business validation rules. You can configure business rules to validate item data at a more granular level than you can with selection criteria. See the Validation section in *Rules and Rule Sets* for information about defining validation rules.

Related Topics

- Product Spoke Systems; Spoke System Setup

Generate an XML Schema Definition for Deployed Data Models

Use the Product Hub Publication Job scheduled process to generate the XML schema definition (XSD) needed to build an integration using the Spoke system.

Generate the XSD one time only, when the item data model for the target application is first deployed. You can run it again if any changes are made to the item data model.

Option	Value
Spoke System	The name of the new Spoke system.
Publish Items	Yes, if needed.
Publish Item Classes	Yes, if needed.
Publish Item Catalogs	Yes, if needed.
Publish Trading Partner Items	Yes, if needed.
Generate XSD	Yes.

Run the Product Hub Publication Job Scheduled Process for the First Time

Run the Product Hub Publication Job scheduled process for the first time to publish all eligible records for the target application, if required.

Select these elements and values when running the Product Hub Publication Job scheduled process for the first time.

Option	Value
Spoke System	The name of the new Spoke system.
Publish All Records	Yes.

- The processing time will depend on the number of items to publish. If there are more than 1,000 items, change the values of the publication profile options to optimize the publication process. For more information, see *Define Profile Options to Publish Items*.
- If a full publish isn't required, run the Product Hub Publication Job scheduled process using the current date as the start date.
- The scheduled process must be run once before you can schedule it to run whenever needed.

Run the Product Hub Publication Job Scheduled Process Subsequent Times When Needed

After you run the Product Hub Publication Job scheduled process for the first time, you can run it whenever you need to.

Select these elements and values when running the Product Hub Publication Job scheduled process for ongoing requirements.

Note: The dates must be blank when configuring the scheduled process for delta updates.

Option	Value
Spoke System	The name of the new Spoke system.
Publish Items	Yes, if needed.
Publish Item Classes	Yes, if needed.
Publish Item Catalogs	Yes, if needed.
Publish All Items	No.

Run the Scheduled Process for an Integration

To schedule the process to run for an integration, select **Process Details** > **Advanced Options** > **Schedule** to set up frequency.

- You shouldn't use the scheduled process to publish updates in real time.
- Don't schedule the process to run more than every 15 minutes.
- If there are real-time integration requirements, see the Product Lifecycle Management table in the Supported SCM and Procurement Business Events section in *Oracle ERP Cloud Adapter Capabilities* for more information.
- Change profile options based on daily loads. See *Define Profile Options to Publish Items* for more information.
- If a business rule validation is associated with the Spoke system, the scheduled process might complete with a Warning status. The log that's generated will show the items that have been filtered by the business rules.
- You must choose someone to notify if a process failure occurs. Select **Process Details** > **Advanced Options** > **Notification** to add a recipient.

Download the Files from Oracle WebCenter Content

You can download the files from Oracle WebCenter Content and process them in the target application.

See *Access Payload Generated by the Publication Scheduled Process* for information about how to access the files.

Synchronize Item Data Between Oracle Fusion Cloud Enterprise Resource Planning and Oracle Health EHR

Overview of the Architecture

You can use these suggested architectures to guide you through the design and implementation of your healthcare integrations with Oracle Health.

Use Cases

This reference architecture supports these data flows:

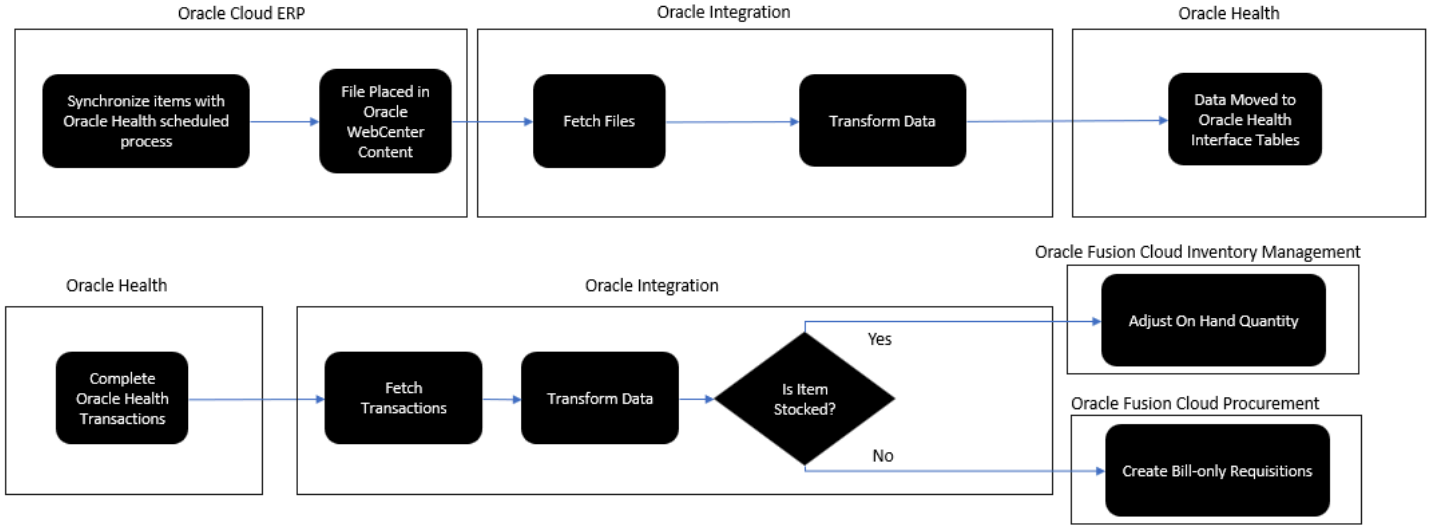
- Item master setup – ERP Master Organization and ERP Inventory Organization sync with Oracle Health.
- Item replacement and substitute setup.
- Item location setup.
- Item cost setup.
- On-hand synchronization between Oracle Health usage and Oracle Fusion Cloud Inventory Management.
- Bill-only item requisition creation in Oracle Fusion Cloud Procurement.

Required Applications

Ensure you have access to these applications.

- Oracle Fusion Cloud Supply Chain & Manufacturing (SCM), Release 24D or later.
- Oracle Integration for Healthcare, Release Version 25.10.0.0 or higher.
- Oracle Health EHR, Release 2025.3 or later.

Process Overview



Details of these data flows are described in these topics:

- *Generate a Full Publish Using an Existing Oracle Health Spoke System*
- *Synchronize Items with Oracle Health for Ongoing Requirements*
- *Schedule the Job for Integration*
- *Oracle Integration and Oracle Health EHR Resources*

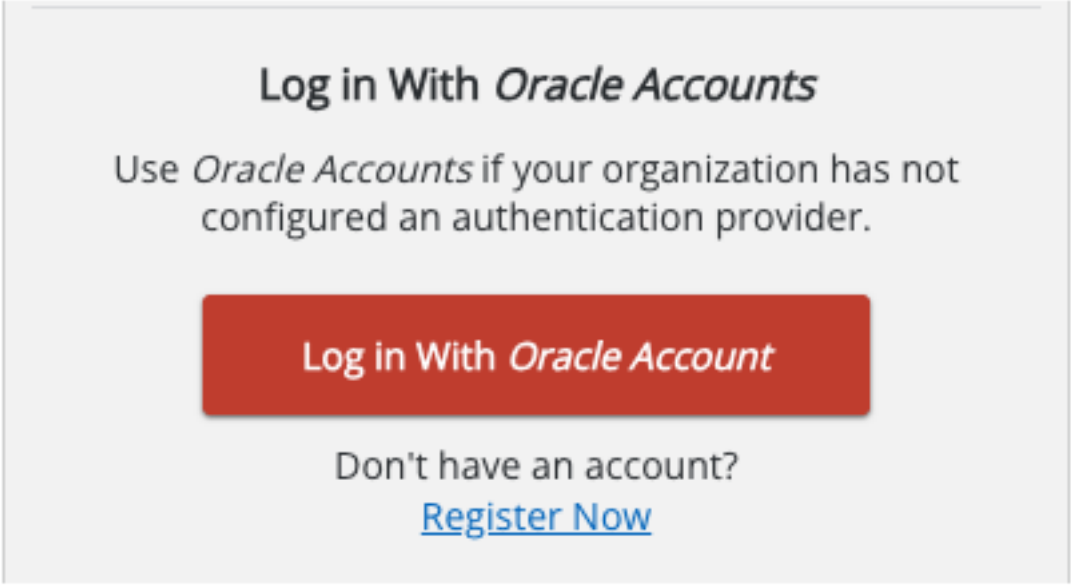
Before You Begin

Ensure that you've completed these tasks before doing an integration.

- Opt in to the Synchronize Items, Item Usage, and Bill-only Requisitions Between Oracle Cloud ERP and Oracle Health feature. For more information, see *Oracle Fusion Cloud Product Lifecycle Management 26A What's New*.

- Set up Transaction account builder rules. The integration uses these to create default distributions and default charge accounts for a requisition. For more information, see *Implementing Procurement > Define Transaction Account Rules*.
- Set up the integrator with the appropriate security to access and publish items, create requisitions, and update on-hand quantities. For more information, see *Assign Required Roles to an Integration User*.
- Install the Oracle Integration Cloud (OIC) accelerator Oracle Fusion Cloud SCM — Oracle Health EHR | Sync Items. For more information, see *Sync Items From Oracle Fusion Cloud SCM to Oracle Health EHR*.
- Ensure that you've completed the REST API setup in Oracle Health. You do this in the *Oracle Health Wiki*.

  All Oracle Health customers should have access to this Wiki. If you don't, you can use the Register Now link.



Generate a Full Publish Using an Existing Oracle Health Spoke System

Use the Product Hub Publication Job scheduled process to generate a full publish after you set up Spoke system filters, or to purge and regenerate the publish history.

Use an Existing Oracle Health Spoke System for Publishing

Use Spoke system filters to manage item entities and data that are published. For multiple Oracle Health instances, create additional Spoke systems. For more information, see the Spoke System Setup section in *Product Spoke Systems*.

Data Selections	Options
Select item entities	The entities are preselected for an Oracle Health Spoke system. Use these options if you need to change them. • Publication Maps: Let you filter the attributes that are needed for downstream applications. They're preferred because they generate a smaller payload only for the applicable attributes. If using a publication map, ensure that the output is XML so that the integration is successful. See *Create Publication Map and Specify Mapping Attributes* for information about How to set up a publication map. • Entities Selector: Lets you publish system IDs that are usually required for data-warehouse applications but aren't usually applicable to other integrations. See *Set Up Publication Options for a Spoke System* for information about setting up Spoke system options.

Data Selections	Options
Define data selection criteria	Use data selection criteria to filter items that are eligible for synchronization with Oracle Health. • Selection Criteria: Let you filter items based on business entities, such as item class and item organization. See *Publish Options* for more information about defining publication options, such as item class, trading partner item, and catalog publication criteria. • Item Validation Rules: Let you filter items using business validation rules. You can configure business rules to validate item data at a more granular level than you can with selection criteria. See *Validation* for information about defining validation rules.

Generate a Full Publish

Select these options and values when running the *Product Hub Publication Job* scheduled process.

Option	Value
Spoke System	The name of the Spoke system you set up for the integration.
Publish Items	Yes.
Publish All Records	Yes.

The processing time will depend on the number of items to publish. If there are more than 1,000 items, change the values of the publication profile options to optimize the publication process. For more information, see *Define Profile Options to Publish Items*.

Purge and Regenerate the Publish History

If you change any of the Oracle Health Spoke system filters, you must purge the publish history. To purge, run the Product Hub Publication Job scheduled process using these elements and options.

Data Selections	Options
Spoke System	The Spoke system that is set up for the integration.
Purge History	Yes.

After you've purged the publish history, you must generate a full publish. For information, see the *Generate a Full Publish* section.

Synchronize Items with Oracle Health for Ongoing Requirements

Use the Synchronize Items with Oracle Health scheduled process to set up publications that are used for integration between Oracle Fusion Cloud Supply Chain & Manufacturing (SCM) and Oracle Health.

When you run the *Synchronize Items with Oracle Health* scheduled process, use these parameters.

Option	Value
Spoke System	The new or existing Spoke system that was set up.
Synchronize Item Master	Yes, if needed.

Option	Value
Synchronize Item Locations	Yes, if needed.
Synchronize Item Costs	Yes, if needed.
Start Date	Blank.
End Date	Blank.

Schedule the Job for Integration

Use the Schedule tab in the Scheduled Processes work area to schedule the job for integration.

Before You Begin

Consider these best practices before you schedule the job.

- The job is not meant for publishing updates in real time. Subsequently, ensure the schedule is set up appropriately.

  The recommendation is that you don't schedule the job more than once every 15 minutes. If you have real-time integration requirements, please use public events and Oracle Integration Cloud. For more information, see *Oracle ERP Cloud Adapter Capabilities > Product Lifecycle Management*.
- Change profile options based on daily loads. For more information, see *Define Profile Options to Publish Items*.
- If a Business Rule validation is associated with the Spoke system, the job may complete with a warning. You can view the log to view the items that have been filtered by the business rules.
- Set up the appropriate notifications so that they're sent when there are job failures. You can set them up in the Notifications tab.

Oracle Integration and Oracle Health EHR Resources

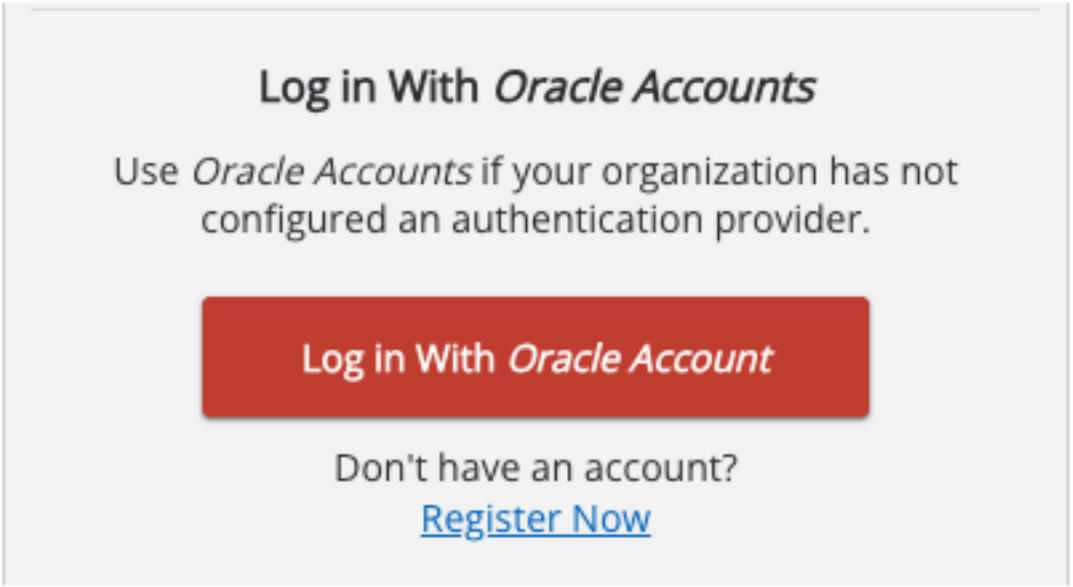
These resources provide additional information about Oracle Integration and Oracle Health EHR.

Oracle Integration

Sync Items From Oracle Fusion Cloud SCM to Oracle Health EHR provides information about using an accelerator to sync item master, item location, and item cost information from Oracle Fusion Cloud Supply Chain & Manufacturing (SCM) with Oracle Health EHR based on a schedule specified in Oracle Fusion Cloud SCM.

Oracle Health EHR

For information about Oracle Health EHR, you must access the *Oracle Health Wiki*. All Oracle Health customers should have access to this Wiki. If you don't, you can use the Register Now link.



Note: You must have an *Oracle Health Wiki* account to access these links.

- *Understand Oracle Cloud Fusion SCM - Oracle Health Item Sync Interfaces*
  - Oracle Health 2025.3+
  - Enable server 2039
- *Overview of Oracle Health Clinical Inventory Management Transactions API*
  - Oracle Health 2025.3+
  - Enable server 2039
  - ml-supply-chain-item-locations (cloud service)

9 Service Logistics

Overview of Service Logistics

About Oracle Service Logistics

Oracle Service Logistics, a module that's part of the Oracle Fusion Cloud Maintenance product, integrates Oracle Fusion Cloud Supply Chain & Manufacturing (SCM) functionality to support customer-service processes.

Oracle Fusion Cloud SCM functionality includes:

- Inventory
- Asset tracking
- Costing
- Maintenance
- Order management
- Accounts receivable
- Projects

Customer-service processes include:

- Depot repair
- Field service
- Preventive maintenance
- Parts sales and exchanges (parts-only service)

Terminology for Service Logistics

These terms are used throughout the Oracle Service Logistics playbook.

Term	Definition
Service Activity Code	Drives much of the processing in Service Logistics include parts ordering, Oracle Fusion Field Servicedebrief/charges, depot-repair charges, and subscription coverage. Because there are no predefined codes, they must be designed by the implementation team.
Business Process	All Service Activity Codes must be assigned to a business process. Business processes are predefined and can't be created by customers. Predefined values are Customer Support, Parts Exchange, Depot Repair, Depot Repair Logistics, and Field Service.
Billing Type	Assigned to Service Activity Codes and to items used for service parts and other types of items such as Labor, Expenses and Fixed Charges. Oracle predefines values, such as parts, labor, and expenses. Customers can create more values, for example, batteries and travel labor. Billing types are tied to predefined billing categories (Material, Labor, Expenses, Fixed Charges). Customer can't create Billing Categories.

Term	Definition
Part Requirement	Header and lines. One of the two objects in Service Logistics. It captures parts needed for service requests and work orders (either Oracle Fusion Cloud or third party). Sales Order, Transfer Orders, and Inventory Reservations then can fulfill and bill for these part requirements.
Debrief	Transactions that record the parts, labor, and expenses used by field service or depot repair when fulfilling work orders. Charges are automatically calculated when debrief transactions are created. Debrief and charges transactions are stored in the other main object in Service Logistics in a header (line structure).
Charges	Transactions that record how much the customer should be charged for the depot-repair, field-service, or parts-only service provided. They're generated from debrief transactions and parts requirements. The customer can also enter them manually on the Service Logistics pages.
Oracle Fusion Field Service	Part of the Oracle Fusion Cloud Applications Suite. Service Logistics provides integrations between Oracle Fusion Field Service and Oracle Fusion Cloud SCM.

Integration Types and Options for Service Logistics

Overview of Service Logistics Integration Types and Options

Several integration types and options are available in an Oracle Service Logistics integration.

Integration Types

Service Logistics supports two integration types.

Inbound

In this integration, data is imported into Service Logistics from upstream on-premise systems or third-party providers.

Outbound

In this integration, data is exported from Service Logistics to downstream on-premise systems or third-party providers.

Integration Options

Use any of these options to import data into Service Logistics or to export data to another system.

Inbound

- *REST APIs for Service Logistics (Inbound)*

Outbound

- *REST APIs for Service Logistics (Outbound)*
- *Oracle Transactional Business Intelligence for Service Logistics*
- *Business Intelligence Cloud Connector for Service Logistics*

Inbound

REST APIs for Service Logistics (Inbound)

You can use REST APIs to create, review, update, and sometimes delete data in Oracle Service Logistics, including setup, definition, and transactional entities.

Key Features

- Create and manage setup data.
- Perform data updates in near real time.
- Retrieve data for custom pages or external systems.

Best Practices

- **Create and manage setup data**

  You can create and manage certain entities using a REST API.
- **Perform data updates in near real-time**

  Use this option only if you need to perform near real-time mode operations, which can include creating or updating data.
- **Retrieve data for custom pages or external systems**
  - You can perform GET operations to retrieve both setup, lookup, and general object data.
  - You can query by object id, query, or finder.
  - To improve performance:
    - Limit the attributes using the fields query parameter.
    - Avoid OR conditions with LIKE clauses where possible.
    - Avoid querying master records using only child query criteria where possible.

Constraints

- **Create and manage setup data**
  - Several objects are supported by the REST API integration option.
  - You should review the capabilities of each REST API and identify the best method for the implementation and for the ongoing management of the object data.
- **Perform data updates in near real-time**

  Every REST API will have validations to ensure data integrity is maintained.
- **Retrieve data for custom pages or external systems**

  Retrieving child records across multiple main records is a REST API limitation.

  REST limitation:

Related Topics

- REST API for Oracle Fusion Cloud SCM (in Tasks > Maintenance)

Outbound

REST APIs for Service Logistics (Outbound)

You can use most of the inbound REST APIs to export data from Oracle Service Logistics to other systems deployed in your business.

Key Features

- Used for both inbound and outbound integrations.
- Export data in real-time.
- Used with Oracle Integration Cloud (OIC) to perform near real-time operations in Oracle Service Logistics.

Best Practices

- Use this option if you need to export data from Oracle Service Logistics in near real time.
- You can perform GET operations to retrieve setup, lookup, and general object data.
- The queries can be by object id, query, or finder.
- To improve performance:
  - Limit the attributes using the fields query parameter.
  - Avoid OR conditions with LIKE clauses where possible.
  - Avoid querying master records using only child query criteria where possible.

Constraints

This option isn't suitable for exporting large volumes of Oracle Service Logistics data.

Related Topics

- REST API for Oracle Fusion Cloud SCM (in Tasks > Maintenance)

Oracle Transactional Business Intelligence for Service Logistics

Oracle Service Logistics provides Oracle Transactional Business Intelligence (OTBI) reports with predefined subjects areas that enable you to extract data for import to your external systems.

Subject Area	Description
Service Parts Profitability	Provides service parts profitability information for parts sales, returns, exchanges, and replacements created in Service

Subject Area	Description
	Logistics Manage Part Requirements.
Parts Fulfillment Performance	Provides parts delivery information for both customer service logistics sales orders (parts sales, exchanges, returns) and field-service part transfer orders.
Field Service Work Order Profitability	Provides revenue reporting for parts and labor debrief lines posted for field service activities for Oracle CX Sales work orders. The outstanding revenues for debrief lines not posted can be viewed as well.

Related Topics

- Using Maintenance

Business Intelligence Cloud Connector for Service Logistics

Using Oracle Fusion Cloud Maintenance's collection of public view objects (PVOs) exposed in Oracle Business Intelligence Cloud Connector (BICC), you can extract data out of your Fusion Cloud instances and load it into specified external storage areas.

Key Features

- Used only for outbound integration.
- Extract data from the available Oracle Maintenance PVOs.

Best Practices

Recommended for bulk extraction of maintenance data (such as organizations, work centers, resources, shifts, and work orders) to be used in an outbound integration with downstream applications.

Constraints

This option isn't suitable for extracting maintenance data on a real-time basis.

Related Topics

- Overview of Business Intelligence Cloud Connector
- Extract Data Stores for SCM
- Tables and Views for SCM

Business Events for Service Logistics

Oracle Service Logistics raises several business events that you can configure and use for outbound integration with third-party applications or for executing business-specific processes on a specific event occurrence.

Key Features

- Used only for outbound integrations.
- Business events notify external systems, initiate workflows, or raise custom logic through integrations defined in Oracle Integration Cloud (OIC) or other middleware.

Best Practices

It's recommended that you use Oracle Service Logistics REST APIs with business events to get detailed information about the Service Logistics business objects that the integrating application requires.

Business Events

This table lists the business events supported by Oracle Service Logistics.

Business Event	Internal Name	Description	Event Trigger Points
Estimate Header Created	**EstimateCreateEvent**	Raised when a new record is created in the Estimate Headers table.	Any process that creates an estimate, such as Estimates Redwood UI or Estimates REST API.
Estimate Header Updated	**EstimateUpdateEvent**	Raised for updates to any attribute in the Estimate Headers table.	Any process that updates an estimate, such as Estimates Redwood UI or Estimates REST API.
Debrief Header Updated	**DebriefUpdateEvent**	Raised when debrief status is updated to Pending.	Any process that sets the debrief header status to Pending. For example, when you click **Post Charges and Close** on the Work Orders and Charges page or the Depot Repair page, it invokes the Debrief REST API or runs the *Auto Process Debrief Charges* scheduled process.

Business Event Payloads

This table shows Oracle Service Logistics business events and their corresponding payload attributes.

Business Event	Event Payload

Estimate Header Created	`EstimateHeaderId`
	`EstimateStatusCode`
	`DocumentName`
	`CustAccountId`
	`AssetId`
	`BuOrgId`
	`ProductItemId`
	`CreatedBy`
	`CreationDate`

Business Event	Event Payload
	LastUpdateDate LastUpdatedBy AssetNumberItem BusinessUnitName CustAccountName CustomerName DocumentType EstimateType EstimateNumber EstimateTotal
Estimate Header Updated	EstimateHeaderId EstimateStatusCode DocumentName CustAccountId AssetId BuOrgId ProductItemId CreatedBy CreationDate LastUpdateDate LastUpdatedBy AssetNumberItem BusinessUnitName CustAccountName CustomerName DocumentType EstimateType EstimateNumber EstimateTotal
Debrief Header Updated	DebriefHeaderId DebriefStatusCode

Business Objects for Service Logistics

Service Logistics Integration Options Available by Business Objects

Oracle Service Logistics provides support for multiple business objects to help inbound and outbound integrations.

Inbound

Business Object	SOAP	REST	FBDI	Business Events Available
Part Requirements	-	x	-	-
Debriefs	-	x	-	x

Business Object	SOAP	REST	FBDI	Business Events Available
Stocking Locations	-	x	-	-
Return Routing Rules	-	x	-	-

Outbound

Business Object	SOAP	REST	BICC Data Extraction	Business Events Available
Part Requirements	-	x	x	-
Debriefs	-	x	x	x
Stocking Locations	-	x	x	-
Return Routing Rules	-	x	x	-

Use Cases and Patterns for Service Logistics

Integrate Oracle Fusion Cloud SCM with Third-Party Service Request Applications

In this use case you're integrating Oracle Service Logistics and Oracle Fusion Cloud Supply Chain & Manufacturing (SCM) with third-party customer-service and support applications that create service requests.

Description	Integration Type	Integration Options	Notes
As a customer service representative using a third-party customer-service application, I want to order service parts or create a depot repair RMA in Oracle Cloud SCM. Available options are • Use the Service Logistics Part Requirements page to create the parts orders or RMAs referencing the third-party customer-service application's service-request number. • Use the Service Logistics Part Requirements REST API to create the parts orders or RMAs referencing the third-party customer-service	Inbound	REST APIs: • *Part Requirement Headers REST resource* • *Part Requirement Lines REST resource*	-

Description	Integration Type	Integration Options	Notes
application's service request number.			

Integrate Oracle Fusion Cloud SCM with Third-Party Work Order Applications

In this use case you're integrating Oracle Service Logistics and Oracle Fusion Cloud Supply Chain & Manufacturing (SCM) with third-party customer-service and support applications that create work orders.

Description	Integration Type	Integration Options	Notes
As a field-service technician using a third-party field-service application, I want to create debrief and charges lines to update inventory, the installed base, and to create an invoice. Available options: • Use the Service Logistics Work Order Charges page to create debrief lines and calculate charges for work performed on work orders in the third-party field-service application including referencing its work-order number. • Use the Debriefs REST resource to create debrief lines and calculate charges for work performed on work orders in the third-party field service application, including referencing its work order number.	Inbound	REST APIs: *Debriefs REST resource*.	-

Oracle Integration Cloud Accelerators for Service Logistics

Previously Built Oracle Integration Cloud (OIC) Recipes for Service Logistics

You can use these previously built OIC recipes, which integrate Oracle Fusion Field Service with Oracle Fusion Cloud Supply Chain & Manufacturing (SCM) and Oracle Service Logistics, as starting points when building integrations to other Oracle Fusion Field Service applications.

Integration Name	Source	Destination	Use Case/Description	Details/Links
Oracle Service Logistics OFS Technician Sync	Oracle Customer Data Management	Oracle Fusion Field Service	Field-service technicians are configured as person parties in Oracle Customer Data Management. The Field Service Technician option can be associated with a Person Party from several work areas, including the Service Logistics Manage Field Service Technicians setup UI. Oracle Integration Cloud (OIC) is then executed to create the technician in Oracle Fusion Field Service if the technician doesn't exist, or to update the technician if they already exist.	To get the Oracle Service Logistics — Oracle Field Service | Integrate Supply-Chain Data recipe, install the recipe to deploy and configure the integration and associated resources on your Oracle Integration instance.
Oracle Service Logistics OFS Parts Catalog Sync	Product Information Management	Oracle Fusion Field Service	Downloads the Oracle Fusion Cloud SCM parts catalog to Oracle Fusion Field Service so that field-service technicians know which parts they can order.	Same.
Oracle Service Logistics OFS Technician Inv Sync	Oracle Fusion Cloud Inventory Management	Oracle Fusion Field Service	Run this integration instead of the Oracle Service Logistics Oracle Fusion Field Service Inv Sync integration to associate the inventory with the technician resource in Oracle Fusion Field Service. Only the Oracle Fusion Cloud Inventory Management balances for the default usable subinventory assigned to the technician are synchronized. No truck	Same.

Integration Name	Source	Destination	Use Case/Description	Details/Links
			resources are created, and the inventory is associated directly with the technician resource. It will also sync serialized items.	
Oracle Service Logistics OFS Tech Inv Incr Sync	Oracle Fusion Cloud Inventory Management	Oracle Fusion Field Service	This integration acts the same way as the Oracle Service Logistics Oracle Fusion Field Service Technician Inv Sync integration but synchronizes only the items transacted in the intervening period between the last and current runs. This allows the program to run faster. This integration should be scheduled to run multiple times a day.	Same.
Oracle Service Logistics OFS Inv Sync	Oracle Fusion Cloud Inventory Management	Oracle Fusion Field Service	Integration to sync between Oracle Inventory Management and Oracle Fusion Field Service.	Same.
Oracle Service Logistics OFS Inv Incr Sync	Oracle Fusion Cloud Inventory Management	Oracle Fusion Field Service	Integration to perform incremental syncs between Oracle Inventory Management and Oracle Fusion Field Service. It also supports serialized item syncing.	Same.
Oracle Service Logistics OFS Debrief	Oracle Fusion Field Service	Oracle Service Logistics	Creates field-service activities when a service work order is created in Oracle Fusion Cloud Applications > Service > Work Orders (Next Generation). Field-service technicians use the Oracle Fusion Field Service debrief plug-in and associated tasks on their mobile devices to report on the labor hours, parts used and recovered, and any expenses incurred on the activities assigned to them. When the activity is completed, these debrief transactions are automatically created in Service Logistics and are visible on the Work Order Charges page. Field-service administrators can then review these debrief transactions, make any adjustments or corrections, and post the debrief transaction.	Same.

Integration Name	Source	Destination	Use Case/Description	Details/Links
			This generates a customer invoice for billing, adjusts inventory balances, updates the customer's asset configuration, and captures the cost of service.	
Oracle Service Logistics OFS Auto Debrief	Oracle Service Logistics	Oracle Fusion Field Service	Populates all part requirements created for a field service work order. Creates a corresponding debrief activity automatically.	Same.
Oracle Service Logistics OFS Order Parts	Oracle Fusion Field Service	Oracle Service Logistics	Technicians can order parts to replenish their trunk stock in Oracle Fusion Field Service. Service Logistics sources the parts and creates the transfer orders. Parts orders for an activity will also be available in the B2B Service work order.	Same.
Oracle Service Logistics OFS Replenish Parts	Oracle Fusion Field Service	Oracle Service Logistics	Technicians can order parts to replenish their trunk stock in Oracle Fusion Field Service. Service Logistics sources the parts and creates the transfer orders.	Same.
Oracle Service Logistics OFS Receive Parts	Oracle Fusion Field Service	Oracle Service Logistics	Enables technicians to receive parts from Oracle Fusion Field Service.	Same.

10 Supply Chain Orchestration

Overview of Supply Chain Orchestration

About Oracle Supply Chain Orchestration

Oracle Supply Chain Orchestration, a module that's part of the Oracle Fusion Cloud Order Management product, is designed to automate and manage supply chain processes.

It offers end-to-end visibility, integrates with other Oracle Fusion Cloud Applications, such as Procurement, Order Management, Inventory Management, and Manufacturing, to provide a unified approach to managing the supply chain and orchestrate complex workflows using configurable rules. Key features include:

- Automated exception management
- Real-time analytics
- Rule-based processing

These features enable businesses to optimize efficiency, reduce errors, and improve customer service. Its flexibility and scalability make it ideal for adapting to changes in demand and business models, ultimately enhancing overall supply chain performance.

Terminology for Supply Chain Orchestration

These terms are used throughout the Oracle Supply Chain Orchestration playbook.

Term	Definition
Supply Request	A request to manage supply. For example, requests to create, update, or cancel a Buy, Make, or Transfer order.
Configured Items	A product that's assembled from an arrangement of features and options. Features and options might include size, capacity, power rating, color, materials used, and so on
Production Report	Provides managers and employees with clear, detailed information about a manufacturing company's production data.

Integration Types and Options for Supply Chain Orchestration

Overview of Supply Chain Orchestration Integration Types and Options

Several integration types and options are available in an Oracle Supply Chain Orchestration integration.

Integration Types

These integration types are available in Oracle Supply Chain Orchestration.

Inbound

In this integration, data is imported into Oracle Supply Chain Orchestration from other Oracle Cloud products, external/third-party applications, or from Oracle E-Business Suite.

Outbound

In this integration, data is exported from Oracle Supply Chain Orchestration to external/third-party applications, including ERP systems, warehouse management systems, transport management systems, and third-party logistics (3PL) providers.

Integration Options

These integration options are available in Oracle Supply Chain Orchestration.

Inbound

- *REST APIs (POST and PATCH) for Supply Chain Orchestration*
- *File-Based Data Import (FBDI) for Supply Orders in Supply Chain Orchestration*
- *File-Based Data Import (FBDI) for Production Reports in Supply Chain Orchestration*

Outbound

- *REST APIs (GET) for Supply Chain Orchestration*
- *Large-Scale Raw Data Extraction Using Supply Chain Orchestration and Business Intelligence Cloud Connector (BICC)*

Inbound

REST APIs (POST and PATCH) for Supply Chain Orchestration

Oracle Fusion Cloud Supply Chain Orchestration provides several REST resources for integrating with external systems.

These REST APIs allow you to automate and manage supply-chain processes programmatically. They provide the functionality that interacts with the orchestration layer to facilitate real-time data exchange and enable the automation of supply-chain workflows.

Create one supply request

You can find this REST API in the **Inventory Management** > **Supply Requests** resource group in *REST API for Oracle Supply Chain Management Cloud*.

Key Features

Allows the creation of a new supply order in the system based on incoming data from external sources.

Best Practices

- Recommended for small volumes of orders.
- Recommended for supply orders that contain small numbers of request lines.

Additional Comments

- Supports the transfer and purchase supply-order types.
- Supports descriptive flexfields.

Update a supply request

You can find this REST API in the **Inventory Management** > **Supply Requests** resource group in *REST API for Oracle Supply Chain Management Cloud*.

Key Features

Updates existing supply orders to reflect changes in quantity, delivery dates, or other key details.

Best Practices

None.

Constraints

The Update a supply request REST API requires the SupplyOrderReferenceNumber parameter and won't be executed unless the parameter that's passed is present in the interface table.

REST Resource Group: Production Reports

You can find this REST resource group in the Manufacturing section in *REST API for Oracle Supply Chain Management Cloud*.

Key Features

Manages the operation and material transactions for a contract manufacturing work order.

Best Practices

NA.

Constraints

NA.

Related Topics

- REST API for Oracle Supply Chain Management Cloud

File-Based Data Import (FBDI) for Supply Orders in Supply Chain Orchestration

Use FBDI to import supply orders with lines.

Use this process to import and upload supply-order data:

1. Use the *Process Supply Chain Orchestration Interface* scheduled process to import the data.

   The resulting input item data file is a comma-separated values (CSV) file.
2. Upload the CSV file to the WebCenter Content account (`scm/supplyOrder/import`) using the *Load Interface File for Import* scheduled process.

Key Features

- Supports the import of large-volume supply orders.
- Supports asynchronous automated integration between systems.

Best Practices

- Use a unique interface batch number for every upload.
- Recommended for large volumes of supply orders that exceed 1,000 order lines per hour.
- Recommended for orders containing large numbers of lines. Typically, greater than 50 lines in an order.
- To improve the throughput, increase the number of child jobs.
- Run the *Process Supply Chain Orchestration Interface* scheduled process only **after** the FBDI is processed successfully.

Additional Comments

The CSV file format is the recommended integration pattern for customers who can batch the orders and import them at predetermined time intervals.

Related Topics

- File-Based Data Import for SCM: Import Supply Order
- File-Based Data Import for SCM: External Data Integration Services for Importing Data
- Download the Microsoft Excel template: DosSupplyOrderImportTemplate.xlsm

File-Based Data Import (FBDI) for Production Reports in Supply Chain Orchestration

You can import production reports that contain operations and material transactions data.

Use the Manage Production Reports task menu in the Supply Chain Orchestration work area to upload the production data, which contains a combination of operations and material transactions.

Key Features

- Supports the import of large-volume production reports.
- Supports asynchronous automated integration between systems.

Best Practices

- Recommended for large volumes of production reports.
- To improve the throughput, increase the number of child jobs.

Constraints

NA.

Related Topics

- File-Based Data Import (FBDI) for SCM: Import Production Reports
- Download the Microsoft Excel template: ProductionReportImportTemplate.xlsm

Outbound

REST APIs (GET) for Supply Chain Orchestration

Use REST APIs to extract data from Oracle Supply Chain Orchestration using the GET action.

These REST resources provide a flexible and efficient approach to managing complex supply-chain orchestration tasks.

For All REST Resources

Key Features

NA.

Best Practices

To optimize performance:

- When possible, it's recommended to use field identifiers, such as item ID, organization ID, and supplier ID, rather than the names of entities.
- Set the `onlydata` option to **true**.
- Limit the GET operation to 3,000 records at a time (5,000 is the maximum).
- Avoid using filters that are derived and must be evaluated row by row. For example, bucket type and release status.
- Avoid OR conditions with LIKE clauses.
- Avoid querying master records using only child query criteria.

> **Note:** Large queries might be aborted after 5 minutes.

Constraints

NA.

REST Resource Group: Supply Requests

You can find this REST resource group in the Inventory Management section in *REST API for Oracle Supply Chain Management Cloud*.

Key Features

REST APIs in this group extract detailed information about a specific supply order, including its status, order lines, and associated activities.

Best Practices

NA.

Constraints

NA.

REST Resource Group: Production Reports

You can find this REST resource group in the Manufacturing section in *REST API for Oracle Supply Chain Management Cloud*.

Key Features

REST APIs in this group extract contract-manufacturer-provided updates on the status of operations completed and materials consumed during production.

Best Practices

NA.

Constraints

NA.

REST Resource Group: Configured Items

You can find this REST resource group in the Order Management section in *REST API for Oracle Supply Chain Management Cloud*.

Key Features

REST APIs in this group extract detailed information about the options a customer selected during a configuration session.

Best Practices

NA.

Constraints

Before executing any REST API in this resource group, you must run the *Build Configured Item Exploded Structure* scheduled process to build the complete structure of a configured item.

REST Resource Group: Available Supply Sources

You can find this REST resource group in the Inventory Management section in *REST API for Oracle Supply Chain Management Cloud*.

Key Features

REST APIs in this group extract all available supply sources and, optionally, gets the total on-hand quantities in each of the supply sources. You can also get the best available supply source.

Best Practices

NA.

Constraints

NA.

Related Topics

- REST API for Oracle Supply Chain Management
- Build Configured Item Exploded Structure

Large-Scale Raw Data Extraction Using Supply Chain Orchestration and Business Intelligence Cloud Connector (BICC)

Oracle Supply Chain Orchestration offers a large collection of public view objects (PVOs) that provide read-only access to the raw data that's stored in the business objects.

Using BICC functionality, you can extract the raw data into a compressed (ZIP) file that you can upload to external systems, such as data warehouses, for specialized analysis.

Key Features

- BICC extract enables you to get supply order data at any stage during supply orchestration and to perform any custom business function, if required.
- Process extraction occurs outside Oracle Fusion Cloud Applications.

Best Practices

Recommended for performing peripheral business operations based on extracts such as Buy Order, Make Orders, and Supply Lines.

Constraints

BICC is recommended only for bulk processing.

Related Topics

- Overview of Business Intelligence Cloud Connector
- Extract Data Stores for SCM: PVOs available for Oracle Supply Chain Orchestration

Business Objects for Supply Chain Orchestration

Supply Chain Orchestration Integration Options Available by Business Objects

Integration options Oracle Supply Chain Orchestration are available through various business objects that represent key transactional data and processes.

These business objects allow Oracle Supply Chain Orchestration to integrate with other Oracle or third-party systems to provide efficient orchestration and management of supply chain operations. Integration can occur through Oracle's native REST APIs and SOAP services, file-based data import (FBDI), and middleware like Oracle Integration Cloud (OIC) or Oracle SOA Suite.

Inbound

Business Object Family	Key Business Objects	SOAP	REST	FBDI	Business Event Available
Supply Requests	Supply Requests, Supply Request Lines, Supply Orders, Supply Order Lines, Flexfields.	-	x	-	-

Outbound

Business Object Family	Key Business Objects	SOAP	REST	Publication	BICC Data Extraction	Business Event Available
Supply Requests	Supply Requests, Supply Request Lines, Supply Orders, Supply Order Lines, Flexfields.	-	x	x	x	-

Related Topics

- REST API for Oracle Supply Chain Management Cloud: Get one supply request

Supply Chain Orchestration Integration Features Available for Business Objects

This table provides a list of key integration features available for each business object.

Use case	SOAP	REST	FBDI	Defaulting and Enrichment Rules	BICC Data Extraction
Supply Request **Create and manage supply requests, track their status, and address exceptions during fulfillment**		X	X	x	
Bulk Data upload			X		
Real-time upload		X	X		
Real-time data extraction		X			X
Bulk Data extraction					X
Supported File Types (CSV, XML)			X		X CSV only

Use Cases and Patterns for Supply Chain Orchestration

Import a Large Volume of Orders

In this use case you're importing a large volume of supply requests from external systems.

Description	Integration Type	Integration Options	Notes
You're importing a large volume of supply requests from external systems to create transfer orders to transfer goods from one warehouse to another warehouse within an enterprise.	Inbound	FBDI	Web Services aren't recommended when importing high volume of supply requests. You can import supply requests to create: • Transfers within an organization • Expense transfers You also can import project attributes and descriptive flexfields (DFFs).

Integrate with Third-Party Systems

In these use cases you're importing different types of data from external systems.

Description	Integration Type	Integration Options	Notes
You're importing production reports from contract manufacturers to update the production progress on the contract manufacturing work order.	Inbound	FBDI, REST	You can import production reports from contract manufacturers to report operation transactions and material transactions on a contract manufacturing work order.
You're importing supply requests from external systems to build inventory of goods in a warehouse within an enterprise.	Inbound	REST	Web Services aren't recommended when importing high volume of supply requests You can import supply requests to create: • Transfers within an organization • Expense transfers You also can import project attributes and descriptive flexfields (DFFs).
You're importing supply requests from the third-party RF Smart application to transfer goods from one warehouse to another warehouse within an enterprise.	Inbound	REST	-
You're getting the status of the supply request and would like to check if the supply delivery is on track or has any exceptions. You also would like to get all the details of the supply transfer order or purchase order.	Outbound	REST	You can check the status of your supply request to get details about the supply transfer order or purchase order These include the transfer order, purchase requisition, and purchase order numbers. You also can check to see if the supply delivery is on track or has any exceptions.
You're getting the status of the production reports and verifying the operation transactions and material transactions that were provided by a contract manufacturer.	Outbound	REST	You can check the status of the production reports that you receive from contract manufacturers.
You're getting a supply source to build inventory in one of your warehouses in the enterprise.	Outbound	REST	You can get a supply source to transfer goods into a warehouse in your enterprise using a transfer order. You can choose a default or best-available supply source, or can get all the available supply

Description	Integration Type	Integration Options	Notes
			sources from which you can select one source.

Other Supply Chain Orchestration Resources

Use these resources to get more information about Oracle Supply Chain Orchestration integrations.

- *Tables and Views for SCM*

  Describes tables and views for common features within Oracle Fusion Cloud Applications. Includes diagrams, schematics, and links to other technical documentation.

- *File-Based Data Import (FBDI) for SCM*

  Describes how to use FBDI to import or update legacy and other data into Oracle Fusion Cloud Supply Chain & Manufacturing from external applications.

- *REST API for Oracle Fusion Cloud SCM*

  Provides a quick start that walks you through a simple request example, plus detailed descriptions for each REST API resource.

- *SOAP Web Services for SCM*

  Describes SOAP web services to integrate with or extend Oracle Fusion Cloud SCM.

- *Oracle Integration*

  Describes Oracle Integration Cloud (OIC).

- *Subject Areas for Transactional Business Intelligence in SCM*

  Provides descriptions, business questions, and security roles for the subject areas in Oracle Fusion Cloud SCM.

11 Supply Chain Planning

Overview of Supply Chain Planning

About Oracle Fusion Cloud Supply Chain Planning

Oracle Fusion Cloud Supply Chain Planning provides a suite of applications that anticipate demand, manage supply, and align stakeholder and trading partner actions to company objectives.

- **Oracle Sales & Operations Planning** translates cash flow from operations (CFO) revenue, margin, and cost objectives into corresponding global supply chain plans to evolve the product mix, sourcing, production, and distribution strategies. Key stakeholders contribute, collaborate, and come to consensus on connected product, financial, sales, marketing, supply chain, and workforce plans.
- **Oracle Demand Management** combines enterprise demand such as orders and shipments with weather, economic, social, and other external data signals to enhance demand sensing. It adapts to handle short lifecycle, intermittent, seasonal, promotional, and configured items. It can also automate demand-driven, time-phased replenishment processes across a multi-echelon network of stores, depots, or other regularly stocked locations.
- **Oracle Fusion Cloud Supply Planning** identifies the inventory, capacity, and material supply required to meet demand, including drop shipments, back-to-back orders, and contract manufactured items. It uses hybrid constraint-based planning to avoid delays, including building ahead of time, alternate resources, substitutes, and alternate suppliers. Built-in production scheduling proactively adjusts the sequence and timing of jobs in the factory in sync with real time shop floor events. Meanwhile, order backlog management prioritizes and reschedules open sales orders when items are on allocation or supply availability changes.
- **Oracle Fusion Cloud Supply Chain Collaboration** provides visibility to downstream demand and upstream supply commitments, identifying any mismatches across multiple supply chain tiers. It also automates supplier-managed inventory and contract manufacturing collaboration processes.
- **Oracle Backlog Management** enables an enterprise to frequently reassess the sales order backlog (sales orders that have been scheduled but haven't yet been shipped) to identify the latest possible scheduled dates on demands, based on the latest supply available. Actions can then be taken within Oracle Backlog Management to refine order schedules, either by re-prioritizing orders or by simulating changes to demand attributes and viewing possible planned results. Once the possible new dates on orders within Backlog Management have been identified, they can then be released to Oracle Fusion Cloud Order Management.

Terminology for Supply Chain Planning

These terms are used throughout the Oracle Fusion Cloud Supply Chain Planning playbook.

Term	Definition
Global Entity	Global entities are specific for each instance and are common for all source systems. They're common without regard to whether they're collected from the Oracle Fusion source system or from an external source system with the use of the file-based data import (FBDI) templates. For more information, see *Global Entities*.

Term	Definition
Net Change Collections	Net change collections is an incremental load of data into planning. When performing net change collections, records that already exist in planning are updated only if the corresponding record is collected. If a record is collected that didn't previously exist in planning, it will be created in planning. Records that previously existed in planning that didn't get a replacement during collections remain untouched.
Targeted Collections	Targeted collections replaces existing data for a given entity. Any previous data for the entity is deleted before the newly collected data is processed. Targeted collections are only available for a subset of collected data. If you select targeted collections and include an entity that doesn't allow targeted collections, then the data is automatically loaded in net change mode.

Integration Types and Options for Supply Chain Planning

Overview of Supply Chain Planning Integration Types and Options

Several integration types and options are available in an Oracle Fusion Cloud Supply Chain Planning integrations.

Integration Types

These integration types are available in Oracle Supply Chain Planning.

Inbound

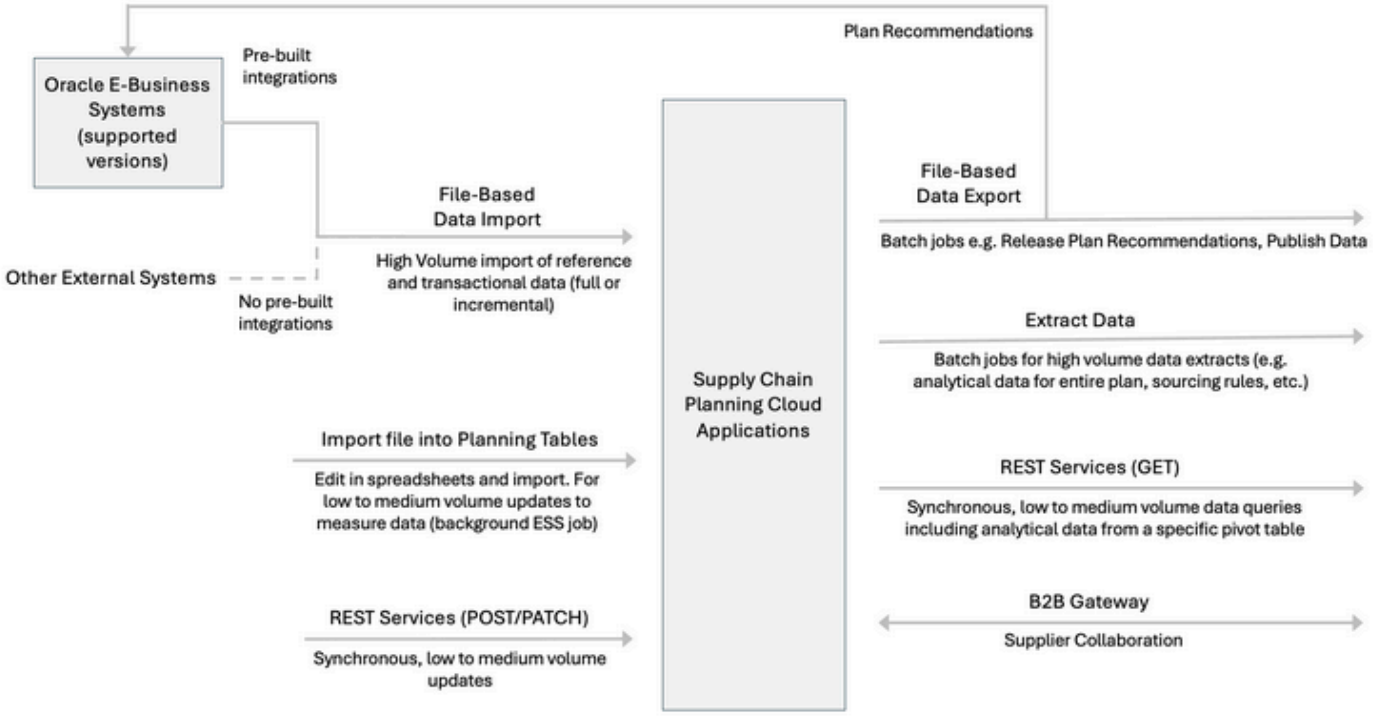
This type of integration refers to importing data into Oracle Supply Chain Planning from other Oracle Fusion Cloud products, external or third-party applications, or from Oracle E-Business Suite.

Outbound

This type of integration refers to exporting data from Oracle Supply Chain Planning to external or third-party applications.

Integration Options

Oracle Supply Chain Planning has flexible options for inbound and outbound integration with external systems that can be used during implementation. With a successful coexistence strategy, companies can gain advantages from using Oracle Supply Chain Planning and start realizing business benefits quickly. This diagram is a high-level representation of the integration of Oracle Supply Chain Planning with other Oracle products and third-party applications.



Inbound

You can import reference and transactional data from your internal system into Oracle Supply Chain Planning. These import options are available:

- *REST APIs (POST and PATCH) for Supply Chain Planning*
- *SOAP Services for Oracle Fusion Cloud Global Order Promising*
- *File-Based Data Import (FBDI) for Supply Chain Planning*
- *Oracle ADF Desktop Integration (ADFdi) for Supply Chain Planning*
- *Update Planning Table Data Scheduled Process*

Outbound

Oracle Supply Chain Planning has a repository of plan output that your internal systems can use. As part of the process integration, you can also export plan output such as supplies and demands, measure data, or reference data such as sourcing rule assignments. These export options are available:

- *REST APIs*
- *Publish Data*
- *Export Data in Table Format from Supply Chain Planning*
- *Export Plan Data*
- *Export to Microsoft Excel from Supply Chain Planning*
- *Business Intelligence Cloud Connector (BICC)*

Inbound

REST APIs (POST and PATCH) for Supply Chain Planning

Oracle Fusion Cloud Supply Chain Planning provides several REST resources for integrating with external systems.

A typical use of REST APIs is in a coexistence scenario where a third-party execution system is integrated to work with Oracle Supply Chain Planning using the POST and PATCH actions to import data into Oracle Supply Chain Planning.

REST Resources Group: Planning Demands

These key features and best practices apply to:

- Supply Plans / Planning Demands
- Demand and Supply Plans / Planning Demands
- Replenishment Plans / Planning Demands
- Simulation Set / Planning Demands

Key Features

- Create manual demands.
- Update existing demands.

Best Practices

- When creating manual demands using the POST action on the Planning Demands REST resource, follow the documentation and provide only the required fields plus the necessary optional fields in payload body. For more information, see the Supply Chain Planning section in *REST API for Oracle Fusion Cloud SCM*.
- Create manual demands or update demands in small batches of a maximum of 50 orders.
- It's important to set the Content-Type to application/vnd.oracle.adf.batch+json in the POST request header for batch post.
- Provide relevant IDs if they're known.

REST Resources Group: Planning Supplies

These key features and best practices apply to:

- Supply Plans / Planning Supplies
- Demand and Supply Plans / Planning Supplies
- Replenishment Plans / Planning Supplies
- Simulation Set / Planning Supplies

Key Features

- Create planned orders or available supplies.
- Update existing supplies.
- Mark orders for release.

Best Practices

- When creating planned orders or available supplies using the POST action on the Planning Supplies REST resource, follow the documentation and provide only the required fields plus the necessary optional fields in payload body. For more information, see the Supply Chain Planning section in *REST API for Oracle Fusion Cloud SCM*.
- When creating planned orders or available supplies or when updating existing supplies, use small batches of a maximum of 50 orders.

  This also applies when using the REST resource to mark orders for release.
- It's important to set the Content-Type: application/vnd.oracle.adf.batch+json in the POST request header for batch post.
- Provide relevant IDs if they're known.

REST Resources Group: Items

These key features and best practices apply to Simulation Sets / Items.

Key Features

Create an item in a simulation set.

Best Practices

To create a new item using the POST action on the simulationSets/{simSetId}/child/Items, provide InventoryItemId and OrganizationId or ItemName and Organization, plus the other optional editable fields in the payload body.

REST Resources Group: Resources

These key features and best practices apply to Simulation Sets / Resources.

Key Features

Create a resource in a simulation set.

Best Practices

To create a new resource using the POST action on the simulationSets/{simSetId}/child/Resources REST resource, provide ResourceId or ResourceCode and WorkCenterCode and Organization, plus the other optional editable fields in the payload body.

REST Resources Group: Supplier Capacity

These key features and best practices apply to Simulation Sets / Supplier Capacity.

Key Features

Update supplier capacity within a simulation set.

Best Practices

To update supplier capacity using the POST action on the simulationSets/{simSetId}/child/SupplierCapacities REST resource, provide ItemId or ItemName, SupplierId or SupplierCode, SupplierSiteId or SupplierSiteCode, plus other optional editable fields in the payload body.

Oracle Global Order Promising

Key Features

- Simulate order promising.
- Schedule orders.
- Review item availability.
- Review time-phased supply availability in a report.
- Review supply allocation details in weekly buckets.

Best Practices

- Use REST APIs as a standard practice when making calls from an external source system directly to Oracle Global Order Promising, bypassing Oracle Fusion Cloud Order Management.
- For the best performance of promising actions, use parallel invocation instead of sending a large batch of requests at once.
- For key attributes like item, customer, and customer site, use the names that were defined and collected in the Planning repository.
- To check for item supplies on a certain date, use the quick availability call as a lightweight option instead of check availability. You also can use the Supply Availability Report.
- When invoking from external source systems, the Calling Module and Calling Instance attributes in the payloads should align with the source system name that was defined for the external source on the Manage Planning Source Systems page.
- When customer and customer site information is defined but not yet collected – as is typically the case where customers are created on-the-fly just before placing orders – use the Ship-to region ID for geography-based sourcing in Check Availability and Automatically Schedule calls.

  > **Note:** Geography setups for this should already exist in Oracle Trading Community Architecture.

For more information about Oracle Global Order Promising REST APIs, see *Global Order Promising* in the Order Management product group in REST API for Oracle Fusion Cloud SCM.

Related Topics

- REST API for Oracle Fusion Cloud SCM: Supply Chain Planning product group
- Oracle Visual Builder Add-in for Excel, Version 3.8.0
- My Oracle Support: Error Codes Reported by the Order Promising Engine (Doc ID 2268710.1)
- My Oracle Support: Transit Time Consideration When Setup Is Using Zones (Doc ID 2590004.1)
- Cloud Customer Connect: Scaling REST services using BATCH requests

SOAP Services for Oracle Fusion Cloud Global Order Promising

Oracle Global Order Promising provides SOAP services for integration with external systems.

A typical use of SOAP services in Oracle Global Order Promising might be running a Check Availability call to simulate a potential order promise. Oracle Global Order Promising returns estimated ship and arrive dates, shipping method, and ship-from location without committing supplies.

Key Features

- Simulate order promising.
- Schedule orders.
- Review item availability.

Best Practices

- Use this option primarily to integrate low order volumes with legacy source systems.
- For key attributes like item, customer, and customer site, use the names that were defined and collected in the Planning repository.
- When invoking from external source systems, the Calling Module and Calling Instance attributes in the payloads should align with the source system name that was defined for the external source on the Manage Planning Source Systems page.
- To check for item supplies on a certain date, use the quick availability call as a lightweight option instead of check availability. You also can use the Supply Availability Report.

Constraints

None.

Related Topics

- My Oracle Support: Error Codes Reported by the Order Promising Engine (Doc ID 2268710.1)

File-Based Data Import (FBDI) for Supply Chain Planning

With this option, you can use the provided FBDI import templates to quickly create and import data into Oracle Fusion Cloud Supply Chain Planning during the early stages of implementation.

Once you've confirmed the format of the data to be imported into Oracle Supply Chain Planning, you can automate process of exporting data from an external execution system to comma-separated values (CSV) files. For more information, see *Load Data into Tables*.

Information about key features, best practices, and constraints for the available FBDI templates is in the sections that follow.

Note: Best Practices and Constraints sections appear only where they're applicable.

Applicable to Most FBDI Import Templates

Key Features

- Upload reference and transactional data into planning from an external source system.
- Upload reference and transactional data into planning from Oracle E-Business Suite.
- Upload transactional data into an Oracle Fusion planning source system in cases where the reference data is coming from an Oracle Fusion source system, but the transactional data still exists in a legacy system.

Best Practices

- It's recommended to keep the combined compressed file close to 100 MB in size, but it varies depending on the pod size. Users with larger pod sizes have been able to upload larger compressed files.
- If the customer's extract is larger than what ERP Integration Service can support, the compressed files must be split into multiple smaller compressed files.
- When grouping comma-separated values (CSV) files into multiple smaller compressed (.zip) files, the CSV files must be grouped and uploaded in the order in which the entities are processed.

ScpApprovedSupplierListImportTemplate.xlsm

Key Features

Use this template to define item-supplier, supplier lead time, and supplier calendar.

Best Practices

For drop-shipped assemble-to-order (ATO) models used in Oracle Fusion Cloud Global Order Promising, provide a supplier calendar value whenever supplier lead time is defined for an individual configuration or for a model.

ScpApprovedSupplierCapacityImportTemplate.xlsm

Key Features

Use this template to define supplier capacity for an item-supplier combination.

Best Practices

Before defining supplier capacity, ensure that there's already a record for the item-supplier in the ScpApprovedSupplierListImportTemplate.xlsm template.

ScpBookingHistoryImportTemplate.xlsm

Used for Oracle Demand Management, Oracle Planning Central, Oracle Replenishment Planning, and Oracle Sales and Operations Planning.

Key Features

- Use this template to upload only the predefined bookings history measures only. See the instructions tab of the FBDI template for the measures that you can upload using this template.
- The Bookings History and Bookings History Value measures are populated from these measures based on the setting for the MSC_DFLT_BOOKING_HIST_MEASURE profile option. The default is to populate the Bookings History measure from the loaded Bookings History: Booked Item by Booked Date measure and to populate

the Bookings History Value measure from the loaded Bookings History Value: Booked Item by Booked Date measure.

Constraints

Bookings History must be loaded at the lowest level:

- Item
- Organization
- Customer Site:
  - Required for Oracle Demand Management, Oracle Planning Central, and Oracle Sales and Operations Planning.
  - Optional for Oracle Replenishment Planning.
- Demand Class:
  - Required for Oracle Demand Management, Oracle Planning Central, and Oracle Sales and Operations Planning.
  - Optional for Oracle Replenishment Planning.
- Sales Rep (optional)
- Day (use the first day of the time period when loading in weekly, monthly, or period buckets).

ScpShipmentHistoryImportTemplate.xlsm

Used for Oracle Demand Management, Oracle Planning Central, Oracle Replenishment Planning, and Oracle Sales and Operations Planning.

Key Features

- Use this template to upload only the predefined shipments history measures. See the instructions tab of the FBDI template for the measures that you can upload using this template.
- The Shipments History and Shipments History Value measures are populated from these measures based on the setting for the MSC_DFLT_SHIPMENT_HIST_MEASURE profile option. The default is to populate the Shipments History measure from the loaded Shipments History: Requested Item by Shipped Date measure and to populate the Shipments History Value measure from the loaded Shipments History Value: Requested Item by Shipped Date measure.

Constraints

Shipments History must be loaded at the lowest level:

- Item
- Organization
- Customer Site:
  - Required for Oracle Demand Management, Oracle Planning Central, and Oracle Sales and Operations Planning.
  - Optional for Oracle Replenishment Planning.
- Demand Class:
  - Required for Oracle Demand Management, Oracle Planning Central, and Oracle Sales and Operations Planning.
  - Optional for Oracle Replenishment Planning.

- Sales Rep (optional)
- Day (use the first day of the time period when loading in weekly, monthly, or period buckets).

ScpOptionBookingHistoryImportTemplate.xlsm

Used for Oracle Demand Management.

Key Features

- Use this template to upload only the predefined Option Bookings History measure.
- The Configured to Order Level Member Value column contains the concatenated member names of the option and its parents in the bill of materials.
- The base model history data is loaded in the Bookings History upload template. The base model in the concatenated name must be included in the Bookings History upload template.

Constraints

Option Bookings History must be loaded at the lowest level:

- Item
- Organization
- Customer Site
- Demand Class
- Day (use the first day of the time period when loading in weekly, monthly, or period buckets).

ScpOptionShipmentHistoryImportTemplate.xlsm

Used for Oracle Demand Management.

Key Features

- Use this template to upload only the predefined Option Shipments History measure.
- The Configured to Order Level Member Value column contains the concatenated member names of the option and its parents in the bill of materials.
- The base model history data is loaded in the Shipments History upload template. The base model in the concatenated name must be included in the Shipments History upload template.

Constraints

Option Shipments History must be loaded at the lowest level:

- Item
- Organization
- Customer Site
- Demand Class
- Day (use the first day of the time period when loading in weekly, monthly, or period buckets).

ScpForecastMeasureImportTemplate.xlsm

Used for Oracle Demand Management.

Key Features

Use this template to upload only predefined forecast measures. See the instructions tab of the FBDI template for the measures that you can upload using this template.

ScpMeasuresImportTemplate.xlsm

Used for Oracle Demand Management, Oracle Planning Central, Oracle Replenishment Planning, and Oracle Sales and Operations Planning.

Key Features

Use this template to load both predefined and user-defined measures for which a specific template doesn't exist.

Constraints

Don't use this template to load any of these measures because there are specific templates for each:

- Predefined bookings history measures including option history.
- Predefined shipments history measures including option history.
- Predefined forecast measures.
- Predefined or user-defined global causal factors measures.
- Predefined price measure.

Related Topics

- File-Based Data Import (FBDI) for SCM

Oracle ADF Desktop Integration (ADFdi) for Supply Chain Planning

The Application Development Framework Desktop Integration (ADFdi) option enables desktop integration with Microsoft Excel spreadsheets and manages large-volume data downloads and uploads to Oracle Fusion Cloud Applications.

ADFdi integration provides the interactivity that enables the web picker to:

- Search for valid values.
- Perform validation during data entry.
- Display error messages.
- Submit transactions directly from Microsoft Excel immediately.

Oracle Supply Chain Planning provides ADFdi support for these entities:

Supplies and Demands

Key Features

Use the Edit in Spreadsheet action to export supplies and demands to an Excel workbook, perform the edits within the workbook, and then upload the changes back into the plan.

Best Practices

Use Edit in Spreadsheet instead of the UI to edit rows in small batches.

Constraints

The document will be limited to 2000 rows. Edits will work better if the maximum number of rows is 200.

Items

Key Features

Use the Edit in Spreadsheet action to export items to an Excel workbook, perform the edits within the workbook, and then upload the changes back into the plan.

Best Practices

Use Edit in Spreadsheet instead of the UI to edit rows in small batches.

Constraints

The document will be limited to 2000 rows. Edits will work better if the maximum number of rows is 200.

Item Structures

Key Features

Use the Edit in Spreadsheet action to export item structures to an Excel workbook, perform the edits within the workbook, and then upload the changes back into the plan.

Best Practices

Use Edit in Spreadsheet instead of the UI to edit rows in small batches.

Constraints

The document will be limited to 2000 rows. Edits will work better if the maximum number of rows is 200.

Segment Members

Key Features

Use the Edit in Spreadsheet action to export segment members information to an Excel workbook, perform the edits within the workbook, and then upload the changes back into the segment members.

Best Practices

Use Edit in Spreadsheet instead of the UI to edit rows in small batches.

Constraints

The document will be limited to 2000 rows. Edits will work better if the maximum number of rows is 200.

Related Topics

- Developing Applications with Oracle ADF Desktop Integration

Update Planning Table Data Scheduled Process for Supply Chain Planning

Use the Update Planning Table Data scheduled process to update measure values in Oracle Fusion Cloud Supply Chain Planning.

> **Note:** The Update Planning Table Data scheduled process can be launched *only* from the **Import** action on the toolbar of a planning pivot table.

Key Features

- Export data from a planning pivot table to Microsoft Excel and change any planning measure in the spreadsheet.
- Import the updated planning measure data back into the table when you've finished making changes offline.

Best Practices

For better performance:

- Use the DisableAuditFromImportFromExcelUpdate parameter to disable a measure audit if one isn't required.
- Use the MSC_REST_CALL_UPDATE_MATRIX profile option to skip the matrix table update during the import process.

Constraints

- Import file must be a Microsoft Excel .xlsx file.
- You can change only the cell value. You can't delete a row or a column or change the row or column order.
- The maximum file size is 1 GB.

Related Topics

- Import Measure Data Into a Planning Table

Outbound

REST APIs (GET) for Supply Chain Planning

Oracle Fusion Cloud Supply Chain Planning provides several REST resources for integrating with external systems.

A typical use of REST APIs is in a coexistence scenario where a third-party execution system is integrated to work with Oracle Supply Chain Planning.

Applicable to All REST Resources

Best Practices

Use these guidelines to help improve performance.

- When possible, provide identifiers such as item ID, organization ID, and supplier ID rather than the names of entities.
- Limit the GET operations to 3000 records at a time (5000 is a maximum).
- Avoid using filters that are derived and must be evaluated rows by row. For example, customer site, bucket type, and release status.
- Avoid OR conditions with LIKE clauses.
- Avoid querying master records that use only child query criteria.

Constraints

Large queries might be aborted after 5 minutes.

Applicable to Multiple REST Resources

These resources are:

- Supply Plans / Planning Demands
- Demand and Supply Plans / Planning Demands
- Replenishment Plans / Planning Demands
- Simulation Set / Planning Demands
- Supply Plans / Planning Supplies
- Demand and Supply Plans / Planning Supplies
- Replenishment Plans / Planning Supplies
- Simulation Set / Planning Supplies

Key Features

- Create or update demands.
- Create or update supplies.

Best Practices

Using item, organization, or order type when querying planning demands or planning supplies will run the query faster.

Related Topics

- REST API for Oracle Fusion Cloud SCM: Supply Chain Planning product group
- Oracle Visual Builder Add-in for Excel, Version 3.8.0

Publish Data from Supply Chain Planning

Use the Publish Data action to export measure data from a planning table.

Use the exported file to integrate data from Oracle Fusion Cloud Supply Chain Planning application to other Oracle or external applications.

There are three ways to perform the Publish Data action:

- Select a plan on the Manage Plans page, then select the **Publish Data** action from the Actions drop-down list for the plan you selected.
- Open a plan to view it. Select the **Publish Data** action from the Actions drop-down list for the open plan.
- Run the Publish Plan scheduled process from the Scheduled Processes work area. For more information, see *Publish Plan*.

Key Features

- Exports measure data from a plan based on a selected table.
- The source system you select determines the value of the product code that's included in the export file.
- Generates a comma-separated values (CSV) file that you can access from the File Import and Export tool.

Best Practices

- Use Publish Data action or the Publish Plan scheduled process when you want to export data in a CSV file format using a table configuration as a reference. Convert all filter levels, row levels, column levels, and measures into columns. Be sure to include the product code from the source system in the output file.
- Create a profile option named MSC_PUBLISH_USES_TABLE_LAYOUT. To ensure that the layout of the output file matches the layout of the selected table, set the value to **Yes**. These are the layout details, in the order that they'll display in the file:
  - Levels in the filter bar: Display in the same order that they do in the filter bar.
  - Levels in the row edge: Display in the same order that they do in the table.
  - Levels on the column edge: Display in the same order that they do in the table.
  - Measures: Display in the same order that they appear in the table. It doesn't matter if the measures are in the column or row edge in the table.

Constraints

None.

Related Topics

- Publish Plan

Export Data in Table Format from Supply Chain Planning

Use the Export Data in Table Format action to export measure data from a planning table.

Use the exported file to integrate data from Oracle Fusion Cloud Supply Chain Planning application to other Oracle or external applications.

There are three ways to perform the Publish Data action:

- Select a plan on the Manage Plans page, then select the **Export Data in Table Format** action from the Actions drop-down list for the plan you selected.
- Open a plan to view it on the Plan Summary page. Select the **Export Data in Table Format** action from the Actions drop-down list for the open plan.
- Run the Export Data in Table Format scheduled process from the Scheduled Processes work area. For more information, see *Export Data in Table Format*.

Key Features

- Exports measure data from a plan based on a selected table.
- You can use the export process even if you can't open the table because of limits on the volume of data that can be displayed on the page.
- Export file will be formatted based on the layout of the selected table including:
  - The positioning of dimension levels and measures in rows and columns.
  - Column and row headings.
  - Summaries.
- Levels on the filter bar will be converted to columns.
- All hierarchies will be fully expanded.

- Generates either a Microsoft Excel or comma-separated values (CSV) file that you can access can be access with the File Import and Export tool.

Best Practices

Use the Export Data in Table Format action when you want to export data in either a Microsoft Excel or CSV file format using a table configuration as a reference. This will convert all filter levels to columns and retain the exact table layout positioning of levels and measures in rows and columns.

Constraints

- Output file is limited to 1 million rows, 4,000 columns, and 10 million cells.
- When exporting in Excel format:
  - The number of columns will be limited to 256.
  - If the table selected for export has more than 65,536 rows (but less than 1 million rows), then the output will be split into multiple sheets within the same Excel workbook with each sheet having 65,536 rows or less.
  - The resulting XLS file will include a macro that runs automatically the first time the file is opened. This macro will merge the multiple sheets into a single sheet and convert the file from an XLS format to an XLXS format. Microsoft Excel XLXS format has a limit of 1 million rows.
- You can't import the exported file using the pivot table's Import from File option.

Export Plan Data from Supply Chain Planning

Use the Export Plan Data action on the Manage Plans page to export measure values from a plan.

You can then use the exported file for data integration between your Oracle Fusion Cloud Supply Chain Planning application and other Oracle or external applications.

Key Features

Exports all measure values for measures within the export measure catalog.

Best Practices

- To limit the size of the data that's exported, create a measure catalog for extracting plan data that includes only the measures you really want to extract.
- If possible, avoid including segment group hierarchy in extract dimension catalog.

Constraints

- You must enable the plan in the Edit Plan Options dialog box before performing the extraction. From the Scope tab, click **Select Advanced Options**.
- The measure catalog you select for extraction must be the same as
  - The measure catalog associated with the plan, or
  - A measure catalog that contains only a subset of the measures found within the plan.

- The maximum number of measures that can be exported are:

Granularity	Maximum #
110	100
125	150
135	250
Others	50

  - Maximum product hierarchies: 5
  - Maximum levels per hierarchy: 10
  - Maximum segment group hierarchies: 2

Related Topics

- Export Planning Data to CSV Files

Export to Microsoft Excel from Supply Chain Planning

You can use the Export action to extract data from Oracle Fusion Cloud Supply Chain Planning to Microsoft Excel for further analysis.

The information in these sections is applicable to UI pages in Oracle Supply Chain Planning.

Pivot Tables

Key Features

Exports data from an opened pivot table to a Microsoft Excel formatted file.

Best Practices

- When exporting measure data for integration with other Oracle or external applications it's recommended to use the *Publish Data from Supply Chain Planning* or *Export Data in Table Format from Supply Chain Planning* integration options rather than using the Export action.
- The Export action is best suited to exporting data from a pivot table, changing the data in Excel, and then importing the changes using the pivot table Import from File.

Constraints

The table must be opened in the UI before it can be exported.

Supplies and Demands

Key Features

- Export the supplies and demands that meet the search criteria to a spreadsheet.
- You can export the Supplies and Demands view either from the pegging tree table or a flat table (without pegging).

- The tree-table pegging mode has two export options: Include All Child Rows and Include Child Rows if expanded.

Best Practices

To maximize performance:

- The maximum row limit to export is defined by the profile option FND_EXPORT_ROWLIMIT. If the profile isn't defined, the default limit is 20,000 rows. This profile should not be set to more than 20,000 rows as this might compromise the health of the UI server. A limit of 5,000 rows helps to limit the export time to 2-3 minutes. This row count includes root and branches for a tree table, or all rows of a flat table.
- Avoid using the Include All Child Rows export option on a large data set. This option includes all nested child rows even when they're not visible in the UI. In addition, the same row and all rows nested below it, might be repeated multiple times, resulting in a very large volume of data. Because you'll choose what to export by expanding pegged rows in the UI, use the Include Child Rows if expanded option to avoid this problem.
- Use key columns such as item, organization, and order type in the search, and use enough criteria to keep batches below FND_EXPORT_ROWLIMIT.
- Limit the number of columns in the layout to increase performance. It's recommended that you use less than 80 columns.
- The Export to Excel action performs better when the notes column is hidden. If the notes column is visible, then the export process checks for the presence of notes on every exported row even though the content of the notes isn't exported.

Constraints

- Downloads that take too much time might end abruptly, resulting in errors.
- The maximum number of root nodes for a tree table is 500.

Replenishment Planning Tables

Key Features

The tables export information about:

- Planning clusters.
- Segment groups.
- Segmentation results.
- Policy assignment sets and policy parameters.

The Supplies and Demands best practices and constraints are also applicable to Replenishment Planning Tables.

Backlog and Analysis Tables

Key Features

You can use Oracle Application Development Framework (Oracle ADF) and custom export to export sales-order data from Backlog Analysis Tables to an Excel spreadsheet to view a detailed analysis.

The first and second export options in the list are standard Oracle ADF exports. The third and fourth export options are custom exports, where all lines of a set are exported even if only one or two lines of the set display on the Backlog Analysis page.

- Export All

- Export Selected
- Export All plus Set Lines
- Export Selected plus Set Lines

Best Practices

- For a standard order, use the standard Oracle ADF export (first and second options in the list).
- For set orders, use the third and fourth export options.

Constraints

You can't export more than 10,000 records in normal table mode.

Related Topics

- Using Supply Planning: Export Supplies and Demands Data

Business Intelligence Cloud Connector for Supply Chain Planning

Use view objects exposed in Oracle Business Intelligence Cloud Connector (BICC) data stores to extract data from Fusion Cloud instances and load it into designated external storage areas.

The BICC service uses the output of the Export Plan Data action to get Oracle Fusion Cloud Supply Chain Planning measure data.

For more information, see *Overview of Business Intelligence Cloud Connector*.

Business Objects for Supply Chain Planning

Supply Chain Planning Business Objects Available for Integration

Oracle Fusion Cloud Supply Chain Planning provides support for product-specific business objects to help inbound and outbound integrations.

Inbound

Oracle Supply Chain Planning Product	Key Business Object	SOAP	REST	FBDI
Planning Common	Approved Supplier List	–	–	x
Global Order Promising	Available to Promise	–	–	x
Sales and Operations Planning	Bill of Resources	–	–	x
Demand Management	Bookings History	–	–	x
Planning Common	Calendar Assignments	–	x	x
Planning Common	Calendars	–	x	x

Oracle Supply Chain Planning Product	Key Business Object	SOAP	REST	FBDI
Planning Common	Carriers	–	–	x
Planning Common	Catalogs		–	x
Demand Management	Casual Factors	–	–	x
Supply Collaboration	Collaboration Order Forecasts	–	x	x
Demand Collaboration	Consumption History	–	x	–
Planning Common	Cross Reference Data	–	–	x
Planning Common	Currencies	–	–	x
Planning Common	Customers	–	–	x
Planning Common	Demands	–	x	x
Planning Common	Demand Classes	–	–	x
Supply Planning	External Forecasts	–	–	x
Planning Common	Fiscal Calendars	–	x	x
Demand Management	Forecast Measures	–	–	x
Demand Management	Forecasting Profiles	–	x	–
Planning Common	Interlocation Shipping Methods	–	–	x
Planning Common	Item Cost	–	–	x
Replenishment Planning	Item Policy Overrides	–	–	x
Planning Common	Item Structures	–	–	x
Planning Common	Item Subinventories	–	–	x
Planning Common	Item Substitutes	–	–	x
Planning Common	Items	–	–	x
Planning Common	Key Customer Options	–	–	x
Planning Common	Measures	–	x	x
Replenishment Planning	Movement Requests	–	–	x
Demand Management	Option Booking History	–	–	x
Demand Collaboration	Order Forecasts	x	–	–
Demand Management	Option Shipment History	–	–	x
Planning Common	Order Orchestration	–	–	x
Planning Common	Organizations	–	–	x

Oracle Supply Chain Planning Product	Key Business Object	SOAP	REST	FBDI
Global Order Promising, Supply Planning	Planned Orders	–	x	Global Order Promising only
Planning Common	Planners	–	x	x
Global Order Promising, Backlog Management	Planning Allocation Rules	–	–	x
Planning Common	Planning Attribute Values	–	–	x
Planning Common	Planning Locations	–	–	x
Planning Common	Price Lists	–	–	x
Demand Management, Replenishment Planning	Purchase Order Receipt History	–	–	x
Planning Common	Purchase Order Requisitions	–	x	x
Global Order Promising	Real Time Supply Updates	–	–	x
Global Order Promising	Region Zone Mappings	–	–	x
Global Order Promising	Regions	–	–	x
Planning Common	Reservations	–	–	x
Planning Common	Resource Availability	–	–	x
Planning Common	Resources	–	–	x
Planning Common	Routings	–	–	x
Planning Common	Safety Stock Levels	–	–	x
Planning Common	Sales Orders	–	–	x
Demand Management	Shipment History	–	–	x
Planning Common	Sourcing Rules	–	–	x
Planning Common	Subinventories	–	–	x
Planning Common	Supplier Capacity	–	–	x
Planning Common	Suppliers	–	–	x
Planning Common	Supplies	x	x	–
Supply Collaboration	Supply Commits	x	x	–
Planning Common	Supply On Hand	–	x	x
Planning Common	Transfer Orders	–	–	x
Planning Common	Units of Measures	–	–	x
Planning Common	User-Defined Hierarchy	–	–	x

Oracle Supply Chain Planning Product	Key Business Object	SOAP	REST	FBDI
Vendor-Managed Inventory	Vendor-Managed Inventory Relationships	–	x	x
Planning Common	Work Order Component Demands	–	–	x
Planning Common	Work Order Operation Resources	–	–	x
Planning Common	Work Orders	–	x	x
Planning Common	Zones	–	x	x
Supply Collaboration	All objects. For more information, see *REST API for Oracle Fusion Cloud SCM*.	–	x	–
Demand Collaboration	All objects. For more information, see *REST API for Oracle Fusion Cloud SCM*.	–	x	–
Buyer Planning	All objects. For more information, see *REST API for Oracle Fusion Cloud SCM*.	–	x	–
Vendor-Managed Inventory	All objects. For more information, see *REST API for Oracle Fusion Cloud SCM*.	–	x	–

Outbound

Oracle Supply Chain Planning Product	Key Business Object	SOAP	REST
Planning Common	Approved Supplier List	–	x
Sales and Operations Planning	Bill of Resources	–	x
Planning Common	Calendar Assignments	–	x
Planning Common	Calendars	–	x
Supply Collaboration	Collaboration Order Forecasts	x	x
Demand Collaboration	Order Forecasts	x	x
Demand Collaboration	Consumption History	–	x
Planning Common	Demands	–	x
Demand Management	Forecasting Profiles	–	x
Planning Common	Items	–	x

Oracle Supply Chain Planning Product	Key Business Object	SOAP	REST
Planning Common	Measures	–	x
Global Order Promising, Supply Planning	Planned Orders	–	x
Planning Common	Planners	–	x
Global Order Promising, Backlog Management	Planning Allocation Rules	–	x
Planning Common	Planning Attribute Values	–	x
Planning Common	Purchase Order Requisitions	–	x
Planning Common	Resources	–	x
Planning Common	Sourcing Rules	–	x
Planning Common	Supplier Capacity	–	x
Planning Common	Supplies	–	x
Planning Common	Supply On Hand	–	x
Vendor-Managed Inventory	Vendor-Managed Inventory Relationships	–	x
Planning Common	Work Orders	–	x
Supply Collaboration	All objects. For more information, see *REST API for Oracle Fusion Cloud SCM*.	–	x
Demand Collaboration	All objects. For more information, see *REST API for Oracle Fusion Cloud SCM*.	–	x
Buyer Planning	All objects. For more information, see *REST API for Oracle Fusion Cloud SCM*.	–	x
Vendor-Managed Inventory	All objects. For more information, see *REST API for Oracle Fusion Cloud SCM*.	–	x

Use Cases and Patterns for Supply Chain Planning

Integrating with an External Source System

In this use case, you're using ERP Integration Service to import files that have been extracted from an external enterprise resource planning or Oracle E-Business Suite source.

Description	Integration Type	Integration Options	Notes
Using ERP Integration Service to import files that have been extracted from an external enterprise resource planning or Oracle E-Business Suite source.	Inbound	FBDI	It's recommended to keep the combined compressed file close to 100 MB. This limit varies depending on the pod size. Users with a larger pod size have been able to upload larger compressed files. If the customer's extract is larger than the ERP integration can support, they must split the compressed files into multiple smaller ones. The comma-separated values (CSV) files within the smaller compressed files must be split in the order of the phases in which entities are processed. For more information, see *My Oracle Cloud Support: What is the maximum file size allowed in WebCenter content server? (KB1172)*

Integrating with Oracle E-Business Suite

In this use case, you're integrating Oracle E-Business Suite with Oracle Fusion Cloud Supply Chain Planning.

Description	Integration Type	Integration Options	Notes
E-Business Suite 12.2.6+ integration with Oracle Supply Chain Planning.	Inbound	File based data import (FBDI)	See *My Oracle Support: Integration For EBS 12.2.x to Fusion Cloud Planning Applications - Release 13 update 18A or later (equivalent of 11.13.18.02.0) (Doc ID 2388134.1)*. This technical brief provides information for the initial release of integration of E-Business Suite 12.2.6 and Oracle Fusion Cloud Applications 11.13.18.02.0. The brief describes the predefined integration and the necessary prerequisites. It also provides step-by-step guidance on how to configure and implement the inbound and outbound integration between these two systems. Download the Oracle White Paper: *Oracle Supply Chain Planning Cloud for E-Business Suite Customers*.

Description	Integration Type	Integration Options	Notes
Extract and upload data from external systems with improved performance	Inbound	FBDI	• Split large comma-separated values (CSV) files into multiple CSV files while extracting data from Oracle E-Business Suite to Oracle Supply Chain Planning. • Sequentially load data in CSV files. For more information, download the *release notes*.
Support of resource shift calendar for computing resource availability for Oracle Supply Chain Planning	Inbound	FBDI	When the calendar shift's workday pattern is different from the calendar's workday pattern, the resource availability computed in Oracle Supply Chain Planning isn't recalculated. This is a workaround to compute the resource availability in Oracle E-Business Suite and then extract and upload it to Oracle Supply Chain Planning. For more information, see *My Oracle Support: Cloud Integration: How to Extract Resource Availability for Cloud based on Resource Shift Calendars In EBS (Doc ID 2712573.1)*.
Supported Oracle E-Business Suite releases: • 12.1.3.9.2 • 12.2.4 • 12.2.6 and later (up to the current 12.2.13 release)	Inbound	FBDI	–

Integrating with Oracle Fusion Cloud Enterprise Performance Management

Use Oracle Enterprise Performance Management data integration as the mechanism through which integration processes are performed in Oracle Enterprise Performance Management.

You can define file-based and direct integration sources, create mapping rules to translate source data into the required target format, and execute and manage the periodic data loading process.

Note: If using *ERP Integration Service* to upload data to Oracle Fusion Cloud Supply Chain Planning, use importBulkData instead of loadAndImportData. The importBulkData operation uploads a file to the Oracle WebCenter Content server based on the document details specified and submits a scheduled process to load and import the uploaded files to application tables.

Description	Integration Type	Integration Options	Notes
Load data from Oracle Enterprise Performance Management (EPM) to Oracle Supply Chain Planning using file-based data import (FBDI). Import Oracle EPM financial data, such as Budget Value and Financial Forecast Value, to Oracle Supply Chain Planning measures. Configuration of these measures is limited. Therefore, you might need to create more measures if you need to configure disaggregation parameters. You can also create unit-based measures. • Use Oracle EPM data integration to run an integration process that generates a comma-separated values data file in *Supply Chain Planning Measures (FBDI import process)* format. • Use ERP Integration Service to load and import the measures file. You can also use Oracle EPM data integration to automate this process. • Run your Oracle Supply Chain Planning plan with the **Refresh with current data** option, or refresh measures incrementally without running the plan by using the *Orchestrate Refresh Measures Processes* scheduled process.	Inbound	Oracle EPM data integration FBDI ERP Integration Service	• FBDI uses stored measures that can't be edited. • Loaded measure data is available for all Oracle Supply Chain Planning plans using those financial measures.
Load data from Oracle EPM to Oracle Supply Chain Planning using REST APIs. Import Oracle EPM financial data, such as Budget Value and Financial Forecast Value, to Oracle Supply Chain Planning measures. Configuration of these measures is limited. Therefore, you might need	Inbound	Oracle EPM data integration REST APIs	• REST uses editable measures. • More measures are required to reference and secure editable measures. • Direct integration that's plan-specific with no plan run required.

Description	Integration Type	Integration Options	Notes
to create more measures if you need to configure disaggregation parameters. You can also create unit-based measures. • Use Oracle EPM data integration to run an integration process that generates a REST API payload for the inbound Oracle Supply Chain Planning measures table. • Use the *Planning Tables* REST resource to create planning table data with the REST API payload in batch mode. This loads and disaggregates measure data while planners can continue to work in a plan. You can also use Oracle EPM data integration to automate this process.			• More flexibility with telescoped Oracle EPM data. For example, years 1 and 2 are modeled at a monthly level and years through 5 at quarterly level can be loaded into separate Oracle Supply Chain Planning tables with different time levels.
Publish data from Supply Chain Planning to Oracle EPM. Export Oracle Supply Chain Planning forecast measures, such as Consensus Forecast and Consensus Forecast Value, to Oracle EPM. • Use the Publish Data plan action to export measure data from an Oracle Supply Chain Planning plans table to a compressed, comma-separated values (CSV) file on the Oracle WebCenter Content server. • Use Oracle EPM data integration to retrieve the comma-separated values file and run an integration process to transform and load the data file.	Outbound	Publish Plan Data Oracle EPM data integration	–

Related Topics

- Oracle Fusion Cloud Enterprise Performance Management: Integration Topic Map for Planning
- Oracle Fusion Cloud Enterprise Performance Management: Data Integration
- Cloud Customer Connect Event: SCM – Enable Integrated Business Planning and Execution with Oracle Cloud Sales and Operations Planning
- Cloud Customer Connect Event: EPM – Data Integration Update and Roadmap
- Cloud Customer Connect Event: SCM – Supply Chain Planning Cloud: Integration and Extensibility

Integrating with Oracle Fusion Cloud Supply Chain Collaboration

This use case provides information about the various ways to load forecast data into Oracle Supply Chain Collaboration.

Description	Integration Type	Integration Options	Notes
Load order forecast data into Supply Chain Collaboration using files. Import collaboration order forecasts into the Oracle Supply Chain Collaboration interface tables using the file-based data import (FBDI) *Collaboration Order Forecasts* process. • The data contains plan source, supplier item header data, and date-specific quantities. • After loading, run the *Supply Planning Collaboration Decomposition* scheduled process.	Inbound	FBDI	The supply plan name is the supply plan used to generate the collaboration order forecasts. It can be a supply plan from Oracle Fusion Cloud Supply Chain Planning or a plan from an external planning application. The name should map to an existing collaboration plan that's defined in Oracle Supply Chain Collaboration.
Load order forecast data into Oracle Supply Chain Collaboration using REST APIs. Use the Collaboration Order Forecast Requests REST API to create order forecast requests. The data that's submitted will be processed asynchronously. The response of the REST API call will include a CollaborationOrderForecastRequest which can be used to query the status of the overall request and of individual entries included in the original request.	Inbound	REST API	The requestStatusDetails child resource of the response provides the status of the request.
Decompose imported data into Oracle Supply Collaboration. After the order forecast data is loaded into the interface tables, run the *Supply Planning Collaboration Decomposition* scheduled process to process the data, evaluate forecast exceptions, and make the order forecast data available to suppliers and collaboration planners.	Inbound	Scheduled process	If the **Exclude unpublished order forecasts with zero quantities from the decomposition process** option is set to Yes on the Manage Supply Chain Collaboration Settings page, then relationship candidates and related order forecasts (if a previous forecast doesn't exist) aren't created for zero quantity order forecasts during the decomposition process.

Description	Integration Type	Integration Options	Notes
The decomposition process is run automatically by the *Publish Order Forecast* scheduled process but must be manually scheduled when loading data with FBDI.			
Export collaboration order forecasts and commit data to files. Use the *Export Collaboration Order Forecasts* scheduled process to export collaboration order forecasts or commit data to comma-separated values (CSV) files. When setting up this process in Oracle Enterprise Scheduler, you can set the supply plan to export and filter the export collection by specifying a supplier or item, and choose to include current forecasts, current commits, previous forecasts, and previous commits.	Outbound	Scheduled process	–
Import supply commits quantities to existing order forecasts using files. Suppliers can download order forecasts to a spreadsheet, fill in the commit values, and upload the new commit data back into the forecast.	Inbound	CSV files Scheduled processes	Both downloads and uploads will be processed using scheduled processes available on the Oracle Supply Chain Collaboration Download Files and Upload Files pages.
Export collaboration order forecasts and commit data using REST APIs. Use the *Collaboration Order Forecasts* REST resource to get the current planning cycle order forecasts that are published for supplier collaboration. This includes: • Any existing commit quantities. • Forecast and commit exceptions associated with the collaboration order forecast, such as forecast changes and commit mismatches. • Reference quantities, such as purchasing measures. Import supply commits quantities to existing order forecasts using REST APIs.	Inbound Outbound	REST APIs	See the *Use Cases* section in *REST API for Oracle Fusion Cloud SCM* for examples of how to integration with Oracle Supply Collaboration using REST APIs.

Description	Integration Type	Integration Options	Notes
You can use this same *Collaboration Order Forecasts* REST resource to respond to collaboration order forecasts by providing supply commits.			
Exchange forecast and commit data with suppliers using B2B messaging. • You can publish order forecasts to suppliers using outbound B2B messaging in Oracle Fusion Collaboration Messaging. • Suppliers can send commit responses using inbound B2B messaging. Commit exceptions are run and commit decomposition started.	Inbound Outbound	B2B Messaging using Oracle Fusion Collaboration Messaging	There are two different processes available for the orchestration of B2B messages. For more information, see *Overview of Orchestration*.
Import supplier on-hand quantities using files. You can upload supplier on-hand quantities for your items using CSV files. Download the spreadsheet template from the Manage Supplier On-Hand Quantities page and populate the available item quantities.	Inbound	CSV files Scheduled processes	Uploaded files will be processed using a scheduled process that's available on the Oracle Supply Chain Collaboration Upload Supplier On-Hand Quantities page for review and error diagnosis. The uploaded file will be available for 30 days.

Integrating with Oracle Demand Collaboration

This use case provides information about the various ways to load demand-order-forecast and consumption-history data from customers into Oracle Demand Collaboration.

Description	Integration Type	Integration Options	Notes
Load demand-order-forecast and consumption-history data from customers into Oracle Demand Collaboration using files.	Inbound	Comma-separated values (CSV) files	Uploads made through the Customer Demand Uploads UI will be processed using scheduled processes. A template containing the required columns data is available for download.
Load demand-order-forecast and consumption-history data from customers into Oracle Demand Collaboration using REST APIs and a file as input.	Inbound	REST APIs, using an encoded file	The *Collaboration Customer Demand Uploads* REST resource processes a base-64 encoded file to load customer demand data.

Description	Integration Type	Integration Options	Notes
Load demand-order-forecast and consumption-history data from customers into Oracle Demand Collaboration using bulk REST APIs.	Inbound	REST APIs	The *Collaboration Customer Demand Requests* REST resource is used to create bulk load customer demand requests. A collaborationCustomerDemandRequests_Id is provided as a response that can be used to check for the status of the request.
Load customer demand-order-forecast data from customers into Oracle Demand Collaboration using B2B messaging.	Inbound	B2B messaging using Oracle Collaboration Messaging	Use the predefined Order Forecast – Inbound document (B2B message definition Oracle-1-0-B2B-Order-Forecast-In) to receive an order forecast message from your customers and use it for your organization's demand planning. Message data consists of Forecasts (customer/customer site), Forecast lines (item/org), and forecast schedule components (quantity, date). Enable the Customer Collaboration business process to allow the Order Forecast – Inbound document to be exchanged. Then associate it with a customer in the Manage Customer Collaboration Configuration task. Set up this message definition as an inbound collaboration message for a trading partner and then associate the trading partner and Order Forecast- Inbound document with a customer using the Manage Customer Collaboration Configuration task. After the message is received and transformed, a compressed file is placed in Oracle WebCenter Content and processed by the Process Collaboration Customer Demands resource.
Export supply forecasts to customers using files.	Outbound	CSV files	–
Create customer and enterprise demand collaborators with REST APIs.	Inbound	REST APIs	Use the *Collaboration Demand Planners* REST resource to create both customer and enterprise demand collaborators and assign them specific access.

Other Supply Chain Planning Resources

Use these resources to get more information about Oracle Fusion Cloud Supply Chain Planning integrations.

- *Tables and Views for SCM*

  Describes tables and views for common features within Oracle Fusion Cloud Applications. Includes diagrams, schematics, and links to other technical documentation.

- *File-Based Data Import (FBDI) for SCM*

  Describes how to use FBDI to import or update legacy and other data into Oracle Fusion Cloud Supply Chain & Manufacturing from external applications.

- *REST API for Oracle Fusion Cloud SCM*

  Provides a quick start that walks you through a simple request example, plus detailed descriptions for each REST API resource.

- *SOAP Web Services for SCM*

  Describes SOAP web services to integrate with or extend Oracle Fusion Cloud SCM.

- *Oracle Integration*

  Describes Oracle Integration Cloud (OIC).

- *Subject Areas for Transactional Business Intelligence in SCM*

  Provides descriptions, business questions, and security roles for the subject areas in Oracle Fusion Cloud SCM.

12 Transportation and Global Trade Management

Overview of Transportation and Global Trade Management

About Oracle Fusion Cloud Transportation and Global Trade Management

Oracle Transportation Management (OTM) and Global Trade Management (GTM) are a global transportation and logistics operations system and a unique global compliance solution that allows companies of all sizes and in all geographies to centrally manage their global trade operations.

For more information, see *Transportation Management* and *Global Trade Management*.

Terminology for Transportation and Global Trade Management

These terms are used throughout the Oracle Fusion Cloud Transportation and Global Trade Management playbook.

Term	Definition
OTM	Oracle Fusion Cloud Transportation Management. The main product. References to OTM also imply GTM. OTM or OTM/GTM are used to identify the entire product suite.
GTM	Oracle Fusion Cloud Global Trade Management. Used to differentiate content that's exclusive to GTM and not in the main OTM product.
Business Object Family - Order Release	A business object that represents the part of a sales order that's ready for transport. It's defined with a required Order Release Lines child object and optional child objects like LPN Packed Details, Special Services, and Remarks.
Business Object - Lifetime Events	Published by OTM to a registered external system. These external systems can be defined to use Oracle Integration Cloud (OIC). **Note:** OIC might require additional licensing.
Workflow Agents	Automation agents in OTM similar to the Order Management Orchestration process. They provide a flexible and extensible framework for orchestrating order releases. Customers can define various predefined tasks in the process. During the agent process the user can define an integration task to be performed when a business object triggers a lifetime event. For example, when a planned shipment is accepted by the carrier the planned shipment integration payload is sent to Oracle Fusion Warehouse Management.

Integration Types and Options for Transportation and Global Trade Management

Overview of Transportation and Global Trade Management Integration Types and Options

Oracle Fusion Cloud Transportation and Global Trade Management supports several integration types and options.

Integration Types

Oracle Transportation and Global Trade Management supports these integration types:

Inbound

This integration imports data into Oracle Transportation and Global Trade Management from other Oracle Fusion Cloud Supply Chain & Manufacturing applications or from other third-party providers.

Outbound

This integration exports data out of Oracle Transportation and Global Trade Management application to other Oracle Fusion Cloud Supply Chain & Manufacturing applications or from other third-party providers.

Integration Options

These options use various protocols and formats to integrate Oracle Fusion Cloud Applications and third-party applications with Oracle Transportation and Global Trade Management.

Inbound Only

File-Based Data Import (FBDI) for Transportation and Global Trade Management

Inbound and Outbound

- *REST APIs for Transportation and Global Trade Management*
- *SOAP Services for Transportation and Global Trade Management*

Inbound and Outbound

REST APIs for Transportation and Global Trade Management

REST APIs are the preferred integration option when you use Oracle Fusion Cloud Transportation and Global Trade Management for automation requirements.

Formats

- XML.

- JSON.

Key Features

- Lightweight.
- Granular control and data access.

Best Practices

- REST APIs are the preferred integration option when you use Oracle Fusion Cloud Transportation and Global Trade Management for automation requirements.
- Use REST APIs to communicate with Oracle OTM and GTM for custom applications built with Oracle Platform as a Service (PaaS) or any third-party application-development tool.

Constraints

Limit the payload by including only the fields you want to work with, rather than using all the data available with every request. This will help you avoid performance issues.

SOAP Services for Transportation and Global Trade Management

You can use SOAP services to import and manage data in Oracle Fusion Cloud Transportation and Global Trade Management in near real time.

Format

XML.

Key Features

- This is currently the most commonly used integration option.
- Supports large payloads.
- Data typically flows from external systems.

Best Practices

- If back-end systems are Oracle Fusion Applications, use the available *Previously Built Oracle Integration Cloud (OIC) Recipes for Transportation and Global Trade Management* for integrations.
- If back-end systems are external or third-party applications, you still would use OIC, or any other middle tier, for data-making and transformation.

Constraints

- The larger the payload, the longer it takes to process. Avoid adding many transactions to a single payload.
- A SOAP service call can experience a 504-gateway timeout if a request runs for more than 5 minutes. The OIC timeout is also 5 minutes.

Inbound Only

File-Based Data Import (FBDI) for Transportation and Global Trade Management

With this option, you can use the provided FBDI import templates to quickly create and import data into Oracle Fusion Cloud Transportation and Global Trade Management.

Format

- Comma-separated values (CSV).
- XML.

Key Features

Typically used for master data set up.

Best Practices

- Use Direct File Upload or Export for master data setup and rate loading in Oracle Transportation and Global Trade Management.
- Loading all the master data beforehand will improve performance. For example, items and locations.

Constraints

- Avoid using FBDI for transactional activities.
- Microsoft Excel-based upload and download are only used for smaller payloads.

Inbound and Outbound Integration Entities for Transportation and Global Trade Management

Master data, transactional data, and metadata are inbound and outbound integration entities.

Master data, for example, includes item and location. Transactional data includes inbound shipments and purchase orders. Metadata includes messages and literals.

Entity Type	Options Available	Formats Supported	References
Master Data (Items, Locations, Users, Ship Unit Definitions)	SOAP Services	XML	• *Integrating with Oracle Integration Cloud Guide* • *Transportation and Global Trade Management APIs*
	REST APIs	JSON/XML	
	Direct file upload	CSV/XML	
Order Releases, Actual Shipments	SOAP Services	XML	
	REST APIs	JSON/XML	
Planned Shipments	SOAP Services	XML	

Transportation and Global Trade Management Business Events

Business events are trigger points in Oracle Fusion Cloud Transportation Management and Global Trade Management that launch actions to respond to that event.

Business Event	Description	Event Raise Points	Enable by Using
Order Creation	On creation, an order agent can be configured to plan the shipment. Or, a bulk plan process can be defined to run periodically.	When an order is created, either through either an integration or in the UI, a lifetime event for the order creation is published. An automation agent can be set up to listen to that event and act on it. The agent can be configured to create a shipment from the order and send an acknowledgment to an upstream system, such as Oracle Cloud Order Management.	Business object lifetime events are published for create. Automation agents needs to be enabled to orchestrate the define tasks and integrations.
Order Modification	On order modification, an automation agent can be configured to propagate the changes made to a planned shipment based on the status of the shipment. If this shipment has been interfaced to Oracle Fusion Cloud Warehouse Management or Oracle Fusion Cloud Inventory Management, this change will be interfaced as an integration update.	When an order is created, either through either an integration or in the UI, a lifetime event for the order modification is published. An automation agent can be set up to listen to that event and act on it. The agent can be configured to propagate the order modifications on the shipment based on the state of the shipment. It also can send an acknowledgment to an upstream system, such as Oracle Cloud Inventory Management.	Business object lifetime events are published for create. Automation agents needs to be enabled to orchestrate the define tasks and integrations.
Compliance Screening	A trade transaction is created from a sales order. The transaction is screened for compliance and the results are sent back to Oracle Order Management.	An automation agent that listens to the create trade transaction lifetime event can be set up to perform the compliance screening.	Business object lifetime events are published for create. Automation agents needs to be enabled to orchestrate the define tasks and integrations.
Planned Shipment Processing	When the shipment reaches a specified status, it will be sent to the downstream system(s). Any later shipment modifications will also trigger an update to the downstream system.	Lifetime events such as shipment created and shipment modified can be used to set up automation agents that act on these events.	Business object lifetime events are published for create. Automation agents needs to be enabled to orchestrate the define tasks and integrations.
Actual Shipment Processing	On shipment confirmation, Oracle Cloud Warehouse Management or Oracle Cloud Inventory Management initiates the actual shipment processing in Oracle OTM/GTM.	–	Integration payload invocation starts the actual shipment processing.

Business Objects for Transportation and Global Trade Management

Transportation and Global Trade Management Business Objects Available for Integration

Oracle Fusion Cloud Transportation and Global Trade Management provides support for multiple inbound and outbound business object families to help inbound and outbound integrations.

These families are contain several child objects. During the integration process, you either can transact the data for the entire business object family as a single unit or for a specific member business object (based on the data-dependency rules). For example, you can import an item with all its structures and attachments at once or import only the item attachments if the item is already present in the system.

Business Object Category	Key Business Objects	Inbound	Outbound	Business Events
Orders	Order Release Header, Order Release Lines, Order Release Ship Units (packaging, LPN), Order Movements, Order Documents	x	x	x
Planned Shipment	Shipment Header, Shipment Equipment, Shipment Stops, Shipping Ship Units (packaging, LPN), Shipping Cost Details, Documents	–	x	–
Actual Shipment	Shipment Header, Shipment Equipment, Shipment Stops, Shipping Ship Units (packaging, LPN), Shipping Cost Details, Documents	x	–	x
Items	Item, Packaged Item, Bill of Material, Country of Origin, Hazardous Information, Item Documents	x	x	x
Locations	Address, Contacts, Location Documents	x	x	x
Trade Transaction	Trade Transaction Header, Transaction Lines, Involved Parties, Trade Transaction Documents	x	x	x

Transportation and Global Trade Management Integration Options Available by Business Objects

This table provides a list of Oracle Fusion Cloud Transportation and Global Trade Management integration options available for each business object.

Use case	SOAP	REST	FBDI	Extension & Transformation Rules	Lifetime Events
Item Synchronization	X	X	X		X
Location Synchronization	X	X	X		X
Order Creation (Create, Update, Cancel operations)	X	X		X	
Planned Shipment	X	X		X	X
Actual Shipment	X	X		X	X
Trade Transaction	X	X		X	X

Use Cases and Patterns for Transportation and Global Trade Management

Overview of Transportation and Global Trade Management Use Cases and Patterns

Oracle Fusion Cloud Transportation Management and Global Trade Management provide a wide range of integration options to support your complex business needs.

These Oracle Cloud OTM and GTM use cases and patterns are included as examples:

- *Item Master Synchronization*
- *Receive, Acknowledge and Process Compliance Screening for Sales Order Pre-Booking*
- *Receive, Acknowledge and Process Compliance Screening for Order Fulfillment Line*

- *Receive, Acknowledge, and Process Order Fulfillment Line*
- *Send Pickup and Delivery Dates Back to Order Management Cloud for Fulfillment Lines*
- *Send Shipment Information to Inventory Management Cloud (Shipping)*
- *Receive, Acknowledge, and Compliance Screening for Pick Confirm Shipment Line*
- *Receive, Acknowledge, and Compliance Screening for Ship Confirm Customer Shipment*
- *Receive Shipment Actual*
- *Send Proof of Delivery to Oracle Fusion Cloud Order Management for Fulfillment Lines*

Item Master Synchronization

In this use case, an item is sent to Oracle Fusion Cloud Transportation and Global Trade Management from Oracle Product Hub through Oracle Integration Cloud (OIC).

Description	Integration Type	Integration Options	Notes
An item is sent to Oracle Fusion Cloud Transportation and Global Trade Management from Oracle Product Hub through Oracle Integration Cloud (OIC). Oracle Global Trade Management creates and updates the item.	Inbound	• SOAP Services • REST APIs • File-based data import (FBDI)	PIM_CREATE_GTM and PIM_UPDATE_GTM integrations are two examples of how this could be done.

Receive, Acknowledge, and Process Compliance Screening for Sales Order Pre-Booking

In this use case, an order is sent to Oracle Fusion Cloud Transportation and Global Trade Management Cloud from Oracle Fusion Cloud Order Management through Oracle Integration Cloud (OIC).

Description	Integration Type	Integration Options	Notes
An order is sent to Oracle Fusion Cloud Transportation and Global Trade Management Cloud from Oracle Fusion Cloud Order Management through Oracle Integration Cloud (OIC). Oracle Global Trade Management acknowledges the receipt of the request. Oracle GTM creates the transaction and performs the screening based on the services configured by the user. Once the compliance- screening processing completes, the system will build the compliance status response structure and send it to OIC.	Inbound	SOAP Services	The Oracle Fusion Applications domain has a DOO-GTM - PRE-BOOKING sample agent that listens to the transaction creation during the pre-booking stage of the sales order and sends the response to OIC. A preferred configuration can be added to the sample agent. The OM_GTM sample integration is one way to perform the screening. GTM_OM is an example of the corresponding response.

Receive, Acknowledge, and Process Compliance Screening for Order Fulfillment Line

In this use case, an order fulfillment line is sent to Oracle Fusion Cloud Transportation and Global Trade Management from Oracle Fusion Cloud Order Management Oracle Integration Cloud (OIC).

Description	Integration Type	Integration Options	Notes
An order fulfillment line is sent to Oracle Fusion Cloud Transportation and Global Trade Management from Oracle Fusion Cloud Order Management through OIC. Oracle GTM acknowledges the receipt of the request, creates and updates the trade transaction, and performs the configured screening.	Inbound	SOAP Services	Suggested screening services are Restricted Party List, Sanctioned Countries, and Control Screening. The Oracle Fusion Cloud Applications domain includes a DOO-GTM - POST-BOOKING sample agent, which listens to the transaction creation and modification in the post-booking stage of sales order and sends the response to OIC. Similar to *Receive, Acknowledge, and Process Compliance Screening for Sales Order Pre-Booking*, OM_GTM and GTM_OM are examples of how the screening and response might be completed.

Receive, Acknowledge, and Process Order Fulfillment Line

In this use case, orders are sent to Oracle Transportation and Global Trade Management from Oracle Order Management through Oracle Integration Cloud (OIC) and must be processed into an order that can be planned.

Description	Integration Type	Integration Options	Notes
Orders are sent to Oracle Transportation and Global Trade Management from Oracle Order Management through Oracle Integration Cloud (OIC) and must be processed into an order that can be planned. This can be done using the PUBLIC ORDER RELEASE – INSERT agent or another agent. For more information, see *Using Order Management*.	Inbound	SOAP Services	When an order is created in Oracle Transportation and Global Trade Management, an acknowledgment can be sent back to Oracle Order Management. The Oracle Fusion Cloud Applications domain includes a SEND ORDER RECEIVED TO agent as an example. The Release interface is sent through OIC and its payload is used to create the proper response to forward to Oracle Order Management. The OM_OTM integration is one example of how the order release might be created. OTM_OM is an example of how the acknowledgment could be sent.

Send Pickup and Delivery Dates Back to Oracle Fusion Cloud Order Management for Fulfillment Lines

In this use case, orders are planned into shipments through an automation agent or a scheduled process.

Description	Integration Type	Integration Options	Notes
Orders can be planned into shipments through an automation agent or a scheduled process to run the BuildBuySideShipments process based on a saved query that selects the orders to be planned. The saved query might select orders with a new and unscheduled status. When an order is initially planned into a shipment, and as stop times are updated throughout its lifecycle, the estimated pickup and delivery dates can be updated on the order, if desired, to send back to Oracle Order Management.	Outbound	SOAP Services	The sample flow assumes the following has been configured in Oracle Transportation and Global Trade Management: • Parameters RECALC ORDER EARLIEST EST PICKUP DATES and RECALC ORDER LATEST EST DELIVERY DATES are set to **True** to enable the calculation of these fields on the order release. The Oracle Fusion Cloud Applications domain includes a FA_ DEFAULT parameter set with these settings: • Properties: **glog.workflow.topic.OrderLatest** and **glog.workflow.topic.OrderEarlie** These properties should be added to the CUSTOM property that's included with Oracle Transportation and Global Trade Management. • An agent listening to ORDER - EARLIEST EST PICKUP DATE CHANGE and ORDER - LATEST EST DELIVERY DATE CHANGE (restrictions: INTERNAL) sends the integration to OIC. The Oracle Fusion Cloud Applications domain includes a SEND ORDER DATES TO FA, which is one example of how this might be configured. Similar to *Receive, Acknowledge, and Process Order Fulfillment Line*, this sends the Release interface, which includes the estimated pickup and delivery dates. The OTM_OM integration is one example of how the date estimates might be sent from Oracle Transportation and Global Trade Management back to Oracle Order Management.

Description	Integration Type	Integration Options	Notes

Send Shipment Information to Oracle Fusion Cloud Inventory Management (Shipping)

In this use case, the shipment information for shipments created in Oracle Fusion Cloud Transportation and Global Trade Management must be sent to Oracle Inventory Management (Shipping).

Description	Integration Type	Integration Options	Notes
When shipments are created in Oracle Transportation and Global Trade Management, the shipment information must be sent to Oracle Inventory Management (Shipping). The Oracle Fusion Applications domain includes a SEND PLANNED SHIPMENT TO FA INV agent as an example of how this could be configured. The OTM_WSH integration is one way the planned shipment might be mapped from Oracle Transportation and Global Trade Management to Oracle Inventory Management.	Outbound	SOAP Services	Currently, the mapping of Order Release Destination to Initial Destination (Release/ShipToLocationRef/LocationRef/LocationGid/Gid/Xid to ShipmentRequestOrderLine/InitialDestinationLocationId) might cause the transmission to fail as the locations received from Oracle Order Management are Party Site IDs, while Oracle Inventory Management expects a Location ID. This is expected to be fixed in a future version. In the meantime, this mapping can either be removed (although it might affect pick release in Oracle Inventory Management), or configured with a lookup table to translate Party Site ID to a Location ID.

Receive, Acknowledge, and Compliance Screening for Pick Confirm Shipment Line

In this use case, a pick confirm shipment line is sent to Oracle Fusion Cloud Transportation and Global Trade Management from Oracle Fusion Cloud Inventory Management (Shipping) through Oracle Integration Cloud (OIC).

Description	Integration Type	Integration Options	Notes
A pick confirm shipment line is sent to Oracle Transportation and Global Trade Management from Oracle Inventory Management (Shipping) through OIC. Oracle Global Trade Management acknowledges the receipt of the	Inbound	SOAP Services	Suggested screening services are Restricted Party List, Sanctioned Countries, and Control Screening. The Oracle Fusion Applications domain has a sample agent, WSH-GTM - READY-TO-SHIP, which listens to the transaction

Description	Integration Type	Integration Options	Notes
request, creates and updates the trade transaction, and performs the screening that's configured by the user.			creation in the ready-to-ship stage of the shipment and sends the response to OIC. The WSH_SCREENING_GTM integration is one example of how this screening might be performed. The GTM_SCREENING_WSH integration is an example of the corresponding response.

Receive, Acknowledge, and Compliance Screening for Ship Confirm Customer Shipment

In this use case, a ship confirm customer shipment is sent to Oracle Transportation and Global Trade Management from Oracle Inventory Management (Shipping) through Oracle Integration Cloud (OIC).

Description	Integration Type	Integration Options	Notes
A ship confirm customer shipment is sent to Oracle Transportation and Global Trade Management from Oracle Inventory Management (Shipping) through OIC. Oracle Global Trade Management acknowledges the receipt of the request, creates the trade transaction, and performs the screening configured by the user.	Inbound	SOAP Services	The suggested screening service is Documents Determination. Oracle GTM doesn't send any screening results back to Oracle Inventory Management. The Oracle Fusion Applications domain has a sample agent, WSH-GTM - SHIPMENT-ADVICE, which listens to the transaction creation related to the shipment advice where the actions needed to generate documents can be added. The WSH_SA_GTM integration is one example of how this might be completed.

Receive Shipment Actual

In this use case, the shipment, as it was shipped in Oracle Fusion Cloud Inventory Management, is sent to Oracle Fusion Cloud Transportation and Global Trade Management.

Description	Integration Type	Integration Options	Notes
The shipment, as it was actually shipped in Oracle Fusion Cloud Inventory Management, is sent to Oracle Fusion Cloud Transportation and Global Trade Management. These are sent as individual ship units that update the shipment. The WSH_OTM integration is one example of how actual updates	Inbound	SOAP Services	The ship units sent from Oracle Inventory Management might differ significantly from those that were originally planned by Oracle Transportation and Global Trade Management. Ship units sent from Oracle Inventory Management will have a Received Ship Unit Count of 1. When all actual updates

Description	Integration Type	Integration Options	Notes
might be mapped from Oracle Inventory Management into Oracle Transportation and Global Trade Management.			have been sent, Oracle Inventory Management will send an **Attribute 20 to Y** update setting to indicate all actuals have been sent. The Oracle Fusion Applications domain includes a sample agent, SHIPMENT COMPLETE, which listens for shipment-modification events. If the shipment is complete (Attribute 20=Y), the WSH_SHIP_COMPLETE_OTM integration will be called. This integration then calls Oracle Transportation and Global Trade Management with a transmission that deletes all the original planned ship units. As a result, only the ship units sent from Oracle Inventory management will remain.

Send Proof of Delivery to Oracle Fusion Cloud Order Management for Fulfillment Lines

In this use case, delivery notification is sent to Oracle Fusion Cloud Order Management when all shipments for an order have been delivered.

Description	Integration Type	Integration Options	Notes
Delivery notification can be sent to Oracle Fusion Cloud Order Management when all shipments for an order have been delivered. The SET ORDER DELIVERED STATUS agent action can evaluate the en route status of the related shipments and set the order release to a delivered status.	Outbound	SOAP Services	The Oracle Fusion Applications domain includes a SHIPMENT DELIVERED agent as an example of how this might be configured. This agent listens for the ENROUTE shipment status to move to COMPLETED. It then uses the SHIPMENT TO ORDER RELEASE data type association to call SET ORDER DELIEVERED STATUS to set the order's delivered status. Another sample agent, SEND ORDER DELIVERY STATUS TO FA, is an example of how an agent might be configured to send the order to Oracle Order Management when the order status shows as delivered. The OTM_OM integration is included in the Oracle Fusion Applications domain and is an example of how proof of delivery might be communicated from Oracle Transportation and Global Trade Management to Oracle Order Management.

Oracle Integration Cloud Accelerators for Transportation and Global Trade Management

Previously Built Oracle Integration Cloud (OIC) Recipes for Transportation and Global Trade Management

Oracle Integration Cloud (OIC) includes a logistics adapter that can be used to integrate Oracle Fusion Cloud Transportation and Global Trade Management (OTM/GTM), Oracle Fusion Cloud Order Management, Oracle Fusion Cloud Inventory Management, and Oracle Product Hub.

You can download and import these sample flows into OIC. In OIC, import the integration archive (.iar) file and change the connection information as needed. You can also download and import the entire set of sample flows with the *LogisticsSupplyChain package*.

Note: You must have a *My Oracle Support* subscription to use the links in the table.

Integration	Source System	Target System	Function Details
PIM_CREATE_GTM	Oracle Product Hub	Global Trade Management	Creates an item in Global Trade Management.
PIM_UPDATE_GTM	Oracle Product Hub	Global Trade Management	Updates an item in Global Trade Management.
OM_GTM	Oracle Order Management	Global Trade Management	Screens a sales order pre-booking.
GTM_OM	Global Trade Management	Oracle Order Management	Sends a screening response.
OM_OTM	Oracle Order Management	Oracle Transportation Management	Creates an order release in Oracle Transportation Management from fulfillment line.
OTM_OM	Oracle Transportation Management	Oracle Order Management	Communicates order shipping information to Oracle Order Management.
OTM_WSH	Oracle Transportation Management	Oracle Inventory Management	Sends planned shipment.
WSH_SCREENING_GTM	Oracle Inventory Management	Global Trade Management	Screening for pick confirm shipment line.
GTM_SCREENING_WSH	Global Trade Management	Oracle Inventory Management	Sends a screening response.
WSH_SA_GTM	Oracle Inventory Management	Global Trade Management	Screening for ship confirm customer shipment.
WSH_OTM	Oracle Inventory Management	Oracle Transportation Management	Sends actuals to Oracle Transportation Management.

Integration	Source System	Target System	Function Details
WSH_SHIP_COMPLETE_OTM	Oracle Inventory Management	Oracle Transportation Management	Removes original planned ship units from Oracle Transportation Management on shipment complete message from Oracle Inventory Management.

For more information, see:

- *My Oracle Support: Sample Integration with Transportation and Global Trade Management (OTM/GTM) Using OIC (Doc ID 2209248.1)* (My Oracle Support subscription required.)
- *Oracle Logistics Cloud Suite*
- *Integrating with Oracle Integration Cloud Guide*

Other Transportation and Global Trade Management Resources

Use these resources to get more information about Oracle Fusion Cloud Transportation and Global Trade Management integrations.

- *My Oracle Support: Transportation and Global Trade Management Information Center (Doc ID 2174060.2)* (Subscription required.)

  Information about these product integrations:

  - Oracle Fusion Cloud Applications
  - Oracle Integration Cloud
  - Oracle Fusion Cloud Warehouse Management
  - Oracle E-Business Suite
- *E-Business Suite Integration Guide*
- *Integrating with Oracle Integration Cloud Guide*
- *Oracle Transportation and Global Trade Management Integration Guide*
- *Transportation and Global Trade Management APIs*

13 Warehouse Management

Overview of Warehouse Management

About Oracle Fusion Cloud Warehouse Management

Oracle Fusion Cloud Warehouse Management can transform warehouse operations to meet the challenges of today's marketplace, managing complex fulfillment operations, and gaining total visibility – from the distribution center to the store shelf.

Oracle Warehouse Management helps you manage a very high level of inventory accuracy and monitors key performance indicators (KPIs) for your warehouse operations.

Terminology for Warehouse Management

These terms are used throughout the Oracle Fusion Cloud Warehouse Management playbook.

Term	Definition
SKU	Stock keeping unit.
Inbound Integration	Data going into the application from external applications.
Outbound Integration	Data going out from the application to external applications.
HTTPS	Hypertext Transfer Protocol Secure.
SFTP	Secure File Transfer Protocol.
XML	Extensible Markup Language.
JSON	Javascript Object Notation.
MHE Automation	Material handling equipment. For example, conveyors, pick-to-light systems, and robots (automated guided vehicles (AGVs), and autonomous mobile robots (AMRs).
ZPL	Zebra Programming Language. A print language used by many label printers.
API	Application Programming Interface. Mechanisms that enable two software components to communicate with each other using a set of definitions and protocols.
REST	Representational State Transfer. Software architecture that imposes conditions on how an API should work.
OIC	Oracle Integration Cloud.

Integration Types and Options for Warehouse Management

Overview of Warehouse Management Integration Types and Options

Oracle Fusion Cloud Warehouse Management supports these integration types and options.

Inbound

Inbound integration manages data import from other Oracle Fusion Cloud Supply Chain (SCM) & Manufacturing applications or external third-party applications into the Oracle Warehouse Management application.

- Master data definitions. (For example, item, supplier, users, locations, destination facilities, destination companies, and routes.)
- Metadata definitions. (For example, literals, messages, and supplier-barcode to item-barcode mappings.)
- Business entities. (For example, fulfillment orders, inbound shipments, purchase orders, planned loads, and movement requests.)
- MHE-related inbound messages. (For example, induction messages, pick confirmations, and packing confirmations.)

Outbound

Outbound integration manages data export from the Oracle Warehouse Management application other Oracle Cloud SCM applications or external third-party applications.

Outbound Push (data automatically pushed by Oracle Warehouse Management)

- Transactional confirmations. (For example, inbound and outbound shipment verifications and various types of inventory transactions.)
- Automation-related, event-driven outbound messages. (For example, wave-pick and replenishment-pick information, outbound license plate number (OBLPN) shipping information, and route information.)
- Scheduled job output. (For example, reports, inventory summaries, and data extracts.)
- Reports and labels. (For example, document reports in different formats [PDF, CSV, Excel] and labels [ZPL, JSON].)

Outbound Pull (data pulled from Oracle Warehouse Management as needed)

- Important business entities. (For example, inbound shipments, purchase orders, and fulfillment orders.)
- Transaction data. (For example, tasks, allocations, inventory transaction history, and inventory summaries.)
- Reports and labels. (For example, document reports [PDF, CSV, Excel] and labels [ZPL, JSON].)

Information that's applicable to both integration types:

Based on Communication Methods and Formats to and from Oracle Warehouse Management

Integration Type	Supported Protocols	Supported Formats
Inbound	• File-based data upload **Note:** Oracle Warehouse Management doesn't support file-based data import (FBDI). • REST API-based HTTPS • SFTP	JSON, XML, Microsoft Excel, delimited flat files
Outbound	• REST API-based HTTPS • SFTP • SMPT • Printer • File-based export	JSON, XML, Microsoft Excel, delimited flat files, PDF, ZPL, email

Based on the Type of External System Oracle Warehouse Integrates With

Integration Type	External System Type	Method
Inbound and Outbound	Enterprise resource planning systems (ERPs, not Oracle).	REST APIs.
	Oracle Fusion Cloud Enterprise Resource Planning.	Ready-to-use integration using Oracle Integration Cloud (OIC).
	MHE/Automation.	REST APIs based on automation type.
	Platform as a service (PaaS) custom application.	REST APIs.

Inbound and Outbound Integration Options

Using various methods of communication, protocols, and formats, these two options support both inbound and outbound integration between Oracle Warehouse Management and any other external system.

Option	Protocol	Format
REST APIs	HTTPS	XML, JSON
Secure File Transfer Protocol (SFTP)	SFTP, direct upload, or export	Delimited flat files/ Microsoft Excel templates

Inbound and Outbound Options

REST APIs for Warehouse Management

With the REST API option, you either can push data into Oracle Fusion Cloud Warehouse Management or retrieve data from Oracle Warehouse Management in real time using standard secure protocols and formats.

Key Features

- Most commonly used.
- Can support large payloads.
- Data typically flows from external systems.

Best Practices

- If back-end systems are part of Oracle Fusion Cloud Applications, use the available *previously built Oracle Integration Cloud (OIC) integrations*.
- If back-end systems are external applications, then you'd still use OIC or any other middle tier for data making and transformation needs.
- If using a warehouse control system for any automation requirements, it's best to use a REST API option.
- Use REST APIs to communicate with Oracle Warehouse Management for custom applications.

Constraints

- In case of persistent failures, customers might need to correct the data set and resend or contact Oracle Support.
- A REST API can experience a 504 Gateway timeout if a request runs for more than 5 minutes. The OIC timeout is also 5 minutes.

Secure File Transfer Protocol (SFTP) for Warehouse Management

Use Secure File Transfer Protocol (SFTP) in flat-file formats to push or pull data into or from warehouse management systems, or use Microsoft Excel to upload or export data to or from Oracle Fusion Cloud Warehouse Management.

Key Features

SFTP, direct upload, and export are used in legacy systems where payload formats are more file based and text delimited.

Best Practices

- Some legacy enterprise resource planning systems (ERPs) still use file-based, text-delimited formats.
- Some legacy automations systems use a file-based approach for communication.
- Direct file upload or export is usually used in a warehouse management system as a standalone system or for low-volume implementations. For example, for master data setup.
- Certain metadata setups in warehouse management systems can only be completed with Microsoft Excel-based file uploads.

- You can submit large data flat files directly to Oracle Integration Cloud (OIC) for processing by SFTP.

Constraints

Excel-based upload and download can only be used for smaller payloads.

Inbound and Outbound Integration Entity Types for Warehouse Management

Entities, or business objects, include master data, transactional data, and metadata.

For example, master data might include item and location; transactional data might include inbound shipments and purchase orders; and metadata might include messages and literals.

Inbound and Outbound

Note: You must have an account to access My Oracle Support information.

Entity Type	Options	Supported Formats	Reference Links
Master data (item, locations, item barcode, suppliers, destination facilities, destination companies, users)	REST API - Init Stage Interface REST API (POST method)	JSON(*)/XML	For more information about Oracle Warehouse Management interfaces, see: • *REST API for Oracle Fusion Cloud SCM* • Interface specifications To find the most recent interface specifications and other documents: 1. Go to *My Oracle Support: Information Center: Oracle Warehouse Management Cloud (Doc ID KA170)*. 2. Click the **Documentation** tab. 3. Click the link in the **Current Documentation** section.
	SFTP	Delimited flat files/XML	
	Direct file upload	Microsoft Excel templates	
Business Objects (inbound shipments, purchase orders, orders, work orders [kits], movement requests)	REST API - Init Stage REST API (POST method)	JSON(*)/XML	
	SFTP	Delimited flat files/XML	
	Direct file upload	Microsoft Excel templates	
Metadata (literal, messages)	Direct file upload	Microsoft Excel templates	
MHE/automation- related inbound messages/custom applications	REST API - Different APIs based on the type of automation (POST method)	JSON	

Outbound

Note: You must have an account to access My Oracle Support information.

Entity Type	Options	Supported Formats	Reference Links
Master data (item, item barcode, suppliers, facilities, company)	REST API (GET methods) - Pull	JSON(*)/XML	For more information about Oracle Warehouse Management interfaces, see:

Entity Type	Options	Supported Formats	Reference Links
Business Objects (inbound shipments, purchase orders, orders, work orders, movement requests)	REST API (GET methods) - Pull	JSON(*)/XML	• *REST API for Oracle Fusion Cloud SCM* • Interface specifications To find the most recent interface specifications and other documents: 1. Go to *My Oracle Support: Information Center: Oracle Warehouse Management Cloud (Doc ID KA170)*. 2. Click the **Documentation** tab. 3. Click the link in the **Current Documentation** section.
Transactional data (allocations, inventory, tasks, and so on, are done using pull methods)	REST API (GET methods) - Pull	JSON(*)/XML	
Inventory history, inventory summary, data extracts, and so on, are done using scheduled processes with push methods (outbound API)	Outbound REST API (POST methods) - Push	JSON(*)/XML	
	SFTP	Flat file	
MHE/automation-related outbound messages (wave- and replenish-pick information, OBLPN shipping information)	Outbound REST API (POST methods)	JSON(*)/XML	
	SFTP	Flat file	
Platform as a service (PaaS) custom application	REST API (GET methods)	JSON(*)/XML	

Warehouse Management Business Events

Business events are trigger points in Oracle Fusion Cloud Warehouse Management that launch actions to respond to that event.

For example, input data that's pushed into Oracle Warehouse Management gets pushed into the staging tables, which then prompts the application to process that data.

Business Event	Description	Payload ‹Attributes›	Enrichment Service
Business events related to warehouse management systems integration occur in other Oracle Fusion Cloud Supply Chain & Manufacturing applications, including Oracle Fusion Cloud Inventory Management.	For information about supported business events, see *Supported SCM and Procurement Business Events*.	For information about applicable payloads, see *Supported SCM and Procurement Business Events*.	For information about applicable callback services, see *Supported SCM and Procurement Business Events*.

Business Objects for Warehouse Management

Warehouse Management Business Objects Available for Integration

Oracle Fusion Cloud Warehouse Management provides support for multiple business object families to help inbound and outbound integrations.

Inbound

Business Objects	REST API	File-Based Data Upload	SFTP	Business Events
Appointments	x	x	x	Trigger Points - Input Interface UI, Init Stage Interface REST API.
Assets	x	x	x	Trigger Points - Input Interface UI, Init Stage Interface REST API.
Companies	x	–	–	Whenever data is pushed into an Oracle Warehouse Management staging table.
Docks	x	x	x	Whenever data is pushed into an Oracle Warehouse Management staging table.
Facilities	x	–	–	Whenever data is pushed into an Oracle Warehouse Management staging table.
From MHE Distribution Short	x	–	–	API
From MHE Distribution OBLPN Pack	x	–	–	API
Inbound Container - LPN Inventory	x	–	–	Can be generated when route instruction rules get triggered.
Inbound Shipment	x	x	x	Trigger Points - Input Interface UI, Init Stage Interface REST API.
Inbound Shipment Container Serial Number	x	x	x	Trigger Points - Input Interface UI, Init Stage Interface REST API.
Inventory History	x	–	–	When the Generate Inventory History Extract job completes.

Business Objects	REST API	File-Based Data Upload	SFTP	Business Events
Item	x	x	x	Whenever data is pushed into an Oracle Warehouse Management staging table.
Item Facility	x	–	–	Trigger Points - Input Interface UI, Init Stage Interface REST API.
Item Barcode	x	–	–	Trigger Points - Input Interface UI, Init Stage Interface REST API.
Locations	x	x	–	Trigger Points - Input Interface UI, Init Stage Interface REST API.
MHE Pick Confirmation	x	–	–	API
Movement Request	x	x	x	Trigger Points - Input Interface UI, Init Stage Interface REST API.
Movement Request Header Detail	x	–	–	Trigger Points - Input Interface UI, Init Stage Interface REST API.
OB Load	x	–	–	Trigger Point - Init Stage Interface REST API
Order	x	x	x	Trigger Points - Input Interface UI, Init Stage Interface REST API.
Order Header	x	x	–	Trigger Point - Init Stage Interface REST API
Order Detail	x	x	–	Trigger Point - Init Stage Interface REST API
Order Instructions	x	x	–	Trigger Points - Input Interface UI, Init Stage Interface REST API.
Order Serial Number	x	x	–	API
Parcel Manifest	x	x	–	• When Container is packed. • When the wave is completed and does cubing. • Can be generated by the user from the OBLPN Inquiry work area. • Can be generated when route instruction rules get triggered.

Business Objects	REST API	File-Based Data Upload	SFTP	Business Events
Purchase Order	x	x	x	Trigger Points - Input Interface UI, Init Stage Interface REST API.
Purchase Order Header	x	–	–	Trigger Point - Init Stage Interface REST API
Purchase Order Detail	x	–	–	Trigger Point - Init Stage Interface REST API
Route Header	x	–	–	Trigger Point - Init Stage Interface REST API
Route Detail	x	–	–	Trigger Point - Init Stage Interface REST API
User	x	x	x	Trigger Points - Input Interface UI, Init Stage Interface REST API.
Vendor	x	x	x	Trigger Points - Input Interface UI, Init Stage Interface REST API.
Work Order Header	x	–	–	Trigger Point - Init Stage Interface REST API
Work Order Kit	x	x	x	Trigger Point - Init Stage Interface REST API
Work Order Component	x	–	–	Whenever data is pushed into an Oracle Warehouse Management staging table.

Outbound

Business Objects	REST API	SFTP	Business Events
Inbound Container - LPN Inventory	x	x	Can be generated when route instruction rules get triggered.
Inventory History	x	x	When the Generate Inventory History Extract job completes.
Inventory Summary	x	x	When Inventory Summary job completes.
Outbound Container - Shipping Info	x	x	• When Container is packed. • When the wave completes and does cubing. • Can be generated by the user from the OBLPN Inquiry work area. • Can be generated when route instruction rules get triggered.

Business Objects	REST API	SFTP	Business Events
Outbound Load	x	x	When load goes to shipped status.
Parcel Manifest	x	x	When parcel manifest is closed.
Wave-Pick Info	x	x	When a wave completes, and wave-pick info generation is enabled on the wave.

For more information about Oracle Warehouse Management interfaces, see the interface specifications.

To find the interface specifications and other recent documents:

1. Go to *My Oracle Support: Information Center: Oracle Warehouse Management Cloud (Doc ID KA170)*.
2. Click the **Documentation** tab.
3. Click the link in the **Current Documentation** section.

Use Cases and Patterns for Warehouse Management

Migrate Master Data from an ERP System to Oracle Fusion Cloud Warehouse Management

In this use case, your business must integrate many master data entities required for warehouse setup into Oracle Warehouse Management for the first time and maintain them on an ongoing basis.

Description	Integration Type	Integration Options	Notes
As a company, you've recently started implementing an execution system like warehouse management for your distribution centers. You must integrate many master data entities required for warehouse setup into Oracle Warehouse Management for the first time and maintain them on an ongoing basis. Back-end enterprise resource planning (ERP) or warehouse management systems, which might be Oracle or external applications, would require a great deal of planning, mapping, and data transformations to suit the format specifications of Oracle Warehouse Management. Master data, such as items, vendors, locations, facilities, supplier barcodes, and metadata could be affected.	Inbound	REST API SFTP	For a large data transaction with some embedded business logic, an integration middle layer is recommended. Explore ready-to-use integration packages if the mapping is uncomplicated or if using Oracle back-end systems.

Description	Integration Type	Integration Options	Notes
Usually, this scenario demands: • Complex data preparation. • Data transformation. • Automated large-scale validation. • Rapid cut-over. • Evaluation of volume considerations while migrating.			

Migrate Inventory Data from a Legacy Warehouse Management System to Oracle Fusion Cloud Warehouse Management

In this use case, your business must migrate all the inventory data in your legacy warehouse management system to Oracle Warehouse Management.

Description	Integration Type	Integration Options	Notes
As a company, you're migrating your legacy warehouse management system, and all the inventory data in that system, to Oracle Warehouse Management. For this scenario, you first must complete the master data setup, as described in *Migrate Master Data from an ERP System to Oracle Fusion Cloud Warehouse Management*. Based on the size of the warehouse, you also must plan layout and migrations. Example scenarios: • Migrating the entire legacy system's data to the new warehouse would require shutting down operations completely. • Operating the legacy warehouse management system and Oracle Warehouse Management simultaneously when part of the warehouse inventory is in the legacy system and the other part of the warehouse is shut down and being migrated to Oracle Warehouse Management.	Inbound	REST API SFTP	For a large data transaction with some embedded business logic, an integration middle layer is recommended. Explore ready-to-use integration packages if the mapping is uncomplicated or if using Oracle back-end systems.

Description	Integration Type	Integration Options	Notes
Usually, these scenarios would demand: • Complex data preparation. • Data transformation. • Automated large-scale validation. • Rapid cut-over. • Evaluation of volume considerations while migrating.			

Integrate Oracle Fusion Cloud Warehouse Management with Multiple Automation Control Systems in the Warehouse

In this use case, your business must integrate multiple automation systems with Oracle Warehouse Management.

Description	Integration Type	Integration Options	Notes
Your business must integrate multiple warehouse automation systems with Oracle Warehouse Management. Depending on the type of automation system and their associated automation-control systems capabilities, you should identify: • The right set of events to handle and respond to. • Timing: How and when, and the time limits for responding to the events. • The right set of APIs to enable communication with the automation-control system. • The exact fields and formats needed to communicate. Planning for the integration requires you to: • Configure the system appropriately to handle the automation type. • Understand the automation and its layout already in place.	Inbound Outbound	REST API SFTP	For a large data transaction with some embedded business logic, an integration middle layer is recommended. Explore ready-to-use integration packages if the mapping is uncomplicated or if using Oracle back-end systems.

Description	Integration Type	Integration Options	Notes
• Understand the automation-control system and its capabilities. • Identify events. • Identify the format and data required to communicate with automation system. • Identify data transformation. • Identifying critical response-time requirements. • Evaluate high throughput and multiple-user concurrent scenarios. For example, pick-to-light, put-to-light, sortation, automatic storage retrieval systems, robotic arms, automated guided vehicles, and automated roaming conveyors.			

Integrate Oracle Fusion Cloud Warehouse Management with an External Data Warehouse or Data Lake

In this use case, warehouse data is extracted from a warehouse management system and fed to data hubs.

Description	Integration Type	Integration Options	Notes
A warehouse management system is a source of truth for inventory in a supply-chain network. This data might need to be sent to a hub for consolidation, and for visibility and performing analytics. It would require extracting data periodically from a warehouse management system and feeding it to feed to data hubs. In a scenario such as this, Oracle Warehouse Management provides REST APIs to: • Pull data for extraction from various business-object and transactional entities in a warehouse management system. • Push data from Oracle Warehouse Management to external systems using various extraction processes.	Outbound	REST API SFTP	For a large data transaction with some embedded business logic, an integration middle layer is recommended. Explore ready-to-use integration packages if the mapping is uncomplicated or if using Oracle back-end systems.

Description	Integration Type	Integration Options	Notes
Planning for the integration requires you to: • Identify the data that needs to be extracted and how often. • Identify volume considerations. • Identify and plan the extraction schedule.			

Oracle Integration Cloud Accelerators for Warehouse Management

Previously Built Oracle Integration Cloud (OIC) Recipes for Warehouse Management

These previously built OIC integrations between Oracle Fusion Cloud Warehouse Management and Oracle Fusion Cloud Inventory Management Cloud are available.

Recipe/Flow Name	Source	Destination	Use Case/Description	Details/Links
• Oracle WMS INV Inventory Transactions • (Previously: WMS-INV Inventory Transactions)	Oracle Warehouse Management	Oracle Inventory Management	Takes cycle count adjustments and inventory adjustments from Oracle Warehouse Management and maps them to Inventory Transactions in Oracle Inventory Management. This includes some transactions that impact material and on-hand availability.	*My Oracle Support: Pre-built Integration between Oracle Fusion Cloud Warehouse Management and Oracle Fusion Cloud Inventory Management (Doc ID KB116215)*
• Oracle INV WMS RA PO_RMA as PO_TO as IB Shipment • (Previously: INV-WMS Receipt Advice)	Oracle Inventory Management	Oracle Warehouse Management	Takes Receipt Advice lines for the expected shipments from Oracle Inventory Management and maps them to Purchase Orders or Inbound Shipments in Oracle Warehouse Management. Supports document type PO, RMA through PO, and TO through Inbound shipment in Oracle Warehouse Management.	Same.

Recipe/Flow Name	Source	Destination	Use Case/Description	Details/Links
• Oracle INV WMS Supplier ASN as Inbound Shipment • (Previously: INV-WMS - Supplier ASN)	Oracle Inventory Management	Oracle Warehouse Management	Takes the Supplier ASN details from Oracle Inventory Management and maps them to Inbound Shipments in Oracle Warehouse Management.	Same.
• Oracle INV WMS RA for RMA as Inbound Shipment • (Previously: INV-WMS Receipt Advice for RMA as Inbound Shipment)	Oracle Inventory Management	Oracle Warehouse Management	Takes Receipt Advice lines for the expected RMA shipments from Oracle Inventory Management and maps them to Inbound Shipments in Oracle Warehouse Management.	Same.
• Oracle WMS INV Receipt Confirmation • (Previously: WMS-INV Receipt Confirmation)	Oracle Warehouse Management	Oracle Inventory Management	Takes Purchase Order, RMA & Transfer Order receiving transactions from Oracle Warehouse Management and maps them to Receipt Confirmations for respective document type in Oracle Inventory Management.	Same.
• Oracle INV WMS Shipment Request • (Previously: INV-WMS Shipment Requests)	Oracle Inventory Management	Oracle Warehouse Management	Takes Shipment Request lines for Sales Orders and Transfer Orders from Oracle Inventory Management and maps them to Orders in Oracle Warehouse Management. (Now includes *shipment set* functionality.)	Same.
• Oracle INV WMS Update Shipment Request • (Previously: INV-WMS Update Shipment Request)	Oracle Inventory Management	Oracle Warehouse Management	Takes updates to Shipment Request lines for Sales Orders and Transfer Orders from Oracle Inventory Management and receives those updates to the Orders in Oracle Warehouse Management. (Now includes *shipment set* functionality.)	Same.
• Oracle INV WMS Order Lock-Unlock • (Previously: INV-WMS Lock/Unlock Shipment Request)	Oracle Inventory Management	Oracle Warehouse Management	Takes holds that have been applied to and removed from sales orders and receives those requests from Oracle Inventory Management to Lock or Unlock the corresponding Order in Oracle Warehouse Management. This integration is also needed when implementing the Update Shipment Requests for Sales Orders Integration. (Now includes *shipment set* functionality.)	Same.

Recipe/Flow Name	Source	Destination	Use Case/Description	Details/Links
• Oracle WMS INV Shipment Confirmation • (Previously: WMS-INV Shipment Confirmation)	Oracle Warehouse Management	Oracle Inventory Management	Takes shipped loads from Oracle Warehouse Management and maps them to Shipment Confirmations for Sales Orders and Transfer Orders in Oracle Inventory Management.	Same.
• Oracle WMS INV Backorder for Shipment Line • (Previously: WMS-INV Backorder Shipment Lines)	Oracle Warehouse Management	Oracle Inventory Management	Communicates unfulfilled quantities for shipped Sales and Transfer Orders from Oracle Warehouse Management and maps them to Shipment Lines for Sales and Transfer Orders in Oracle Inventory Management allowing the remaining quantity to be backordered or canceled.	Same.
Oracle INV WMS MFG Movement Request	Oracle Inventory Management	Oracle Warehouse Management	Takes the Movement Request details from Oracle Inventory Management and maps them to Movement Requests in Oracle Warehouse Management.	Same.
Oracle WMS INV MFG Movement Request Pick Confirm	Oracle Warehouse Management	Oracle Inventory Management	Updates the movement request pick confirmation from Oracle Warehouse Management to the Movement Request in Oracle Inventory Management.	Same.
Oracle WMS INV MFG Movement Request Pick Cancel	Oracle Warehouse Management	Oracle Inventory Management	Updates the movement request short/cancel from Oracle Warehouse Management to the Movement Request in Oracle Inventory Management.	Same.

Related Topics

- My Oracle Support: Pre-built Integration between Oracle Fusion Cloud Warehouse Management and Oracle Fusion Cloud Inventory Management (Doc ID KB116215)