**Oracle® Application Integration Architecture
for Communications 2.0:
Release Notes**

Release 2.0
**Part No. E11063-01**

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Oracle AIA for Communications 2.0: **Release Notes**

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# Contents

# Release Notes for Oracle Application Integration Architecture for Communications 2.0 Preface

This document provides an overview of the value proposition that is associated with the features and enhancements for Oracle Application Integration Architecture for Communications 2.0. It is intended to help you assess the business benefits of Oracle Application Integration Architecture for Communications 2.0 and to plan your information technology (IT) projects and investments.

# Oracle Application Integration Architecture for Communications Value Proposition

This document provides an overview of the value proposition that is associated with Oracle's Application Integration Architecture (AIA) for Communications, and specifically the process integration packs (PIPs) introduced with AIA for Communications. AIA for Communications is release 2.0 of AIA, and introduces three new process integration packs, which are described in more detail in subsequent sections of this document.

The PIPs in AIA for Communications introduce pre-built integrations between the following applications:

- Siebel CRM and Oracle Communications Billing and Revenue Management (BRM)

- Oracle BRM and E-Business Suite (for General Ledger)

This document describes the business processes supported for each of the three PIPs. The document also describes any new or changed functionality implemented for the participating applications (Siebel CRM and Oracle BRM) to support the PIPs. Existing functionality from prior releases is not described.

## AIA for Communications Overview

The Oracle Application Integration Architecture (AIA) release provides customers with the ability to orchestrate, monitor, and manage cross-functional business processes that span multiple applications. By definition, Oracle AIA is a distributed composite business process application that leverages existing application component services (web services), native SOA technologies, enterprise business objects, and enterprise business services to deliver pre-built and integrated business processes that can be easily extended and monitored.

The AIA for Communications release (AIA 2.0) provides a pre-built set of integrated orchestration flows, application integration logic, extensible enterprise services, and objects required to manage the state and execution of key business processes targeted specifically at the communications industry. AIA for Communications 2.0 addresses the following key business processes:

- Product Management: provides support for product and price synchronization between the CRM and Billing system.

- Order Management: automates the order management process between CRM and Billing system. Includes taking an order within CRM and initiating billing on the ordered services.

- Customer Management: automates the synchronization of customer accounts between CRM and billing systems. This is accomplished during the order management process.

- Agent Assisted Billing Care: provides real-time access to the most critical billing information from within the CRM system.

- Revenue Accounting: supports the GL integration between billing and ERP systems.

Support for these business processes is introduced with the following three PIPs:

- Siebel CRM Integration Pack for Oracle Communications Billing and Revenue Management: Order to Bill. Includes support for product, order, and customer management processes.

- Siebel CRM Integration Pack for Oracle Communications Billing and Revenue Management: Agent Assisted Billing Care. Includes support for customer management and agent-assisted billing care processes.

- Oracle Communications Billing and Revenue Management Integration Pack for Oracle E-Business Suite: Revenue Accounting. Includes support for using Oracle General Ledger as an accounting engine on top of Oracle BRM.

Each of the PIPs are sold as a separately licensed packaged offering and is described in more detail in subsequent sections of this document.

Each PIP consists of the following components:

- Enterprise business objects (EBO): an EBO is a standard business data object definition used in the canonical data model. It contains components that satisfy the requirements of business objects from best of breed application data models and is application independent. EBOs are used by AIA to enable integration of many applications rather that point-to-point integrations, which become inefficient if there are more than two participating applications.

- Enterprise business services (EBS): an EBS provides the web service implementation of the EBO. An EBS is application-independent and performs the functions required by the generic business service. The primary purpose of the EBS is as follows:

  - To receive the request from the calling application.

  - To identify the implementation as well as the deployment that is responsible for providing the requested service.

  - To delegate the requested task to the right implementation.

  - To receive the response and return the enterprise business message (EBM) to the calling application.

- Enterprise business messages (EBM): an EBM acts as the container for the EBOs for an enterprise business service operation. At least one corresponding EBM will exist for each EBO supported by the PIPs.

- Application business connector services (ABCS): an ABC service provides a bridge between the common object model, as defined by the EBOs, and the specific object definition of the participating application. The ABC service is responsible for performing the translating the EBS invocation (web service) to the appropriate API call(s) for the participating application (and vice versa). It is also within the ABC service where any application-specific logic can be performed. Out of the EBO, EBS and EBM, the ABC service is the only application-dependent component and as such, it functions as the abstraction layer.

The following application independent components of each PIP can be used by a service provider even if the provider is not using Siebel CRM or Oracle BRM:

- EBO

- EBM

- EBS

Purchasing the PIPs also provides customers license to any required application patches, as well as a restricted use license to the required Fusion Middleware components (for example, Oracle SOA Suite, Application Server, etc.)

## AIA 2.0 Enhancements

The AIA components introduced for the three PIPs that make up the AIA for Communications release are highlighted below in the sections that describe the individual PIPs. However, in addition to the new AIA PIPs, the AIA for Communications release (AIA 2.0) contains the following Lifecycle Management components that were not available with AIA 1.0.

- Oracle Universal Installer-based installation and deployment capabilities.

- Extensibility support for enterprise business objects, transformations, and routing rules.

- Business Service Repository to provide visibility into how various SOA assets are incorporated into the integration scenarios of a PIP.

- Composite Application Validation System to provide valuable web service test and validation capabilities.

- Centralized error resolution and handling across SOA Suite components to ensure that errors are routed to the appropriate person or trouble ticket system.

- Diagnostic framework and test scripts to assist customers, support, and development in resolving errors.

## AIA Positioning Statement

Application Integration Architecture enables best-of-breed applications to be assembled for composite business processes.

## AIA for Communications Positioning Statement

Oracle AIA for Communications unites the most complete suite of best-in-class communications applications based on market leading SOA-based middleware and productized, extensible integrations of mission critical business processes.

## AIA for Communications Value Proposition

Oracle AIA for Communications Application Integration Architecture delivers pre-built, mission-critical business process integrations, uniting the industry's most complete, best-in-class communications applications suite.

## AIA for Communications Key Messages and Proof Points

- Provide a comprehensive and accurate view of critical enterprise information:

  - Synchronize data from new and existing applications and processes on a robust open standards based platform.

  - Improve customer and product information, quality, and accuracy from pre-built real-time business process integrations.

  - Easily integrate third-party products through application independent design.

- Deliver compelling services and offerings faster:

  - Speed time to market with pre-built business process integrations based on best practice industry reference models.

  - Discover new revenue streams by analyzing cross-application usage and trend data.

  - Capture new opportunities by rapidly adapting business processes.

- Reduce implementation and operational cost:

  - Eliminate costly custom integrations with pre-built business process integrations based on best practices.

  - Accelerate adoption of SOA with pre-built SOA for Communications.

  - Simplify upgrades through common objects and services and well defined interfaces.

# Siebel CRM Integration Pack for Oracle Communications Billing and Revenue Management: Order to Bill

Integrated Applications:

- Siebel CRM 7.8.2.6

- Oracle BRM 7.3.1

The Communications Order to Bill PIP automates the order management process between Siebel CRM and Oracle BRM. The PIP includes support for the following key business processes:

- **Product Management:** provides support for product and price synchronization between Siebel CRM and Oracle BRM. Users initially define the base products (billing products) within Oracle BRM. The base products are automatically synchronized to Siebel CRM. Both batch and real-time synchronization flows are supported. After the base products are synchronized to CRM, users can define service bundles consisting of these products within Siebel, as well as create marketing promotions to create the commercial offers, contractual terms, and promotional pricing.

- **Order Management:** automates the order management process between Siebel CRM and Oracle BRM. This includes taking an order from within Siebel CRM, initiating billing on the ordered services within Oracle BRM, and creating and updating the CRM assets.

- **Customer Management:** automates the synchronization of customer accounts between Siebel CRM and Oracle BRM. The customer synchronization is accomplished as part of the order management process and provides support to create new customers or to update existing customers.

## AIA Components and Features

To support the key business processes described above, the Communications Order to Bill PIP includes the following AIA components:

### Enterprise Business Objects (EBO)

The Order to Bill PIP includes the following EBOs:

- Item

- Pricelist

- Sales Order

- Customer Party

## Enterprise Business Services (EBSs)

The Order to Bill PIP includes the following EBSs:

- SalesOrderOrchestrationEBS: performs various sales order orchestration related actions such as submitting an order to an order decomposition and orchestration service, and interfacing an order to a billing system.

- SalesOrderEBS: is callable from an order orchestration process to update order line status.

- InterfaceOrderToCustomerEBF: is callable from an orchestration process to create customer data referenced on an order.

- Item EBS: performs all item and product related actions, such as creating an item or product, updating an item or product, and synchronizing an item or product.

- Price List EBS: performs all price list related actions, such as creating a pricelist, updating a pricelist, synchronizing a pricelist, and synchronizing a pricelist line.

- Customer Party EBS: performs all customer related actions, such as creating, updating, and querying a customer party.

# Siebel CRM Application Features

The Siebel CRM application includes the following features to support the key business processes (product management, order management, and customer management) for the Order to Bill PIP:

- Product Management

  - New product import services to import products from Oracle BRM.

  - New Siebel Business Process definition for creating commercial bundles and commercial offers.

- Order Management

  - Support for multiple billing profiles on the quote, order, adjust, and asset lines.

  - Enhanced integration support for one-time charges, order history tracking, and move scenarios.

- Customer Management

  - Support for multiple billing profiles.

  - Support for multiple balance groups, balances, and details for an account.

  - New and enhanced web services for accounts, contacts, and billing profiles.

## Oracle BRM Application Features

The Oracle Communications BRM application includes the following features to support the key business processes (product management, order management, and customer management) for the Order to Bill PIP:

- Product Management

  - Batch export of products and discounts from Oracle BRM to Siebel CRM.

  - Real-time synchronization capabilities for new products or discounts defined in Oracle BRM.

  - Real-time synchronization for incremental updates to existing Oracle BRM products or discounts.

- Order and Customer management

  - New and modified APIs to support the integrated order management process.

  - New J2EE Connector Architecture (JCA) based adaptor to increase the performance and usability of CRM integration services.

  - Web Services Description Language (WSDL) for each supported operation.

## The Order to Bill PIP Value Proposition

The Communications Order to Bill PIP automates data synchronization across Oracle's Siebel CRM and Oracle BRM to ensure the accuracy and real-time availability of customer, billing, product, and pricing data for improved customer service and value.

## Communications Order to Bill Key Messages and Proof Points

- Consistency and accuracy of data and processes between CRM and billing systems:

  - Reduce errors through zero touch, integrated order management.

  - Ensure cross-application data consistency and accuracy through pre-built process integrations and automated billing provisioning.

  - Reduce exposure to stale data through automatic synchronization of customer data.

- Improve product lifecycle management:

  - Consistent and accurate product and pricing catalogs via automated synchronization.

  - Streamline concept-to-launch by harnessing combined strengths of Siebel CRM and Oracle BRM.

- Speed time to market of new services through integrated product and pricing catalogs.

- Reduce implementation and operational cost:

  - Keep costs low with pre-built, standards-based integrations between Siebel CRM and Oracle BRM that are adaptable to changing business needs.

  - Access a holistic view of the customer to drive higher quality and more efficient customer interactions.

  - Lower operational expenses with greater levels of automation and efficiency from productized integrations.

# Siebel CRM Integration Pack for Oracle Communications Billing and Revenue Management: Agent Assisted Billing Care

Integrated Applications:

- Siebel CRM 7.8.2.6

- Oracle BRM 7.3.1

The Agent Assisted Billing Care PIP integrates the billing management process between Siebel CRM and Oracle BRM. The PIP enables Siebel CRM to be used as the single interface to access all customer-related information, including data that is mastered and maintained within the Oracle BRM system. The PIP includes support for the following key processes to be performed from the CRM system:

- Real-time view of balance groups and balance details.

- Real-time display of unbilled usage information.

- View invoice details.

- View payment and adjustment history.

- Capture payments for an invoice and send to Oracle BRM for processing.

- Capture new adjustment requests and send to Oracle BRM for processing.

## AIA Components and Features

To support the key business processes described above, the Agent Assisted Billing Care PIP includes the following AIA components:

### Enterprise Business Objects (EBOs)

The Order to Bill PIP includes the following EBOs:

- Customer Party

- Invoice

- Service Usage

- Payment Receipt

- Account Balance Adjustment

### Enterprise Business Services (EBSs)

The Agent Assisted Billing Care PIP includes the following EBSs:

- Customer Party EBS: performs all customer-related actions like creating, updating, and querying a customer party.

- Invoice EBS: performs actions to query for all invoice and invoice details.

- Service Usage EBS: performs actions to query for unbilled usage details.

- Payment Receipt EBS: performs all actions related to payments like querying for payment history and issuing payment receipts.

- Account Balance Adjustment EBS: performs all actions related to balance adjustments like querying for adjustment requests and issuing new adjustment requests.

## Siebel CRM Application Features

The Siebel CRM application includes the following features to support the key business processes for the Agent Assisted Billing Care PIP:

- 14 new user interfaces to view billing data.

- Support for multiple billing profiles per account.

- Support for and ability to view data related to multiple balance groups, balances and details.

- Real-time display of unbilled usage data and invoice details.

- Support for payment and adjustment capture.

## Oracle BRM Application Features

The Oracle Communications BRM application did not need any modifications to support the Agent Assisted Billing Care PIP. Existing product capabilities were used.

## The Agent Assisted Billing Care PIP Value Proposition

The Agent Assisted Billing Care PIP integrates the billing management process between Siebel CRM and Oracle BRM, providing an integrated, real-time, and actionable view of billing data from the CRM console to empower CSRs and improve customer service value.

## Communications Agent Assisted Billing Care Key Messages and Proof Points

- Provide better customer service and improve call center productivity:

  - Improve effectiveness and speed issue resolutions with a rich set of Siebel CRM interfaces that provide an integrated, accurate, and real-time view of customer and billing data.

  - Perform all billing care functions directly from the Siebel CRM console negating call transfers between departments.

  - Access from the Siebel CRM console to key customer retention features in Oracle BRM.

- Maximize value to the business from customer interactions:

  - Enable real-time capture of payments and adjustments from the Siebel CRM console to Oracle BRM.

  - Present customer usage data, charging details, and profile information to Siebel CRM console to enhance real-time upselling and cross-selling.

  - Provide integrated access to complete and accurate invoice details for customer inquiries and dispute handling.

- Reduce implementation and operational cost:

  - Keep costs low with pre-built integrations between Siebel CRM and Oracle BRM, thus easily adaptable to changing needs.

  - Reduced training costs through CSRs being trained on a single system.

  - Improve efficiency of call center handling with pre-integrated front-to-back-office.

# Oracle Communications Billing and Revenue Management Integration Pack for Oracle E-Business Suite: Revenue Accounting

Integrated Applications:

- Oracle BRM 7.3.1

- E-Business Suite 11.5.10 (Oracle GL)

The Revenue Accounting PIP provides a General Ledger (GL) integration between Oracle BRM and Oracle E-Business Suite. This PIP is different from the previous two PIPs described in this document. Application Integration Architecture recommends different design patterns that best align with the integration use case. The Revenue Accounting PIP utilizes a point-to-point integration between Oracle BRM and Oracle E-Business Suite to optimize the integration for frequent batch loads and high volumes of GL data.

The Revenue Accounting PIP takes GL reports produced by Oracle BRM and automatically posts the GL reports into Oracle E-Business Suite.

## AIA Components and Features

As mentioned above, the Revenue Accounting PIP utilizes a point-to-point integration rather than the traditional AIA approach that utilizes EBOs and EBSs. The primary reason for a point-to-point approach for this integration is for performance optimization. The Revenue Accounting PIP performs frequent batch loads for what can be very high volumes of GL data. To best optimize for this type of integration, a point-to-point integration is recommended.

### ODI Solution Components

The solution leverages Oracle Data Integrator (ODI), which is a comprehensive data integration platform that is part of the Fusion Middleware stack. ODI is designed to handle data integration requirements—from high-volume, high-performance batches, to event-driven, trickle-feed integration processes, to SOA-enabled data services. ODI provides an extract, load, transform (ELT) architecture, which optimizes performance and scalability and lowers overall solution costs.

Leveraging ODI, the Revenue Accounting PIP provides a set of scripts and tools to take the GL reports generated by Oracle BRM, load, and then transform the data into the required format for Oracle E-Business Suite.

## Oracle BRM Application Features

The Oracle BRM application includes the following features to support the Revenue Accounting PIP:

- New Scheduler to automate GL report generation.

- Ability to customize reports as well as regenerate specific reports.

- Enhanced reports that include currency or non-currency resources (or both).

- Enhanced reporting capability to provide incremental and cumulative reports.

## Oracle E-Business Suite Application Features

The Oracle E-Business Suite application did not need any modifications to support the Revenue Accounting PIP. Existing product capabilities were utilized.

## The Revenue Accounting PIP Value Proposition

The Revenue Accounting PIP provides a performance-optimized General Ledger (GL) integration between Oracle BRM and Oracle E-Business Suite improving GL accounting, reporting, and accuracy.

## Communications Revenue Accounting Key Messages and Proof Points

- Better financial tracking and reporting:

  - Strong cross-product alignment to general accounting principles.

  - Highly configurable reporting to support one-off or unique requirements.

  - Streamline revenue accounting by harnessing combined strengths of Oracle BRM and Oracle E-Business Suite.

- Improve operational control and compliance:

  - Improved visibility and accuracy of accounting data through pre-built billing-to-financials integration.

  - Highly flexible support for unique GL configurations.

  - Increase compliance and control through accounting of non-currency usage and balances.

- Reduce implementation and operational cost:

  - Keep costs low with pre-built integrations between Oracle BRM and Oracle E-Business Suite, thus easily adaptable to changing needs.

  - Optimized integration from Oracle BRM to Oracle E-Business Suite spanning high-volume files and transactional feeds.

  - Single-vendor solution (Oracle) will be supported and maintained as new application releases are introduced.

# Oracle AIA Features

Oracle AIA enables the development of compelling industry-specific composite business processes leveraging existing software assets that are available in your IT infrastructure.

Pre-built PIPs use the AIA architecture to deliver composite industry processes for specific industries, using software assets from Oracle's portfolio of applications. Most of these solutions encompass orchestrated process flows, as well as pre-built data integration scenarios that are meant to seamlessly connect the systems. To develop these solutions in a consistent manner, we have defined the Oracle AIA.

This diagram illustrates the components of Oracle AIA:
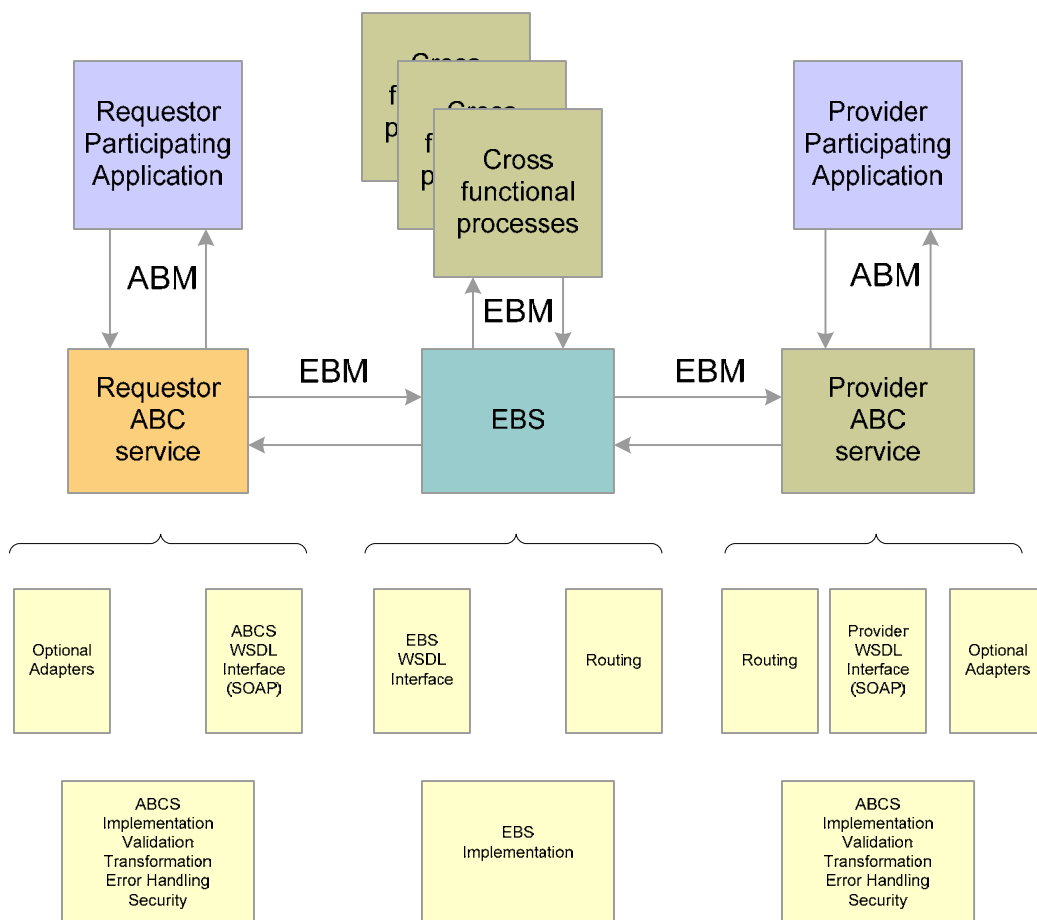


Oracle AIA components

# AIA Capabilities

Oracle AIA:

- Defines an integration architecture by adopting a service-oriented architecture (SOA).

- Leverages various existing assets found in Oracle's portfolio, as well as those of customers.

- Enables extensive access to web services provided by various applications.

- Provides a general infrastructure for consistent integrations that are also extensible and able to respond to requests from industry strategy.

- Facilitates the use of services in orchestrated process flows.

- Allows customers to extend various artifacts of the delivered solution.

Accommodates a loose coupling between systems. This includes the ability to:

  - Define loosely bound services that are invoked through communication protocols that stress location transparency and interoperability.

  - Define services that have implementation-agnostic interfaces.

  - Replace one service implementation with another with no impact to the client.

- Incorporates synchronous and asynchronous communication.

- Accommodates the following interaction styles:

  - Request/Response

  - Fire-and-Forget

  - Publish/Subscribe

- Adopts an applications independent data model to accomplish the decoupling of data format.

- Provides end-to-end security.

- Supports heterogeneous programming languages and platforms.

- Supports incremental adoption and implementation.

- Allows customers to upgrade participating applications and integration components according to timelines they are comfortable with.

- Handles high transaction rates and volumes that are normally associated with mission-critical applications.

- Preserves extensions and modifications to integrations during upgrades of source or target applications.

# Enterprise Business Objects (EBOs)

Oracle AIA introduces a set of generic data structures called enterprise business objects (EBOs). An EBO represents a common object definition for business concepts such as account, sales order, item and so on. The business integration processes work only on messages that are either a complete EBO or a subset of an EBO.

The EBO represents a layer of abstraction on top of the logical data model and is targeted for use by developers, business users, and system integrators. In the integrations developed using AIA architecture, the EBO data model serves as a common data abstraction across systems. It supports the loose coupling of systems in AIA and eliminates the need for one-to-one mappings of the disparate data schemas between each set of systems.

The adoption of the EBO facilitates the mapping of each application data schema only once to the EBO data model. This significantly minimizes the manual coding for data transformation and validation since it eliminates the need to map data directly from one application to another.

EBOs have the following characteristics:

- They contain components that satisfy the requirements of business objects from the target application data models.

- EBOs differ from other data models in that they are not data repositories. Instead they provide the structure for exchanging data. XML provides the vocabulary for expressing business data rules. The XML schema is an XSD file that contains the application-independent data structure to describe the common object.

- Each EBO is represented in an XML schema in XSD file format.

Wherever possible, the EBO is designed with reusable objects by using object types that are inherited by the different common objects in which they are referenced. An example would be an Address definition type. If your implementation requires customizing this address format by adding a third address line, the modification of the Address definition type automatically affects the addresses referenced in EBOs. This design philosophy significantly reduces the design, development, and maintenance of common objects.

Components that are applicable to all EBOs are defined in a common components schema module. Business components that can be used across various context-specific definitions for a single EBO are defined within the EBO schema module.

Wherever possible and practical, the EBO leverages widely adopted international standards for modeling and naming, such as the United Nations Centre for Trade Facilitation and Electronic Business (UN/CEFACT) Core Components Technical Specification (CCTS) and ISO 11179.

Apart from creating the complete definition for an EBO, a definition is also created for each of the contexts in which this EBO will be used.

# Enterprise Business Messages (EBMs)

At the most basic level, enterprise business messages are the messages that are exchanged between two applications. The enterprise business message (EBM) represents the specific content of an EBO needed for performing a specific activity. For example, an invoice might be used in three contexts: process, cancel, and update. The context for processing the invoice might warrant the presence of almost all of the elements present in the EBO however, canceling the invoice might only need to identify the invoice instance to be cancelled.

The context-specific EBO definitions are created by assembling a set of common components and EBO-specific business components. These context-specific EBO definitions are then used in the appropriate context-specific EBMs. In this scenario, the process-specific invoice definition would be part of the ProcessInvoice EBM and the cancel-specific invoice definition would be a part of the CancelInvoice EBM. These EBMs can be used either as the request or response parameters.

The definitions for these context-specific EBMs is present in the EBM schema module. Hence, for every EBO, there will be two schema modules—one containing the definition of the EBO and another containing the definition of the context-specific definitions for that EBO. In the case of the Customer Party EBO, there is a Customer Party EBO schema module as well as a Customer Party EBM schema module to represent the entire concept for the business object.

# Enterprise Business Services (EBSs)

Enterprise business services (EBSs) are the foundation blocks in the Oracle AIA. EBSs represent the application or implementation independent web service definition for performing a business task. The architecture facilitates distributed processing using EBSs.

An EBS is self-contained, that is, it can be used independent of any other services. In addition, it can also be used within another EBS. Since EBSs are business level interfaces, they are standard service definitions that can be implemented by the applications that want to participate in the integration. EBSs are generally coarse-grained and typically perform a specific business activity such as creating an account in a billing system, or getting the balance details for an account from a billing system. Each activity in an EBS has a well-defined interface described via XML. This interface description is composed of all details required for a client to independently invoke the service.

These services expose coarse-grained, message-driven interfaces for the purpose of exchanging data between applications, both synchronously and asynchronously. The request- and response-specific payload for each of the services is defined as an enterprise business message (EBM). The EBM typically contains one or several instances of a single EBO, which forms the crux of the message; the action to be performed; and the metadata about the message specified in the message header section.

The enterprise business service (EBS) architecture enables:

- Reuse of the available assets.

- Substitution of one service provider with another without any impact to the client.

- Content-based selection of the service provider.

The EBS is a web service. Like any other web service, the interface definitions for the EBS are defined in Web Service Definition Language (WSDL). The list of EBS-specific business activities (service operations), the input and output arguments for each of these service operations (input and output messages) are specified in the WSDL. As with any other web service, an EBS can be implemented using any language. The implementation takes an EBM as input and provides another EBM as output. AIA uses the enterprise service bus technology to implement an enterprise business service.

Even though an EBS activity such as Create or Update can be built from the ground up using web services technology, AIA takes advantage of the existing functionality in the applications. The EBS acts as a conduit or a vehicle to expose the actual implementation provided by the participating application in a format that is amenable to the EBS. These intermediary services are called application business connector (ABC) services. The ABC service acts as the glue connecting EBS and the participating application that is exposing the business capability. The ABC service is responsible for exposing the data access as well as the transactions related business functions available in applications as services that an EBS can invoke.

The ABC service approach does not preclude the customer from creating entirely new services for implementing the EBS.

# Application Business Connector (ABC) Services

The role of the application business connector (ABC) service is to expose the business functions provided by the participating application in a representation that is agreeable to enterprise business services (EBSs). It also serves as the glue that allows the participating application to invoke the EBSs.

An ABC service can be requestor-specific or provider-specific. A requestor ABC service accepts the request from the client application via a client-specific application business message (ABM) and returns the response to the client application via a client-specific ABM. The role of the requestor ABC service is to act as a vehicle to allow the participating application to invoke the EBSs either to access data or to perform a transactional task. The client side ABM will be the payload that is passed by the requestor application to the requestor ABC service.

The requestor application that wants to leverage an action needs to define the requestor-specific ABC service. The requestor application that wants to implement this ABC service could be Siebel CRM, PeopleSoft Enterprise CRM, or Oracle eBusiness Suite CRM. The requestor application-specific ABC service needs to take the requestor application-specific ABM as input and provide the requestor application-specific ABM as output.

The role of the provider ABC service is to expose the business capabilities available in the provider application according to the EBS specification. The service-provider-side ABC service will accept the request from the enterprise business service (EBS) via the EBM and will send the response using the same format. ABC services are needed because every application has a different representation of objects, and any communication between applications necessitates the transformation of these objects to the canonical definition.

The ABC service is responsible for the coordination of the various steps that are provided by a number of services, including:

- Validation (if any)

- Transformations—message translation, content enrichment, and normalization

- Invocation of application functions

- Error handling and message generation

- Security

For each of the activities that can be performed with an EBO, an ABC service must be defined by the participating requestor application and another ABC service must be defined by the service provider application. In the use case, Query Customer Party could be an action for the Customer Party EBO. In this case, a Query Customer Party provider ABC service must be created by the service provider application (in the use case, Oracle BRM) and a Query Customer Party requestor ABC service must be created by the service requester application (for the use case, Siebel CRM).

# Extensibility

One of the capabilities of the architecture is to allow for various artifacts of pre-built integrations to be extended by customers. It also ensures that these extensions are protected during the upgrades although for some extensions, configurations may have to be done after the upgrade to point to the artifacts. The AIA artifacts have been designed and constructed from the ground up to have native support for extensibility.
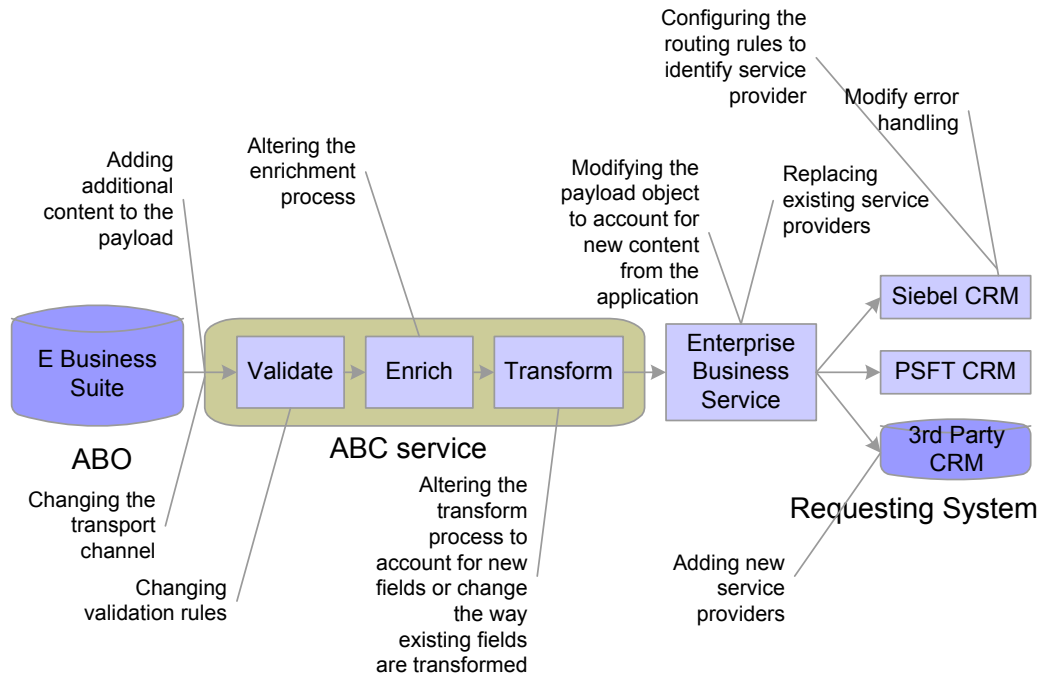
Illustration of customer extensibility points

# Security

Oracle AIA provides support for all security-related functions including:

- Identification

- Authentication (verification of identity)

- Authorization (access controls)

- Privacy (encryption)

- Integrity (message signing)

- Non-repudiation

- Logging

The SOA based integration approach allows for clear separation between the interface and the actual business logic. This provides the security architect with a number of choices in deploying security for SOA and Web services.

For example, a SOAP Web service interface such as CreateSalesOrder can be hosted as a proxy instead of the real endpoint that hosts the business logic implementation. The gateway proxies communication to and from the web service and performs security functions on behalf of the service endpoint. The actual end point is virtualized. Even though the client thinks it is talking directly to the service provider, it communicates through the proxy.

AIA leverages web services administration tools such as Oracle Web Services Manager in a non-intrusive manner to ensure the validity as well as safety of the XML messages exchanged between services. This methodology ensures that there is no enforcement of web services security in silo mode. This approach allows integration architects and developers to focus on integration logic; and the security architects and administrators to focus on security and management. Having security policies enforced via a centralized tool enables the administrators to ensure that the corporate rules are applied as well as to apply the policy changes centrally instead of applying them in each of the web services. With tools such as Oracle Web Services Manager, an administrator creates security and management policies using a browser-based tool. A typical web service security policy could:

- Decrypt the incoming XML message.

- Extract the user's credentials.

- Perform an authentication for this user.

- Perform an authorization check for this user and this web service.

- Write a log record of the above information.

- Pass the message to the intended web service, if all steps are successful.

- Return an error and write an exception record, if all of the steps are not successful.

To apply the security policy, Oracle Web Services Manager (OWSM) intercepts every incoming request to a web service and applies any one of the policy items listed above. As the policy is executed, OWSM collects statistics about its operations and sends them to a monitoring server. The monitor displays errors, service availability data, and so on. As a result, each web service in an enterprise network can automatically gain security and management control, without the service developer coding extra logic.

# Oracle AIA Core Components Features

Oracle AIA provides the following core components for all PIPS:

- The Business Service Repository (BSR).

- The Composite Application Validation System (CAVS).

- Error handling and logging.

- The Diagnostics Framework.

## The Business Service Repository (BSR)

The Business Service Repository (BSR) is a service-oriented architecture (SOA) repository. In support of SOA governance, the BSR provides visibility into the individual services (enterprise business services and application business connector services) and objects (enterprise business objects and enterprise business messages) that support the business process integrations in your Oracle AIA ecosystem.

The BSR also provides the relationships between these services and objects and their metadata. Most importantly, through integration scenarios, the BSR showcases the context in which the artifacts are tied together to support end-to-end process integrations.

As a SOA repository, the BSR augments Oracle Service Registry (OSR) Universal Description, Discovery and Integration (UDDI) functionality. By combining a repository and registry, the BSR provides comprehensive coverage of artifacts that are used throughout the SOA lifecycle, from design-time through run-time.

Some of the primary features of the BSR include:

- A mechanism for publishing content into the BSR and the UDDI registry.

- A user interface for discovering and learning about the integration scenarios in your Oracle AIA ecosystem.

Integration Scenario page displaying a requestor integration scenario (1 of 2)



Integration Scenario page displaying a requestor integration scenario (2 of 2)

Potential BSR users are active across the span of the SOA artifact lifecycle and include functional and business analysts, architects, developers, system integrators, and system administrators.

# The Composite Application Validation System (CAVS)

The Composite Application Validation System (CAVS) enables you to test integration web services without the presence of deployed participating applications and their web services. Using a framework that includes initiators to simulate calls to web services and simulators to simulate responses from web services, the CAVS provides a system that can test integrations without the need to set up deployments of all participating applications and web services that are involved in the integration.

At a high level, the CAVS:

- Provides a validation tool for business process integrations.

- Allows black-box testing of individual services and integration flows.

- Enables the creation of response simulators, which facilitate the simulation of unavailable participating applications and services.

- Allows users to author and reuse test cases to perform functional testing throughout development, deployment, and production phases.



Modify Test Definition page (1 of 2)



Modify Test Definition (2 of 2)

# Error Handling and Logging

The error handling and logging core components support the needs of integration services operating in an Oracle AIA ecosystem.

The Error Handling Framework provides error handling, notifications, and an Error Console for enterprise service bus (ESB) service and BPEL process errors. Error handling is provided for the following scenarios:

- A BPEL partner link experiences an invocation error.

- A BPEL partner link receives a fault.

- A BPEL process throws a non-partner link error in a catch block.

- An ESB service experiences an error.

The logging component provides trace and error logs that are viewable through the Oracle Enterprise Manager user interface.

# The Diagnostics Framework

The Diagnostics Framework provides a set of diagnostic tests designed to run in an Oracle AIA ecosystem.

These diagnostic tests provide data that can be useful to integration developers and administrators who are maintaining an Oracle AIA ecosystem. These tests can be run independently or as a group.

The Diagnostics Framework generates test result and error logs that are viewable through the Oracle Enterprise Manager user interface.

Some of the diagnostic tests provided include:

- SoaSuiteVersion

  The results of this diagnostic test provide operating system details, application server details, Oracle BPEL database schema details, and a list of applied patches.

- CustomizedBpel

  The results of this diagnostic test indicate whether any BPEL process has been customized. Only BPEL processes that have been delivered as a part of the Oracle AIA installation are checked for customizations.

- CustomizedEsb

  The results of this diagnostic test indicate whether any ESB service has been customized. Only ESB services that have been delivered as a part of the Oracle AIA installation are checked for customizations.

- BpelEsbCommunication

  The results of this diagnostic test indicate whether the communication between ESB and BPEL is working.

- DeployedServicesVersion

  The results of this diagnostic test provide a list of all ESB services and BPEL processes that are deployed in the Oracle AIA system.

# Oracle AIA for Communications Process Integration Pack Features

Oracle AIA delivers three process integration packs (PIPs) that provide one or more process integrations.

The Siebel CRM Integration Pack for Oracle Communications Billing and Revenue Management: Order to Bill provides these process integrations:

- AIA Communications Process Integration for Order Management.

- AIA Communications Process Integration for Customer Management.

- AIA Communications Process Integration for Product Management.

The Siebel CRM Integration Pack for Oracle Communications Billing and Revenue Management: Agent Assisted Billing Care provides these process integrations:

- AIA Communications Process Integration for Billing Management.

- AIA Communications Process Integration for Customer Management.

The Oracle Communications Billing and Revenue Management Integration Pack for Oracle E-Business Suite: Revenue Accounting provides the Process Integration for Revenue Management.

Each of the process integrations is described in more detail in the following sections.

# Process Integration for Order Management Features

The Process Integration for Order Management automates the order management process between Siebel CRM and Oracle Communications BRM and delivers the following:

- Services that can take a submitted Siebel CRM order and call an order decomposition and orchestration service.

- Services that can be called from an order orchestration process to perform various tasks, such as creating customer data in a billing system, interfacing the order to a billing system, and communicating status changes back to Siebel CRM.

## Submitting Orders to an Order Orchestration Process

After a new or MACD order is entered and validated in the CRM system, a Customer Service Representative (CSR) can submit it for further processing. The Process Integration for Order Management provides services that enable you to submit Siebel CRM orders to an order decomposition and orchestration process.

## Creating Customer Data in Billing

Service providers do not want to overburden their billing system with all of the customer information in their CRM system. Rather, they want the ability to create the necessary customer data in the billing system only when the customer places an order and the order is submitted for fulfillment.

The Process Integration for Order Management provides a service that takes in an order as input and calls the necessary enterprise billing service to create an account and its components (such as billing preferences, payment methods) referenced on a new or MACD service order, in a target billing system. This service can be invoked from the order orchestration process.

## Interfacing Orders to Billing

A customer needs to be billed for service purchase and usage. The Process Integration for Order Management provides a way to interface the order to billing so that the billing system can create the data it needs to bill the customer.

The integration creates or updates service instances, balance groups, and product instances. It communicates pricing information such as price overrides, penalties, and one-time charges to billing.

## Updating Order Line Status in CRM

As an order is processed, status updates must be sent to Siebel CRM. For this release, the Process Integration for Order Management provides a service that an order orchestration process can call to update the order line(s) status as the order progresses through its flow.

## Creating or Updating Installed Assets in CRM

An installed asset is initially created when a customer orders a new service and that order is fulfilled. From then on, if the customer requests a change on the existing services, the CSR initiates what is known as asset-based ordering. An asset-based order or MACD order has references to an existing installed asset and actions indicating how it needs to be modified to match the customer's request. After a MACD order is fulfilled, the installed asset is updated to reflect the new state.

For this release, the Process Integration for Order Management relies on Siebel CRM auto-asset functionality. You can configure Siebel CRM so that creating or updating assets can be automatically triggered after a new or MACD order line status is set to Complete.

# Process Integration for Billing Management Features

The Process Integration for Billing Management supports multiple billing integration touch points between Siebel CRM and Oracle BRM. This process integration enables a CSR to retrieve account balances, invoices, and unbilled data at a header, summary, and detail level. The process integration also enables a CSR to adjust and pay invoices.

After a service is activated, usage events (for example, a phone call, an SMS, or a data session) are sent from the communications network to the billing system. These events are rated, bills are generated, and then bills are sent out to customers.

The service cycle of the Process Integration for Billing Management starts when customers call into question the content of their bills, make payments, or file disputes. Billing information must be sent from Oracle BRM to Siebel CRM so that CSRs can respond to billing questions.

Most of these billing integration touch points do not replicate the billing data in Siebel CRM. Instead, the integration retrieves the billing data on demand and shares it within CRM. The Process Integration for Billing Management was designed so that this billing data can be displayed in Siebel CRM.

The Process Integration for Billing Management provides these integration flows and their respective integration scenarios:

- The Account Balance integration flow provides the QueryBalanceSummary and QueryBalanceDetails integration scenarios.

- The Invoice integration flow provides the QueryInvoiceList, QueryInvoice, QueryInvoiceCharge, and QueryBalanceTotal integration scenarios.

- The Service Usage integration flow provides the QueryServiceUsage and QueryServiceUsageCharge integration scenarios.

- The Payment integration flow provides the QueryPaymentReceipt and CreatePaymentReceipt integration scenarios.

- The Adjustment integration flow provides the QueryAccountBalanceAdjustment and CreateAccountBalanceAdjustment integration scenarios.

# Process Integration for Customer Management Features

The Process Integration for Customer Management enables the synchronization of customer information between Siebel CRM and Oracle BRM. Customers are created in Siebel CRM and sent to Oracle BRM. Customer updates are allowed on both the Siebel CRM and Oracle BRM systems. When updates occur in one system, they are then synchronized with the other system.

The Process Integration for Customer Management provides these integration flows:

- The create account integration flow, which interfaces customers to Oracle BRM (executed during the Order Management processing flow).

- The update customer account integration flow, which updates accounts from Siebel CRM to Oracle BRM.

- The update customer account status integration flow, which updates status changes from Oracle BRM to Siebel CRM.

Account information is captured at the beginning of the order process. When a customer places an order, the first step of the process is to determine if the customer is new or existing. If this is an existing customer, the customer record can be found and selected, and the customer order details are captured. If this is a new customer, a new account is created.

The customer account and contact information is captured in Siebel CRM. Depending on the customer type (residential, business), the customer may be placed in a customer hierarchy. The billing preferences (bill medium, bill frequency, cycle start date, billing node, billing contact) are also captured. After all of the account information is captured, the order details are captured. The order is submitted to the back end systems (provisioning, ERP, and billing) for processing. For this release, the order can be picked up by the Process Integration for Order Management.

Customers often update account information (for example, a name or address change). When an account is updated in Siebel CRM, the changes are communicated to Oracle BRM.

Likewise, when account information is updated in Oracle BRM, (for example, suspend or inactivate accounts when payments are overdue) the changes are communicated to Siebel CRM.

# Process Integration for Product Management Features

The Process Integration for Product Management enables you to administrate and synchronize products and discounts from Oracle BRM to Siebel CRM.

The Process Integration for Product Management delivers the following:

- Real-time synchronization of products and discounts: Oracle BRM to Siebel CRM. The product synchronization integration flow enables you to create new products in Oracle BRM and synchronize those products to Siebel CRM. It also enables you to update existing products in Oracle BRM and then synchronize the updated products to Siebel CRM. The discount synchronization integration flow enables you to create discounts as products in Oracle BRM and synchronize discounts to Siebel CRM. It also enables you to update existing discounts in Oracle BRM and then synchronize the updated discounts to Siebel CRM.

- Batch Synchronization of products and discounts: Oracle BRM to Siebel CRM. The Batch synchronization integration flow enables you to create new products and discounts in Oracle BRM and synchronize them as a batch to Siebel CRM. It also enables you to update existing products and discounts in Oracle BRM and synchronize them as a batch to Siebel CRM. It uses the batch utility provided by Oracle BRM.

- Optimized Product Synchronization: The optimized product synchronization performs the same synchronization as the product synchronization integration flow, but it associates one of the component products with the main product, thus reducing the number of component products within the product definition by one.

- Product Definition Methodology: This describes the methodology for introducing service bundles and promotions in relations to synchronized billing products and billing discounts. The methodology also describes handling of the following components: entity mappings, sales catalogs, physical goods, penalty products, balance groups and credit limits.

# Process Integration for Revenue Management

The Process Integration for Revenue Management moves General Ledger (GL) data from Oracle BRM to the Oracle E-Business Suite, enabling customers to use Oracle General Ledger as an accounting engine on top of the Oracle BRM application.

As previously mentioned, the Process Integration for Revenue Management differs from other AIA for Communications Integration Packs in that it does not use EBOs or other standard AIA objects to complete this integration. Rather, the Process Integration for Revenue Management uses Oracle Data Integrator to pick up the BRM GL data files and then move those files to the Oracle GL application.

This solution is a point-to-point integration because of the mass data that needs to be batch loaded from Oracle BRM to Oracle General Ledger. By automating the general ledger data import from Oracle BRM to Oracle General Ledger, this integration enables service providers to drastically reduce implementation and maintenance costs and helps improve operational control.

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