

Integration Concepts for Oracle E-Business Suite and Oracle Field Service Cloud Service

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Executive Overview

Service organizations face the challenge of providing consistent, exceptional service, while also reducing operational costs and increasing productivity. As organizations seek new ways to overcome this challenge, many are turning to technologies such as field service management software in order to achieve their goals. Common success metrics include lower operating costs, improved first-time fix rates, increased customer satisfaction ratings such as the Net Promoter Score and compliance with service level agreements (SLAs). Oracle Field Service Cloud Service provides a time-based, predictive and self-learning approach to field service management, enabling organizations to optimize their field service operations. Features include an advanced routing optimization engine, real-time visibility into field workforce activities and capacity, as well as a browser-based mobile application providing field teams access to important job information on the go. Oracle Field Service Cloud can be integrated with CRM, ERP, HCM and other back-end systems to power even greater efficiency and consistency of data across the organization.

Introduction

The concepts set forth in this document provide guidance for customers interested in integrating Oracle E-Business Suite (EBS) and Oracle Field Service Cloud in order to achieve maximum efficiencies in field service operations. Customers can incorporate the concepts and methodologies illustrated here as a part of their own efforts to identify the work requirements and scope of effort that may be entailed in an integration project.



Defining an Integration Approach

Integration needs vary from customer to customer based on many inter-related factors, including the product features in use, the business processes in place and specific data integration needs. Specific requirements around the directional flow of data and desired frequency of data updates dictate the methodology and technical requirements. All of these factors need to be evaluated in order to establish the requirements essential to an effective integration approach for an organization.

Determining the Integration Methodology

This document illustrates an integration model using open standards-based concepts, as well as Oracle Field Service Cloud standard APIs. To facilitate integrations, Oracle Field Service Cloud offers business services to synchronize data, such as: activity creation/status/completion, field service team capacity, inventory management and customer and resource data.

Identifying Data Touch Points

Depending on the application features in use and the business processes in place, customers may have varying needs for determining the data integration requirements. Common data transfer needs include customer data, activity and service work order data, resource information, parts and inventory data and service level agreement (SLA) information.

By leveraging integration between EBS and Oracle Field Service Cloud, customers can achieve greater operational efficiency across the organization, significantly reduced costs, an end-to-end service cycle and a streamlined IT environment.

Overview of Field Service Processes

Consider the field service process holistically:

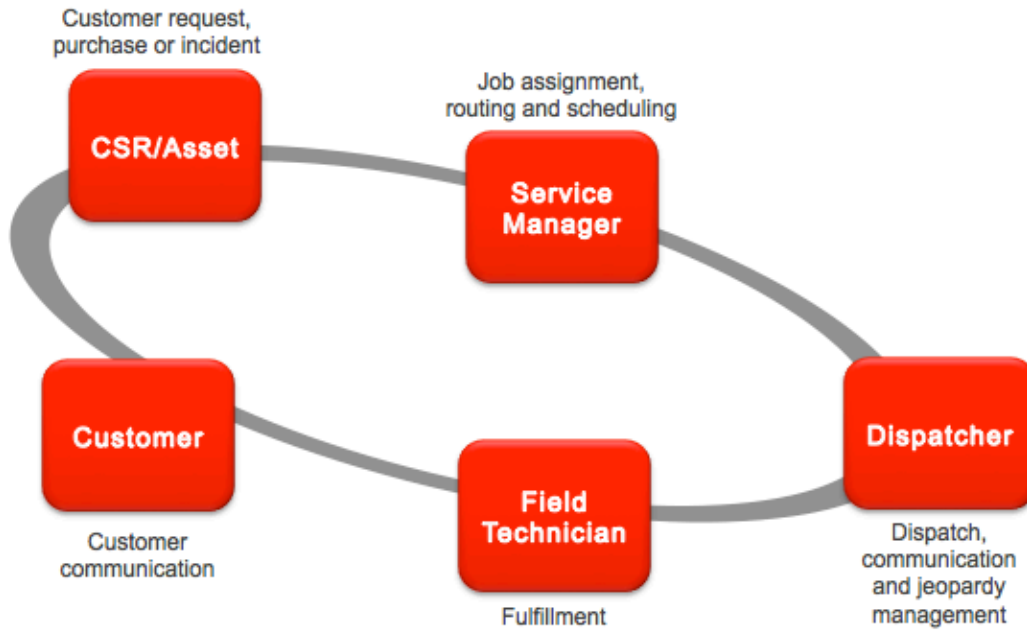



Figure 1 – Holistic Business Process Flow: Field Service Cycle

Figure 1 illustrates the typical field service loop – the end-to-end process for a field service appointment. Steps include:

- » **The customer request, incident or purchase:** An event that happens to trigger the field service cycle. Typically, these events occur when a customer experiences an issue and reaches out to the call center for resolution, the customer makes a purchase which requires an installation in the field, or an asset in the field sends a notification via machine-to-machine (M2M) communication that scheduled maintenance is due.
- » **Job assignment, routing and scheduling:** The type of job is identified and then assigned to a mobile employee – for example, a field service technician. A service window is then scheduled and the job is routed.
- » **Dispatch, communication and jeopardy management:** The mobile employee is dispatched, and appointment information is communicated to the mobile employee, customer and the CSR who scheduled the appointment. Dispatchers receive automatic and proactive notifications for future jobs in jeopardy of missing the promised service window, so they can take action to reassign or alert the customer.
- » **Fulfillment:** The mobile employee arrives at the customer site and completes the job.
- » **Customer communication:** Following the completed service activity, a request for customer feedback is triggered.

At each of these various steps in the field service cycle, there are several opportunities to integrate data from Oracle EBS to drive further efficiency in the process. When combined with EBS, Oracle Field Service Cloud helps organizations achieve a truly end-to-end field service cycle, which can support efficient service management processes for reduced costs and greater customer satisfaction.



Oracle E-Business Suite (EBS)

In this business process model, Oracle E-Business Suite (EBS) manages the following:

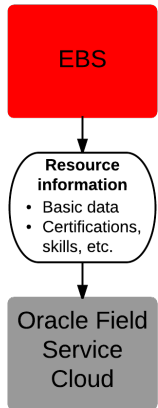
- » Creation and maintenance of customer data
- » Creation and maintenance of activity types
- » Creation and maintenance of select resource data
- » Creation and maintenance of parts and inventory information
- » Creation and maintenance of customer asset data

Oracle Field Service Cloud

In this business process model, Oracle Field Service Cloud supports:

- » Creation of routing and scheduling configuration
- » Creation and the continuous learning and updating of field employee data – their skill sets, availability, location and equipment
- » Creation of users and roles; updated as needed
- » Creation and updates of service areas, locations
- » Status and completion updates for both customer-facing and inventory activities

Integrating EBS Resource Data



With an integrated approach to resource management leveraging the Oracle Field Service Cloud Resource Management API, EBS can share information about resources. This information includes basic information, such as name and contact information, as well as certifications and specialties. The Resource Management API also allows EBS to update Oracle Field Service Cloud when new resources or users need to be added, or attributes of existing resources need to be added.

This approach to resource management enables consistent resource information to be shared across all systems, ensuring more efficient resource management processes.

Additionally, Oracle Field Service Cloud continuously learns new data about each employee's performance and leverages this performance data to predict activity start and duration times more accurately and precisely over time.

Figure 2 – Field Resource Data Transfer

Integrating Customer-facing Activity Data

Activities are created when there is a job that needs to be completed by a mobile employee at a customer or asset site. A range of data is required in order for the mobile employee to efficiently complete the activity, including customer data, asset data and parts data. Once the activity is complete, a transfer of completion data, including parts used and job duration, may be required. The advantages of using an integrated approach include increased operational efficiency, reduction in costs and improved customer satisfaction. Figure 3 illustrates how this integrated process flow can work.

Transfer of Activity Data

This model illustrates an integration method for creating and transferring activity data between EBS and Oracle Field Service Cloud. Steps to support the extract of activity data include:

- » EBS receives notification that an action needs to be taken in the field. This notification can come from a customer call via the contact center, or directly from an asset in the field through machine-to-machine (M2M) communication. Notifications are typically triggered when a customer makes a purchase, when a customer experiences a problem with an asset or when routine/scheduled maintenance is required.
- » EBS creates an activity, and sends it to Oracle Field Service Cloud through the Inbound API. The activity data can include:
 - » **Customer information** – Customer name, site address, work history, assets installed at site
 - » **Job type** – Installation, repair (corrective maintenance), preventative/scheduled maintenance
 - » **Parts data** – Which parts are associated with the job type, and are required to complete the work
 - » **Problem codes** – If applicable, what is wrong with the asset that needs to be repaired or replaced
 - » **Contract information** – SLA terms (critical timeframes in which the job must be completed), warranty information and billing rates

Integrated Approach to Dispatch

Oracle Field Service Cloud provides an advanced routing optimization engine, which can leverage the activity data sent from EBS to ensure maximum efficiency in the dispatch and routing of mobile field employees.

- » Based on activity data and resource data received from EBS, Oracle Field Service Cloud dispatches the best mobile employee available for each job – data considered includes: mobile employee availability, proximity and skill sets/certifications, as well as job type, site and skills required
- » Using data about service level agreements (SLA) and warranties, Oracle Field Service Cloud can route the mobile employee via the most efficient travel route to ensure arrival and job completion within the promised service window.
- » Oracle Field Service Cloud can also use the activity information to inform the mobile employee which parts are required to complete the job, ensuring that the mobile employee arrives to the customer site with the proper tools for a first time resolution.
- » Considering factors like job type and problem codes, Oracle Field Service Cloud can also provide mobile employees with relevant knowledge (manuals, guides, etc.) on the go via the mobile application.

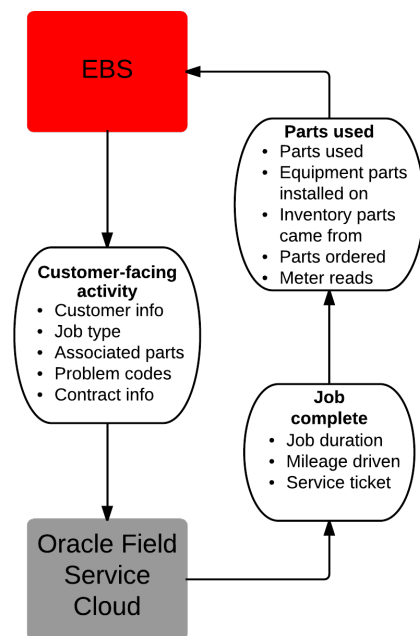


Figure 3 – Field Service Activity Completion Process

Job Completion and Associated Data

Once a job is finished, the mobile employee can indicate that the activity is complete in the Oracle Field Service Cloud mobile application, which then triggers the submittal of completion information back to EBS.

- » The mobile employee completes the activity, and indicates this in the Oracle Field Service Cloud mobile application. This then can generate a service ticket, which will require a customer's signature, including information on how long the mobile employee was on-site and what parts were used and worked on.
- » Oracle Field Service Cloud then sends information associated with the completed job back to EBS for processing – job duration, mileage driven, signed service ticket and parts used.
 - » Information on parts used can include what parts were used for the job, the equipment on which those parts were installed/used, which inventory those parts came from, if any parts had to be ordered and updates on asset information like meter reads, for example.
- » EBS can then process this information, using it for billing, updating customer records and parts inventory, etc.

Additional Considerations

In the customer-facing activity business process, several additional factors should be considered when discussing how Oracle Field Service Cloud and EBS can work together to drive efficiency.

- » In this model, additional processes can be incorporated for on-site parts orders, ordered parts delivery and the return of defective parts to ensure that information travels holistically throughout the systems.
- » Inventory management activities and processes can also be incorporated to support an organization in ensuring accurate and proper inventory levels, and to help track each of an organization's inventories.

Inventory Management Operational Efficiency

Other business processes that organizations can optimize to increase efficiency include inventory management processes such as Parts Order, Expected Receipt (parts) and Parts Received. These processes are outlined holistically in Figure 4; however, it's important to note that they can be integrated with other processes (such as customer-facing activities and other inventory activities) depending on an organization's needs.

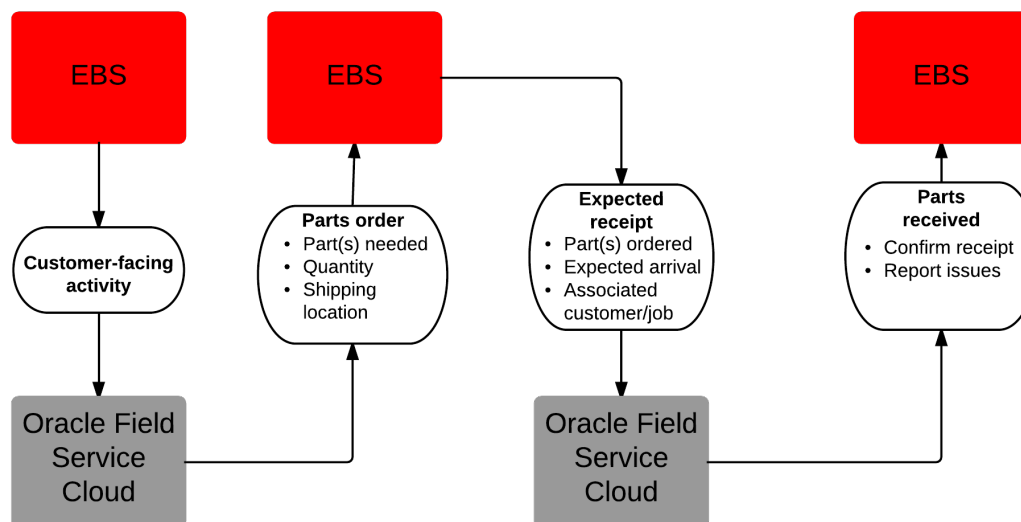



Figure 4 – Inventory Management Processes

On-site Parts Order

Oracle Field Service Cloud can support the ability for mobile employees to order required parts when at a customer site, via its mobile application. In this model, customer-facing activities created in EBS are sent to Oracle Field Service Cloud to initiate the optimized routing, dispatch and job completion process. If a mobile employee arrives on a customer site and realizes that a required part is not available in his trunk – for example, if he discovers a secondary issue with a piece of equipment that requires repair –, the mobile employee can look up and order the part while still in the field, provided that the Parts Catalog API is being used and proper integration is in place. Steps for this process include:

- » The mobile employee goes into the Oracle Field Service Cloud mobile application and indicates which parts are needed, the quantity needed for each part and the location to which the parts should be shipped. The Resource Management API can be used to manage the locations to which a mobile employee can have parts shipped. All of this information is then sent to EBS.

- 
- » EBS can then generate an order for the parts and update its records on open parts orders. The system then sends a notification back to Oracle Field Service Cloud detailing when the mobile employee can expect the parts to arrive.
 - » Per an organization's preferences and configuration, Oracle Field Service Cloud can work with EBS to schedule an activity on the expected arrival date to pick up the parts from the shipping location and perform the associated work at the customer site. The mobile employee would be able to do this using the Oracle Field Service Cloud mobile booking tool, following the parts order, while still at the customer site.

Expected Parts Receipt

After EBS processes an order, it can send a notification to Oracle Field Service Cloud telling the mobile employee when to expect arrival of the parts order to the shipping location. The information sent back to Oracle Field Service Cloud provides the mobile employee with confirmation that the order was placed, confirmation of what parts were ordered, the expected time of order arrival, and reference to which job or customer the parts are associated.

Parts Order Received

When a parts order arrives at a shipping location and a mobile employee picks the parts up, Oracle Field Service Cloud can then send a Parts Received notification back to EBS.

- » If the mobile employee receives the correct order, this information will simply confirm that the mobile employee has picked up the parts.
- » If there is an issue with the order, the mobile employee can indicate the issue in the Parts Received notification. The issue will then be sent back to EBS for correction. Examples of issues that may occur include: an incorrect number of parts being shipped or the wrong parts being shipped.

Using the Parts Received information from Oracle Field Service Cloud, EBS can then update records of open parts orders and inventory levels.

Parts Return Activities

Defective Return

When a mobile employee is dispatched to a customer site in order to replace a defective piece of equipment, the defective part often must be returned to the organization, in anticipation that it can be refurbished and used again. In this case, EBS can send Oracle Field Service Cloud a Defective Return activity.

Figure 5 illustrates a model of the Defective Return process, with EBS and Oracle Field Service Cloud integrated.

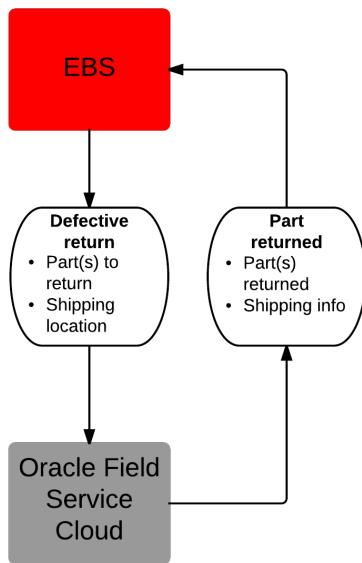


Figure 5 – Integrated Defective Parts Return Process

- » EBS would submit data to Oracle Field Service Cloud regarding which parts need to be returned and where to ship these parts.
- » After retrieving the defective part from a customer site, the mobile employee would then take the part to a shipping location to package it and ship it back to the organization's designated location.
- » Once this is complete, Oracle Field Service Cloud can send information back to EBS, detailing the part that was shipped and shipping/tracking information, so that EBS can update the job and parts records on its end.

Excess Return

If an organization determines that mobile employees should have a threshold for the amount of inventory each mobile employee can have in their stock, EBS and Oracle Field Service Cloud can support an Excess Return process. Figure 6 outlines this process.

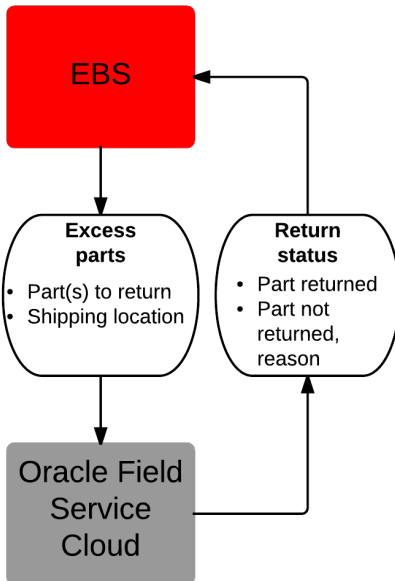


Figure 6 – Integrated Excess Parts Return Process

- » EBS can be set up to perform scheduled checks on each mobile employee's inventory levels.
- » When integrated with Oracle Field Service Cloud, EBS can send an Excess Parts notification when a mobile employee's inventory levels are too high. The mobile employee receives the notification through Oracle Field Service Cloud's mobile application.
- » Once a mobile employee returns the designated parts to the organization's warehouse or other inventory location, confirmation of parts returned is sent back to EBS. Or, if the mobile employee does not return the parts, a reason can be provided back to the organization through EBS.

Integration Supporting Scheduled Inventory Activities

Integration between EBS and Oracle Field Service Cloud can support scheduled inventory activities, in addition to the inventory activities resulting from the work that mobile employees perform in the field.

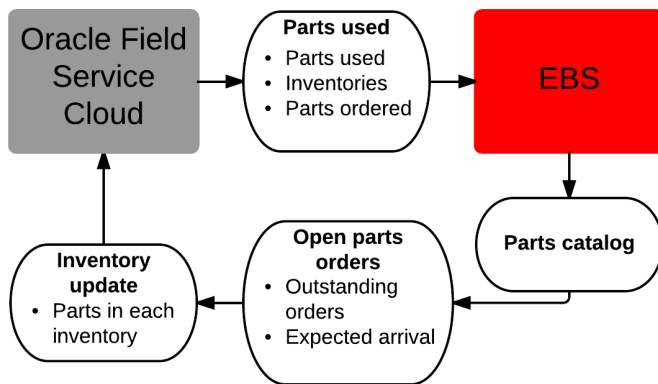


Figure 7 – Scheduled Inventory Management Processes

Regularly Scheduled Inventory Activities

Figure 7 illustrates a variety of inventory activities that can be supported through the proper integration of EBS and Oracle Field Service Cloud.

In order to optimize operational efficiency in the inventory management process, EBS can send parts information to Oracle Field Service Cloud each day. In doing so, mobile employees have accurate inventory information necessary to complete their work each day. This information includes data from the organization's parts catalog, open part orders and each mobile employee's inventory.

Oracle Field Service Cloud can also send EBS data on the parts that each mobile employee has used regularly, per an organization's preferences.

- » This includes which parts the mobile employee used, the inventories that each of these parts came from and any parts orders that each mobile employee has submitted.
- » EBS can then use this information to accurately update an organization's inventory lists, and send back an updated listing of the parts each mobile employee has in their personal inventories, as well as outstanding order information.

Regular Physical Inventory Activities

EBS and Oracle Field Service Cloud can also be integrated to support the process of routine physical inventory counts.

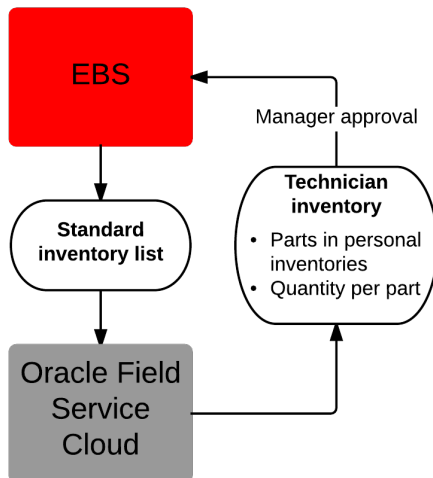


Figure 8 – Physical Inventory Process

- » A list of possible inventory can be produced in EBS and sent to Oracle Field Service Cloud using the Inbound API.
- » Mobile employees can then reference that list when counting their personal inventory levels, and indicate the amounts of each part they have in their car stock, at customer sites and at other sub inventories designated by the organization.
- » Depending on an organization's needs, the mobile employees may be required to send their inventory counts to managers for approval before submitting the lists back to EBS.

Conclusion

By leveraging EBS and Oracle Field Service Cloud in an integrated model, customers can seamlessly integrate business processes supporting inventory management throughout the end-to-end field service cycle, illustrated below:

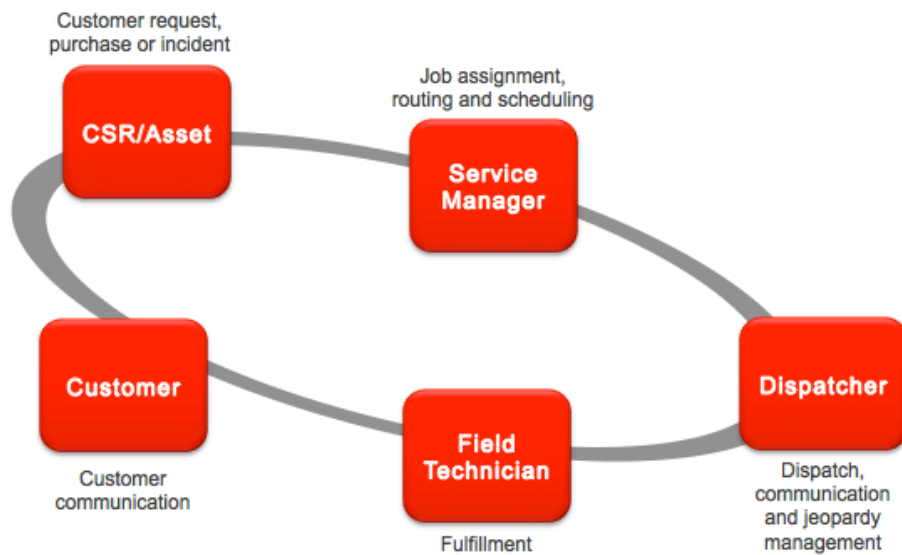


Figure 9 – Holistic Business Process Flow: Field Service Cycle

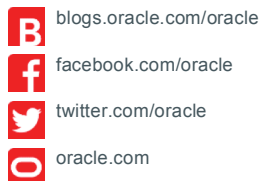
Integrating these two systems to create more connected processes for field service and inventory management can result in greater operational efficiency, reduced costs and greater customer satisfaction. Various factors will influence each customer's unique integration requirements – ranging from project features being used, specific data integration needs and technical methodology preferences. This whitepaper illustrates best-practices concepts in a model that can be leveraged as a guideline for any customer undertaking an integration project with EBS and Oracle Field Service Cloud.



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