

XML Gateway with BPEL

B2B and A2A integrations made easier

Kalyan Sura
HCL
www.hcltech.com

Agenda

- XML Gateway
- Integrating with Oracle Business Events
- BPEL – Oracle Applications Adapter
- Use Case

XML Gateway

- Overview
- Architecture
- Message Designer
- OAG Standards
- XML Messages and EDI Transactions
- Setups
- Conclusion

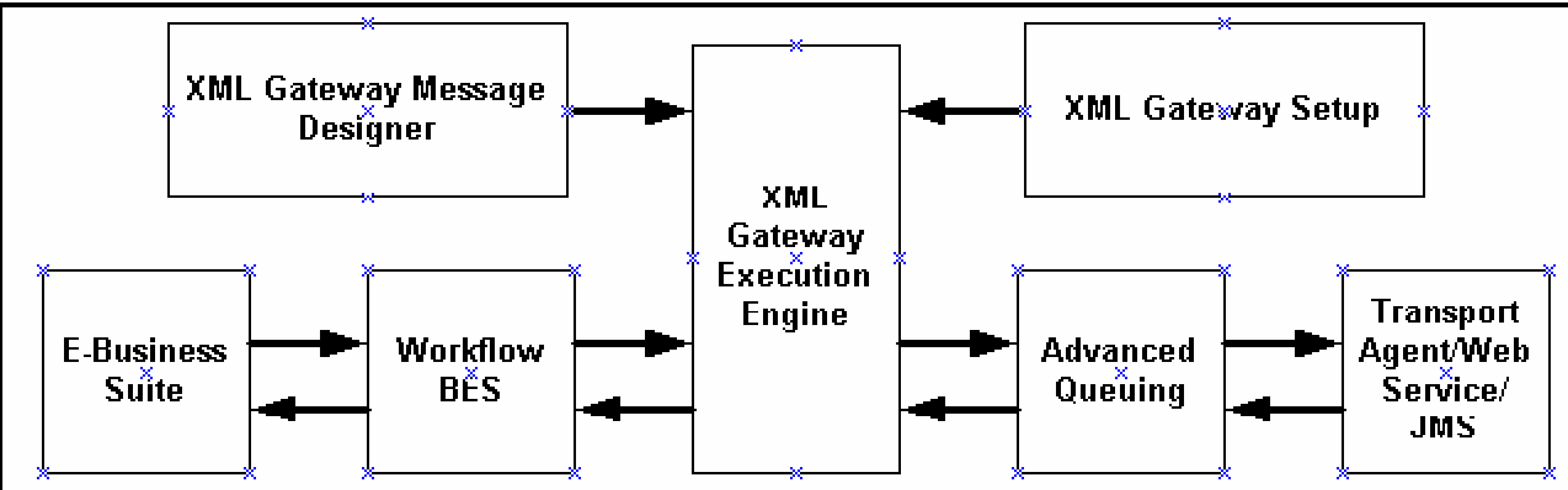
XML Gateway Overview

- Oracle XML Gateway is a set of services that allows easy integration with the Oracle E-Business Suite to support XML messaging
- Oracle XML Gateway supports all DTD based XML standards
- Oracle XML Gateway supports both Business-to-Business (B2B) and Application-to-Application (A2A) initiatives

XML Gateway Overview - cont

- 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
- Oracle XML Gateway uses the message propagation feature of Oracle Advanced Queuing to integrate with the Oracle Transport Agent to deliver to and receive messages from business partners.

XML Gateway Architecture



Message Designer

- The Message Designer is a wizard-guided, repository-based tool used to create XML message maps
- The Message Designer can support map creation for any business document as long as the document conforms to a Document Type Definition (DTD)
- Use Message designer to Modify the Oracle prebuilt message maps or create new message maps

OAG Standards

- The Open Applications Group was formed in late 1994 as the first post-EDI organization focusing on improving the state of application integration
- Open Applications Group is organized to promote business process interoperability for both inter & intra enterprise business processes
- The OAG's unique, technology neutral approach to building the OAGIS standard ensures that both end-users and solution providers have the most robust XML standard in the world
- Oracle XML Gateway prebuilt maps use OAG standard

XML Messages vs. EDI Transactions

- EDI transactions are more batch-oriented while their XML counterpart is event-based, real-time, and tend to be based on a single transaction.
- Oracle e-Commerce Gateway integrates with the Oracle E-Business Suite to extract or to import traditional EDI transactions using a flat ASCII file.
- Oracle XML Gateway integrates with the Oracle E-Business Suite to create or to consume XML messages based on application business events.
- Oracle XML Gateway creates and consumes standards-compliant XML messages without the use of a translator

Setups

Three Major Steps (most common)

- Define Transactions
- Define Trading Partners
- Define Code Conversions

Define Transactions

Define Transactions

Party Type: **Bank**

Transaction Type: **AP**

Transaction Subtype: **PROCESSPAYMENT**

Transaction Description: **An XML Format Payment Instruction**

External Transactions

Standard Code	Direction	External Transaction Type	External Transaction Subtype
OAG	OUT	PAYMENT	PROCESS

Define Trading Partners

Trading Partner Setup

Trading Partner Type: **Customer**

Trading Partner Name: **Business World**

Trading Partner Site: **1755 Park St Aurora IL 60504**

Company Admin Email: **kalyan@hcl.in**

User Setup Code Conversion

Trading Partner Details

Transaction Type	Transaction SubType	Standard Code	External Transaction Type	External Transaction SubType	Direction Map	Connection/Hub	Protocol Type
ECX	CBODO	OAG	BOD	CONFIRM	OUT ECX_CBODO_	DIRECT	BPEL
ONT	POI	OAG	PO	PROCESS	IN ONT_3A4R_72		
CLN	SHOWSHIP	OAG	SHIPMENT	SHOW	OUT CLN_SHOW_:	DIRECT	BPEL

Define Transactions

Trading Partner Code Conversion: Business World,1755 Park St Aurora IL 60504

Category Code	Description
UOM	Unit of Measurement codes in which

Category Values

Standard Code	Oracle Value	Description	From Trading Partner Value	To Trading Partner Value	Standard	Data Seeded
OAG	ACR	Acre	ACR	ACR	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
OAG	ANN	Year	ANN	ANN	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
CUSTOM	LBS	Pounds	LB	LB	<input type="checkbox"/>	<input type="checkbox"/>
OAG	AS	Assortment	AS	AS	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Conclusion

- Oracle XML Gateway is the XML message enabler for the Oracle E-Business Suite
- Oracle XML Gateway leverages the publish and subscribe features of the Oracle Workflow Business Event System
- Utilizes Oracle Workflow to link key business processes
- Enables seamless collaboration, coordination, and communication of business-critical data throughout the supply chain

Oracle Workflow Business Event System and XML Gateway

Oracle Workflow BES

- Is an application service that leverages the Oracle AQ infrastructure to communicate business events between systems
- It consists of Event Manager and Workflow Process Event Activities
- BES Framework allows to extend and configure business logic without modifying standard application code

Oracle Workflow BES – allows us to

- Define business events
- Register event subscriptions to these business events
- Raise these business events
- Route messages to and from business to business exchanges
- Route messages to and from legacy applications

Business Event

- A business event is simply any event which is of importance to either development team or business users and might happen as part of daily business activities.

For Example

- Creation of a Sales Order
- Item Out of Stock
- Shipment of an Order

Event Subscription

- An event subscription is a registration indicating that a particular event is significant to a particular system and specifying the processing to perform when the triggering event occurs

Subscriptions typically perform following actions

- Execution of PL/SQL code
- Send the business event to a predefined workflow process
- Send and receive messages from Trading partners

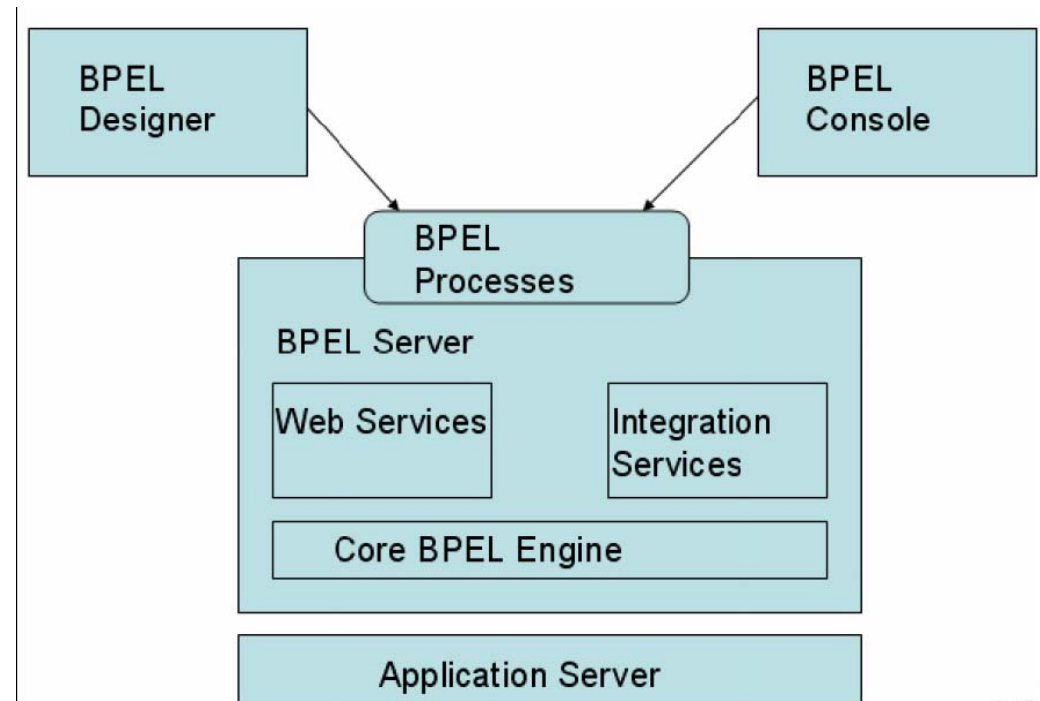
Integrating BES and XML Gateway

By using the built in Subscription Action Types “Send Trading Partner Message” and “Receive Trading Partner Message” we can integrate Oracle Workflow Business Event System with XML Gateway

BPEL & Oracle Applications Adapter

BPEL Process Manager Components

- BPEL Designer
- BPEL Server
- BPEL Console



Oracle Applications Adapter

OracleAS Adapter for Oracle Applications provides comprehensive, bidirectional, multimodal, synchronous, and asynchronous connectivity to Oracle Applications

OracleAS Adapter Features

- Supports open standards, including J2CA, XML, WSIL and WSDL
- JDeveloper based design-time tool for dynamically browsing the Oracle Applications interface
- It integrates applications based on open standards, such as OAG, RosettaNet, and UCCnet by interfacing with XML Gateway

Integration Interface Types

- **Oracle XML Gateway**
- **Business events**
- **Concurrent programs**
- **Interface tables**
- **Interface views**
- **PL/SQL APIs**
- **Oracle e-Commerce (EDI) Gateway**

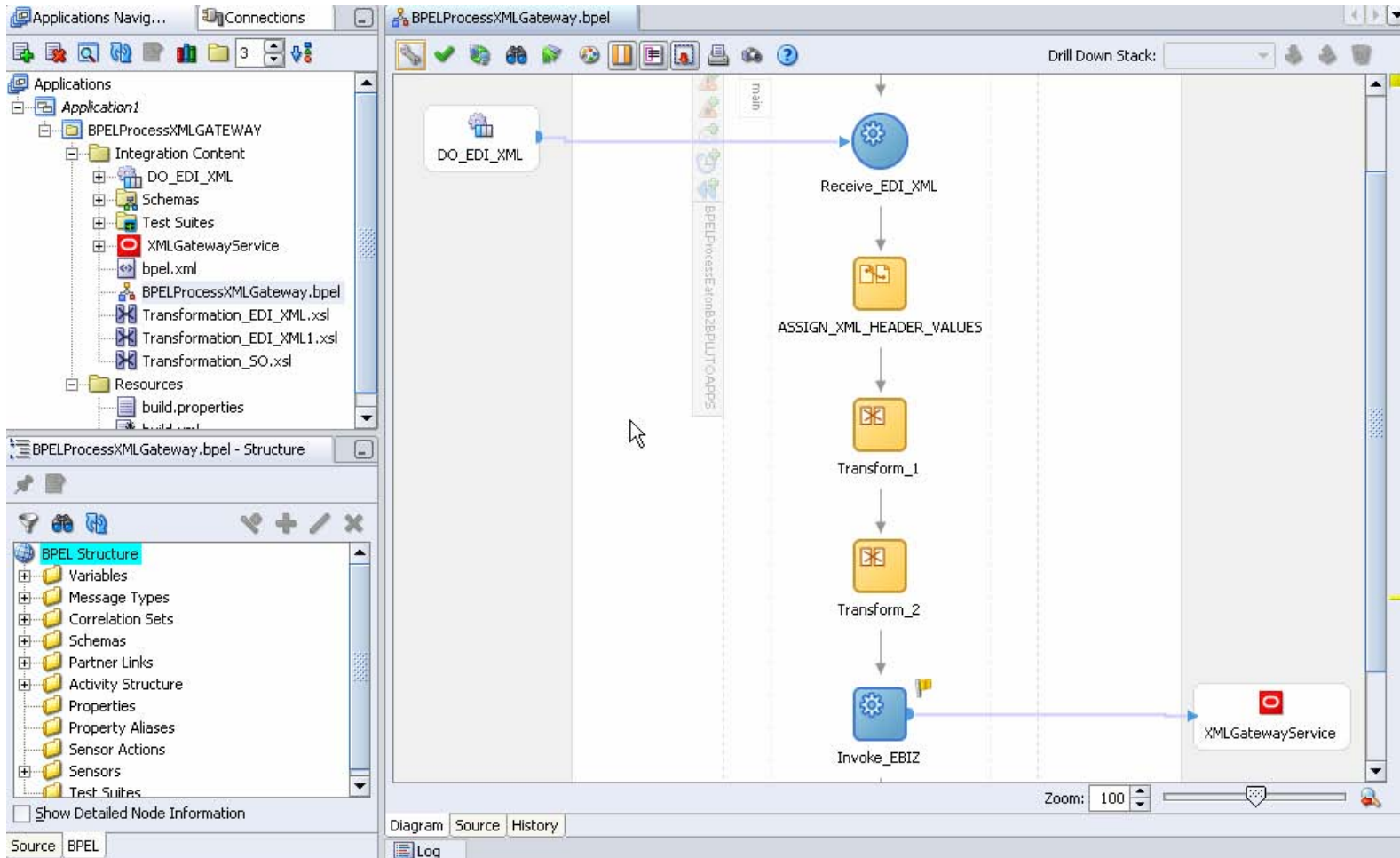
Oracle XML Gateway Adapter

XML Gateway is a higher-level interface that exposes OAGIS-formatted XML documents for commonly used Oracle Application business objects and business interfaces.

XML Gateway integrates with interface tables, BES, and interface views

It maps the underlying table data to XML and back

Sample BPEL process for B2B



Oracle Applications Module Browser

The screenshot shows the Oracle Applications Module Browser window. The title bar reads "Oracle Applications Module Browser". Below the title bar, there is a search field labeled "Object Name:" with a percentage sign (%). To the right of the search field are several checkboxes: "Tables", "Views", "APIs", "CP", "XML Gateway" (checked), "EDI", and "Business Events". There are "Search" and "Browse" buttons to the right of these checkboxes.

The main area is divided into two panes. The left pane shows a hierarchical tree view of Oracle Applications modules. The tree is expanded to show the "Sales Order" module, which contains a sub-module "XML Gateway (11)". Under "XML Gateway (11)", there are several XML messages and transactions. One transaction, "OUTBOUND: Acknowledge Purchase Order XML Transaction (ONT_3A4R_...)", is selected and highlighted in blue. The "Other Interfaces" folder is circled in red.

The right pane displays the details for the selected XML Gateway object. It has a table with two columns: "Type" and "Value".

Type	Value
Root Element	ACKNOWLEDGE_PO_008
File Name	004_acknowledge_po_...
Version	ont/xml/oag72
Direction	Outbound

Below the table, there is a "Payload" section containing XML code:

```
<IDENTITY % SEG_AMOUNT_QUALIFIERS_EXTENSION "OTHER">
<IDENTITY % SEG_AMOUNT_TYPES_EXTENSION "OTHER">
<IDENTITY % SEG_DATETIME_QUALIFIERS_EXTENSION "OTHER | EXCHRATEDATE">
<IDENTITY % SEG_DATETIME_TYPES_EXTENSION "OTHER">
<IDENTITY % SEG_OPERAMT_QUALIFIERS_EXTENSION "OTHER">
<IDENTITY % SEG_OPERAMT_TYPES_EXTENSION "OTHER">
<IDENTITY % SEG_QUANTITY_QUALIFIERS_EXTENSION "OTHER">
<IDENTITY % SEG_TEMPRATURE_QUALIFIERS_EXTENSION "OTHER">
<IDENTITY % SEG_TEMPRATURE_TYPES_EXTENSION "OTHER">
<IDENTITY % DATETIME.EXCHRATEDATE "DATETIME">
<IDENTITY % FIELDS SYSTEM "file:/d02/oracle/t1appl/ont/11.5.0/xml/oag72/oagis_fields.dtd">
<IDENTITY % DOMAINS SYSTEM "file:/d02/oracle/t1appl/ont/11.5.0/xml/oag72/oagis_domains.c
<IDENTITY % STRDOM "(#PCDATA)">
<IELEMENT ABSENCETYP (#PCDATA)>
<IELEMENT ACCTPERIOD (#PCDATA)>
<IELEMENT ACCTTYPE (#PCDATA)>
<IELEMENT ACCTYEAR (#PCDATA)>
<IELEMENT ACKCODE (#PCDATA)>
<IELEMENT ACKMODE (#PCDATA)>
<IELEMENT ACKREQUEST (#PCDATA)>
<IELEMENT ACTIONCODE (#PCDATA)>
<IELEMENT ACTIVE (#PCDATA)>
<IELEMENT ACTTYPE (#PCDATA)>
<IELEMENT ADDRLINE (#PCDATA)>
<IATTLIST ADDRLINE index:CDATA #REQUIRED >
<IELEMENT ADDRTYPE (#PCDATA)>
```

At the bottom of the right pane, there are "OK" and "Cancel" buttons.

Use Case

Use Case

Orders details that are over certain dollar value have to be extracted and sent to logistics department in real time. Order booking workflow raises the business event that accomplishes this.

Use Case - Steps

- Create DTD and XML Gateway Map
- XML Gateway Setups
- Create Business Event and Subscription
- Raise the Business Event
- Create BPEL process to Dequeue the Message and Route it

DTD

```
<?xml version = "1.0" encoding = "UTF-8"?>
```

```
<!ELEMENT ORDER_DETAILS (ORDER+)* >
```

```
<!ELEMENT ORDER (ORDNO+ ,ORDWT+,RDATE+,CITY*,ZIP+)* >
```

```
<!ELEMENT ORDNO (#PCDATA) >
```

```
<!ELEMENT ORDWT (#PCDATA) >
```

```
<!ELEMENT RDATE (#PCDATA) >
```

```
<!ELEMENT CITY (#PCDATA) >
```

```
<!ELEMENT ZIP (#PCDATA) >
```


XML Gateway Map

- Identify Source and Target
- Define mapping levels
- Define element mapping
- Execute action to update status as message got picked up
- Upload DTD and MAP into to oracle

NOTE: Detailed steps provided in white paper

XML Gateway Setups

- Create Transactions
- Create Trading partners
- Enable the transaction for the Trading Partner
- Attach the Map for this transaction

NOTE: Detailed steps provided in white paper

Business event and subscription

- Login to Workflow Administrator Web Applications
- Create Business event
- Create Subscription (Send Trading Partner Message)

NOTE: Detailed steps provided in white paper

BPEL Process

- Create asynchronous BPEL process
- Two Partner links, Dequeue and Send
- Deploy the BPEL Process

NOTE: Detailed steps provided in white paper

End-to-End flow

- Make sure you have data in the table waiting to be picked up
- Raise the event manually (for testing purpose)
- Check XML message in Transaction Monitor
- Login to BPEL console and see a new instance
- Finally see the message in FTP server

References

- https://metalink.oracle.com/metalink/plsql/ml2_documents.showDocument?p_database_id=NOT&p_id=329903.1
- Oracle Application Server Adapter for Oracle Applications User's Guide
- Oracle® XML Gateway User guide
- <http://docs.oasis-open.org/wsbpel/2.0/wsbpel-v2.0.pdf>

Questions & Answers

Thank You

Kalyan Sura

ksura@hcl.in

HCL