Oracle® E-Business Suite

Integrated SOA Gateway User's Guide

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Oracle E-Business Suite Integrated SOA Gateway User's Guide, Release 12.1

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Primary Author: David Weld, Melody Yang

Contributing Author: Leslie Studdard

Contributor: Rekha Ayothi, Santiago Bastidas, Neeraj Chauhan, Avinash Dabholkar, Mark Fisher, Kevin Hudson, Neeraj Kumar, Ravindra Nadakuditi, Narendra Parihar, Gautam Satpathy, Vijayakumar Shanmugam, Golla Venkateswarlu, Abhishek Verma, Jason Xie

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Preface

Intended Audience

Welcome to Release 12.1 of the *Oracle E-Business Suite Integrated SOA Gateway User's Guide.*

This guide assumes you have a working knowledge of the following:

- The principles and customary practices of your business area.
- Computer desktop application usage and terminology.
- Oracle EBS integration interfaces.
- B2B, A2A and BP integrations.

If you have never used Oracle Applications, we suggest you attend one or more of the Oracle Applications training classes available through Oracle University.

See Related Information Sources on page viii for more Oracle Applications product information.

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If this guide refers you to other Oracle Applications documentation, use only the latest Release 12 versions of those guides.

Online Documentation

All Oracle Applications documentation is available online (HTML or PDF).

- **Online Help** - Online help patches (HTML) are available on My Oracle Support.
- **PDF Documentation** - See the Oracle Applications Documentation Library for current PDF documentation for your product with each release. The Oracle Applications Documentation Library is also available on My Oracle Support and is updated frequently.
- **Oracle Electronic Technical Reference Manual -** The Oracle Electronic Technical Reference Manual (eTRM) contains database diagrams and a detailed description of database tables, forms, reports, and programs for each Oracle Applications product. This information helps you convert data from your existing applications and integrate Oracle Applications data with non-Oracle applications, and write custom reports for Oracle Applications products. The Oracle eTRM is available on My Oracle Support.

Related Guides

You should have the following related books on hand. Depending on the requirements of your particular installation, you may also need additional manuals or guides.

Oracle Alert User's Guide

This guide explains how to define periodic and event alerts to monitor the status of your Oracle Applications data.

Oracle Applications Concepts

This book is intended for all those planning to deploy Oracle E-Business Suite Release 12, or contemplating significant changes to a configuration. After describing the Oracle Applications architecture and technology stack, it focuses on strategic topics, giving a broad outline of the actions needed to achieve a particular goal, plus the installation and configuration choices that may be available.

Oracle Applications CRM System Administrator's Guide

This manual describes how to implement the CRM Technology Foundation (JTT) and use its System Administrator Console.

Oracle Applications Developer's Guide

This guide contains the coding standards followed by the Oracle Applications development staff. It describes the Oracle Application Object Library components needed to implement the Oracle Applications user interface described in the *Oracle Applications User Interface Standards for Forms-Based Products*. It provides information to help you build your custom Oracle Forms Developer forms so that they integrate with Oracle Applications. In addition, this guide has information for customizations in

features such as concurrent programs, flexfields, messages, and logging.

Oracle Applications Flexfields Guide

This guide provides flexfields planning, setup, and reference information for the Oracle Applications implementation team, as well as for users responsible for the ongoing maintenance of Oracle Applications product data. This guide also provides information on creating custom reports on flexfields data.

Oracle Application Framework Developer's Guide

This guide contains the coding standards followed by the Oracle Applications development staff to produce applications built with Oracle Application Framework. This guide is available in PDF format on My Oracle Support and as online documentation in JDeveloper 10*g* with Oracle Application Extension.

Oracle Application Framework Personalization Guide

This guide covers the design-time and run-time aspects of personalizing applications built with Oracle Application Framework.

Oracle Applications Installation Guide: Using Rapid Install

This book is intended for use by anyone who is responsible for installing or upgrading Oracle Applications. It provides instructions for running Rapid Install either to carry out a fresh installation of Oracle Applications Release 12, or as part of an upgrade from Release 11*i* to Release 12. The book also describes the steps needed to install the technology stack components only, for the special situations where this is applicable.

Oracle Applications Multiple Organizations Implementation Guide

This guide describes the multiple organizations concepts in Oracle Applications. It describes in detail on setting up and working effectively with multiple organizations in Oracle Applications.

Oracle Application Server Adapter for Oracle Applications User's Guide

This guide covers the use of OracleAS Adapter in developing integrations between Oracle applications and trading partners.

Please note that this guide is in the Oracle Application Server 10*g* Documentation Library.

Oracle Applications System Administrator's Guide Documentation Set

This documentation set provides planning and reference information for the Oracle Applications System Administrator. *Oracle Applications System Administrator's Guide - Configuration* contains information on system configuration steps, including defining concurrent programs and managers, enabling Oracle Applications Manager features, and setting up printers and online help. *Oracle Applications System Administrator's Guide - Maintenance* provides information for frequent tasks such as monitoring your system with Oracle Applications Manager, administering Oracle E-Business Suite Secure Enterprise Search, managing concurrent managers and reports, using diagnostic utilities including logging, managing profile options, and using alerts. *Oracle Applications System Administrator's Guide - Security* describes User Management, data

security, function security, auditing, and security configurations.

Oracle Applications User's Guide

This guide explains how to navigate, enter data, query, and run reports using the user interface (UI) of Oracle Applications. This guide also includes information on setting user profiles, as well as running and reviewing concurrent requests.

Oracle Applications User Interface Standards for Forms-Based Products

This guide contains the user interface (UI) standards followed by the Oracle Applications development staff. It describes the UI for the Oracle Applications products and how to apply this UI to the design of an application built by using Oracle Forms.

Oracle E-Business Suite Diagnostics User's Guide

This manual contains information on implementing, administering, and developing diagnostics tests in the Oracle E-Business Suite Diagnostics framework.

Oracle E-Business Suite Integrated SOA Gateway Implementation Guide

This guide explains how integration repository administrators can manage and administer the service enablement process (based on the service-oriented architecture) for both native packaged public integration interfaces and composite services (BPEL type). It also describes how to invoke Web services from Oracle E-Business Suite by employing the Oracle Workflow Business Event System; how to manage Web service security; and how to monitor SOAP messages.

Oracle E-Business Suite Integrated SOA Gateway Developer's Guide

This guide describes how system integration developers can perform end-to-end service integration activities. These include orchestrating discrete Web services into meaningful end-to-end business processes using business process execution language (BPEL), and deploying BPEL processes at run time.

It also explains in detail how to invoke Web services using the Service Invocation Framework. This includes defining Web service invocation metadata, invoking Web services, managing errors, and testing the Web service invocation.

Oracle e-Commerce Gateway User's Guide

This guide describes the functionality of Oracle e-Commerce Gateway and the necessary setup steps in order for Oracle Applications to conduct business with trading partners through Electronic Data Interchange (EDI). It also contains how to run extract programs for outbound transactions, import programs for inbound transactions, and the relevant reports.

Oracle e-Commerce Gateway Implementation Manual

This guide describes implementation details, highlighting additional setup steps needed for trading partners, code conversion, and Oracle Applications. It also provides architecture guidelines for transaction interface files, troubleshooting information, and a description of how to customize EDI transactions.

Oracle Report Manager User's Guide

Oracle Report Manager is an online report distribution system that provides a secure and centralized location to produce and manage point-in-time reports. Oracle Report Manager users can be either report producers or report consumers. Use this guide for information on setting up and using Oracle Report Manager.

Oracle iSetup User Guide

This guide describes how to use Oracle iSetup to migrate data between different instances of the Oracle E-Business Suite and generate reports. It also includes configuration information, instance mapping, and seeded templates used for data migration.

Oracle Web Applications Desktop Integrator Implementation and Administration Guide

Oracle Web ADI brings Oracle E-Business Suite functionality to a spreadsheet where familiar data entry and modeling techniques can be used to complete Oracle E-Business Suite tasks. You can create formatted spreadsheets on your desktop that allow you to download, view, edit, and create Oracle E-Business Suite data that you can then upload. Use this guide to implement Oracle Web ADI and for information on defining mappings, layouts, style sheets, and other setup options.

Oracle Workflow Administrator's Guide

This guide explains how to complete the setup steps necessary for any product that includes workflow-enabled processes. It also describes how to manage workflow processes and business events using Oracle Applications Manager, how to monitor the progress of runtime workflow processes, and how to administer notifications sent to workflow users.

Oracle Workflow Developer's Guide

This guide explains how to define new workflow business processes and customize existing Oracle Applications-embedded workflow processes. It also describes how to define and customize business events and event subscriptions.

Oracle Workflow User's Guide

This guide describes how users can view and respond to workflow notifications and monitor the progress of their workflow processes.

Oracle Workflow API Reference

This guide describes the APIs provided for developers and administrators to access Oracle Workflow.

Oracle Workflow Client Installation Guide

This guide describes how to install the Oracle Workflow Builder and Oracle XML Gateway Message Designer client components for Oracle E-Business Suite.

Oracle XML Gateway User's Guide

This guide describes Oracle XML Gateway functionality and each component of the Oracle XML Gateway architecture, including Message Designer, Oracle XML Gateway

Setup, Execution Engine, Message Queues, and Oracle Transport Agent. The integrations with Oracle Workflow Business Event System and the Business-to-Business transactions are also addressed in this guide.

Oracle XML Publisher Report Designer's Guide

Oracle XML Publisher is a template-based reporting solution that merges XML data with templates in RTF or PDF format to produce a variety of outputs to meet a variety of business needs. Using Microsoft Word or Adobe Acrobat as the design tool, you can create pixel-perfect reports from the Oracle E-Business Suite. Use this guide to design your report layouts.

Oracle XML Publisher Administration and Developer's Guide

Oracle XML Publisher is a template-based reporting solution that merges XML data with templates in RTF or PDF format to produce a variety of outputs to meet a variety of business needs. Outputs include: PDF, HTML, Excel, RTF, and eText (for EDI and EFT transactions). Oracle XML Publisher can be used to generate reports based on existing Oracle Applications report data, or you can use Oracle XML Publisher's data extraction engine to build your own queries. Oracle XML Publisher also provides a robust set of APIs to manage delivery of your reports via e-mail, fax, secure FTP, printer, WebDav, and more. This guide describes how to set up and administer Oracle XML Publisher as well as how to use the Application Programming Interface to build custom solutions.

Integration Repository

The Oracle Integration Repository is a compilation of information about the service endpoints exposed by the Oracle E-Business Suite of applications. It provides a complete catalog of Oracle E-Business Suite's business service interfaces. The tool lets users easily discover and deploy the appropriate business service interface for integration with any system, application, or business partner.

The Oracle Integration Repository is shipped as part of the E-Business Suite. As your instance is patched, the repository is automatically updated with content appropriate for the precise revisions of interfaces in your environment.

Do Not Use Database Tools to Modify Oracle Applications Data

Oracle STRONGLY RECOMMENDS that you never use SQL*Plus, Oracle Data Browser, database triggers, or any other tool to modify Oracle Applications data unless otherwise instructed.

Oracle provides powerful tools you can use to create, store, change, retrieve, and maintain information in an Oracle database. But if you use Oracle tools such as SQL*Plus to modify Oracle Applications data, you risk destroying the integrity of your data and you lose the ability to audit changes to your data.

Because Oracle Applications tables are interrelated, any change you make using an

Oracle Applications form can update many tables at once. But when you modify Oracle Applications data using anything other than Oracle Applications, you may change a row in one table without making corresponding changes in related tables. If your tables get out of synchronization with each other, you risk retrieving erroneous information and you risk unpredictable results throughout Oracle Applications.

When you use Oracle Applications to modify your data, Oracle Applications automatically checks that your changes are valid. Oracle Applications also keeps track of who changes information. If you enter information into database tables using database tools, you may store invalid information. You also lose the ability to track who has changed your information because SQL*Plus and other database tools do not keep a record of changes.

1

Introduction to Oracle E-Business Suite Integrated SOA Gateway

Oracle E-Business Suite Integrated SOA Gateway Overview

Building on top of Oracle Fusion Middleware and service-oriented architecture (SOA) technology, Oracle E-Business Suite Integrated SOA Gateway (ISG) provides a customer-focused robust communication and integration infrastructure between independently managed components and loosely coupled applications. This infrastructure not only allows greater and effective business integration between heterogeneous applications, but also facilitates the development and execution of complex business processes into highly flexible and reusable Web services. With this standardized and interoperable Web service platform, Oracle E-Business Suite Integrated SOA Gateway provides a powerful framework that accelerates dynamic business processes and service integration between applications over the Web.

Oracle E-Business Suite Integrated SOA Gateway is a complete set of service infrastructure. It supports almost all integration interface types and services invoked within Oracle E-Business Suites no matter if they are native packaged interfaces or the services that are orchestrated using native services. With this pre-built, reusable business services and service-oriented components, Oracle E-Business Suite Integrated SOA Gateway provides a capability of allowing various users to perform different tasks and to monitor and manage service integration throughout the entire service deployment life cycle.

For example, integration developers can perform end-to-end service integration activities including orchestrating discrete Web services into meaningful end-to-end business processes, defining Web service invocation metadata, and testing the Web service invocation.

Application users can then browse through and search on available integration interfaces and services as well as view each interface details through the centralized repository.

Integration repository administrators can take further actions on transforming native

interfaces into Web services, and then deploying the services for public use and access. The administrators are also responsible for enforcing service related securities, monitoring and managing the entire integrated service deployment life cycle to ensure smooth service integration between applications.

With pre-built, reusable business services and an essential service-oriented framework allowing service generation, deployment, invocation, and management, Oracle E-Business Suite Integrated SOA Gateway is the intrinsic part of Oracle E-Business Suite for service enablement. It not only enables services within and beyond Oracle E-Business Suite, but also facilitates dynamic business execution through a seamless service integration and consumption over the internet.

For more information on implementing and administering Oracle E-Business Suite Integrated SOA Gateway and performing end-to-end integration activities, see *Oracle E-Business Suite Integrated SOA Gateway Implementation Guide* and *Oracle E-Business Suite Integrated SOA Gateway Developer's Guide* for details.

Major Features

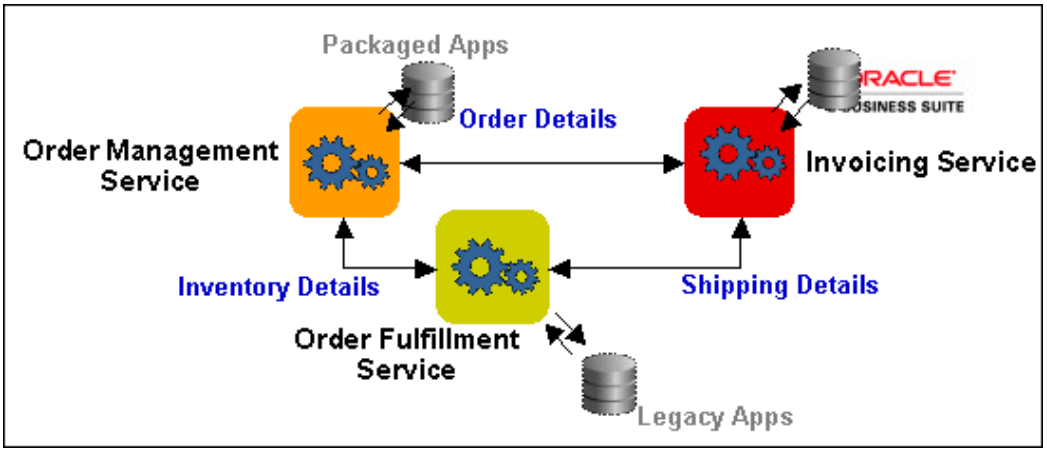
Oracle E-Business Suite Integrated SOA Gateway contains the following features:

- Provide robust, consistent integration framework with extensive infrastructure based on SOA principles
- Integrate loosely coupled and heterogeneous applications
- Contain pre-built and reusable business services
- Provide native service enablement capability within the Oracle E-Business Suite
- Use native services as building blocks to create composite services
- Enforce function security and role-based access control security to allow only authorized users to execute administrative functions
- Enable Web service invocation from Oracle E-Business Suite
- Audit and monitor Oracle E-Business Suite service operations from native SOA Monitor

Business Process Scenario

Oracle E-Business Suite Integrated SOA Gateway provides a seamless integration between various applications. Take the most common business process such as Order-to-Receipt as an example to further explain how discrete web services can be orchestrated into a standards-based manner and more meaningful end-to-end business flow.

Order-to-Receipt Business Flow Between Applications



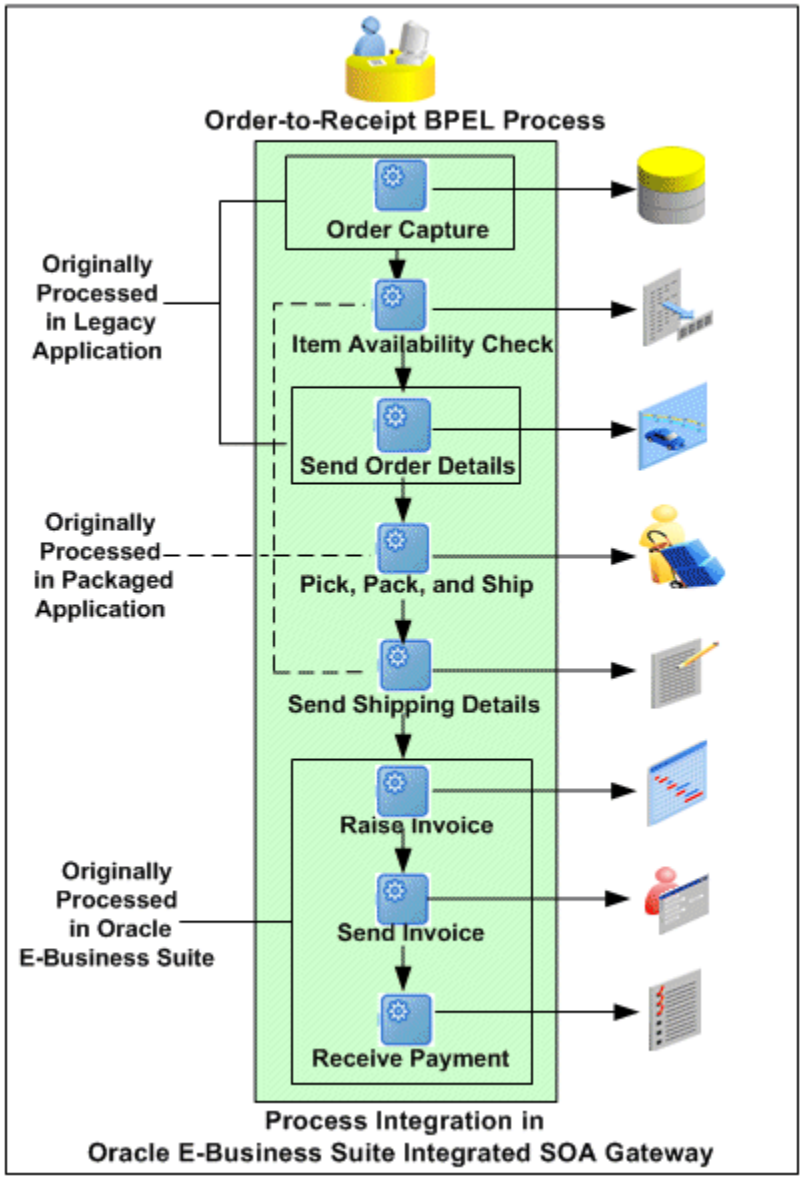
The packaged application is used to capture the order; the legacy application is used to fulfill (pick and ship) the order; Oracle E-Business Suite is used to invoice the customer.

- Sales Order Entry: Packaged Application
- Item Availability Check: Legacy Application
- Pick, Pack and Ship : Legacy Application
- Invoicing and A/R: Oracle E-Business Suite

A complete Order-to-Receipt business flow may require to integrate with each of the above applications at different points. With Oracle E-Business Suite Integrated SOA Gateway, the public integration interfaces of E-Business Suite can be exposed as standard Web services.

Each individual business process mentioned here managed by packaged application, legacy application, and Oracle E-Business Suite can be orchestrated using Oracle BPEL Process Manger (PM) to streamline the Order-to-Receipt business process.

Process Integration Within Oracle E-Business Suite Integrated SOA Gateway



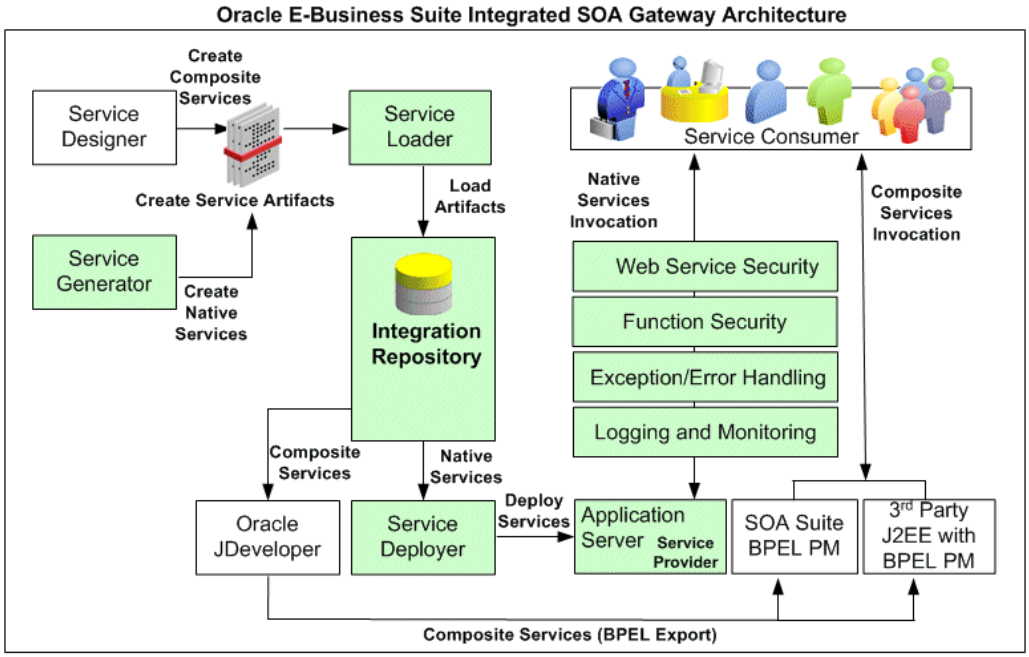
Oracle E-Business Suite Integrated SOA Gateway Architecture Overview

Oracle E-Business Suite Integrated SOA Gateway employs essential key components that enable service integration at design time and run time, and ease the service management throughout the entire service integration and deployment life cycle.

The seamless integration between each component forms the Oracle E-Business Suite Integrated SOA Gateway architecture.

The following diagram illustrates the integration architecture flow between each

component:



All the native packaged public integration interfaces are published in the Oracle Integration Repository by default. Integration repository administrators can then transform these native integration interfaces into Web services through service generator. Service loader uploads service artifacts to Oracle Integration Repository. Service deployer deploys service artifacts from the Integration Repository to the application server where services can be exposed to customers through service provider.

Service provider identifies and processes inbound SOAP requests from service consumers, reinforces function security and Web service security, as well as passes all SOAP request and response messages to SOA Monitor (if the monitoring feature is enabled) for further monitoring SOAP messages to ensure the seamless service invocations throughout the entire service life cycle.

For composite services, system integration developers orchestrate composite services using Oracle JDeveloper. Service loader then uploads these service artifacts to Oracle Integration Repository. Users granted with the Download Composite Service privilege can further download the BPEL files to their local directories. Integration repository developers can open the downloaded BPEL files in Oracle JDeveloper, modify and deploy them if needed. Oracle BPEL Process Manager (BPEL PM) or 3rd party J2EE BPEL PM will then pick up deployed composite services which can be invoked from the Oracle E-Business Suite.

> **Note:** Unlike native services that they are deployed directly from the Oracle Integration Repository user interfaces, composite services are

typically not deployed within Oracle E-Business Suite like those of other service enabled interface types. For example, a composite service - BPEL type can be deployed to a BPEL server in Oracle SOA Suite BPEL PM (Process Manager) or a third party BPEL PM in a J2EE environment. This deployed composite service - BPEL project can interact with Oracle Applications and update application data if necessary.

2

Understanding Service Enablement

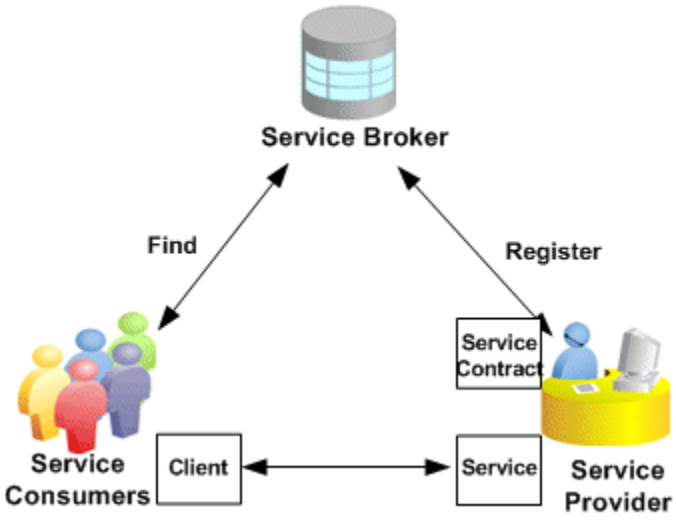
Service Enablement Overview

Service enablement is a key requirement for developing manageable, profit-generating *Web services*. For example, if you are a service provider, service enablement enables you to dynamically provision new Web services and meter the use of those services. If you are a Web site hoster, service enablement helps you to host multiple customers across a shared infrastructure, and also helps you to set and monitor service level agreements with those customers.

> **Note:** Web services are Web-based applications that provide a standard means of interoperating between different software applications, running on a variety of platforms or frameworks. Web services have an interface described in a machine-processable format called WSDL (Web Services Description Language). Other systems interact with the Web service in a manner prescribed by its description using SOAP (Simple Object Access Protocol) messages, typically conveyed using HTTP with an XML serialization in conjunction with other Web-related standards.

The common service-oriented architecture used in enabling Web services is illustrated in the following diagram:

Service-Oriented Architecture



A *service provider* is the primary engine underlying the Web services. It describes its Web services using WSDL and actually provides or implements the business functionality of various types. The WSDL definition is published to a service broker.

A *service broker* describes the service's location and contract. It is responsible for ensuring the service information is available to any potential service requestor, consumer, or called Web service client.

A *service consumer* or Web service client issues one or more queries to the service broker to locate a service and determine how to communicate with that service.

WSDL and SOAP are the communication vehicles facilitating the services. Part of the WSDL provided by a service provider is passed to the service consumer in specifying what the requests and responses are for the service provider. The service consumer sends SOAP messages as service requests to the service provider. The service provider then provides the expected SOAP responses back to the service consumer to complete the requests.

Service Enablement and Oracle E-Business Suite Integrated SOA Gateway

Service enablement is the essential feature within Oracle E-Business Suite Integrated SOA Gateway. It provides a mechanism that allows native packaged integration interface definitions residing in Oracle Integration Repository (the service broker) to be transformed into Web services described in WSDL code. Additionally these services can be further deployed to Oracle Application Server allowing more consumptions over the Web.

For example, PL/SQL integration interface definitions can be service enabled within Oracle E-Business Suite, and then deployed as Web services. Third party clients can discover them and initiate transactions with Oracle E-Business Suite.

For more information about services, refer to the *Oracle Application Framework Developer's Guide*, available from My Oracle Support Knowledge Document 565870.1, Oracle Application Framework Release Notes, Release 12.1.1.

Common Terms Used in the Service-Oriented Architecture

The following concepts or terminologies are commonly used in service-oriented architecture.

Service Provider

The primary engine underlying the Web services capability is *Service Provider*. To support all published integration interface types and services in Oracle E-Business Suite Integrated SOA Gateway, an enhanced Web Service Provider called *SOA Provider* is particularly used here to achieve the necessary functionality of a service provider plus additional features in supporting various interface types.

Service Consumer

The service consumers or Web service clients are the parties that use or consume the services provided by a service provider.

The consumer locates entries in the service broker using various find operations and then binds to the service provider in order to invoke one of its Web services.

Service Broker

Service broker plays an important role in the service-oriented architecture. The service broker is responsible for making the service interface and implementation access information available to any potential service requestor. The scope of a service broker can be decided based on the business needs. For example, a public registry or broker is available through the Internet, while a private broker is only accessible to a limited audience such as users of a company intranet.

A service broker is the key component of any SOA-based infrastructure which enables service providers to advertise their service offerings, allows service consumers to find, access, and invoke services that meet defined criteria, as well as provides critical features for SOA governance.

Web Services Discovery

Web services provide access to software systems over the Internet using standard protocols. Therefore, there exists at least a Web service provider that publishes certain services such as computer repair services, and a Web service consumer that uses the services. Web service discovery is the process of finding a suitable Web service for a given task.

Simple Object Access Protocol (SOAP)

Simple Object Access Protocol (SOAP) is a protocol for exchanging XML-based messages over networks, normally using HTTP/HTTPS.

SOAP forms the foundation layer of the Web services stack, providing a basic messaging framework upon which abstract layers can be built.

In Web service environment, SOAP provides a standard way of structuring these XML documents and acts as a building block for Web service communication. For example, Web service provider receives SOAP requests from Web service clients to invoke Web services and also sends the corresponding SOAP responses out to the clients.

Web Services Description Language (WSDL) and its Structure

WSDL is a format for describing a Web Services interface. It is a way to describe services and how they should be bound to specific network addresses.

WSDL has three parts:

- Definitions

  Definitions are generally expressed in XML and include both *data type* definitions and *message* definitions that use the data type definitions. These definitions are usually based upon some agreed upon XML vocabulary which could be within an organization or between organizations.

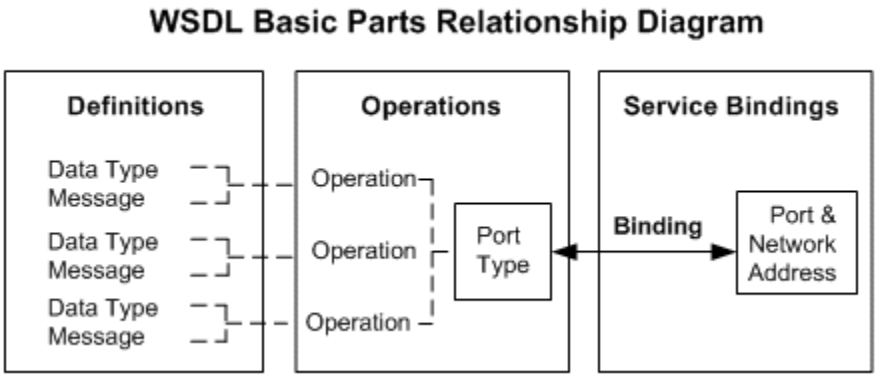
- Operations

  Operations describe actions for the messages supported by a Web service. Operations are grouped into *port types*. Port types define a set of operations supported by the Web service.

- Service bindings

  Service *bindings* connect port types to a *port*. A port is defined by associating a network address with a port type. A collection of ports defines a *service*. This binding is commonly created using SOAP.

The following figure shows the relationship of the basic parts of WSDL:



Web Service Security

Web service security (WS-Security) is a communication protocol providing a means for applying security to Web Services. It describes enhancements to SOAP messaging to provide quality of protection through message integrity, message confidentiality, and single message authentication.

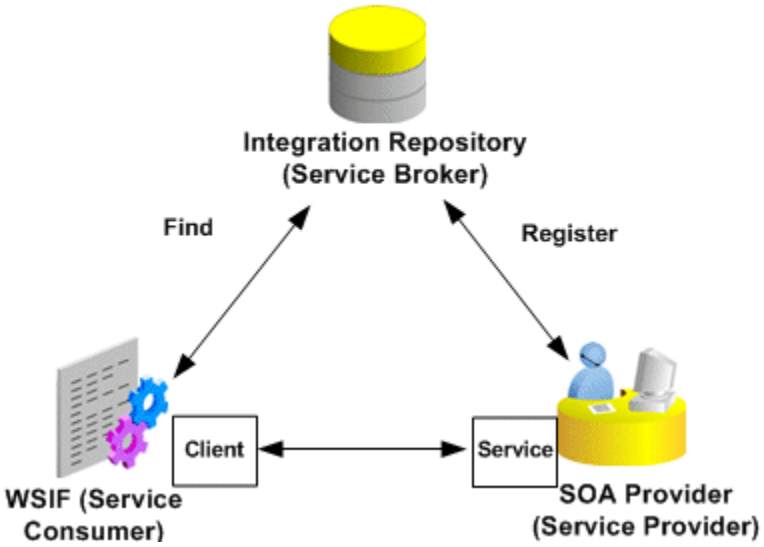
In addition, WS-Security describes how to attach signature and encryption headers to SOAP messages. It also describes how to attach security tokens to the messages to reinforce security rules and guard Web service content from unauthorized access.

Service-Oriented Architecture in Oracle E-Business Suite

To allow pre-built and reusable business services available to customers and let customers dynamically interact between applications, Oracle E-Business Suite Integrated SOA Gateway, building on the principle of service-oriented architecture, allows service enablement within the Oracle E-Business Suite. As a result, integration interface definitions that have been used internally within an organization are now Web available.

The following diagram illustrates the essential SOA components in enabling services within Oracle E-Business Suite:

Service-Oriented Architecture in Oracle E-Business Suite



In this diagram, SOA Provider is the service provider used in enabling services; Oracle Integration Repository plays a role as a service broker; the Web service invocation framework (WSIF) serves as a service consumer to issue a request through the invocation of a Web services from Oracle E-Business Suite.

SOA Provider

SOA Provider is an enhanced service provider particularly in supporting additional interface types for service enablement.

> **Note:** In Release 12.0, Oracle E-Business Suite is service partially enabled using Web Service Provider to enable XML Gateway Map and Business Service Object (formerly known as Service Bean) interface types. For backward compatibility, Oracle E-Business Suite Integrated SOA Gateway continues to support the Release 12.0 based Web Service Provider service enablement, plus additional interface types using SOA Provider to enable services.

At run time, SOA Provider references integration services and data from Oracle Integration Repository in processing inbound SOAP request messages that invoke Web services and sends the SOAP response out.

Web Service Invocation Framework

To invoke integration services from Oracle E-Business Suite, Oracle E-Business Suite Integrated SOA Gateway uses service invocation framework, leveraging Oracle Workflow Java Business Event System (JBES) and a seeded Java rule function, to allow any WSDL-described service to be invoked.

For more information about how to set up and invoke a Web service through the

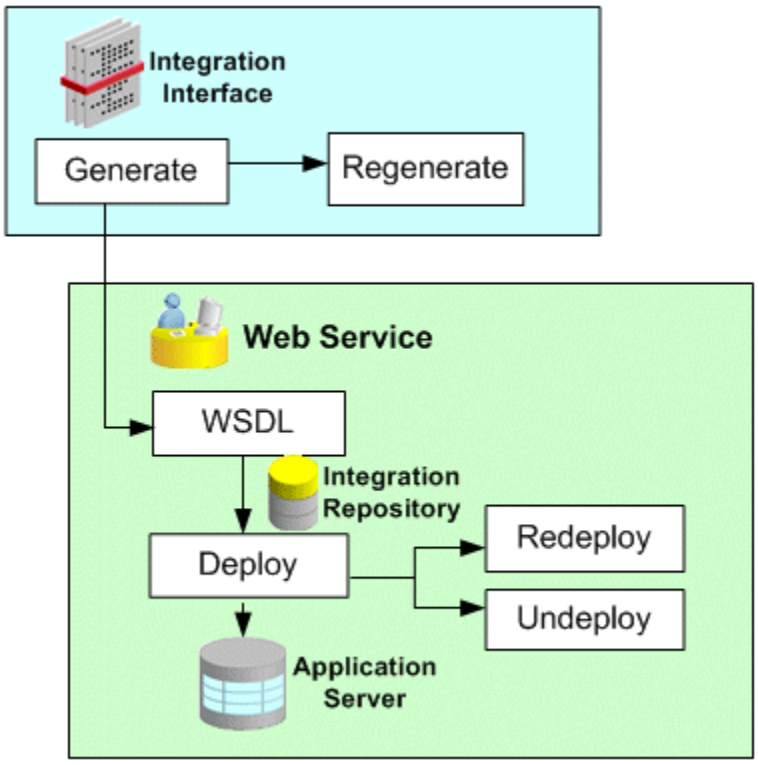
invocation framework, see Implementing Service Invocation Framework, *Oracle E-Business Suite Integrated SOA Gateway Implementation Guide* and Oracle Workflow and Service Invocation Framework Overview, *Oracle E-Business Suite Integrated SOA Gateway Developer's Guide*.

Oracle Integration Repository

Oracle Integration Repository, an integral part of Oracle E-Business Suite, is the centralized repository that contains numerous interface endpoints exposed by applications within the Oracle E-Business Suite. It provides a comprehensive, consistent browsing view of the interface mechanism which lets you easily discover and search on the business interface from the catalog. Additionally, users with administrator role can generate Web services by transforming interface definitions to a machine-processable format that complies with Web standards using WSDL. Once a Web service is successfully generated, the service can be deployed to the Oracle Application Server.

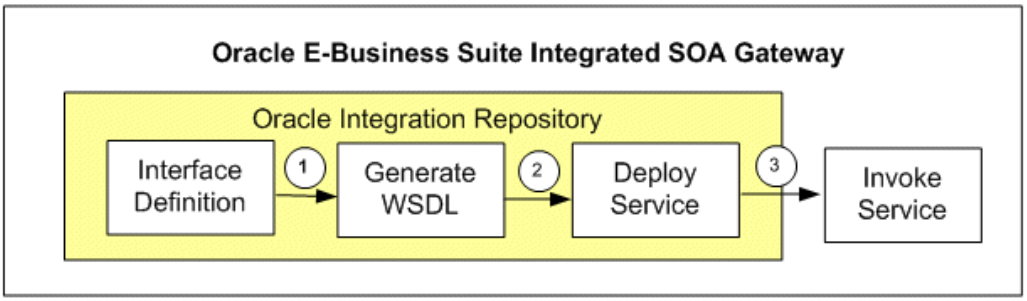
The Web service generation and deployment process flow can be illustrated in the following diagram:

Service Generation and Deployment Process Flow



The following diagram illustrates the service enablement process flow within Oracle E-Business Suite:

Service Enablement Functional Process Flow



1. An integration repository administrator transforms the integration interface definitions resided in Oracle Integration Repository into Web services in WSDL URLs.

   You can view the WSDL sources in the Web Service region. See: Reviewing Web Service WSDL Source, page 4-8.

2. An integration repository administrator then deploys Web services.

   How to generate and deploy Web services, see: Performing Additional Web Service Activities, page 4-12.

3. Web services representing in WSDL URLs can be invoked from any Web service clients.

In addition to transforming interface definitions into Web services and deploying them, integration repository administrators can access the SOA Monitor user interface to monitor and manage all SOAP messages in and out from the SOA Provider (if the SOA monitoring feature is enabled). This allows any operation error if occurred during the message exchanges to be identified and audited. The administrators can search and view SOAP request and response message details, and take necessary actions if needed to expedite the interaction between services and consumers. For more information on how to use SOA Monitor, see Monitoring and Managing SOAP Messages Using SOA Monitor, *Oracle E-Business Suite Integrated SOA Gateway Implementation Guide*.

3

Navigating Through Oracle Integration Repository

This chapter covers the following topics:

- Oracle Integration Repository Overview
- Getting Started
- Discovering and Reviewing Interfaces

Oracle Integration Repository Overview

Oracle E-Business Suite Integrated SOA Gateway is the intrinsic part of Oracle E-Business Suite for service enablement. It provides the capability of invoking services or Web services and allowing services or Web service clients to make use of the services provided from the Suite.

To accomplish this goal, there must be a centralized location where all service related business interfaces can be stored, and at the same time all application users can browse through these business interfaces knowing what type of services are available for business consumption.

Oracle Integration Repository, an integral part of Oracle E-Business Suite, is the repository to serve this purpose. It contains numerous interface endpoints exposed by applications throughout the entire Oracle E-Business Suite and is an essential component within Oracle E-Business Suite Integrated SOA Gateway. This centralized repository not only provides a complete catalog of Oracle E-Business Suite's business interfaces, but also provides a comprehensive, consistent browsing view of the interface mechanism. You can use this tool to easily discover and search on business interfaces from the catalog for integration with any system, application, or business partner.

A business interface is a collection of functions provided for transferring data from one computerized system to another to achieve a specific goal. An Oracle application might include one or more business interfaces, which enable you to use other Oracle software or third party programs to transfer data to or from the application, or to invoke some

aspect of the application's functionality.

Interfaces can be used from application-to-application (A2A), or from business-to-business (B2B). An example of a B2B transaction would be something like that a purchase order acknowledgement interface receives an acknowledgement from a trading partner in response to an outbound purchase order request or change.

Oracle business interfaces are built using a variety of technologies, with each technology appropriate to different environments and tasks. These constitute the available *interface types.* For example, a business interface can be based on a PL/SQL package. PL/SQL is an interface type that you can find it through the Integration Repository and then locate various PL/SQL based business interfaces grouped by product family.

Note: Oracle Integration Repository supports the following integration interface types which can be categorized as follows:

- Service enabled
  - PL/SQL
  - XML Gateway Map (inbound)
  - Concurrent Program

    Important: Service enablement for concurrent programs linked to Open Interfaces are currently not supported. This type of concurrent programs can be viewed and displayed under the Open Interface category which is not supported for service enablement.

  - Business Service Object (Service Beans)
- Subscription model
  - Business Event
  - XML Gateway Map (outbound)
- Composite services - BPEL
- Non-service enabled public interfaces
  - Open Interface Tables
  - Open Interface Views

- EDI Interface

Detailed information on each interface type, see Interface Types, page 3-11.

Major Features

- A unified repository from which all integration interface types are exposed.
- Updates are automated and documented.
- Catalog is searchable on keywords and navigable by product family.
- A powerful user interface to help you find the data you are looking for from the repository.
- It supports composite services containing a collection of native interfaces.
- It enforces security rules to allow only authorized users to perform administrative tasks such as generate and deploy Web services.

Getting Started

Accessing Oracle Integration Repository

You can invoke the repository like any other Oracle E-Business Suite application, provided that you are logged in as a user with sufficient permissions. From the Navigator menu, select the **Integrated SOA Gateway** responsibility, then click the **Integration Repository** link that appears.

Oracle E-Business Suite Integrated SOA Gateway allows the following three roles to access the Integration Repository user interfaces and perform necessary tasks:

- System Integration Analyst
- System Integration Developer
- Integration Repository Administrator

Users granted with different roles can perform various tasks as described in the following table:

Privileges	System Integration Analyst	System Integration Developer	Integration Repository Administrator
View Public Interfaces	Yes	Yes	Yes
View Private/Internal Interfaces	No	Yes	Yes
Generate/Regenerate Web Services (WSDL)	No	No	Yes
Deploy/Redeploy Web Services	No	No	Yes
Undeploy Web Services	No	No	Yes
Subscribe to Business Events	No	No	Yes
Create Grants	No	No	Yes
Download Composite Service	No (Configurable)	Yes	Yes

Note: Oracle E-Business Suite Integrated SOA Gateway leverages the concepts of permissions and permission sets to grant appropriate access privileges or permissions to users through roles. For example, multiple privileges related to administrative functions can be grouped into an administrative permission set and then granted to an appropriate user through the Integration Repository Administrator role. That user becomes an integration repository administrator and has privileges to perform administrative tasks.

System integration analysts by default do not have the privilege to download composite services unless they are granted with the Download Composite Service privilege through a permission set. For more information on how to manage security through roles, see Role-Based Access Control (RBAC) Security, *Oracle E-Business Suite Integrated SOA Gateway Implementation Guide*.

Users with the Integration Repository Administrator role can find an additional SOA Monitor link from the Navigator menu after logging on with the Integrated SOA Gateway responsibility. This link provides an extra access privilege for users with the integration repository administrator role to see an extra SOA Monitor tab displayed once logging on to Oracle Integration Repository. This SOA Monitor tab allows

integration repository administrators to further audit or monitor all SOAP messages in and out through SOA Provider and view all SOAP message details.

For information on how to use SOA Monitor, see Monitoring and Managing SOAP Messages Using SOA Monitor, *Oracle E-Business Suite Integrated SOA Gateway Implementation Guide*.

For detailed information on each task performed by the Integration Repository Administrator role, see *Oracle E-Business Suite Integrated SOA Gateway Implementation Guide*. For tasks related to the System Integration Developer role, see *Oracle E-Business Suite Integrated SOA Gateway Developer's Guide*.

Using Oracle Integration Repository

Oracle Integration Repository has two main user interfaces: The Browse interface, page 3-5 (the default) and the Search interface, page 3-7.

Following are links to some of the commonly requested information about using Oracle Integration Repository:

- Included interface types, page 3-11
- Integration standards, page 3-15
- Searching for a specific interface, page 3-7
- Information included for each interface, page 4-1

Discovering and Reviewing Interfaces

Browsing the Integration Interfaces

The Browse interface appears by default when you invoke Oracle Integration Repository. You can also access it by clicking the **Browse** button on the search page or any interface information page.

You can browse directly to an appropriate list of interfaces if you know which product family and product you want to integrate with, plus one of the following:

- **Business entity**

  Business entities are objects that either perform business activities or have business activities performed on them. Sales orders, employees, purchase orders, customers, and receipts are all examples of business entities. An interface can be used by multiple business entities, and a business entity can be accessed using multiple interfaces.

- **Interface type**

Business interface information in Oracle Integration Repository is organized for browsing and searching by interface type, based on the integration technology used.

For more information, see Interface Types, page 3-11.

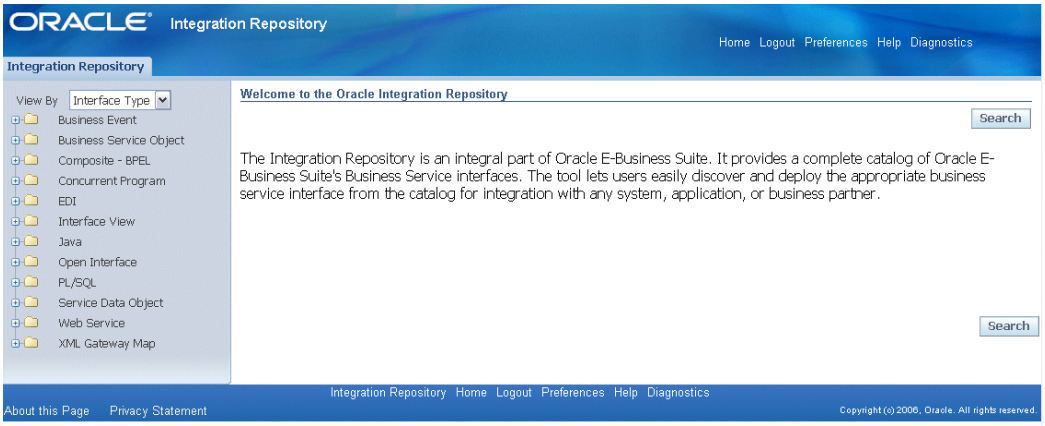
- **Integration standard**

  XML Gateway and Web service-based interfaces conform to various industry standards.

  For more information, see Integration Standards, page 3-15.

If you don't have this information, you'll find it more effective to conduct a search, page 3-7.

Oracle Integration Repository Browse Page



You browse the interfaces by selecting one of the following views from the **View By** list:

- **Product Family**
- **Interface Type**
- **Standard** (integration standard)

Expand the navigation tree in one of these views to see a list of the available interfaces. To save the list of interfaces in a CSV file, click **Export.**

To review the details of an interface, click the interface name on the list.

Browsing by Product Family

The **Product Family** view is organized as follows: **Product Family > Product > Business Entity.**

For example, `Financials > Payables > Payables Invoice.`

Select a business entity, page 3-5 to view the interfaces that comprise it. Note that a business entity can include multiple interfaces of different types owned by different products. For example, the business entity "Payables Invoice" includes the following:

- Create Credit Card Issue Invoice open interface from Internet Expenses
- Invoice open interface from Payables
- Invoice Notification XML Message from Supply Chain Trading Connector

Browsing by Interface Type

The **Interface Type** view is organized as follows: **Interface Type > Product Family > Product.**

For example, `Web Service > Financials > Cash Management.`

Use this view to see all of the interfaces available for a particular product that use a particular interface type.

Browsing by Standard

The **Standard** view is organized as follows: **Standard and Version > Product Family > Product.**

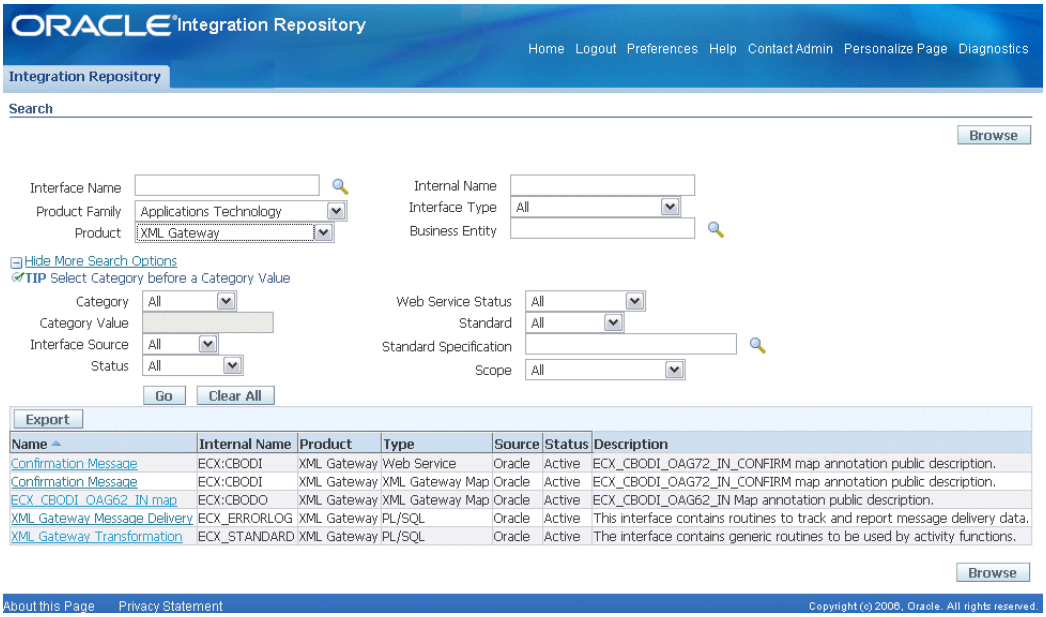
For example, `OAG7.2 > Financials > Payables > Process Invoice.`

Use this view to browse for a product's XML Gateway maps and Web services belonging to the specified standard; for example, *W3C* or *OAG 7.2*.

Searching for an Integration Interface

Click the **Search** button anywhere in Oracle Integration Repository to access the main Search page.

Oracle Integration Repository Search Page



You can search for interfaces with any combination of the following criteria:

> **Note:** Before entering search criteria in the Search page, you will find the default value 'All' automatically displayed in the Product Family, Product, Interface Source, and Interface Type fields. This allows a search to be executed appropriately if you do not make further selections from the drop-down lists.
>
> Additionally, the same default value 'All' can also be found in the Category, Status, Web Service Status, Standard, and Scope fields while clicking the **Show More Search Options** link.

- **Interface Name**
- **Product Family**
- **Product**
- **Internal Name**, page 4-2
- **Interface Type**, page 3-11
- **Business Entity**, page 3-5

Click **Show More Search Options** to include any of the following additional criteria in your search:

- **Category and Category Value**

  Used to qualify product-specific features. For example, some products provide specific methods of extending the API functionality. Products offering this functionality use the category "Extensions". Examples of extensions are the User Hooks provided by Human Resource Management System and Client Extensions provided by Projects.

  First select the category (for example, `Extensions`), then select the category value (for example, `HRMS User Hooks provided`).

- **Interface Source**

  Select one of the following values from the drop-down list:

  - `All` (default) - All integration interfaces will be displayed from the search.
  - `Oracle` - All Oracle native packaged integration interfaces and services are categorized with this interface source type.
  - `Custom` - This indicates annotated custom integration interfaces. This value is reserved for future use.

- **Status**

  Select one of the following values from the drop-down list:

  - `All` (default)
  - `Active`
  - `Deprecated`
  - `Obsolete`
  - `Planned`

  For more information, see Status, page 4-3 in the Common Information table.

- **Web Service Status**

  If an integration interface is exposed or generated as a Web service, then the Web service can be further deployed from Oracle Integration Repository to the application server.

  Use the Web Service Status field to search by different stages of Web services during the service generation and deployment life cycle.

  Select one of the following values from the drop-down list:

  - `All` (default) - This displays all interfaces regardless of the interface types whether they are service enabled or not.

- `Not Generated` - This displays all service-enabled interfaces that do not have Web service generated.

- `Generated` - This displays all interfaces that have Web services generated, but have not yet been deployed.

- `Deployed` - This displays all interfaces that have Web services generated and deployed.

For more information, see Common Information on Web Services, page 4-6.

- **Scope**

  Select one of the following values from the drop-down list:

  - `All` (default) - All integration interfaces regardless of public, internal, or private interfaces.

  - `Public` - These interfaces can be used by anyone.

  - `Internal To Oracle` - These interfaces are available for business integration between applications within Oracle E-Business Suite.

    For example, if an interface of this type (Internal to Oracle) belongs to Application Object Library, then that interface can be used by any other applications within Oracle E-Business Suite for process integration in addition to using by the Application Object Library.

    This type of interface can only be accessed by users with the integration developer role and the integration repository administrator role.

  - `Private To Application` - These interfaces are available for business integration only within the application itself. They will not be used by any other applications outside the application that the interface belongs to.

    For example, if an interface with this 'Private to Application' type belongs to Purchasing application, then it will not be used by any other applications within Oracle E-Business Suite but Purchasing.

    This type of interface can only be accessed by users with the integration developer role and the integration repository administrator role.

- **Standard and Standard Specification**

  For more information, see Integration Standards, page 3-15.

After selecting your criteria, click **Go** to launch the search and see a list of the available interfaces that meet the criteria. To save the list of interfaces to a CSV file, click **Export.**

To review the details of an interface, click the interface name on the list.

Interface Types

Business interfaces are organized into *interface types* according to the integration technologies on which they're based.

Based on the natural way of how services are formed or established, Oracle Integration Repository supports the following interface types:

- **Native Services**

  Native services are native packaged integration interfaces. This type of service includes the following native interfaces:

  - PL/SQL
  - XML Gateway
  - Concurrent Programs
  - Business Events
  - Open Interface Tables/Views
  - EDI
  - Business Service Object (Service Beans)

- **Composite Services**

  Building upon native services, a composite service consists of a collection of native services that belong to a specific product or product family available in the Integration Repository.

  The only available composite service type in this release is Composite - BPEL.

Business Events

A business event is an occurrence in an internet application that might be significant to other objects in a system or to external agents. An example of a business event can be the creation of a new sales order or changes to an existing order.

Oracle Workflow uses the Business Event System that leverages the Oracle Advanced Queuing (AQ) infrastructure to communicate and manage business events between systems. The Business Event System consists of an Event Manager and workflow process event activities. The Event Manager lets you register subscriptions to significant events; event activities representing business events within workflow processes let you model complex business flows or logics within workflow processes.

When a local event occurs, the subscribing code is executed in the same transaction as the code that raised the event. Subscription processing can include executing custom

code on the event information, sending event information to a workflow process, and sending event information to other queues or systems.

> **Note:** Users with Integration Repository Administrator role can have the privilege to subscribe to a business event in the Business Event Details page. See *Oracle E-Business Suite Integrated SOA Gateway Implementation Guide* for details.

For more business event information, see Events, *Oracle Workflow Developer's Guide*.

XML Gateway Message Maps

Oracle XML Gateway comprises a set of services that allows easy integration with Oracle Applications to support XML messaging. The Oracle E-Business Suite utilizes the Oracle Workflow Business Event System to support event-based XML message creation and consumption.

Oracle XML Gateway consumes events raised by the Oracle E-Business Suite and subscribes to inbound events for processing. XML Gateway uses the message propagation feature of Oracle Advanced Queuing to integrate with Oracle Transport Agent to deliver messages to and receive messages from business partners. XML Gateway supports both Business-to-Business (B2B) and Application-to-Application (A2A) initiatives. XML Gateway message maps (or just *XML Gateway maps*) can be used directly, or they can be exposed as Web services.

> **Note:** The message map is a file of type .xgm and is created using the XML Gateway Message Designer. Message maps define the data source and data target, any hierarchies between the source and the target, and actions for data transformation and process control.

For the Integration Repository information provided about XML Gateway maps, see XML Gateway Map Information, page 4-15.

For more information about XML Gateway, see *Oracle XML Gateway User's Guide*.

PL/SQL Procedures and Functions

A business interface can be based on a PL/SQL package from which you invoke procedures and functions appropriate to a narrowly defined integration goal.

For the Integration Repository information provided about PL/SQL, see PL/SQL Information, page 4-18.

Concurrent Programs

In Oracle applications, concurrent processing simultaneously executes programs running in the background with online operations to fully utilize your hardware capacity. A concurrent program runs as a concurrent process and is executed by the

Concurrent Manager. Functions performed by concurrent programs are typically data-intensive and long-running, such as posting a journal, populating an interface table, and generating an EDI flat file.

For the Integration Repository information provided about Concurrent programs, see Concurrent Program Information, page 4-35. For more information about concurrent programs, refer to the *Oracle Applications System Administrator's Guide - Configuration*.

Open Interface Tables

An open interface consists of the interface tables to store data from external sources and concurrent programs, to validate and apply this data into the Oracle Applications base tables. All open interfaces are implemented using concurrent programs.

For the Integration Repository information provided about open interface tables, see Open Interface Information, page 4-36.

Interface Views

Interface views are database objects that make data from Oracle Applications products available for selection and use by destination applications.

For the Integration Repository information provided about interface views, see Interface View Information, page 4-39.

EDI Message Transactions

Electronic Data Interchange (EDI) is one form of electronic commerce. Interface data files are electronically exchanged between trading partners as messages in a standard format to minimize manual effort, speed data processing, and ensure accuracy. EDI message transactions are supported by *Oracle e-Commerce Gateway*.

Oracle e-Commerce Gateway provides users the ability to conduct business electronically between trading partners based on Electronic Commerce standards and methodology. It is designed with an open and flexible architecture for easy integration with trading partners or EDI translators. When used for EDI solutions, e-Commerce Gateway integrates with EDI translators to provide specific EDI standard formats and versions. Oracle e-Commerce Gateway is a file-based integration layer between Oracle Applications and any other external application.

For the Integration Repository information provided about EDI messages, see EDI Message Information, page 4-40.

For more information about Oracle e-Commerce Gateway, see *Oracle e-Commerce Gateway User's Guide*.

Java Methods

A business interface can be based on a Java class from which you invoke methods that are appropriate to a narrowly defined integration goal.

For the Integration Repository information provided about Java, see Java Information, page 4-21.

Business Service Objects

A business service object, formerly known as Service Bean, is a high-level service component that allows OA Framework or BC4J components to be deployed as Web services.

It is the tool by which Oracle applications employ *service oriented architecture* (SOA) and *Web services* to facilitate integration with each other and with third party trading partners.

Business service object interfaces provide access to SOA services to facilitate integration between Oracle applications and trading partners. They often employ *service data objects* as parameters to pass complex data.

> **Note:** A service data object is not actually an interface type; rather, it is an object used by one or more business service objects or other service data objects to pass data. Oracle Integration Repository includes it on lists of interface types, so you can browse or search for business service object interface based on the service data objects that they use.

Web Services

To enhance the robust integrations between Oracle E-Business Suite, packaged applications, and legacy systems, all interface types stored in the Integration Repository can be exposed as Web services, which are defined with Web Services Description Language (WSDL) content appropriate to the interface types.

> **Note:** Although a Web service does not by itself constitute a business interface, Oracle Integration Repository includes it on lists of interface types, so you can browse or search for the interface types based on the Web services that expose them.

For more information about Web services, see Understanding Web Services, page 2-1.

Composite Services

A composite service consists of a collection of native packaged public interfaces or called native services that belong to a specific product or product family and are available in the Integration Repository.

Composite services use the native service as building blocks to construct the sequence of business flows. Basically, this interface type orchestrates the invocation sequence of discrete Web services into a meaningful end-to-end business process through a Web service composition language BPEL (business process execution language). For example, use Oracle BPEL Process Manager (BPEL PM) to integrate the

Order-to-Receipt business process that contains sales order entry, item availability check, pack and ship, and invoice to Accounts Receivable sub processes handled by various applications. This approach effectively tightens up the control of each individual process and makes the entire business flow more efficiently.

> **Note:** Since composite services can be designed and created in Oracle JDeveloper and Oracle Eclipse, based on the different creation methods, composite services can have various composite types such as BPEL, ESB (enterprise service bus), or SCA (service component architecture) types. BPEL and ESB are the typical composite interface types designed using Oracle JDeveloper. However, composite service - BPEL is the only composite service type supported in this release.

For more information about composite services, see Working with Composite Services, page 5-1 and *Oracle E-Business Suite Integrated SOA Gateway Developer's Guide*.

Integration Standards

Each Web service interface conforms to an integration standard; for example, OAGIS or RosettaNet. The fully qualified standard includes the name, version, and specification. For example: OAG 7.2 CONFIRMBOD_004. The following standards are observed in Oracle Integration Repository:

- IFX1.2
- OAG6.2
- OAG7.0
- OAG7.1
- OAG7.2
- RosettaNet01.01.00
- RosettaNet01.03.00
- RosettaNet02.02.00
- RosettaNet02.03.00
- UCCnet2.4
- W3C

4

Working with Native Services and Integration Interfaces

This chapter covers the following topics:

- Common Information
- XML Gateway Map Information
- PL/SQL Information
- Java Information
- Business Service Object
- Concurrent Program Information
- Open Interface Information
- Interface View Information
- EDI Message Information
- Business Event Information

Common Information

The details page of each integration interface type contains the following two types of information:

- Interface detail information

  This interface detail information includes a header region with general information, a description region, a source region, and an interface methods or procedure and functions region.

  Integration repository administrators can perform additional administrative tasks including generating a Web service for a selected interface type if the type has a Web service enabled, subscribing to a business event, and creating security grants for appropriate users.

For more information on interface details, see Common Information on Interface Details, page 4-2.

- Interface Web service information

  Once an integration interface definition is transformed into a Web service representing in WSDL format, then the Web Service - SOA Provider region by default appears in the details page if it is not an interface type of XML Gateway Map or Business Service Object. The Web Service Status field is also marked as 'Generated' to indicate that the status of this Web service.

  If a generated Web service has been successfully deployed, then 'Deployed' appears in the Web Service Status field. Users with administrator privileges can redeploy or undeploy the service again if needed.

  For more information on Web services, see Common Information on Web Services, page 4-6.

Each interface details page also includes **Search** and **Printable Page** allowing you to perform a search or view the details page of a selected interface in a printable format if you want. See Searching for an Integration Interface, page 3-7 for details.

> **Important:** Information specific to Web services is discussed under Understanding Service Enablement, page 2-1.
>
> Information specific to composite services is discussed under Working with Composite Services, page 5-1.

Common Information on Interface Details

Each interface information page includes a header region with general information about the interface. The following fields are common to almost all interface types:

Field	Notes
Internal Name	This is the PL/SQL package name, the document name, or the Java service interface name. **Note:** For Java service interfaces, this is called **Qualified Name,** and includes the full Java package name and the class name.
Type	The interface type, page 3-11. **Note:** This field does not appear for Java service interfaces.

Field	Notes
Product	The Oracle Applications product that supplies the interface.
Business Entity	Business entities are objects that either perform business activities or have business activities performed on them. For example, sales orders, account numbers, employees, purchase orders, customers, and receipts are all business entities. An interface can be used by multiple business entities, and a business entity can be accessed using multiple interfaces. The Business Entity field lists the business entities accessed by an interface. Click a business entity name to view a list of available interfaces to that entity. **Note:** This field does not appear for Java service interfaces.
Status	Valid status codes are: • `Active` • `Deprecated` - this interface should not be used, but it will be supported until obsolete. • `Obsolete` - the interface is no longer supported. • `Planned` - This interface will be activated at a future date.
Scope	The scope can be one of the following: • `Public` • `Internal To Oracle` • `Private To Application` For more information, see **Scope** on the Oracle Integration Repository Search page, page 3-10.
Interface Source	The only available interface source in Oracle Integration Repository is Oracle native packaged integration interfaces. **Interface Source** on the Oracle Integration Repository Search page, page 3-9.

Field	Notes
MetaLink	Included for any interface that has a related My Oracle Support (formerly Oracle*MetaLink)* Knowledge Document. Click the link to log in to My Oracle Support and view the Knowledge Document. A valid user name and password is required to access My Oracle Support.
Documentation	Included for any interface that has related online documentation. Click the link to view or download the documentation.
Online Help	Provided for any interface that has related Oracle Applications online help. Click the link to view online help for the interface.

Each interface information page also includes a Source Information region that contains the following fields:

Field	Notes
Source File	The source code file for this interface, and its location in the file system.
Source Version	The version of the source file. The first portion of the number corresponds to the base release version of Oracle Applications and the second portion is the version of the file. For example, `120.8` is Oracle Applications 12.0, and `8` indicates that this is the 8th version of the file. **Note:** The version number changes only when it has been worked on by Oracle development. Therefore the version may increment multiple times between releases, or not at all.

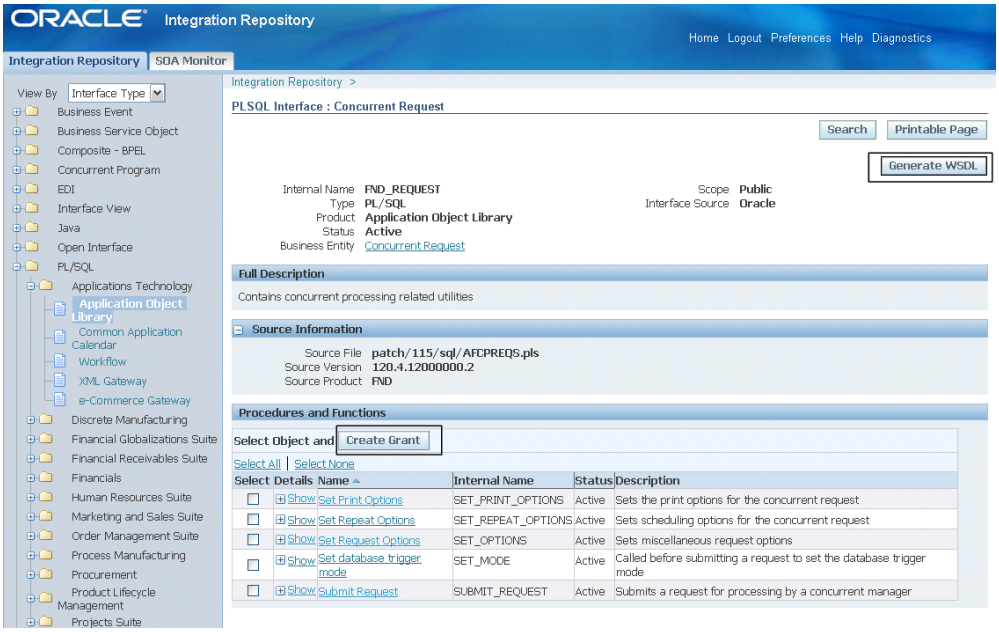
Field	Notes
Source Product	The product code of the source product. The source product specifies under which product directory the file resides in the Oracle Applications file system (also referred to as the *product top*). **Tip:** This field shows the product shortname. You can learn the corresponding full product name by choosing the **System Administration** responsibility from the Navigator menu, then selecting **Oracle Applications Manager** >**License Manager** >**Reports** >**Licensed Products**. On the product list that appears, you can filter the results for any product abbreviation (shortname) or license status.

Integration repository administrators or only users granted with the integration repository administrator role can find the following buttons available in the interface details page:

> **Note:** Users with the integration repository administrator role can find an additional SOA Monitor tab displayed next to the Integration Repository tab. This tab allows the administrators to further audit or monitor all SOAP messages in and out through SOA Provider and view the message details.
>
> For information on how to use SOA Monitor, see Monitoring and Managing SOAP Messages Using SOA Monitor, *Oracle E-Business Suite Integrated SOA Gateway Implementation Guide*.

- **Generate WSDL**: This generates a Web service WSDL file for a selected interface. If the file is generated successfully, you will find the Web Service region becomes available. **Regenerate WSDL** also appears in the details page allowing you to regenerate the service again if needed.

Generate Button Visible in Interface Details Page



See: Generating Web Services, *Oracle E-Business Suite Integrated SOA Gateway Implementation Guide*.

- **Create Grant**: This allows the administrators to create security grants by authorizing the access permission of a selected interface method or a procedure or function to an appropriate user, a user group or all users.

  Oracle Integration Repository also provides a feature to revoke the grants for a particular user for a selected method or service.

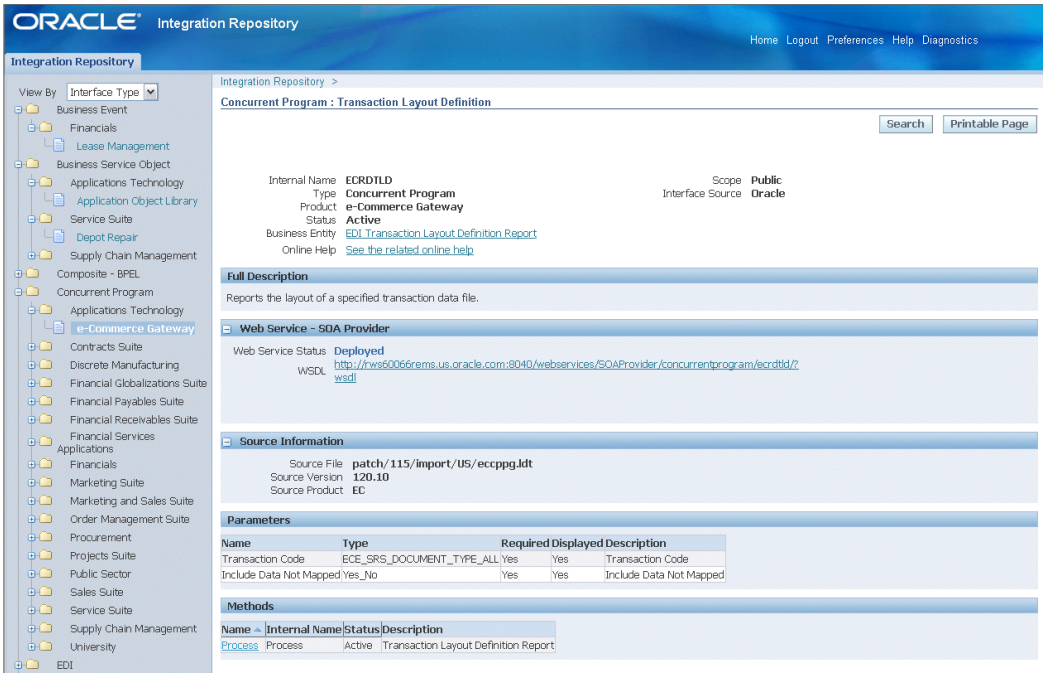
  For more information on managing function security through security grants, see Managing Grants, page 4-13.

Common Information on Web Services

Web service information is displayed in the appropriate Web Service region of the interface details page.

For example, the Web Service - SOA Provider region by default appears in the details page if the selected interface type is not Business Service Object. This region allows you to review a Web service details in WSDL code, and allows the administrators (or users granted with the integration repository administrator role) to perform administrative tasks including deploying or undeploying Web services.

Web Service Region



Note: XML Gateway Map and Business Service Object (formerly known as Service Bean) interface types are service enabled in Release 12.0 through Web Service Provider. To enable services for more interface types, SOA Provider is used in this release to support XML Gateway Map, plus additional interface types including PL/SQL, Concurrent Program, Business Event, and Composite Service - BPEL types. Therefore, you might still find Web Service - SOA Provider region available for XML Gateway Map interface type if the service is enabled by SOA Provider in this release.

Web Service Region(s) for XML Gateway Map and Business Service Object

- For XML Gateway Map interface type

  Because it can be supported by both Web Service Provider in Release 12.0 and by SOA Provider in this release, for backward compatibility, a profile option *FND: XML Gateway Map Service Provider* is used to let you select an appropriate service provider in enabling services for XML Gateway Map interface type. Based on your selected profile value, the interface details page can display the 'Web Service - Web Service Provider region' or 'Web Service - SOA Provider region', or displayed both regions at the same time if a service is generated successfully.

  See: XML Gateway Map Web Service Region, page 4-16.

- For Business Service Object interface type

  Web Service Provider supports the service enablement for Business Service Object interface type in Release 12.0 and will continue to support it in this release; therefore, the Web Service - Web Service Provider region will be displayed if a service is generated successfully.

  > **Note:** The Business Service Object interface type is not supported by SOA Provider.

  See: Business Service Object Web Service Region, page 4-26.

From the appropriate Web service region, you can perform the following tasks:

- Review the status of a selected Web service. The Web Service Status field can be one of the following values:
  - Generated: Indicates that a selected interface has a Web service available, but the service has not yet been deployed.
  - Deployed: Indicates that a selected interface not only has a Web service available, but also the service has been deployed.
- Review WSDL code once a Web service is generated successfully.

  See: Reviewing Web Service WSDL Source, page 4-8
- Deploy, undeploy, or redeoploy Web services if you have appropriate privileges.

  After the Web service has been generated successfully, integration repository administrators or users with the integration repository administrator role can find **Deploy** allowing the generated service to be deployed.

  > **Note:** If it is for Business Service Object interface type, then the administrators can find **Deploy Web Service** instead.

  After deploying a service, the administrators can also undeploy or redeploy the Web service if needed.

  See: Performing Additional Web Service Activities, page 4-12.

Reviewing Web Service WSDL Sources

To make integration interfaces available to customers over a network where customers can dynamically interact between applications, Oracle Integration Repository allows integration repository administrators (or users granted with the integration repository administrator role) to generate Web services by transforming service interface definitions into WSDL files.

Once Web services are generated, you will find the appropriate Web Services region(s) available when viewing an interface detail for a given interface type.

- XML Gateway Map and Business Service Object (formerly known as Service Bean) interface types are supported by Web Service Provider for service enablement in Release 12.0. In this release, Web Service Provider will continue to support the Business Service Object interface type, while XML Gateway Map along with PL/SQL, Concurrent Program, and Composite Service BPEL are supported by SOA Provider. Business Event interface type is supported by SOA Provider through the subscription model.

- For XML Gateway Map interface type service enabled by Web Service Provider in Release 12.0, you will find a standard and deployed XML Gateway WSDL URL displayed with the 'Web Service Status - Deployed' status in the Web Service - Web Service Provider region.

  For more information on service enablement support for XML Gateway Map interface type, see XML Gateway Map Web Service Region, page 4-16.

To view WSDL file:

1. Log on to Oracle Integration Repository and locate your desired interface definition through a search or from the navigation tree.

2. Click the interface name to open the interface details.

3. Click the **WSDL** link in the Web Service region to view the WSDL source code.

```
<?xml version="1.0"?>
<definitions name="IntegrationRepositoryService"
targetNamespace="http://myhost.us.oracle.com/oracle/apps/fnd/rep/ws/
IntegrationRepositoryService"
  xmlns="http://schemas.xmlsoap.org/wsdl/"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema"
  xmlns:soap="http://schemas.xmlsoap.org/wsdl/soap/"
  xmlns:tns2="http://xmlns.oracle.com/apps/fnd/ServiceBean"
  xmlns:tns1="http://xmlns.oracle.com/apps/fnd/rep/ws"

xmlns:tns="http://myhost.us.oracle.com/oracle/apps/fnd/rep/ws/Integr
ationRepositoryService">
<types>
<xsd:schema>
  <xsd:import namespace="http://xmlns.oracle.com/apps/fnd/rep/ws"
schemaLocation="http://myurl.us.oracle.com:1234/webservices/AppsWSPr
ovider/oracle/apps/fnd/rep/ws/IntegrationRepositoryService.xsd"/>
</xsd:schema>
<xsd:schema elementFormDefault="qualified"
targetNamespace="http://xmlns.oracle.com/apps/fnd/ServiceBean" >
  <xsd:element name="ServiceBean_Header">
    <xsd:complexType>
      <xsd:element name="RESPONSIBILITY_NAME" minOccurs="0"
type="xsd:string"/>
      <xsd:element name="RESPONSIBILITY_APPL_NAME" minOccurs="0"
type="xsd:string"/>
      <xsd:element name="SECURITY_GROUP_NAME" minOccurs="0"
type="xsd:string"/>
      <xsd:element name="NLS_LANGUAGE" minOccurs="0"
type="xsd:string"/>
     </xsd:sequence>
   </xsd:complexType>
  </xsd:element>
 </xsd:schema>
   . . .
```

Note: The Responsibility Name, Responsibility Application Name, Security Group, and NLS Language elements listed under the ServiceBean_Header are used in passing values that may be required to embed application context into SOAP envelopes for Web service authorization.

For more information, see Setting Other Web Service Input Message Parts, *Oracle E-Business Suite Integrated SOA Gateway Implementation Guide*.

You might find the following information under <Method>_Response about error messages if occur:

```
...
<xsd: complexType name
="IntegrationRepositoryService_GetServiceDescription_Response">
  ...
  <xsd:sequence>
     <xsd:element name="serviceDescription"
type="oans3:ServiceDescription" minOccurs="0" nillable="true"/>
    <xsd:element name="Message" type="oans1:ServiceMessage"
minOccurs="0" maxOccurs="unbounded"/>

    <xsd:element name="ErrorMessage" type="oans1:ServiceMessage"
minOccurs="0" maxOccurs="unbounded"/>
  </xsd:sequence>
</xsd: complexType name>
```

Note: The Message and ErrorMessage elements listed under <Method>_Response are used for error messages if occur. The Message element will appear as warning messages (<OAException> objects registered using `OADBTransaction.putDialogMessage()`) in the SOAP response. The ErrorMessage element corresponds to OAExceptions that were raised during the method invocation. In general, the response for any service method can contain any of the following:

- The original output data
- Warning messages (registered using `OADBTransaction.putDialogMessage()`) if any (in <Message> element)
- OAExceptions raised during the method invocation if any (in <ErrorMessage> element)

For more information about error messages, see Error Handling section, Building an OA Framework Application (the Basics) chapter, *Oracle Application Framework Developer's Guide*, available from My Oracle Support Knowledge Document 565870.1, Oracle Application Framework Release Notes, Release 12.1.1.

To view deployed WSDL:

When an integration repository administrator successfully deploys or redeploys a Web service, a deployed WSDL link appears confirming that the service has been successfully deployed.

Click the **Deployed WSDL** link to view the deployed WSDL file.

Web Service Deployed WSDL Information Page

Performing Additional Web Service Activities

Oracle E-Business Suite Integrated SOA Gateway allows integration repository administrators to perform the following tasks:

- **Generating or Regenerating Web Services**

  Oracle Integration Repository allows integration repository administrators to transform integration interface definitions into a format that complies with Web standards using WSDL to define Web services. Once the WSDL file is generated successfully, a Web Service region becomes visible in the interface details page.

  > **Note:** Because XML Gateway Map can be supported by both Web Service Provider and SOA Provider for service enablement, there might have more than one Web Service region available for XML Gateway Map interface type depending on the profile value set in the 'FND: XML Gateway Map Service Provider' profile option. See: XML Gateway Map Web Service Region, page 4-16.

  Please note that only integration repository administrators can perform this task. See: Generating Web Services, *Oracle E-Business Suite Integrated SOA Gateway Implementation Guide*.

- **Deploying, Undeploying, and Redeploying Web Services**

  If a Web service has been generated successfully, then integration repository administrators can find **Deploy** (or **Deploy Web Service** if it is for Business Service Object interface type) in the Web Service region of an interface details page. Clicking **Deploy** (or **Deploy Web Service**) will deploy the Web service from Oracle Integration Repository to Oracle Application Server.

  If the Web service is successfully deployed, a deployed WSDL link appears allowing you to review the deployed WSDL code. In addition, the following buttons appear:

  - **Undeploy**: This allows you to undeploy the Web service if needed.
  - **Redeploy**: This allows you to redeploy the Web service if needed.

  See: Deploying and Undeploying Web Services, *Oracle E-Business Suite Integrated SOA Gateway Implementation Guide*.

- **Monitoring SOAP Messages Using SOA Monitor**

  In addition to transforming interface definitions into Web services and deploying them, integration repository administrators can have the privilege to access SOA Monitor to monitor and manage all SOAP messages in and out from the SOA Provider (if the SOA monitoring feature is enabled).

  This SOAP message monitoring tool allows any operation error if incurred during the message exchanges to be identified and audited. The administrators can search and view SOAP request and response message details, and take necessary actions if needed to expedite the interaction between services and consumers.

  For more information on how to use SOA Monitor, see Monitoring and Managing SOAP Messages Using SOA Monitor, *Oracle E-Business Suite Integrated SOA Gateway Implementation Guide*.

For more administrative tasks, see *Oracle E-Business Suite Integrated SOA Gateway Implementation Guide* for details.

Managing Grants

Only integration repository administrators (or users granted with the integration repository administrator role) can create security grants by authorizing the access permission of a selected interface method or procedure and function to an appropriate user, user group, or all users.

> **Note:** Interface types that have the security grant feature available are PL/SQL, Concurrent Program, Business Event, Business Service Object, and Java interfaces.

Oracle Integration Repository also allows the administrators to revoke the grants for a

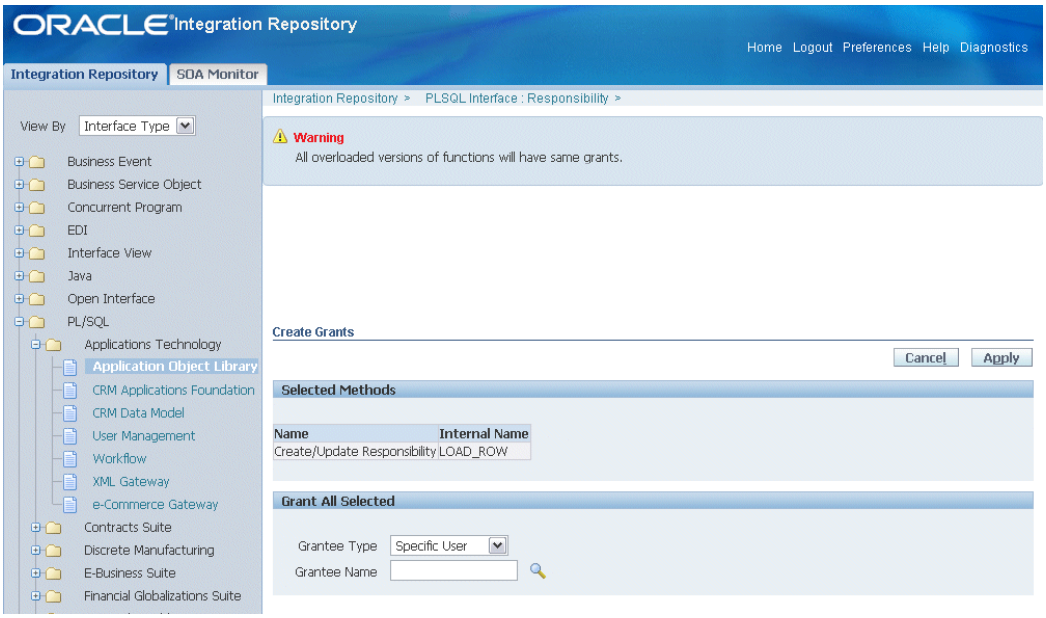
particular user on a selected event or service.

To create a grant

In the interface details page, select appropriate method name check boxes in the Methods region or appropriate procedure and function names in the Procedure and Function region. Click **Create Grant** to open the Create Grants page.

> **Note:** For overloaded methods or functions, select one or more of the overloaded methods or functions and click **Create Grant**. A warning message will populate indicating that all overloaded versions of functions will have same grants.

A Warning Message for Granting Overloaded Functions



From here, you can select a grantee type and grantee name if applicable and click **Apply**.

To revoke a grant

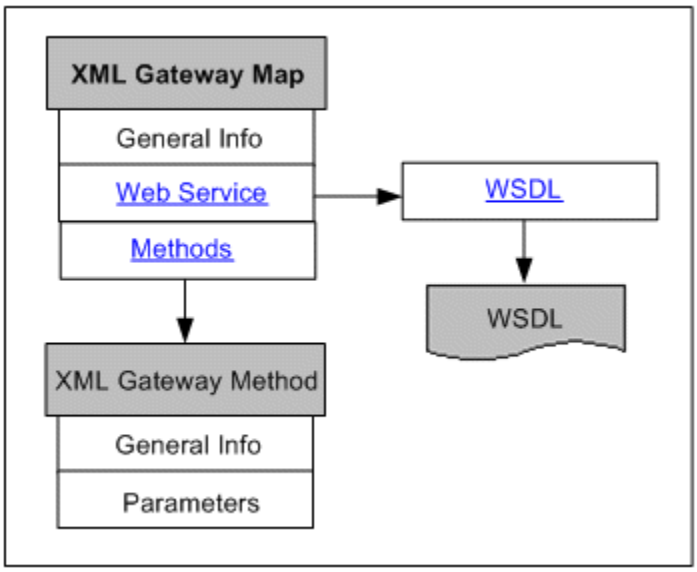
In the interface details page, select the Show link for the method or procedure and function that you want to view or revoke the grant. The Grant Details section of the selected method or procedure and function name appears detailing the grantee and grantee type information. Click the **Revoke** icon for the grant that you want to revoke to revoke the grant.

> **Note:** To create and revoke grants, you must log on to Oracle Integration Repository through the username granted with the integration repository administrator role.

For more information on security grants, see Managing Security Grants, *Oracle E-Business Suite Integrated SOA Gateway Implementation Guide*.

XML Gateway Map Information

The following diagram illustrates the basic structure of the XML Gateway Map information page and its connections to related pages:



The XML Gateway Map information page contains the following information:

- **Web Service Region**

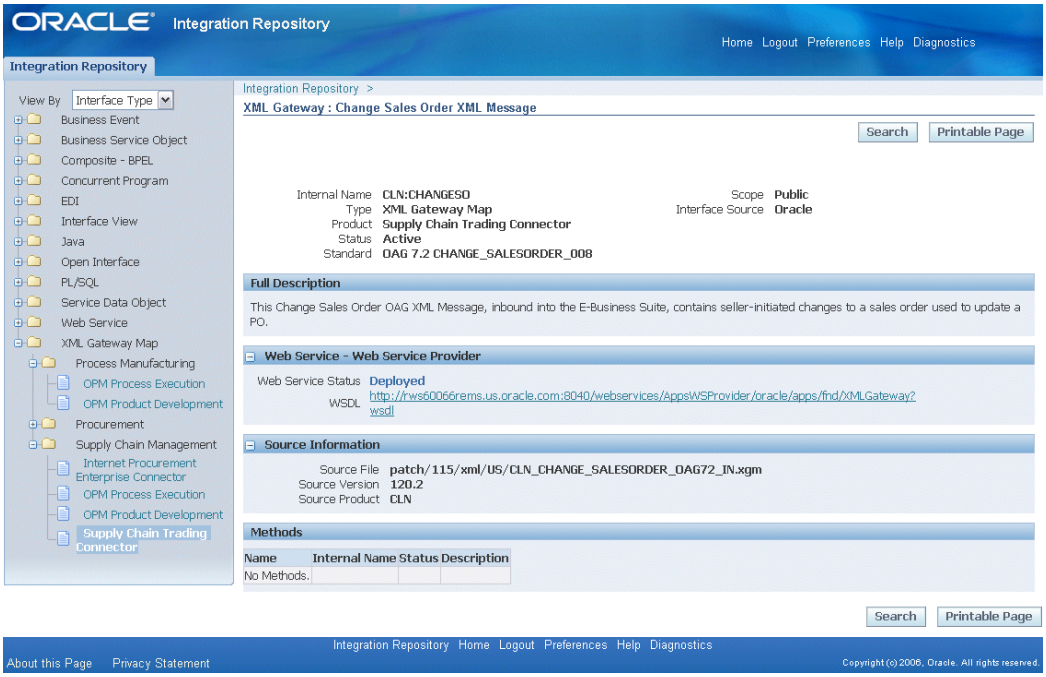
  If the XML gateway map is exposed as a Web service, appropriate Web Service region(s) will be available.

  See XML Gateway Map Web Service Region, page 4-16.

- **Methods Region**

  The Methods region links to one or more XML Gateway Method information pages.

XML Gateway Map information page



The general section of the XML Gateway Map displays common information, page 4-1.

The information page or interface details page includes a table listing the XML Gateway methods. Click a method name to access the information page for that method.

XML Gateway Map Web Service Region

To support the XML Gateway Map service enabled by Web Service Provider in Release 12.0 and to differentiate the service enablement by SOA Provider in this release, Oracle E-Business Suite Integrated SOA Gateway uses the following profile option to let you select an appropriate service provider in enabling services for XML Gateway Map interface type. Based on the selected profile value, the interface details page displays an appropriate Web Service region or more than one region.

Select one of the following values to define the **FND: XML Gateway Map Service Provider** profile option:

- **WSP (Web Service Provider)**

  This displays the Web Service - Web Service Provider region if Web services are available.

  Web Service - Web Service Provider region

  In Release 12.0, XML Gateway Map interface type were deployed by default through Web Service Provider; therefore, you can find a standard XML Gateway WSDL URL displayed in this region with the 'Web Service Status - Deployed' status.

http://host.com:port/webservices/AppsWSProvider/oracle/apps/fnd/XMLGateway?wsdl)

- **SOAP (SOA Provider)**

  This is the default profile value which displays the Web Service - SOA Provider region if Web services are available.

  Web Service - SOA Provider region

  You will find a WSDL file which links to a WSDL page. See: Reviewing Web Service WSDL Source, page 4-8.

  > **Note:** The default profile value is set to 'SOAP'. However, if you do not start from this release and your system is upgrading from Release 12.0, you must change the profile value from the default 'SOAP' to 'Both' because Web Service Provider could have already been used in enabling services. To continue having service enabled using SOA Provider and for backward compatibility, both service providers should be enabled in transforming XML Gateway Map interface definitions into Web services. Otherwise, a fault message appears if it is still set to the default profile value 'SOAP' (SOA Provider).
  >
  > If you start with Rapid Install of Oracle E-Business Suite for this release, the default service provider is SOA Provider ('SOAP' profile value). In this situation, Web Service Provider will be disabled and any invocations of generic XML Gateway Web services will return a fault message.

- **Both**

  This displays both the Web Service - Web Service Provider region and Web Service - SOA Provider region in the interface details page if Web services are available.

For more profile option information used in Oracle E-Business Suite Integrated SOA Gateway, see *Oracle E-Business Suite Integrated SOA Gateway Implementation Guide*.

Integration repository administrators (defined by the Integration Repository Administrator role) can also find the following buttons available if the Web service has been generated successfully:

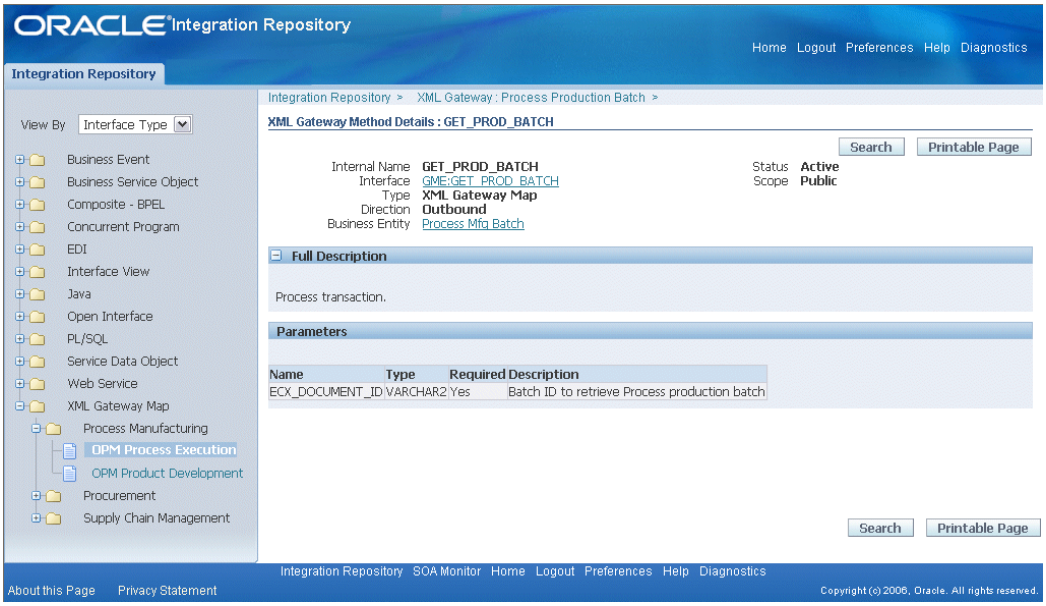
- **Deploy**: Deploys the Web service.
- **Undeploy**: Undeploys a Web service if the service has been deployed.
- **Redeploy**: Redeploys the Web service if needed.

See: Performing Additional Web Service Activities, page 4-12.

XML Gateway Method Information

The XML Gateway method information page appears when you click a method name on an XML Gateway Map information page.

XML Gateway method information page



The general section of this page displays common information, page 4-1 for the XML Gateway method, plus the following additional field:

Direction

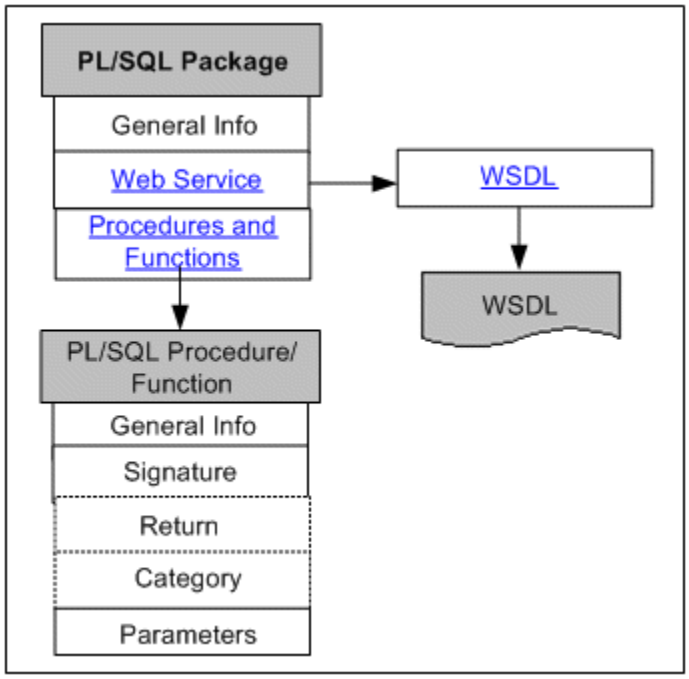
- `Inbound` indicates that the interface receives incoming transactions or messages into the Oracle E-Business Suite.

- `Outbound` indicates that the interface sends outgoing transactions or messages to another system.

This page also contains a table listing the XML Gateway method parameters, including each parameter's data type and whether the parameter is required.

PL/SQL Information

The following diagram illustrates the basic structure of the PL/SQL information page and its connection to the related PL/SQL procedure/function information page:



The PL/SQL information details page contains the following information:

- **Web Service - SOA Provider Region**

  If the PL/SQL is exposed as a Web service, the Web Service - SOA Provider region will be available. This region provides a link to a page containing the Web service WSDL source code.

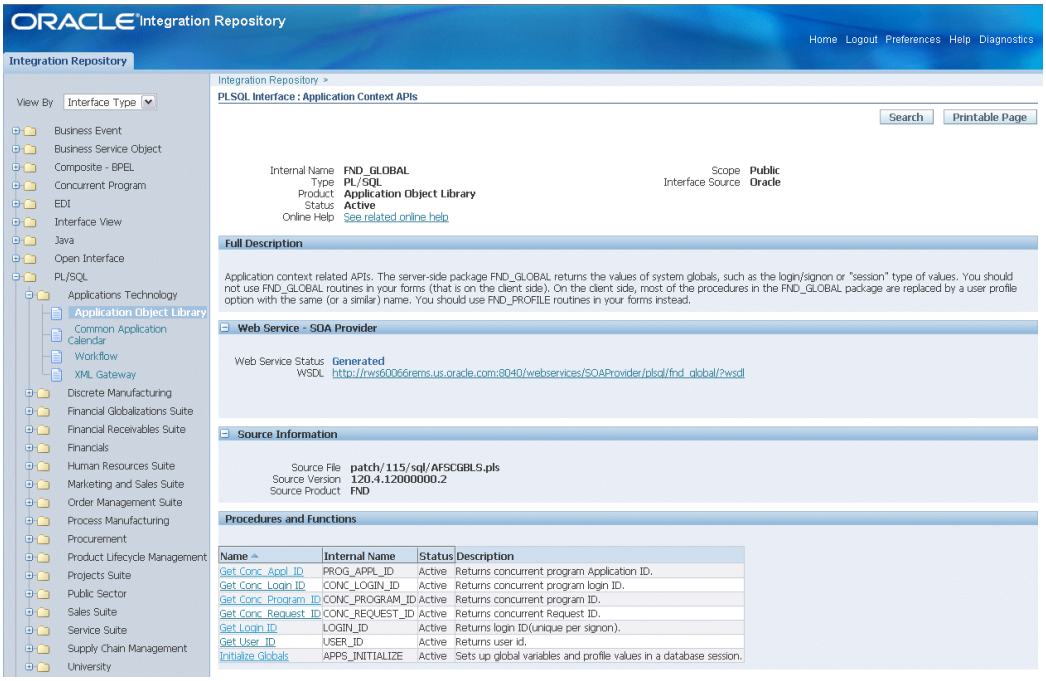
  > **Note:** For more information about Web services, see the following topics:
  >
  > - Understanding Web Services, page 2-1
  > - Common Information on Web Services, page 4-6

- **Procedure and Function Region**

  The PL/SQL Procedures and Functions region links to one or more PL/SQL Procedures and Functions pages.

The general section of the PL/SQL information page displays common information, page 4-1 for the selected PL/SQL package.

PL/SQL information page

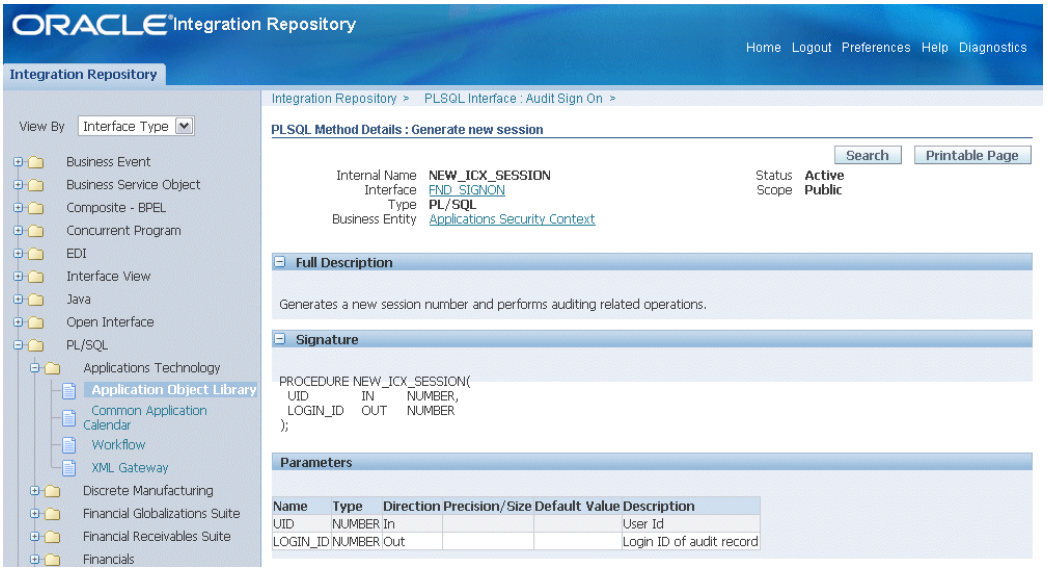


This page also contains a table listing the package procedures and functions, including active status and internal name. Click a procedure or function name to access its information page.

PL/SQL Procedure and Function Information

The PL/SQL procedure/function information page appears when you click a procedure or function name on the PL/SQL information page.

PL/SQL procedure/function information page



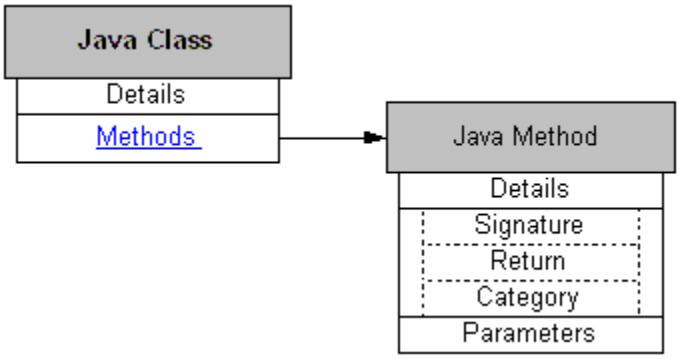
The general section of this page displays common information, page 4-1 for the selected PL/SQL procedure or function, plus the **Interface** field. Click the link to view the interface that uses this package.

This page also displays the signature of this procedure or function, and it contains a table listing the procedure or function parameters and their attributes, including parameter name, data type, message direction (inbound or outbound), precision size, default value, and description.

Integration repository administrators (or users with the integration repository administrator role) can find the **Create Grant** button available which allows the administrators to grant the access of selected PL/SQL procedure and functions to a specific user, user group, or all users. See: Managing Grants, page 4-13.

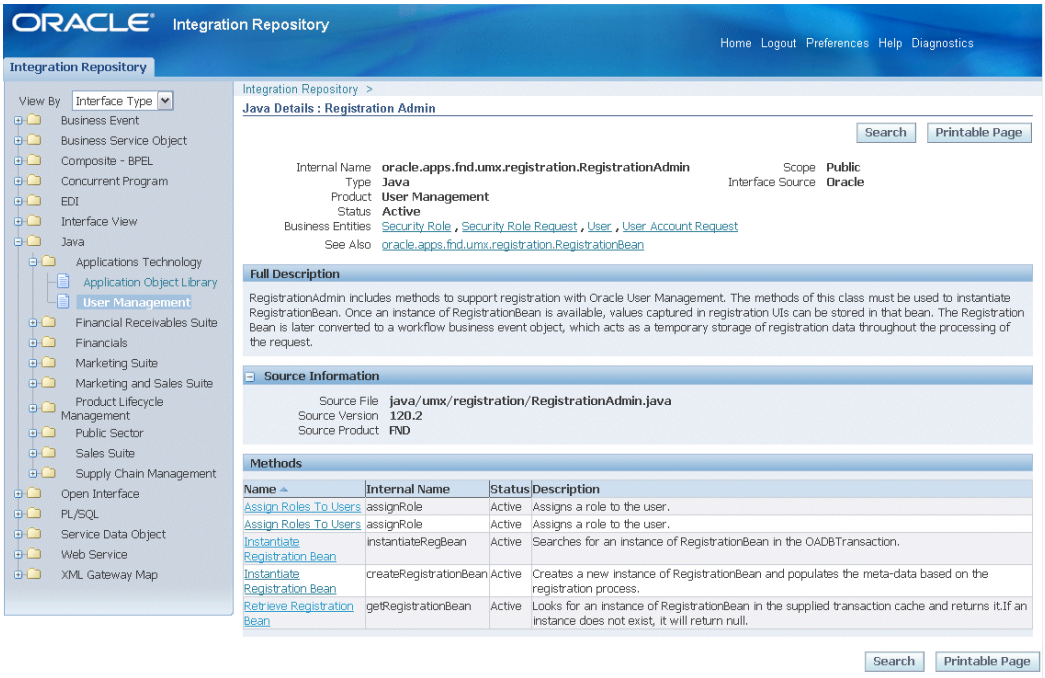
Java Information

The following diagram illustrates the basic structure of the Java information page and its connection to the related Java method information page.



The general section of the Java information page displays common information, page 4-1 for the selected Java class.

Java information page



This page also contains a table listing the class methods, including active status and internal name. Click a method name to access its information page.

Java Method Information

The Java method information page appears when you click a method name on the Java information page.

Java method information page

The general section of the Java method information page displays common information, page 4-1 for the selected method, plus the following additional fields:

- **Interface**

  This Interface field displays the interface that uses this Java method. Click the link to view the interface details.

- **See Also**

  This See Also field displays a related Java method. Click a related Java method name link to view the Java method details.

This page also displays the signature of this method, and information about the return type, and it contains a table listing the method parameters.

Integration repository administrators (or users with the integration repository administrator role) can find the **Create Grant** button available which allows the administrators to grant the access of selected methods to a specific user, user group, or all users. See: Managing Grants, page 4-13.

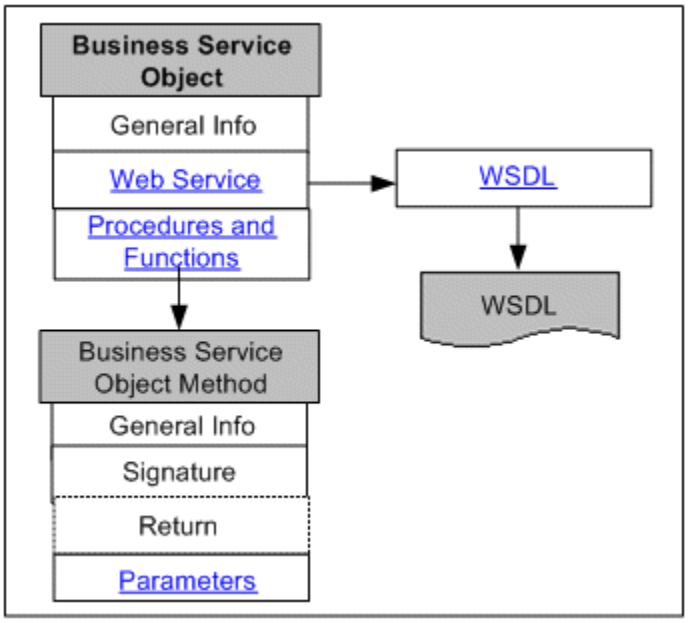
Business Service Object

Business service object interface type, formerly known as service bean, provides the access to SOA services and facilitates integration between Oracle Applications and trading partners. They can be used directly, or they can be exposed as *Web services.* They often employ *service data objects* as parameters to pass complex data.

A service data objects (SDO) defines a generic API for accessing and manipulating structured data as part of a Service Oriented Architecture (SOA). It is designed to simplify and unify the way in which applications handle data. The SDO API is independent of the actual data source. For example, SDO can be used to access XML data or SQL data. For more information about SDO, see Reviewing Service Data Objects, page 4-29.

> **Note:** A business service object is not actually an interface type; rather, it is an object used by one or more Java service interfaces or other service data objects to pass data. Oracle Integration Repository includes it on lists of interface types, so you can browse or search for Java service interfaces based on the business service objects that they use.

The following diagram illustrates the basic structure of the business service object interface information page and its connections to related pages:



Business Service Object Interface Information

The business service object interface information page contains the following information:

- **Web Service - Web Service Region**

  The Web Service - Web Service Provider region provides a link to a page containing the Web service WSDL code.

  See Business Service Object Web Service Region, page 4-26.

Note: For more information about Web services, see Viewing Web Services, page 2-1.

- **Methods Region**

  The Methods region links to one or more business service object Method information pages.

Business Service Object Interface Information Page

The general section displays common information, page 4-1 for the selected business service object interface, plus interface name, the interface that extends, and XML schema information:

An XML schema is a description of a type of XML document, typically expressed in terms of constraints on the structure and content of documents of that type. It describes all input and output message definition and data type.

Click the XML schema link that is associated with your selected business service object to view the XML schema document displayed in a separate window.

This information page or interface details page includes a table listing the business service object interface methods. Click a method name to access the information page for that method.

Note: In the list of methods, you can select one or more methods and specify which users can execute them.

Business Service Object Web Service Region

Unlike XML Gateway Map interface type that can be service enabled by both Web Service Provider (in an earlier release) and SOA Provider (in this release), business service object interface type is service enabled only through Web Service Provider, not by SOA Provider.

When a service is generated successfully for a given business service object, the Web Service - Web Service Provider region appears with a WSDL link allowing you to review its WSDL file. If the service has been deployed, then a deployed WSDL link is also available for your review.

See: Reviewing Web Service WSDL Source, page 4-8.

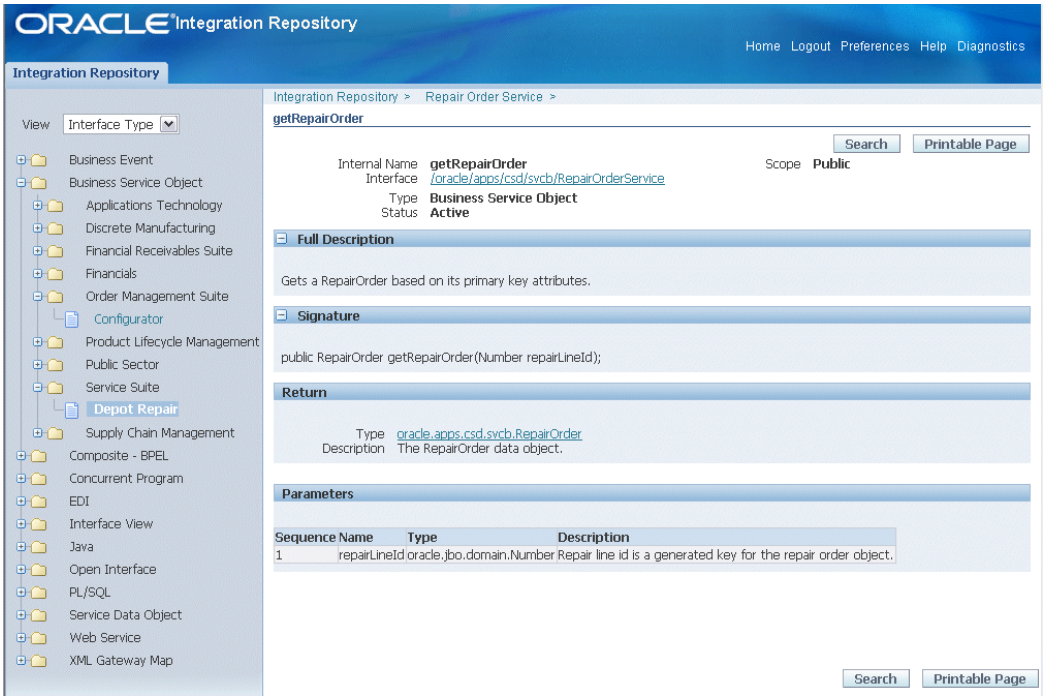
Additionally, integration repository administrators (or users with the integration repository administrator role) can find **Deploy Web Service** in this region to deploy the service. When the service is successfully deployed, **Redeploy Web Service** is shown for redeploying the services if needed.

See: Performing Additional Web Service Activities, page 4-12.

Business Service Object Interface Method Information

The business service object interface method information page appears when you click a method name on the business service object interface information page.

Business Service Object Method Information Page



In addition to common information, page 4-1, the general section of the method information page contains a link to the interface that uses this method.

The following regions also appear on the method information page:

- **Signature**

  The region describes the interface method, parameter type, value, and return information.

- **Return**

  If the return type is a service data object, you can click the link in the **Type** field to access the service data object information page.

- **Parameters**

  If a parameter is a service data object, you can click the link in the **Type** column to access the service data object information page.

  Integration repository administrators (or users with the integration repository administrator role) can find the **Create Grant** button available which allows the administrators to grant the access of selected methods to a specific user, user group, or all users. See: Managing Grants, page 4-13.

Integration Repository Service

Based on business service object interface, Integration Repository Service is a service component residing in Oracle Integration Repository. It queries Integration Repository data, and provides information about all the interface definitions to facilitate the integration between Oracle Applications and trading partners.

When you search for Integration Repository Service through the business service object interface type, all business service objects contained in the Integration Repository Service are displayed. You can grant the control access of each business service object method to appropriate users.

To access the Integration Repository Service interface, log on to Oracle Integration Repository and use the following steps to navigate to Integration Repository Service:

1. Select Integration Repository responsibility from the Navigator menu, and click the Integration Repository link that appears.

2. Click **Search**.

3. Enter the following information in the Search page:

   - Product Family: Application Technology

   - Interface Type: Business Service Object

4. Click **Go** to execute the search.

5. Click **Integration Repository Service** link from the search result table.

   This opens the Business Service Object Interface information page. If the service is exposed as Web service for Integration Repository Service, the Web Service region also appears.

   See: Business Service Object Interface information page, page 4-24.

6. Click a method name link in the Methods region to get to business service object method details.

   See: Business Service Object Method Information, page 4-26.

7. Integration repository administrators can find **Create Grant** displayed in the Methods region.

   Select a method name and click **Create Grant**, you can grant the control access of a selected business service object interface method to appropriate users.

   See: Managing Grants, page 4-13.

Reviewing Service Data Object

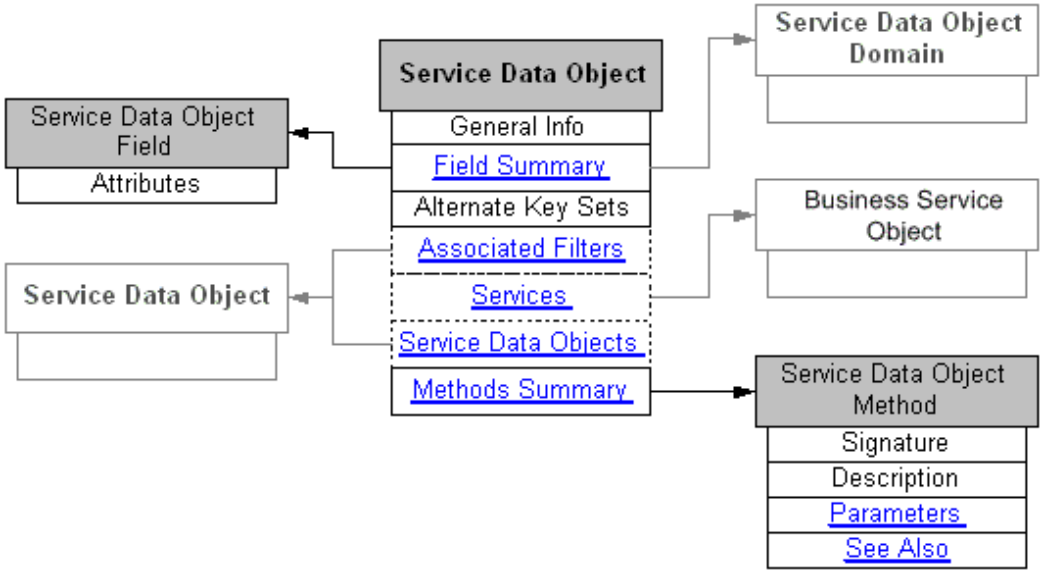
A service data objects (SDO) defines a generic API for accessing and manipulating structured data as part of a Service Oriented Architecture (SOA). It is designed to simplify and unify the way in which applications handle data. The SDO API is independent of the actual data source. For example, SDO can be used to access XML data or SQL data.

The data objects associated with business service objects include *service data objects* (SDO) and *filter data objects* (FDO).

Service Data Object Information

This page is accessible from the `getDataList` and `processDataList` method information pages. You can also access it directly from the Oracle Integration Repository browse interface, through the list of interface types.

The following diagram illustrates the basic structure of the service object information page and its connections to related pages.



The general section of the service data object page displays common information, page 4-1, plus the data object class name, implementation name, and its associated XML schema.

Click the XML schema name link to view the schema document displayed in a separate window.

Service Data Object Information Page

The following regions also appear on the service object information page:

- **Fields**

  Click a link in the **Name** column to view the field's complete attributes.

  If the field type is a filter, you can click the link in the **Type** column to access the filter data object information page for that filter.

- **Alternate Key Sets**

These are the key sets that can be used to identify an instance of this data object in the absence of the primary keys. These key sets are evaluated in the sequence specified.

- **Filters**

  The Filters region lists filters that can be used to filter data sources based on this service data object.

  For example, data sources based on BaseDataSourceNameDomain service data object can be filtered by BaseDataSourceNameFilter filter data object.

  Click the name of a filter (such as BaseDataSourceNameFilter) to access the selected filter data object information page.

- **Services**

  The Services region lists the services that directly use this service data object.

  Click the name of a service to access the information page for a business service object interface that uses this service object.

- **Service Data Objects**

  This Service Data Objects region lists the data objects that directly reference this service data object.

  Click the name of a service data object to access its information page.

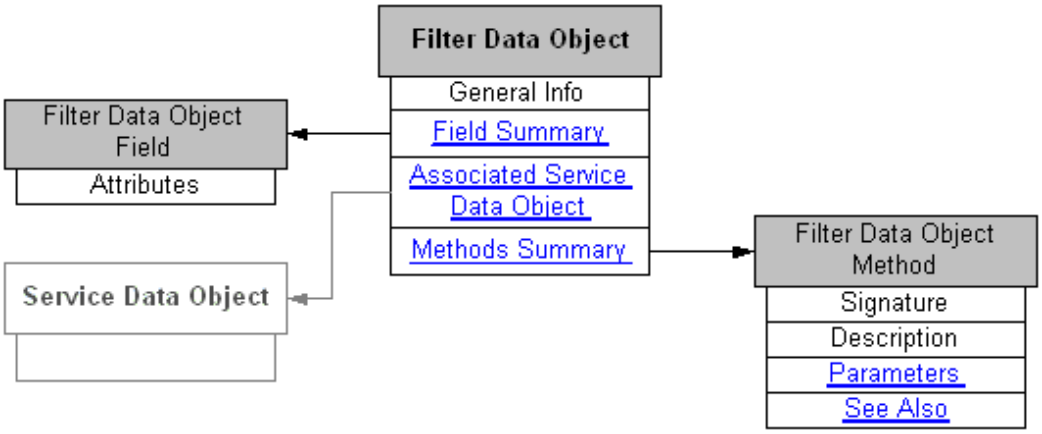
- **Methods**

  Click a link in the **Name** column to access the service object method information page.

Filter Data Object Information

This page is accessible only from the `getDataList` method information page.

The following diagram illustrates the basic structure of the filter data object information page and its connections to related pages.



A filter data object is a type of service object. The general section of the filter data object page displays common information, page 4-1, plus the data object class name, implementation name, filter type, and its associated XML schema information.

Note: There are two types of filter:

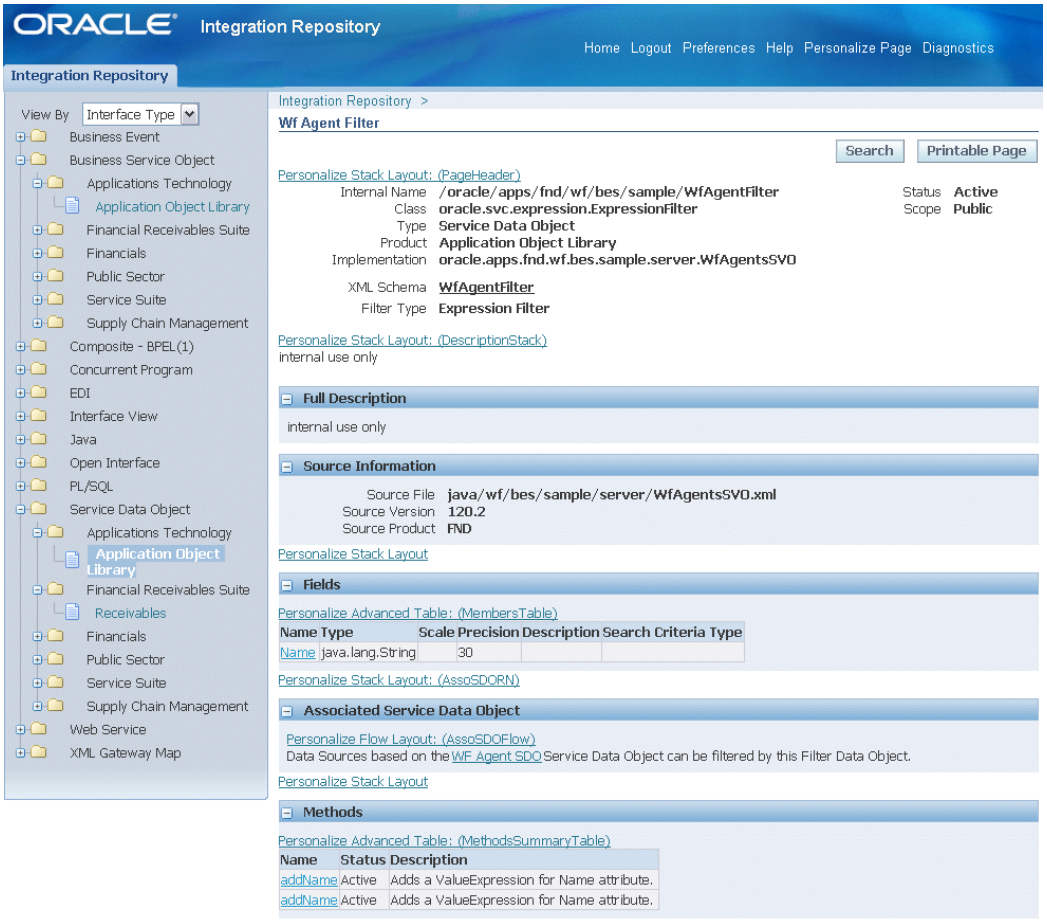
- Expression Filter: Allows a client program to construct a simple or complex expression, including nested expressions.

- Fixed Filter: Allows a simple list of attributes. This is used when the view object must do custom processing of filter attributes and the client program should not be allowed to build nested and complex filter expressions.

For more information on filters, see *Oracle Application Framework Developer's Guide*, available from My Oracle Support Knowledge Document 565870.1, Oracle Application Framework Release Notes, Release 12.1.1.

Click the XML schema name link to view the schema document displayed in a separate window.

Filter data object information page



The following regions also appear on the service object information page:

- **Fields**

  Click a link in the **Name** column to view the field's complete attributes.

- **Associated Service Data Object**

  This region describes the associated service data object name that can be filtered by this selected filter data object.

  Click the name of a service data object to access the service data object information page.

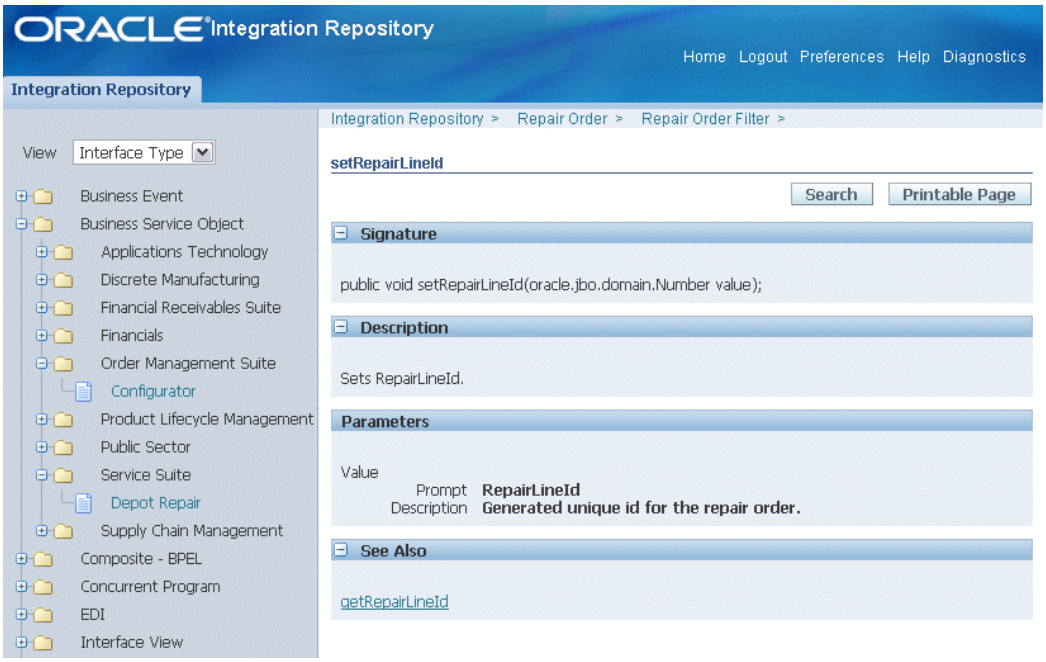
- **Methods**

  Click a link in the **Name** column to access the object method information page.

Service Data Object Method Information

The type of information provided for filter data object methods is the same as for service data object methods. The data object method information page appears when you click a method name on the service data object information page or the filter data object information page.

Service Data Object Method Information Page



In addition to a description, the following regions also appear on the service data object method information page:

- **Signature**

  This region describes the interface method, parameter type, value, and return type information.

- **Parameters**

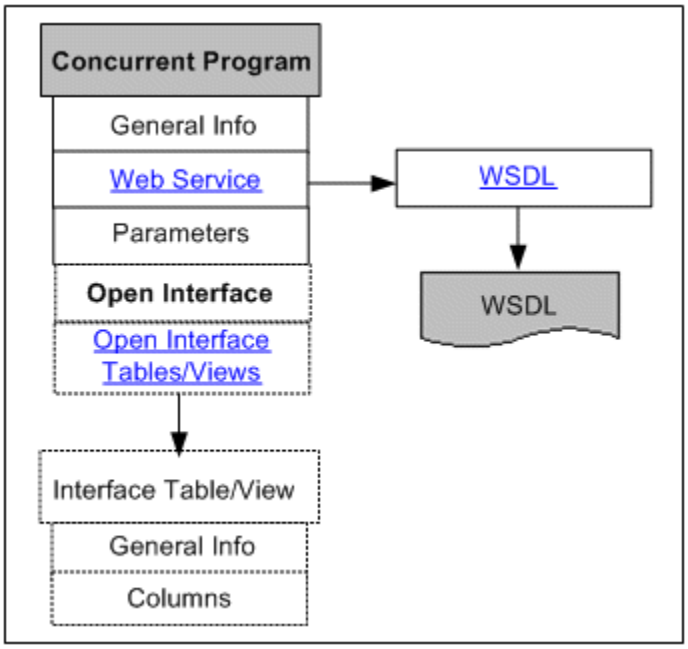
  This region contains descriptions of the parameters that are listed in the Signature region.

- **See Also**

  This region displays related service object methods. Click a related object method link to access the selected service object method details.

Concurrent Program Information

The following diagram illustrates the basic structure of the concurrent program information page.



The concurrent program details page contains the following information:

- **Web Service - SOA Provider Region**

  If the concurrent program is exposed as a Web service, the Web Service - SOA Provider region will be available. This region provides a link to a page containing the Web service WSDL source code.

  For more information about Web Services, see

  - Understanding Web Services, page 2-1
  - Common Information on Web Services, page 4-6
  - Reviewing Web Service WSDL Source, page 4-8

- **Methods Region**

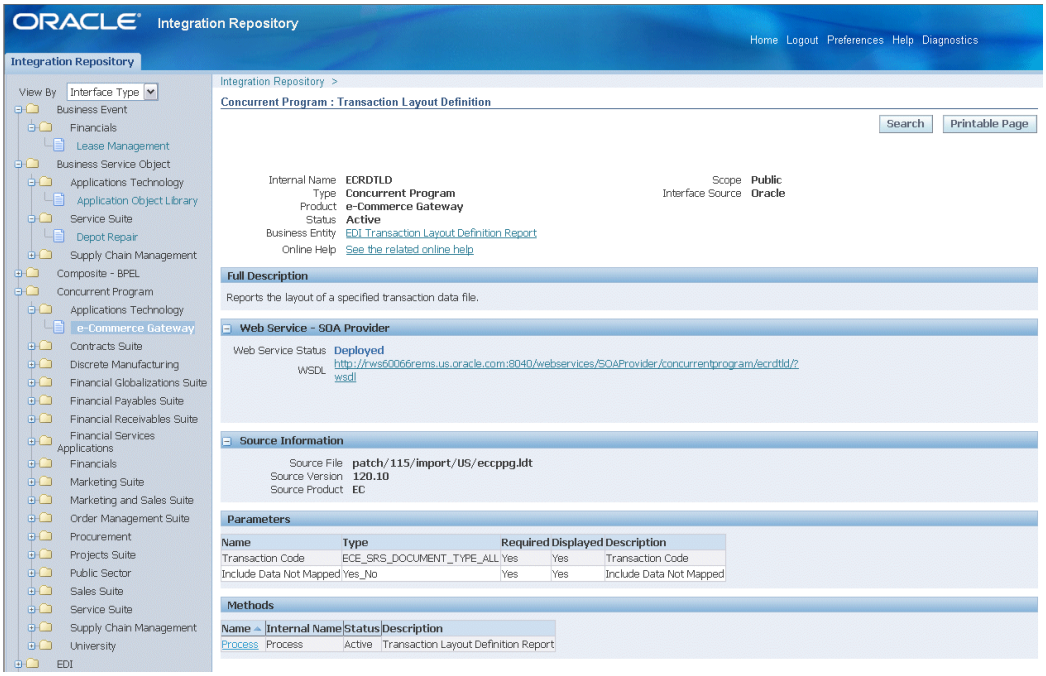
  The Methods region displays its associated method information.

  Integration repository administrators can create security grants by authorizing the access permission for a selected method name to an appropriate user, a user group, or all users. See Managing Grants, page 4-13.

Note: Since Oracle Integration Repository does not support Open Interface Tables and Views for service enablement, if a concurrent program is linked to Open Interface tables or views, this concurrent program will be viewed and displayed under the Open Interface category and cannot be service enabled.

For more information about the Open Interface integration type, see Open Interface Information, page 4-36.

Concurrent program information page



The general section of the concurrent program information page displays common information, page 4-1.

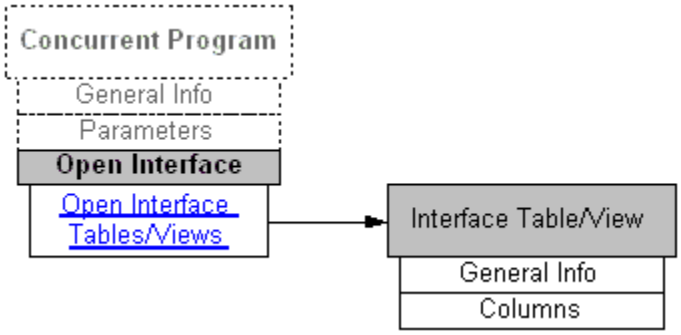
In the Parameters region, the parameters used in the selected interface are listed in a table. It includes parameter name, parameter type, required or not, displayed or not, and description information.

Note: The Type and Displayed columns are parameters used by Standard Report Submission (SRS).

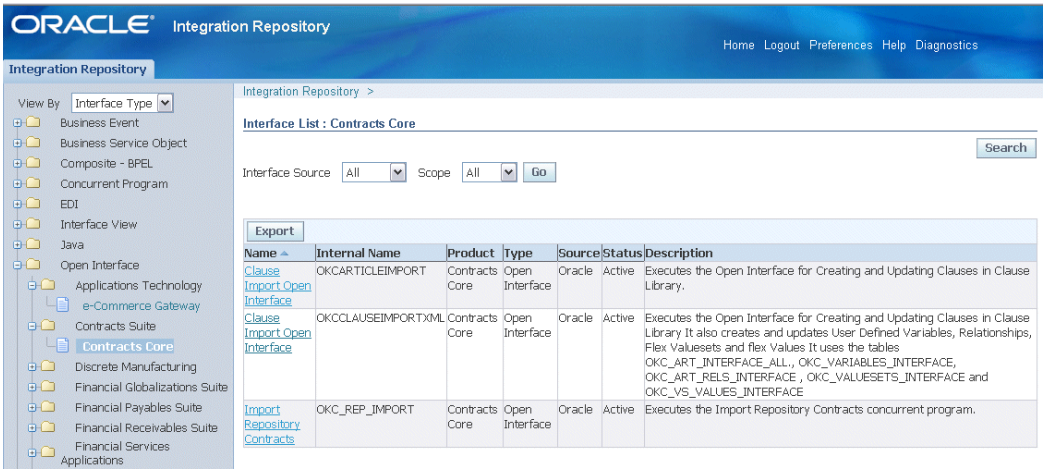
Open Interface Information

Open interface integrations are always implemented using concurrent programs, so open interface information is listed in a region on a concurrent program information

page. The following diagram illustrates the basic structure of the open interface information region and its connection to the related interface table information page.



Open Interface table list

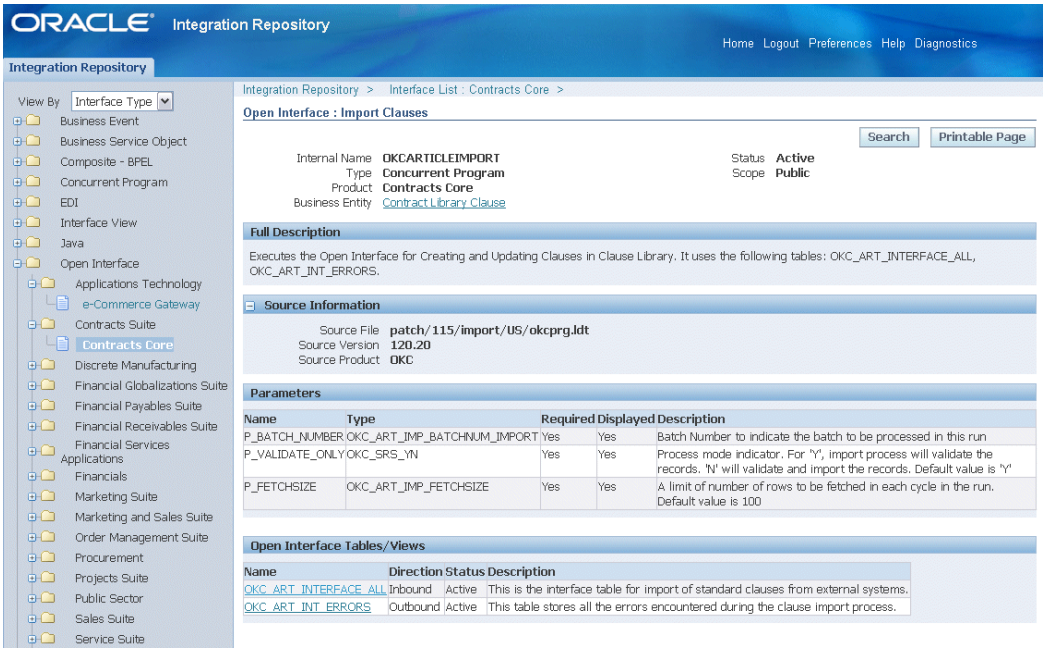


The Open Interface information table lists the open interface tables and views that store the interface data, including active status, and whether it stores data inbound to Oracle E-Business Suite or outbound to another system. Click an interface table name to access the information page for that table.

Interface Table Information

The interface table information page appears when you click an Open Interface table name on a concurrent program information page.

Open Interface table information page



The general section of this page displays common information, page 4-1 for the selected interface table.

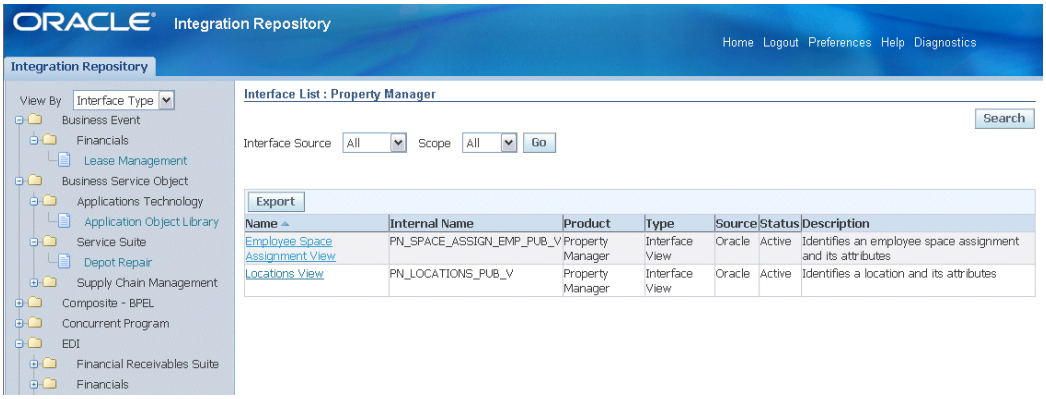
By clicking a name link in the Open Interface Tables/Views region, you will find the selected table details displayed in a separate page. This open interface details page contains a table listing the interface table columns and their attributes, including a table column data type, data length, data precision, and data scale for each column, and whether the column is required or not.

Open Interface Table Details

Interface View Information

The general section of the interface view information page displays common information, page 4-1 for the selected interface view.

Open Interface View List



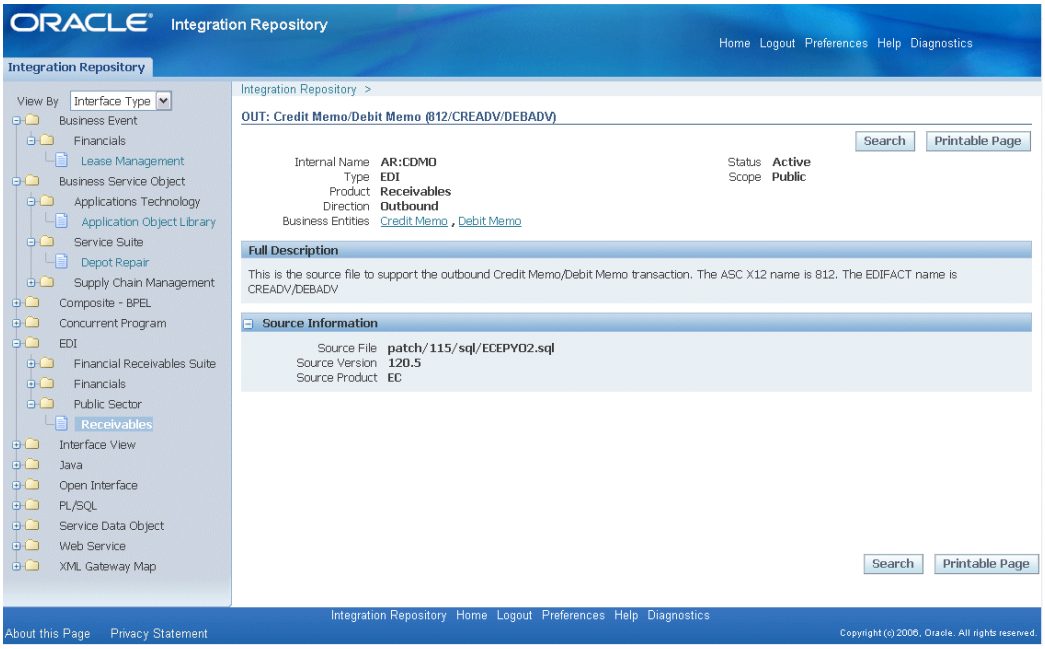
Interface View Information Page

This page also contains a table listing the interface view columns and their attributes, including the data type, data length, data precision, and data scale for each view column.

EDI Message Information

The general section of the EDI message information page displays common information, page 4-1 for the selected EDI message.

EDI message information page

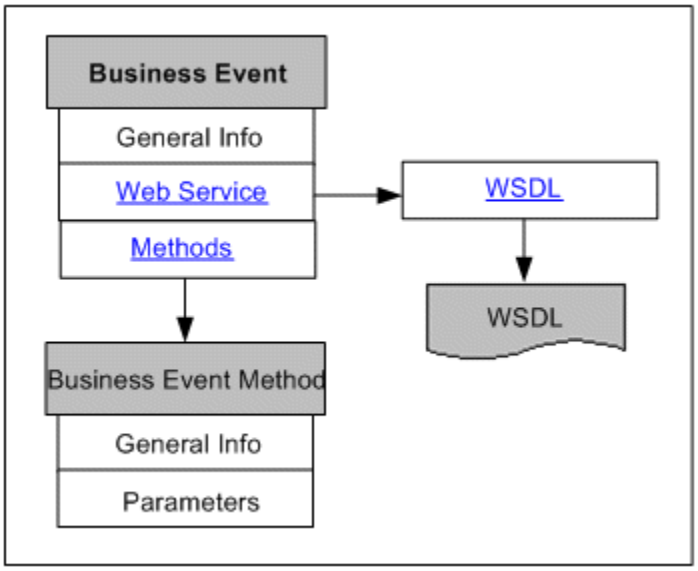


The EDI Message information page also displays the message direction in the Direction field:

- `Inbound` indicates that the interface is for receiving an incoming transaction or message into Oracle E-Business Suite.
- `Outbound` indicates that the interface is for sending an outgoing transaction or message to another system.

Business Event Information

The following diagram illustrates the basic structure of the Business Event information page and its connection to related pages:



The Business Event information page contains the following information:

- **Web Service - SOA Provider Region**

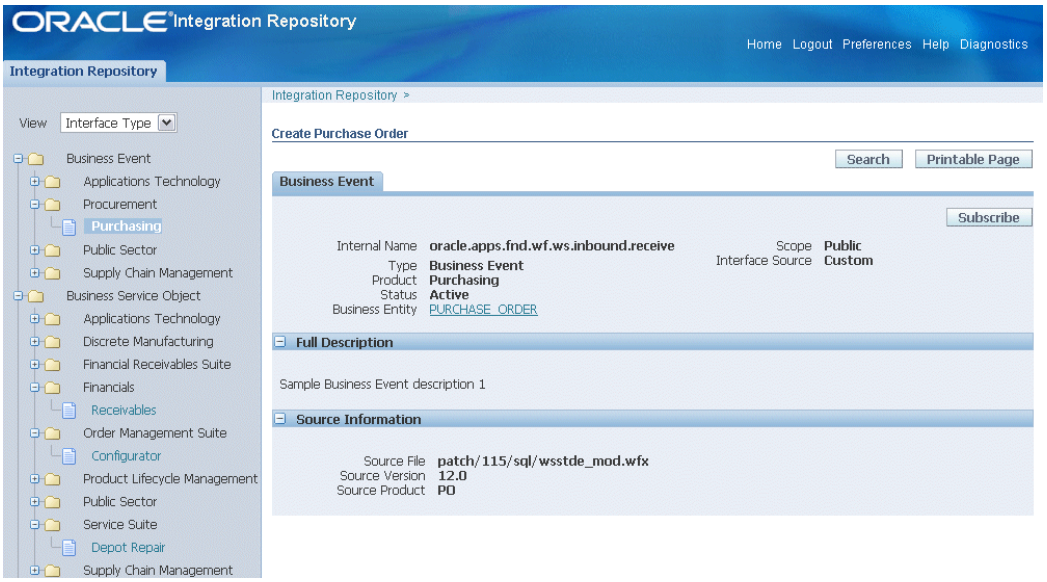
  If the business event is exposed as a Web service, the Web Service - SOA Provider region will be available. This region provides a link to a page containing the Web service WSDL source code.

  For more information about Web Services and service enablement, see

  - Understanding Service Enablement, page 2-1
  - Common Information on Web Services, page 4-6
  - Reviewing Web Service WSDL Source, page 4-8

- **Methods Region**

  The Methods region links to one or more Business Event Method information pages.



The general section of the Business Event displays common information, page 4-1 for business event.

The Business Event interface details page includes a table listing the business event methods. Click a method name to access the information page for that method.

Business Event Method Information

The business event method information page appears when you click a method name on the Business Event information page.

All business event listed here are all outbound events.

Integration repository administrators can find the following buttons available to perform administrative tasks:

- **Subscribe**: This allows the administrators to subscribe to the event.

  Subscribing to an outbound business event creates an event subscription with Out Agent. Once the event subscription has been successfully completed, a confirmation message appears. Additionally, the **Unsubscribe** button appears in the details page allowing you to remove or unsubscribe the event.

  For more information about subscribing to business events, see Subscribing to Business Events, *Oracle E-Business Suite Integrated SOA Gateway Implementation Guide*.

- **Create Grant**: This allows the administrators to grant appropriate users the access of a selected business event method.

  See: Managing Grants, page 4-13.

5

Working With Composite Services

This chapter covers the following topics:

- Overview of Composite Services
- Viewing Composite Services
- Downloading Composite Services

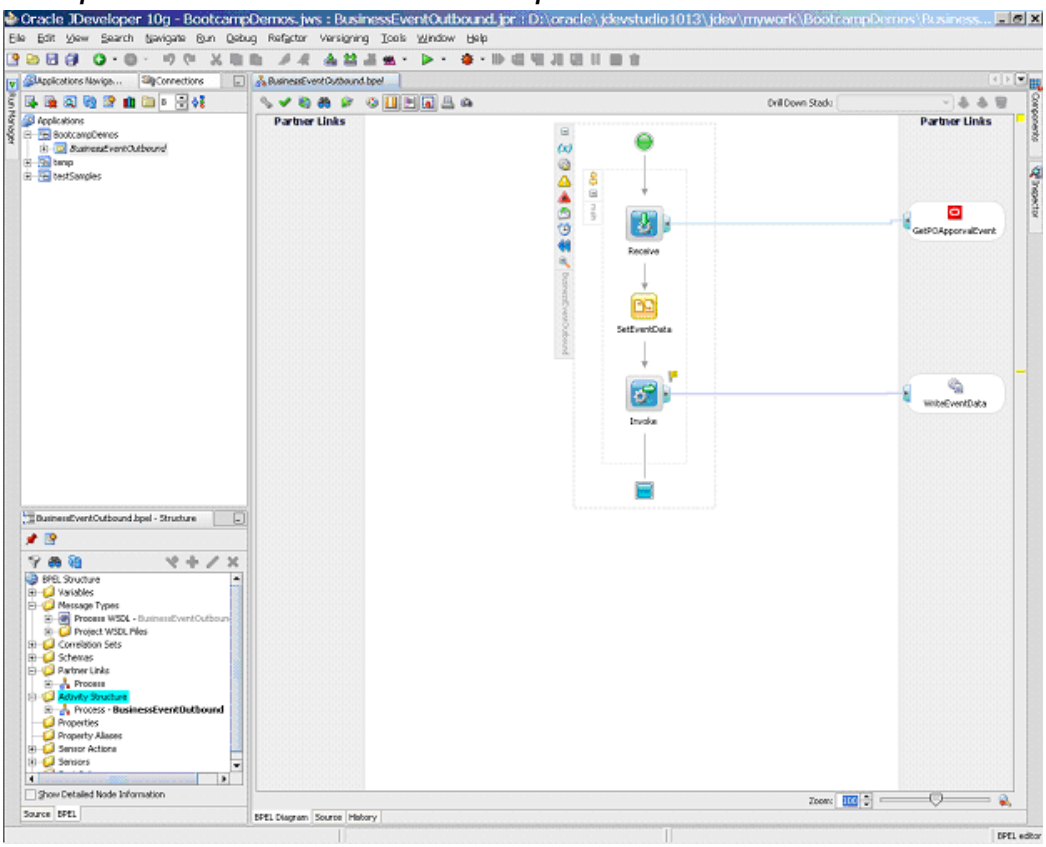
Overview of Composite Services

A composite service consists of a collection of native packaged public interfaces or called native services that belong to a specific product or product family and are available in the Integration Repository.

Composite services use the native service as building blocks to construct the sequence of business flows. Basically, this interface type orchestrates the invocation sequence of discrete Web services into a meaningful end-to-end business process through a Web service composition language BPEL (business process execution language). For example, use Oracle BPEL Process Manager (BPEL PM) to integrate the Order to Receipt business process that contains sales order entry, item availability check, pack and ship, and invoice to Accounts Receivable sub processes handled by various applications. This approach effectively tightens up the control of each individual process and makes the entire business flow more efficiently.

To create a composite service, integration developers need to specify the invocation sequence in Oracle JDeveloper by using the BPEL language. This composite service has its own WSDL definition and endpoint through the creation of a partner link which allows an outbound business event, for example, to be published to the Oracle BPEL Process Manager or to interact with a partner service.

A Composite Service - BPEL in Oracle JDeveloper



How to create and administer composite services, see *Oracle E-Business Suite Integrated SOA Gateway Developer's Guide* and *Oracle E-Business Suite Integrated SOA Gateway Implementation Guide* for details.

> **Note:** Since composite services can be designed and created in Oracle JDeveloper and Oracle Eclipse, based on the different creation methods, composite services can have various composite types such as BPEL, ESB (enterprise service bus), or SCA (service component architecture) types. BPEL and ESB are the typical composite interface types designed using Oracle JDeveloper. However, composite service - BPEL is the only composite service type supported in this release.

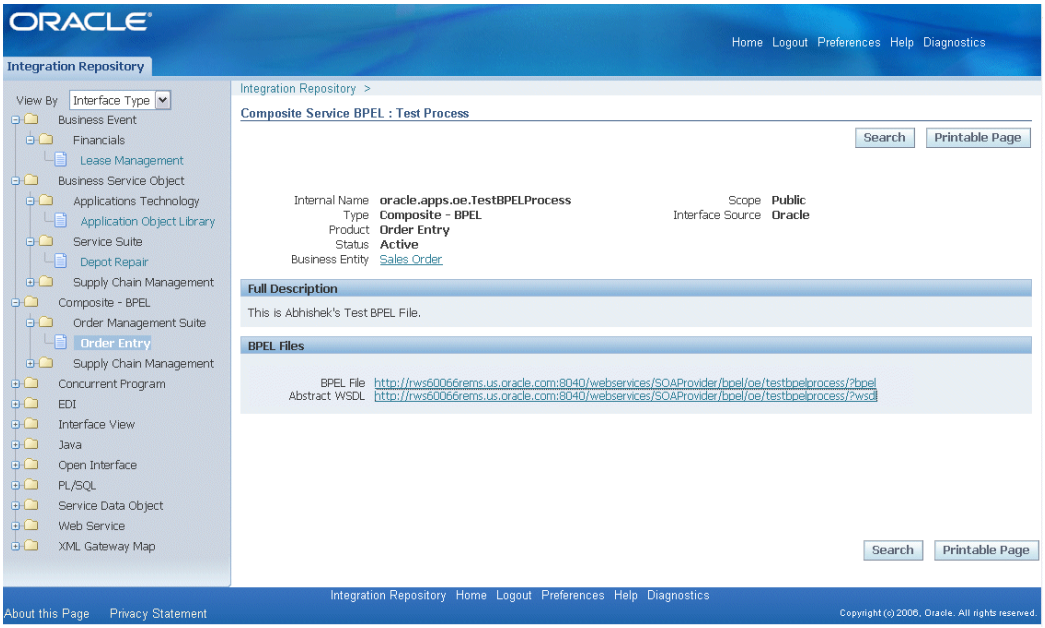
Viewing Composite Services

You can view composite services by navigating to the Composite Service interface type directly from the Oracle Integration Repository Browser window or performing a search by selecting Composite Service interface type in the Search page.

By clicking a composite service name link from the navigation tree or search results,

you will find the composite service interface details page where displays composite service name, description, BPEL file, and other annotated information.

Composite Service Details Page



The composite service details page allows you to perform the following tasks in the BPEL Files region:

- View a WSDL file by clicking the URL link

  See: Reviewing Web Service WSDL Source, page 4-8.

- View the composite - BPEL file by clicking the URL link

  You will find the BPEL code displayed in a pop-up window containing major BPEL process components and activities included for the composite service.

Users granted with the Download Composite Service privilege can find additional **Download Service** in the interface details page. This lets you download a corresponding composite service project file, such as a BPEL file, to your local machine.

See: Downloading Composite Services, page 5-4.

It is important to note that a composite service - BPEL itself consisting of multiple native services is considered as a Web service. Therefore, there is no **Generate** or **Regenerate** shown in the composite service details page.

To view a composite service:

1. Log on to Oracle Integration Repository with the Integrated SOA Gateway responsibility. Select the Integration Repository link.

2. In the Integration Repository tab, select 'Interface Type' from the View By drop-down list.

3. Expand the Composite Service interface type node to locate your desired composite service.

4. Click the composite service that you want to review to open the Composite Service Interface Details page.

5. Click the WSDL link to review the WSDL description.

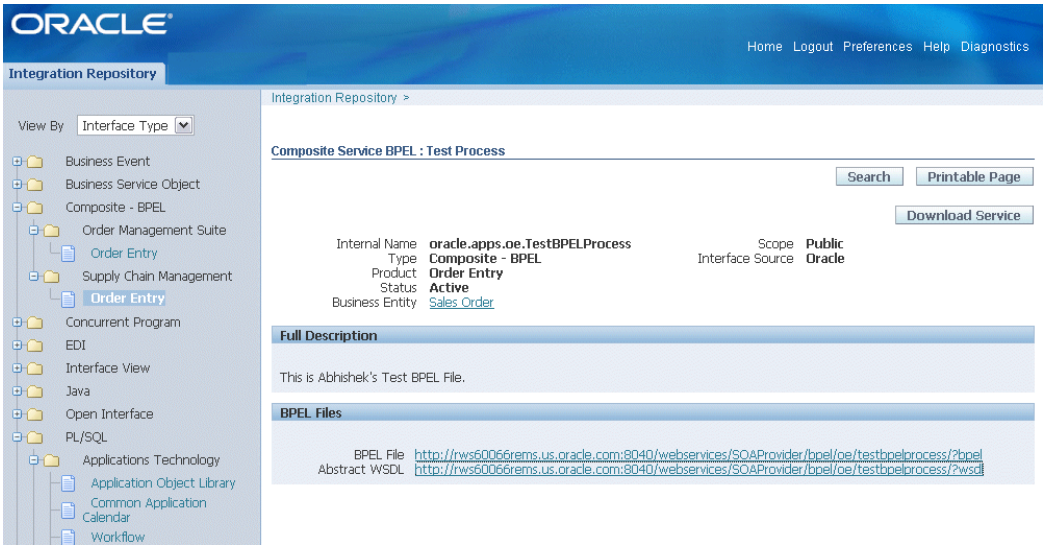
6. Click the BPEL link to view the BPEL code.

Downloading Composite Services

In addition to viewing composite service details and reviewing a WSDL file, users with the download privilege can download a composite service BPEL .JAR file to your local directory.

> **Important:** In general, only system integration developers and integration repository administrators can download the composite services. However, general users (system integration analysts) who are granted the download privilege, an Integration Repository Download Composite Service permission set FND_REP_DOWNLOAD_PERM_SET, can also perform the download action. Otherwise, users will not find **Download Service** available in the details page. See *Oracle E-Business Suite Integrated SOA Gateway Implementation Guide* for details.

Composite Details Page with Download Privilege



To download the relevant files aggregated in a .JAR file for a composite service BPEL project, navigate to the composite service details page for a service that you want to download, and then click **Download Service** to download the file to your local machine.

> **Note:** After downloading the file, system integration developers can unzip the BPEL .JAR file and open the BPEL process in Oracle JDeveloper for further modification on service endpoints if needed. Additionally, the developers can deploy the BPEL process. Since composite services are typically not deployed within Oracle E-Business Suite, a separate BPEL PM (SOA Suite or a third party BPEL PM server) is needed to deploy the BPEL composite services. For example, the developers can deploy it to Oracle BPEL server through Oracle BPEL Process Manager. See *Oracle E-Business Suite Integrated SOA Gateway Developer's Guide* for details.

To download a composite service:

1. Log on to Oracle Integration Repository with the username granted with the download composite service privilege. Select the Integrated SOA Gateway responsibility from the navigation menu and then select the Integration Repository link.

2. In the Integration Repository tab, select 'Interface Type' from the View By drop-down list.

3. Expand the Composite Service interface type node to locate your desired composite service.

4. Click the composite service that you want to download it to open the Composite Service Interface Details page.

5. Click **Download Service** to download the selected composite file to your local machine.

Glossary

Agent

A named point of communication within a system.

Agent Listener

A type of service component that processes event messages on inbound agents.

BPEL

Business Process Execution Language (BPEL) provides a language for the specification of executable and abstract business processes. By doing so, it extends the services interaction model and enables it to support business transactions. BPEL defines an interoperable integration model that should facilitate the expansion of automated process integration in both the intra-corporate and the business-to-business spaces.

Business Event

See Event.

Concurrent Manager

An Oracle Applications component that manages the queuing of requests and the operation of concurrent programs.

Concurrent Program

A concurrent program is an executable file that performs a specific task, such as posting a journal entry or generating a report.

Event

An occurrence in an internet or intranet application or program that might be significant to other objects in a system or to external agents.

Event Activity

A business event modelled as an activity so that it can be included in a workflow process.

Event Data

A set of additional details describing an event. The event data can be structured as an XML document. Together, the event name, event key, and event data fully communicate what occurred in the event.

Event Key

A string that uniquely identifies an instance of an event. Together, the event name, event key, and event data fully communicate what occurred in the event.

Event Message

A standard Workflow structure for communicating business events, defined by the datatype `WF_EVENT_T`. The event message contains the event data as well as several header properties, including the event name, event key, addressing attributes, and error information.

Event Subscription

A registration indicating that a particular event is significant to a system and specifying the processing to perform when the triggering event occurs. Subscription processing can include calling custom code, sending the event message to a workflow process, or sending the event message to an agent.

Function

A PL/SQL stored procedure that can define business rules, perform automated tasks within an application, or retrieve application information. The stored procedure accepts standard arguments and returns a completion result.

Integration Repository

Oracle Integration Repository is the key component or user interface for Oracle E-Business Suite Integrated SOA Gateway. This centralized repository stores native packaged integration interface definitions and composite services.

Interface Type

Integration interfaces are grouped into different interface types.

Loose Coupling

Loose coupling describes a resilient relationship between two or more systems or organizations with some kind of exchange relationship. Each end of the transaction makes its requirements explicit and makes few assumptions about the other end.

Lookup Code

An internal name of a value defined in a lookup type.

Lookup Type

A predefined list of values. Each value in a lookup type has an internal and a display name.

Message

The information that is sent by a notification activity. A message must be defined before it can be associated with a notification activity. A message contains a subject, a priority, a body, and possibly one or more message attributes.

Message Attribute

A variable that you define for a particular message to either provide information or prompt for a response when the message is sent in a notification. You can use a predefine item type attribute as a message attribute. Defined as a 'Send' source, a message attribute gets replaced with a runtime value when the message is sent. Defined as a 'Respond' source, a message attribute prompts a user for a response when the message is sent.

Notification

An instance of a message delivered to a user.

Notification Worklist

A Web page that you can access to query and respond to workflow notifications.

Operation

An abstract description of an action supported by a service.

Port

A port defines an individual endpoint by specifying a single address for a binding.

Port Type

A port type is a named set of abstract operations and abstract messages involved.

Process

A set of activities that need to be performed to accomplish a business goal.

Service

A service is a collection of related endpoints.

Service Component

An instance of a Java program which has been defined according to the Generic Service Component Framework standards so that it can be managed through this framework.

SOA

Service-oriented Architecture (SOA) is an architecture to achieve loose coupling among interacting software components and enable seamless and standards-based integration in a heterogeneous IT ecosystem.

SOAP

Simple Object Access Protocol (SOAP) is a lightweight protocol intended for exchanging structured information in a decentralized, distributed environment. It uses XML technologies to define an extensible messaging framework providing a message construct that can be exchanged over a variety of underlying protocols.

Subscription

See Event Subscription.

Web Services

A Web service is a software system designed to support interoperable machine-to-machine interaction over a network. It has an interface described in a machine-processable format (specifically WSDL). Other systems interact with the Web service in a manner prescribed by its description using SOAP-messages, typically conveyed using HTTP with an XML serialization in conjunction with other Web-related standards.

Workflow Engine

The Oracle Workflow component that implements a workflow process definition. The Workflow Engine manages the state of all activities for an item, automatically executes functions and sends notifications, maintains a history of completed activities, and detects error conditions and starts error processes. The Workflow Engine is implemented in server PL/SQL and activated when a call to an engine API is made.

WSDL

Web Services Description Language (WSDL) is an XML format for describing network services as a set of endpoints operating on messages containing either document-oriented or procedure-oriented information. The operations and messages are described abstractly, and then bound to a concrete network protocol and message format to define an endpoint.

WS-Addressing

WS-Addressing is a way of describing the address of the recipient (and sender) of a message, inside the SOAP message itself.

WS-Security

WS-Security defines how to use XML Signature in SOAP to secure message exchanges, as an alternative or extension to using HTTPS to secure the channel.

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