ORACLE
FUSION MIDDLEWARE
SOA SUITE

What’s New in Oracle SOA Suite 12*c*

ORACLE WHITE PAPER | JULY 2014

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This whitepaper describes how Oracle SOA Suite 12c builds on earlier versions with specific features that address these requirements. In addition, it will discuss product improvements aimed at developer productivity and also introduces a new product, Oracle Managed File Transfer. It is intended for someone who is already familiar with Oracle SOA Suite 11g. If you are new to Oracle SOA Suite, please see the “Oracle SOA Suite 12c – A Detailed Look” white paper for an introduction to the product.

Introducing Oracle SOA Suite 12*c*

Increased integration complexity may seem inevitable as organizations are suddenly faced with the requirement to support three new integration challenges:

» **Cloud Integration** - Rapidly integrate a growing list of cloud applications with existing applications
» **Mobile Integration** - Mobile enable enterprise applications and services
» **IoT Integration** - Connect Internet of Things (IoT) devices to existing systems

To address these integration challenges, companies might assume they need specialized platforms to handle the requirements unique to each. For example, a cloud integration platform to handle heightened security and latency concerns that are of increased importance when integrating cloud applications. Likewise, a separate project within the same company might be looking into a mobile integration platform with support for lighter weight integration standards (REST/JSON, etc.) than traditional enterprise service integration.   And finally, another division within the company might be exploring an IoT platform to support the IoT-specific high-volume, high-velocity integration requirements such as advanced proactive filtering and processing not typically included within integration platforms. Over time, these organizations are likely to create an “accidental architecture” of overlapping, disparate, and often proprietary integration platforms resulting in dramatically increased complexity.

This scenario is why Oracle SOA Suite 12*c* was developed: to simplify integration by unifying the disparate requirements for the latest integration challenges of mobile, cloud, and IoT into one unified and standards-based integration platform.

This scenario is why Oracle SOA Suite 12c was developed…to simplify integration by unifying the disparate requirements of mobile, cloud, and IoT into one unified and standards-based platform.

Oracle SOA Suite 12c speeds up your integration time-to-market with features like templates, cloud integration adapters, and mobile-ready integration. You will respond to new business requests more quickly thanks to the new seamless integration of Oracle Service Bus into Oracle SOA Suite, a new managed file transfer offering and significantly improved management capabilities. Your total costs for integration should be reduced as a result of many new productivity enhancements including a quick install capability, advanced new business activity monitoring features and more.

Cloud Integration

Integration entails exchanging information between systems to achieve a specific business objective such as synchronization of customer account data for fulfilling orders. The location of an application and its data, whether in your data center or under the auspices of a cloud provider, does not change this basic business need. While many enterprises have committed some level of investment to the cloud, most of these organizations have to deal with on-premise systems in tandem, or fuse data from another cloud app.

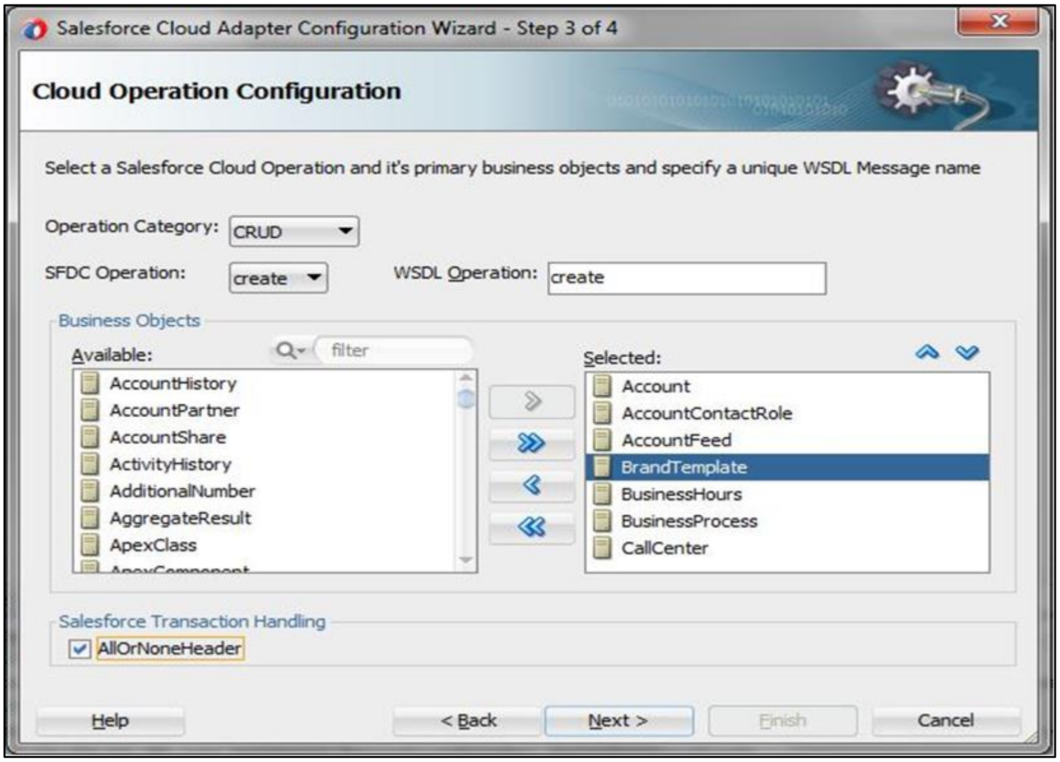
Most enterprises have spent years avoiding the data “silos” that inhibit productivity. After decades of locking down critical issues such as interface definitions, governance, reliability, transaction management, exception handling, and transaction monitoring, is it time to reinvent the wheel yet again for the cloud era? Do cloud applications represent a new silo?

Fortunately, with Oracle Fusion Middleware, one set of integration tools can handle all of these integration scenarios, with direct and interchangeable connections to cloud and on-premise systems. Oracle SOA Suite 12c provides a cohesive set of integration capabilities to simplify diverse IT environments. The recently released Oracle Cloud Adapters simplify the integration of cloud applications with your existing infrastructure to allow, for example, your field sales teams to have real-time access to all of your on-premise applications.

Oracle Cloud Adapters

Oracle SOA Suite aims to simplify, accelerate and optimize integrations with various cloud applications by providing a standard based platform for integration that not only enables connectivity, but also lays a strong foundation to address aspects of audits, compliance, security and governance. In early 2014, Oracle began to offer native connectivity and enhanced developer productivity while integrating with SaaS applications through its newly introduced Cloud Adapters. Oracle Cloud Adapter for Salesforce.com is the first of its kind in this portfolio, and more are coming soon, including Cloud Adapters for RightNow (Oracle Service Cloud), Oracle Sales Cloud, Eloqua (Oracle Marketing Cloud) and Big Machines (Oracle CPQ Cloud). These cloud adapters build on the SOA integration platform to enable standards based connectivity to cloud based applications from on-premise, legacy and other cloud applications, while significantly simplifying the overall life-cycle and user experience. They shield the integration modeler from hand-coding and configuring dedicated logic for handling connectivity, security, and session management individually for each cloud application being integrated with. They also avoid the need for in-depth expertise on the complex functional and technical knowledge of the applications. Thus, with these adapters addressing all the requisites for managing integration with the applications, developers can focus on building the business logic for the integration and business processes.

The cloud adapters enable seamless and simplified connectivity with SaaS applications through their intuitive design-time wizards and rich processing options. In contrast to exposing complex WSDL interfaces for the original service, the cloud adapter configuration wizard engages users with an extremely simplified view of the business object catalog in the application from where they can browse and select one or more objects or services of interest for executing the supported operations. The adapter supports integrating with and also visually distinguishes standard business objects from custom objects within the applications.



Salesforce Cloud Adapter Configuration Wizard - Step 3 of 4

Cloud Operation Configuration

Select a Salesforce Cloud Operation and it's primary business objects and specify a unique WSDL Message name

Operation Category: CRUD

SFDC Operation: create

WSDL Operation: create

Business Objects

Available:

- AccountHistory
- AccountPartner
- AccountShare
- ActivityHistory
- AdditionalNumber
- AggregateResult
- ApexClass
- ApexComponent

Selected:

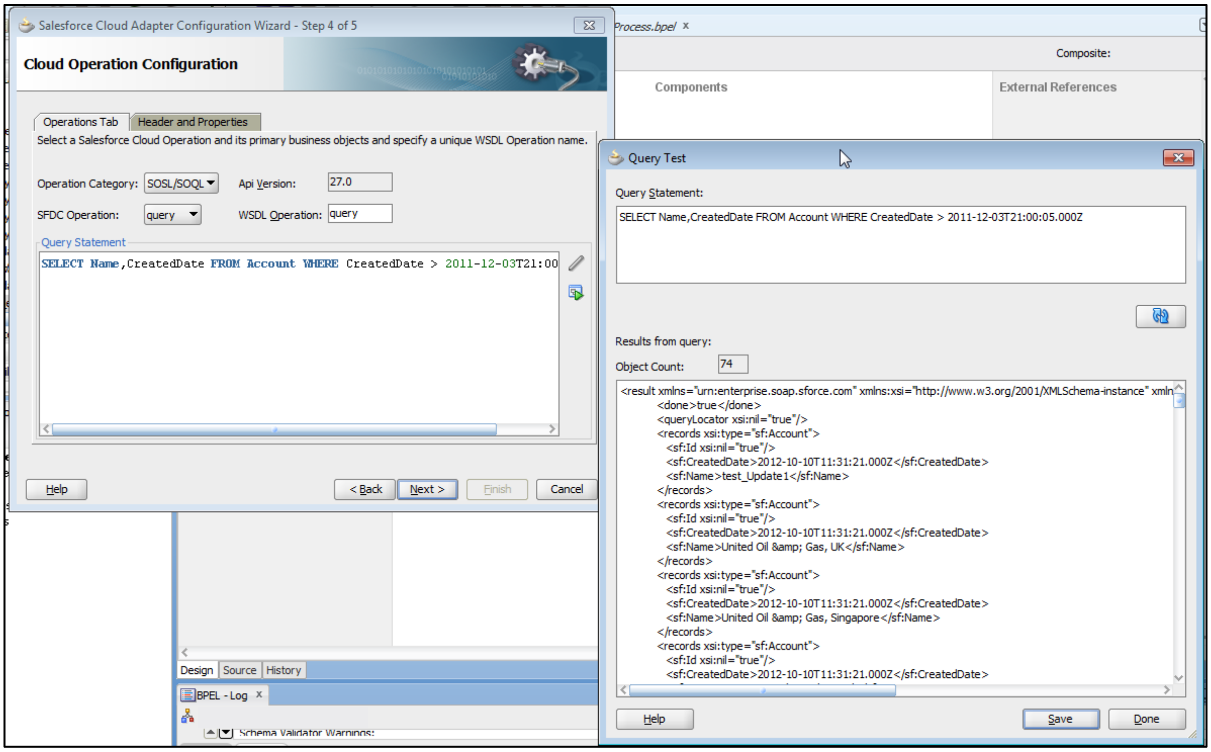
- Account
- AccountContactRole
- AccountFeed
- BrandTemplate
- BusinessHours
- BusinessProcess
- CallCenter

Salesforce Transaction Handling

☑ AllOrNoneHeader

Figure 1: The Business Object Catalog Browser for Salesforce.com within the Cloud Adapter Configuration Wizard provides an intuitive and simple way to discover and integrate with Salesforce.com Business Objects

Several cloud applications also support native query languages used to retrieve one or more business objects and their attributes using a given search criteria. Oracle cloud adapters provide a design-time query editor to build, validate and test these queries right at design-time. This helps shorten test cycles when it comes to integrating with these applications. In addition to provide syntax highlighting for these queries in the editor, the adapters also plan to support real-time code insight capabilities in order to assist the user auto-complete complex queries.



Select a Salesforce Cloud Operation and its primary business objects and specify a unique WSDL Operation name.

Operation Category: SOSL/SOQL
Api Version: 27.0
SFDC Operation: query
WSDL Operation: query

Query Statement

```
SELECT Name,CreatedDate FROM Account WHERE CreatedDate > 2011-12-03T21:00
```

Query Statement:

```
SELECT Name,CreatedDate FROM Account WHERE CreatedDate > 2011-12-03T21:00:05.000Z
```

Results from query:

Object Count: 74

```
<result xmlns="urn:enterprise.soap.sforce.com" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xmln
        <done>true</done>
        <queryLocator xsi:nil="true"/>
        <records xsi:type="sf:Account">
          <sf:Id xsi:nil="true"/>
          <sf:CreatedDate>2012-10-10T11:31:21.000Z</sf:CreatedDate>
          <sf:Name>test_Update1</sf:Name>
        </records>
        <records xsi:type="sf:Account">
          <sf:Id xsi:nil="true"/>
          <sf:CreatedDate>2012-10-10T11:31:21.000Z</sf:CreatedDate>
          <sf:Name>United Oil &amp; Gas, UK</sf:Name>
        </records>
        <records xsi:type="sf:Account">
          <sf:Id xsi:nil="true"/>
          <sf:CreatedDate>2012-10-10T11:31:21.000Z</sf:CreatedDate>
          <sf:Name>United Oil &amp; Gas, Singapore</sf:Name>
        </records>
        <records xsi:type="sf:Account">
          <sf:Id xsi:nil="true"/>
          <sf:CreatedDate>2012-10-10T11:31:21.000Z</sf:CreatedDate>
```

Figure 2: The Query Editor within the Adapter Design-time also provides a design-time test utility to validate the queries modeled by the User

Several SaaS applications impose a cap on the number of user requests that can be made to it on a daily basis. This requires organizations to smartly manage sessions established with the cloud application at runtime. To counter this challenge, Oracle cloud adapters provide intelligent session management capabilities wherein authenticated sessions can be re-used across multiple invocations of the SaaS application across multiple SOA applications.

The most time-consuming component of Integration is data mapping. Cloud applications such as Salesforce.com and RightNow expose complex polymorphic WSDLs that further elevate the costs and complexity of developing data mappings. Oracle Cloud Adapters alleviate this complexity by exposing a strongly typed version of these WSDLs, so that the user can graphically visualize and build data maps with greater ease. The adapter shields this complexity from the user and undertakes the responsibility of translating the generated document into a format, which the SaaS application can understand.

Different SaaS applications have their own unique security requirements for integrations. The cloud adapters expose consistent and simplified security capabilities to integrate with the target SaaS application. For instance, the Cloud Adapter for Salesforce.com enables SSL communication with the cloud applications to prevent eavesdropping while the message is in transit. Furthermore, it also manages the credentials used to communicate with the application within a secure credential store using the WebLogic credential store framework.

In a nutshell, most of the nuances of integrating with SaaS applications such as session management, handling a complex WSDL and security are addressed within the adapter itself. Users are not exposed to these complexities and instead, can focus on fulfilling the business requirement at hand. With all these tasks delegated to the adapter, the possibility of manual errors is reduced, development cycles are cut short and maintenance costs are lowered.

Cloud Adapter SDK

Along with the cloud adapter for Salesforce.com, Oracle SOA Suite 12c also includes a new Cloud Adapter SDK. This SDK allows customers and partners to rapidly on-board new SaaS applications into their enterprise business processes. The Salesforce adapter and all other upcoming adapters from Oracle are developed using the cloud adapter SDK. This SDK is available to partners and customers to develop connectivity and accelerate integration with SaaS applications of interest in a consistent and simplified manner.

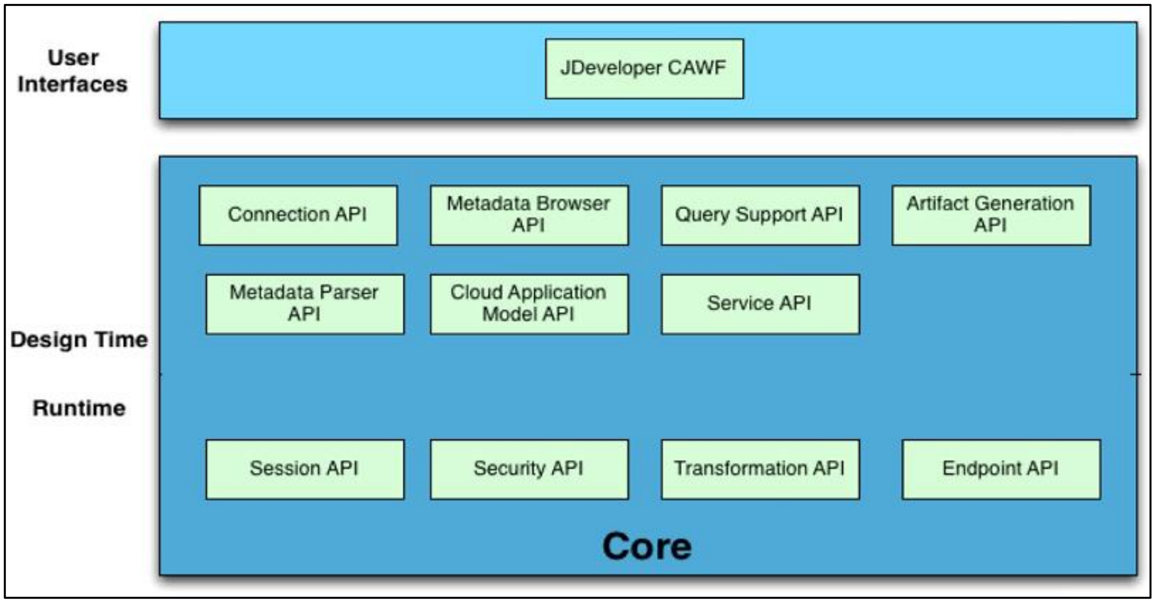


Figure 3: Tailored to integrate with Cloud Applications, the Cloud SDK significantly simplifies and accelerates development time for building adapters to SaaS Applications.

The SDK provides a design-time and a runtime component. Design-time components provide various capabilities such as

- Connection API – Define the connectivity to the SaaS application as required by the application.
- Metadata Browser – Enable the design-time to browse the metadata within the application.
- Query Support - Provide support for creating queries (e.g. SOQL for Salesforce.com, ROQL for RightNow etc)
- Artifact Generation – Generate the required JCA and WSDL files for the adapter interaction.

The Runtime APIs provide various runtime capabilities including the following.

- Session API – Define the session management capabilities for the adapter
- Security API – Security configuration including integration with WebLogic's credential store framework
- Transformation API – Ability to transform the message before sending to the target SaaS application in case the design-time data definition is different from the expected data definition. This is often the case for complex polymorphic data definitions for which a simplified structure (XSD, WSDL) is defined at design-time for easier modeling.
- The design-time APIs are plugged into the adapter configuration wizard within JDeveloper. The runtime APIs are used by the SOA Suite and Service Bus runtime to invoke the target SaaS application as shown in Figure 4.

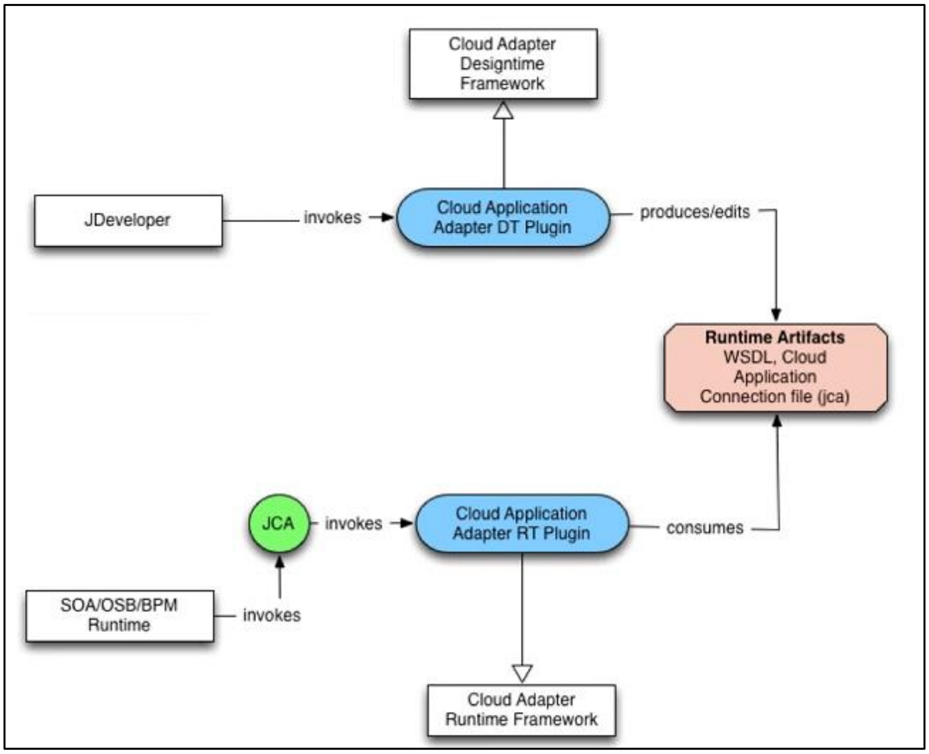

Cloud Adapter Designtime Framework
JDeveloper
invokes
Cloud Application Adapter DT Plugin
produces/edits
Runtime Artifacts
WSDL, Cloud Application Connection file (jca)
JCA
invokes
Cloud Application Adapter RT Plugin
consumes
SOA/OSB/BPM Runtime
invokes
Cloud Adapter Runtime Framework

Figure 4: Illustration showing the integration between JDeveloper and the SOA Runtime with the Cloud SDK (Plugin)

Mobile Enablement

For many years web browsers and desktop computers were the primary platforms for accessing information from enterprise applications. As mobile devices proliferate, applications are no longer tied to the desktop. Users want to use their **smartphones** and **tablets** to access corporate data and business apps, anytime, anywhere. In support of this paradigm shift, **Representational State Transfer (REST)** and **JavaScript Object Notation (JSON)** have emerged as the dominant standards for exposing services and APIs for mobile enablement.

When addressing this challenge, mobile should be treated as an extension of the applications that are already in place and developers should simply extend their SOA integration methods and infrastructure rather than adopting new development and deployment infrastructures to address the mobile challenge.

Oracle SOA Suite 12c introduces a **REST binding** within JDeveloper to simplify mobile enablement by exposing traditional SOAP services, Enterprise Java Beans (EJBs), JCA adapters connecting backend applications or just about any other underlying implementation through **JSON/REST**. The REST binding is available for SOA composites and Service Bus services and allows the configuration of REST interactions as exposed interfaces and allows the invocation of externally available REST services.

Multiple ways to define a REST binding through a simple wizard are included: the definition can be on an existing WSDL, or the binding can even create the WSDL for you. When using the REST binding, a WADL (Web Application Description Language) file is created automatically to define the REST interaction and to allow interaction with the REST binding throughout the integration layer. Oracle SOA Suite 12c practices a “REST on the edges” approach where a REST/XML, REST/JSON, or URL-encoded payload is translated to and from SOAP/XML in the integration wire. This is called a “translation on the wire”.

This approach has been selected because SOAP/XML has been well accepted for many years. Any experienced integration developer is quite familiar with SOAP/XML interactions and will likely want to reuse as much as possible rather than a complete “rip-and-replace”. By translating, you can interact with REST style edge interfaces while leveraging your existing integration layer. This allows an existing SOAP/XML interface to be exposed easily as a REST style interface.

By exposing back-end applications as RESTful APIs through your existing SOA composite or Service Bus, which then connects to backend services and applications, developers are able to leverage existing application and integration infrastructure as part of a highly reusable and scalable development and integration platform for mobile applications, which communicate through Oracle Service Bus as a standardized mediation and virtualization layer.

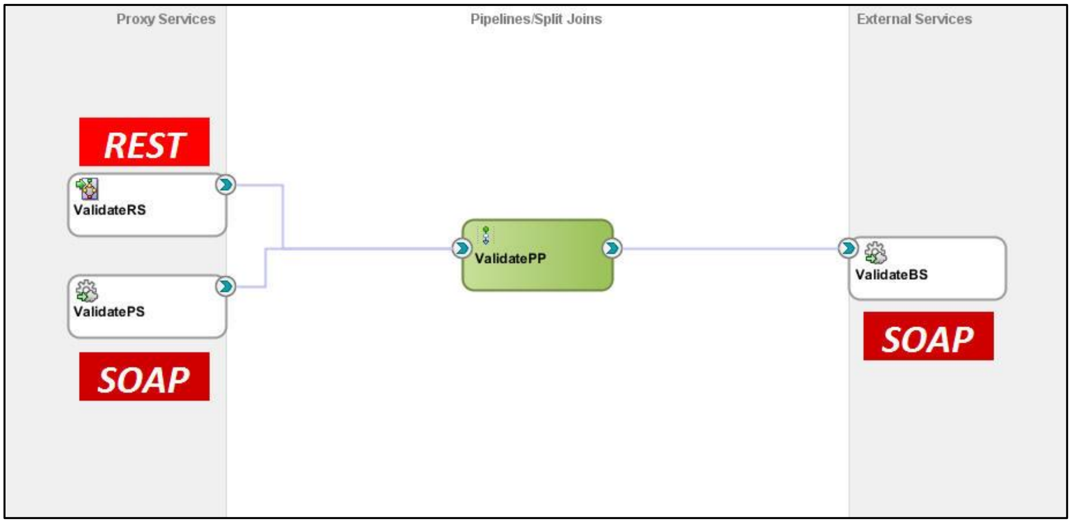
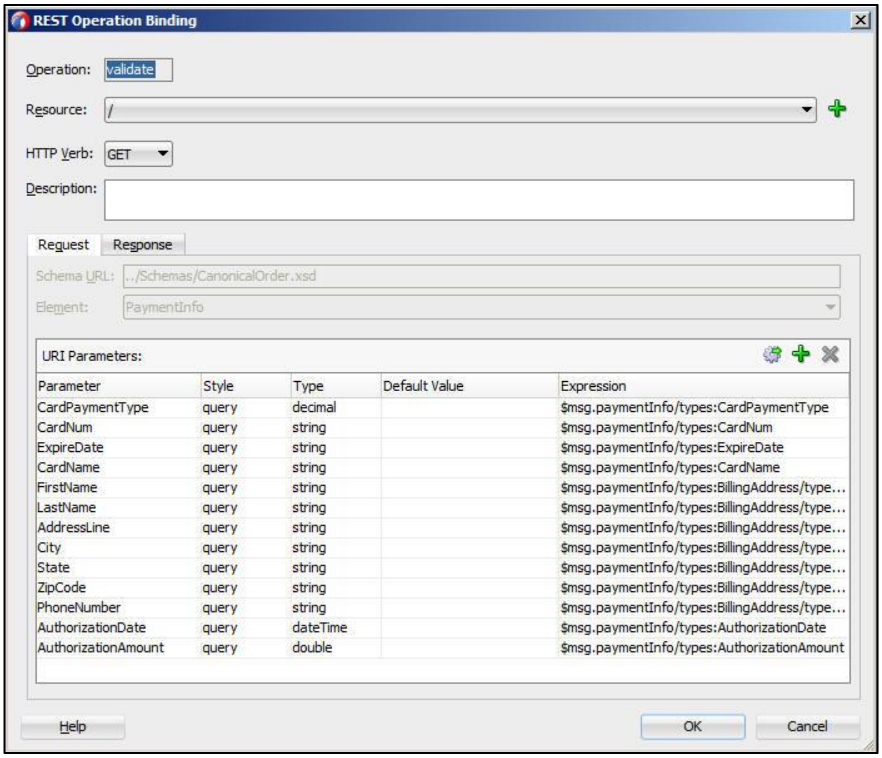


Figure 5: Oracle Service Bus exposing a backend SOAP service as REST service

Both SOA composites and Service Bus projects include the same REST binding wizard. To avoid duplication, the remainder of this section will discuss REST support within Service Bus.

When exposing an existing SOAP service, the REST binding automatically takes the same shape as defined in the original WSDL. If a different shape needs to be supported, a REST interface can be created based on a different schema and messages can be transformed in the pipeline. Remember, the translation (REST to SOAP to REST) takes place on the wire between the pipeline and the Proxy and/or Business services.

Figure 6 shows how a SOAP based payment service is exposed as a REST service through the new wizard. You can see that the parameters for the REST service are auto-created and can be changed manually. The HTTP Verb dropdown allows the creation of bindings for all of the standard verbs. The wizard allows the definition of the payload type as XML or JSON or both, sample data creation as XML or JSON and HTTP status definition for each operation.



Operation: validate

Resource: /

HTTP Verb: GET

Description:

Request | Response

Schema URL: ../Schemas/CanonicalOrder.xsd

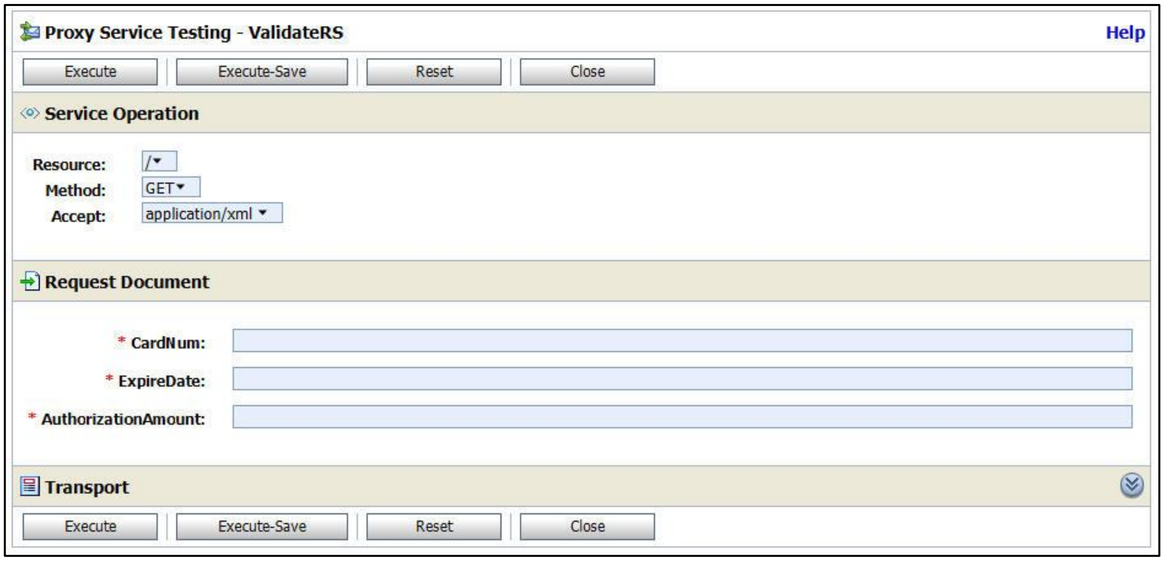
Element: PaymentInfo

URI Parameters:

Parameter	Style	Type	Default Value	Expression
CardPaymentType	query	decimal		$msg.paymentInfo/types:CardPaymentType
CardNum	query	string		$msg.paymentInfo/types:CardNum
ExpireDate	query	string		$msg.paymentInfo/types:ExpireDate
CardName	query	string		$msg.paymentInfo/types:CardName
FirstName	query	string		$msg.paymentInfo/types:BillingAddress/type...
LastName	query	string		$msg.paymentInfo/types:BillingAddress/type...
AddressLine	query	string		$msg.paymentInfo/types:BillingAddress/type...
City	query	string		$msg.paymentInfo/types:BillingAddress/type...
State	query	string		$msg.paymentInfo/types:BillingAddress/type...
ZipCode	query	string		$msg.paymentInfo/types:BillingAddress/type...
PhoneNumber	query	string		$msg.paymentInfo/types:BillingAddress/type...
AuthorizationDate	query	dateTime		$msg.paymentInfo/types:AuthorizationDate
AuthorizationAmount	query	double		$msg.paymentInfo/types:AuthorizationAmount

Figure 6: REST binding wizard defining the request

The Service Bus test console has been enriched for easy testing of REST services by providing an input field for the resource to be tested and drop-down menus to select the method the accept header, and whether to display the response as XML or JSON.



Resource: /

Method: GET

Accept: application/xml

* CardNum:

* ExpireDate:

* AuthorizationAmount:

Figure 7: Service Bus test console for REST services

Internet of Things (IoT)

As devices become connected and the Internet of Things becomes ubiquitous, the multitude of devices will enable companies to improve customer service, offer newer products or streamline existing processes. Middleware plays a key role in acting as a bridge between such edge devices or things and enterprise applications.

The role of middleware is to provide the infrastructure and IoT services which in turn help drive innovation, enable new revenue streams, and improve operational efficiencies.

Event processing is an integral part of an Internet of Things platform. As massive amounts of data streams from sensing devices, it's important to derive an understanding of what data is important and what's not.

Oracle Event Processing (OEP) delivers real-time analysis of high-velocity data. It is a complete solution for building IoT applications to filter, correlate and process events in real time so that downstream applications are driven by true, real-time intelligence. OEP filters out noise (such as data ticks without any change in values) and helps identify critical conditions before this data is actually relayed to the back-end. Built on industry standards including SQL, Java, and OSGI, it provides an open architecture for processing complex events. Oracle SOA Suite 12c more tightly integrates the OEP platform with Oracle Service Bus and the Oracle SOA Suite Event Delivery Network (EDN). More information on this important component is available in separate documents.

Productivity Improvements

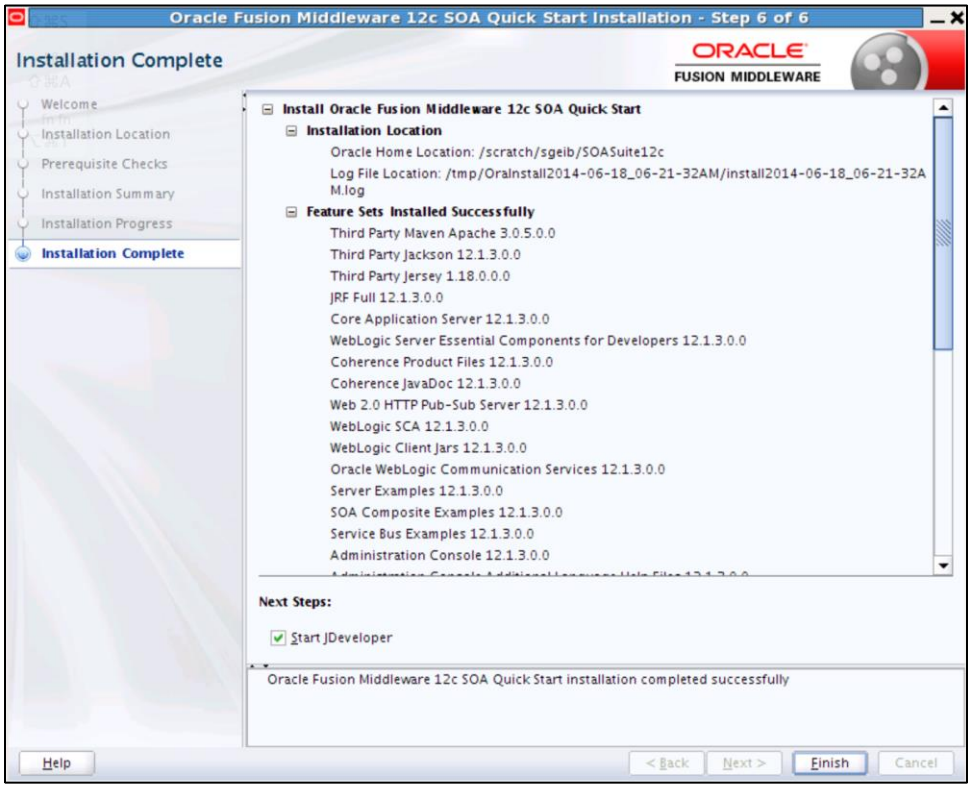
In addition to adding new features supporting emerging industry trends like cloud and mobile, Oracle SOA Suite 12c also provides many new features and enhancements around developer tooling, administration and operations and, of course, performance.

Rapid Install

Crucial first steps in every SOA development cycle are the **installation** and **configuration** of a SOA **development environment**, including the Integrated Development Environment (IDE) and the SOA run-time and infrastructure database. For pre-12c versions of Oracle SOA Suite, these steps were challenging, starting with the download of several components and a complicated install and configuration process.

With Oracle SOA Suite 12c, this process has been dramatically simplified with the introduction of the new **Quick Start installer**. The download consists of a single file that can be obtained from the Oracle Technology Network (OTN). The user only needs to answer a few questions, such as defining the location for Oracle Home, and the installation usually completes in less than 30 minutes.

The Quick Start install provides the foundation for a single user development environment, which includes all Oracle SOA Suite core components - Oracle BPEL Process Manager, Oracle Human Workflow, Oracle Business Rules, Oracle Mediator, Oracle Service Bus, Oracle Technology Adapters, Oracle Enterprise Scheduler, SOA Spring Component and Enterprise Manager Fusion Middleware Control. In addition, Oracle JDeveloper is installed with all SOA IDE extensions and an integrated WebLogic Server.



```
⊟ Install Oracle Fusion Middleware 12c SOA Quick Start
    ⊟ Installation Location
        Oracle Home Location: /scratch/sgeib/SOASuite12c
        Log File Location: /tmp/OraInstall2014-06-18_06-21-32AM/install2014-06-18_06-21-32A
        M.log
    ⊟ Feature Sets Installed Successfully
        Third Party Maven Apache 3.0.5.0.0
        Third Party Jackson 12.1.3.0.0
        Third Party Jersey 1.18.0.0.0
        JRF Full 12.1.3.0.0
        Core Application Server 12.1.3.0.0
        WebLogic Server Essential Components for Developers 12.1.3.0.0
        Coherence Product Files 12.1.3.0.0
        Coherence JavaDoc 12.1.3.0.0
        Web 2.0 HTTP Pub-Sub Server 12.1.3.0.0
        WebLogic SCA 12.1.3.0.0
        WebLogic Client Jars 12.1.3.0.0
        Oracle WebLogic Communication Services 12.1.3.0.0
        Server Examples 12.1.3.0.0
        SOA Composite Examples 12.1.3.0.0
        Service Bus Examples 12.1.3.0.0
        Administration Console 12.1.3.0.0
        Administration Console Additional Language Help Files 12.1.3.0.0
```

Next Steps:

☑ Start JDeveloper

```
Oracle Fusion Middleware 12c SOA Quick Start installation completed successfully
```

Figure 8: Final Quick Start install screen

After the installation completes, you only need to create and then start the pre-configured development domain, in this case an integrated WebLogic Server domain in Oracle JDeveloper, which uses Java DB, also known as Apache Derby, for the SOA dehydration store.

At this point, everything is ready to go and you can either download the provided SOA tutorial or start with your first Oracle SOA Suite 12c application.

Unified Design Interface

A key differentiator of Oracle SOA Suite 11g relative to other integration platforms has always been the **unified design interface** across most of the components for Oracle SOA Suite. Oracle SOA Suite 12c takes this differentiator a big step forward by integrating the remaining major components for Oracle SOA Suite, Oracle Service Bus and Oracle Event Processing, into a single unified experience.   This feature simplifies integration by eliminating the need to train developers, administrators, architects and others on separate components for every aspect of integration, which lowers cost and provides a faster time to integrate.

Oracle Service Bus

The visual representation of an Oracle Service Bus project, the **Overview editor** (see Figure 9), has been modeled from the SOA Composite Editor and now shares the same JDeveloper IDE environment with the rest of Oracle SOA Suite. This view allows the creation of Service Bus projects using a top-down, drag and drop approach. You can create services by dragging icons from the Component Palette on the right, to the lanes of the canvas.

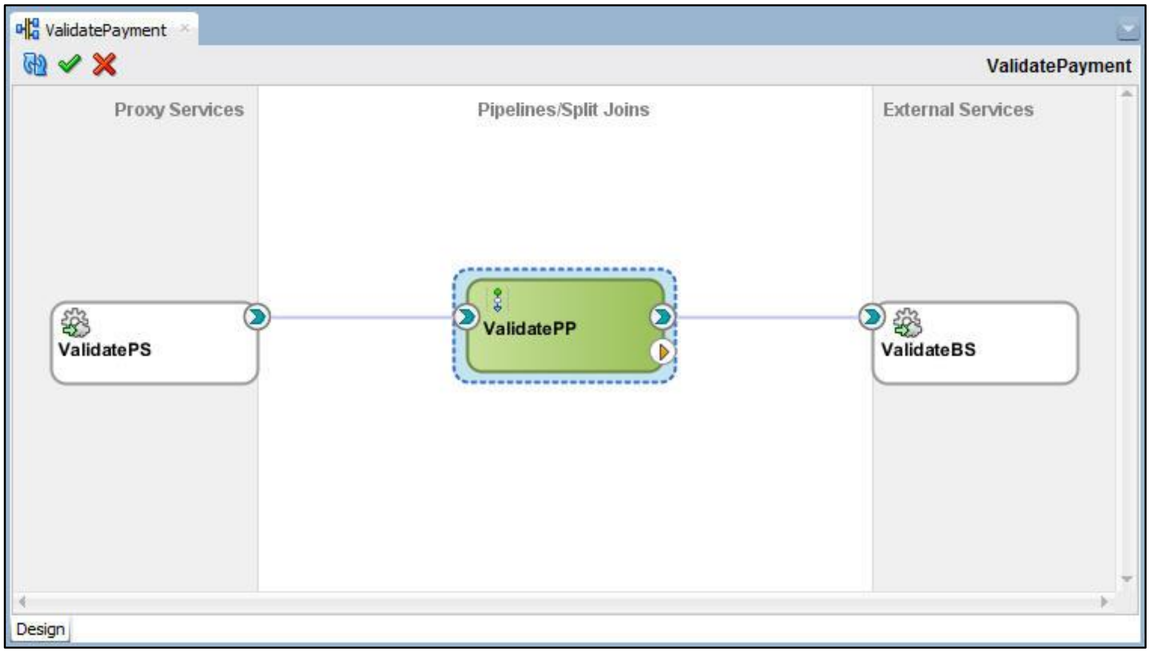


Figure 9: The Service Bus Overview in JDeveloper with a proxy service, pipeline and business service

On the Component Palette seen in Figure 10, notice that the **Resources** category contains **Pipeline** and **Split-Join** icons, the components for a Service Bus application. In this release, the pipeline has been split from the proxy service to allow it to be a re-usable component. The proxy is defined through the transport while the pipeline includes the message flow. Due to this split, a pipeline can now be exposed through several transports, allowing more than one input channel into the same message flow.

The palette also includes adapters and Service Bus transports. While all SOA adapters are now certified with Service Bus, the transports will still be available. In order to minimize confusion, the group **Technology** includes recommended technology adapters and transports. Others are grouped in **Advanced** for completeness and backward compatibility.

You can also see **Application** and **Cloud** Adapters in the component palette (Figure 10).

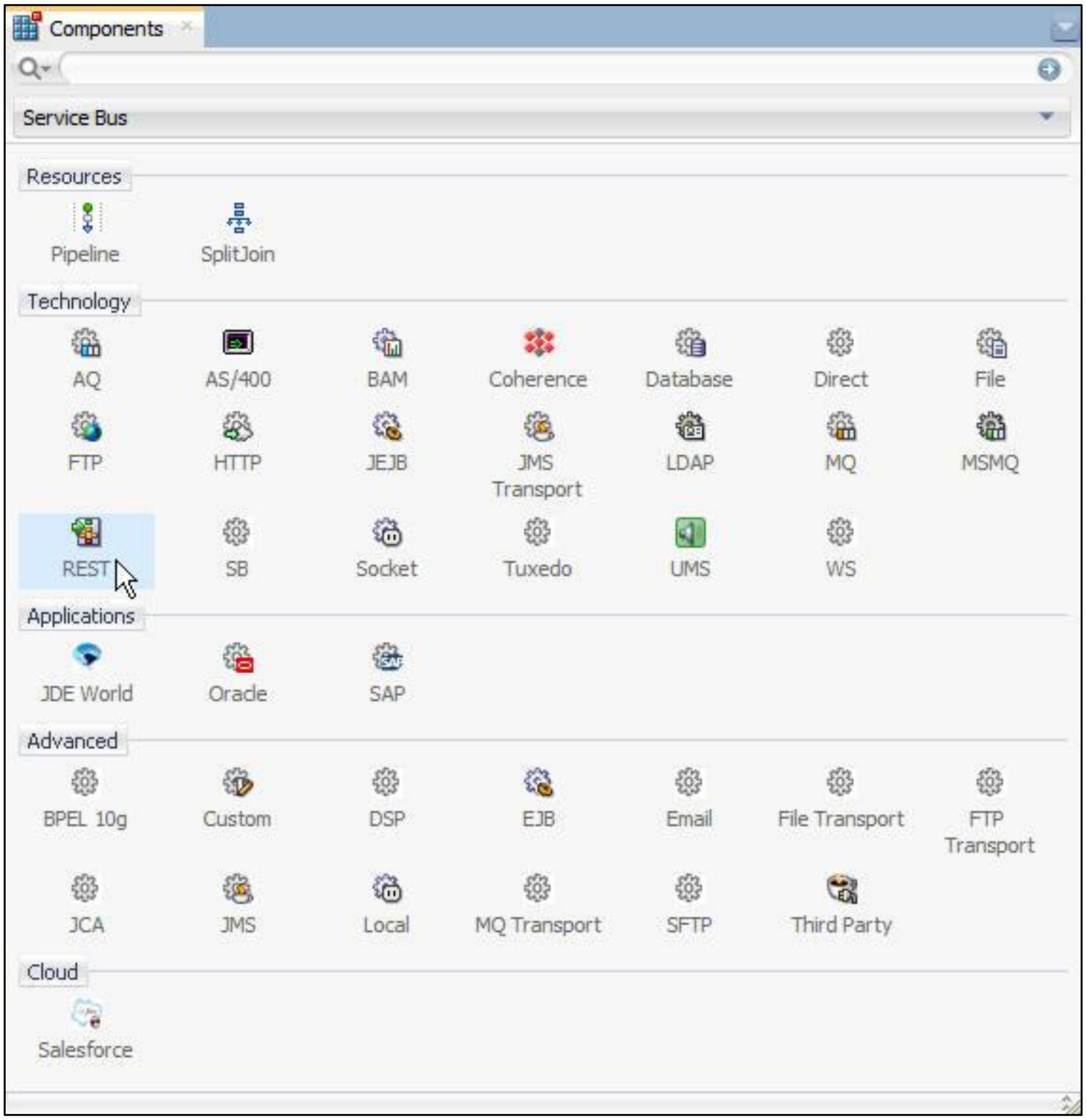
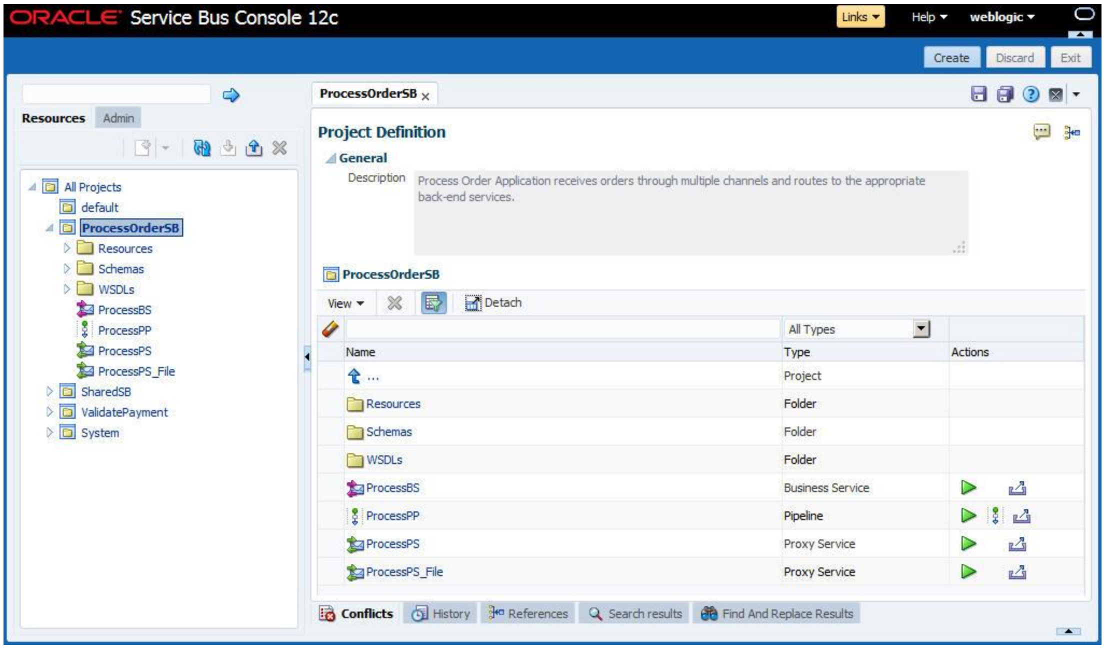


Figure 10: The Oracle Service Bus component palette in JDeveloper includes Pipeline, Split-Join, Technology Adapters and Transports, Application Adapters and Cloud Adapters.

Traditionally, Service Bus always provided a browser-based console for light-weight Service Bus configuration. This console is still available in Service Bus 12c and has received a fresher look as you can see in Figure 11.



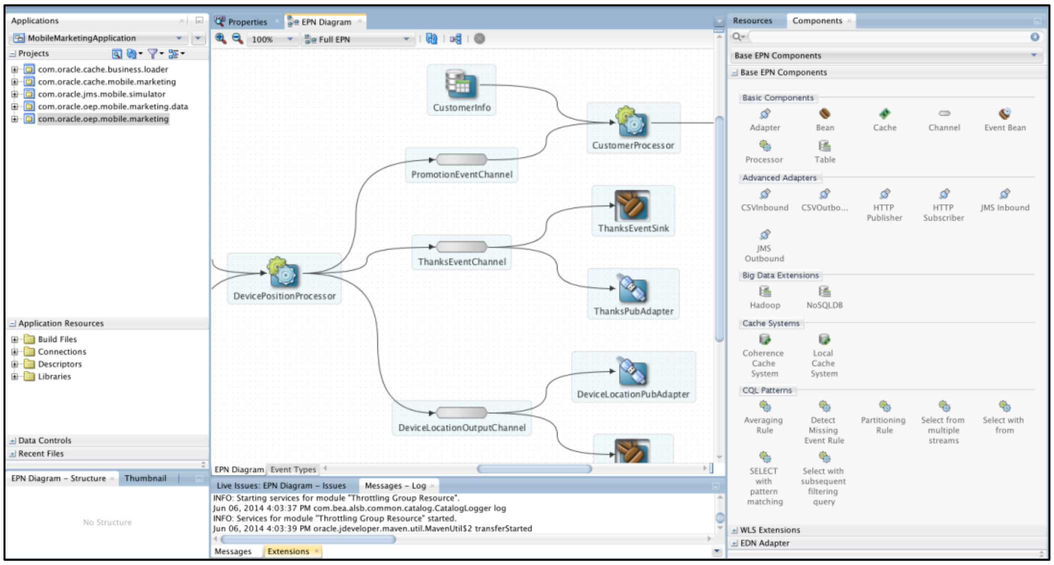
Description: Process Order Application receives orders through multiple channels and routes to the appropriate back-end services.

Name	Type	Actions
...	Project	
Resources	Folder	
Schemas	Folder	
WSDLs	Folder	
ProcessBS	Business Service	
ProcessPP	Pipeline	
ProcessPS	Proxy Service	
ProcessPS_File	Proxy Service	

Figure 11: Service Bus 12c browser-based Console

Oracle Event Processing

With Oracle SOA Suite 12c, OEP has been integrated into JDeveloper, providing a visually impressive component palette to create your applications by simply dragging and dropping the required artifacts onto the canvas. With each event node dropped, wizard driven prompting is shown to ensure that the correct and required parameters are quickly defined. Another major new feature is the Event Delivery Network (EDN) event adapter nodes, which provide that tight integration at runtime to Oracle SOA Suite composites and all other SOA components supporting the EDN. Using the resource components window view, the Oracle Event Processing runtime server and application status can be easily reviewed and manipulated effectively.



```
INFO: Starting services for module "Throttling Group Resource".
Jun 06, 2014 4:03:37 PM com.bea.alsb.common.catalog.CatalogLogger log
INFO: Services for module "Throttling Group Resource" started.
Jun 06, 2014 4:03:39 PM oracle.jdeveloper.maven.util.MavenUtil$2 transferStarted
```

Figure 12: Visual Event Processing Network Development Environment

Templates & BPEL subprocesses

“Share and **reuse”** has always been one of the pillars of a service-oriented architecture. Oracle SOA Suite 12c introduces several new features to boost the ability to share and reuse services and components, while at the same time enabling **best practices** and improving **manageability**. The new **SOA starter templates** provide an easy way to package SOA composites, components or fragments of a BPEL process and distribute them to other departments, partners or customers. This enables the sharing of frequently used patterns and speeds up development for template users. Three types of SOA starter templates are supported:

Project templates are a new way of creating a SOA project instead of starting with an empty composite. The template can include pre-defined components, as well as services and references. For example, frequently used adapters and transformations can be pre-configured in a template to eliminate the need to re-create the same components every time a new project is created.

Component templates package one main component, for example a BPEL process, including all references (adapters and bindings) invoked by the process. You can enforce best practices by packaging a BPEL process with a pre-defined fault handler and a number of mandatory variables as a component template and sharing it across departments. By providing this template to all developers, you ensure a consistent way of handling faults and naming variables.

Custom activity templates consist of a group of activities in a BPEL process, which can include partner-links and external services. The templates are available within the BPEL palette and can be dragged and dropped into any BPEL process. You can for example package a BPEL scope, consisting of a complex assign or transformation and the invocation of an external web service. By sharing this scope, you eliminate the chances of introducing errors and of course save development time through re-use.

SOA templates work in a “drag-and-drop” way. Once they have been used, they become an integral part of the application and can be customized going forward. When changes are made to the original template, they’re not reflected in the composites and components created through templates.

Note that **pipeline templates in Oracle Service Bus** fulfill a slightly different use case. Many customers have been asking for a faster way to provision services that are very similar to each other, apart from small differences, like a different routing end point or service call-outs. The template author defines the message flow and marks those areas allowing customization as so called “**placeholders**” (see Figure 13). Whenever a new “**derived**” pipeline is created based on a template, only the areas defined as placeholders can be changed. All other stages and actions within the pipeline will be preserved as long as the pipeline stays connected with the template. Derived pipelines inherit all future changes to the template.

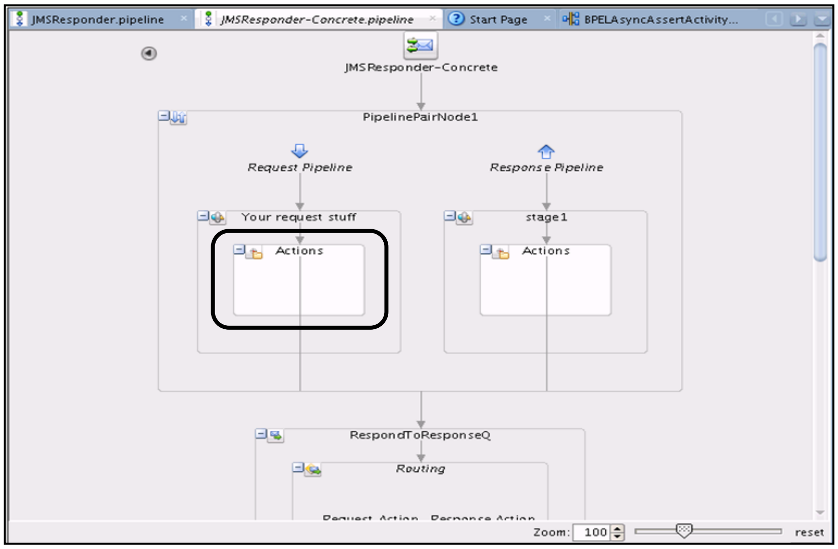


Figure 13: A Service Bus pipeline template with placeholders that allow customization

If the connection between a derived pipeline and a template is intentionally broken, the pipeline behaves like any other pipeline and changes will not be inherited anymore.

Both types of templates – SOA starter templates and pipeline templates - accelerate development, reduce the chance of errors when duplicating patterns and still provide enough freedom for customization. At the same time, there is no difference at runtime between services or components generated from scratch or those derived from templates.

BPEL subprocesses also promote re-use and sharing, but work slightly differently. Don't be fooled by the name, this is not just a fancy new way of calling one BPEL process from another. A BPEL subprocess is actually not a complete process, but a fragment that modularizes a reusable piece of business logic. This fragment can include partnerlinks and references and can be invoked from other "parent" BPEL processes through a new "call" activity. A subprocess doesn't have an interface, like a standard BPEL process does. You can best compare it to a subroutine in an object-oriented programming language. At run-time, it executes completely in the context of the parent process, permitting access to process variables and inheriting fault handling and compensation logic.

Oracle SOA Suite 12c provides two types of BPEL subprocesses: an **inline** subprocess is implemented as part of a parent BPEL process and only visible to this one process. It can be invoked anywhere within the parent. A **standalone** subprocess can be invoked by all BPEL processes within the same composite and has a visual representation in the composite editor. You can see in Figure 14 that the wire between the parent and the subprocess is represented as a dotted line to visualize the difference to a normal wire in a composite.

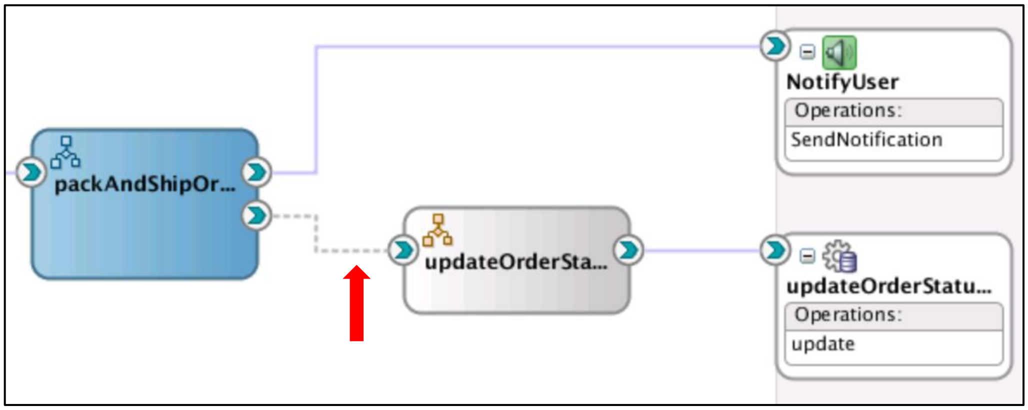


Figure 14: Standalone subprocess in the component palette including database adapter shown as dotted line

Like a template, a BPEL subprocess enforces best practices and reduces development time by eliminating the need to re-create the same activities over and over again. A BPEL subprocess however also boosts performance: It takes up less memory at run-time as it only gets created in memory once, independent of the number of invocations.

Debugger & Tester Enhancements

A successful development process requires simple tools for **debugging** and **testing** during development. Oracle SOA Suite 12c includes a visual debugger in Oracle JDeveloper that allows the setting of breakpoints within a SOA composite, a BPEL process and a Service Bus pipeline. For composite breakpoints, you have a choice between request and reply breakpoints or a breakpoint pair. Figure 15 shows a BPEL process with a SOAP interface and two breakpoint pairs. The debugger will stop four times: after the SOAP requests is received, before the BPEL process starts, after the BPEL process completes and before the SOAP response is returned.

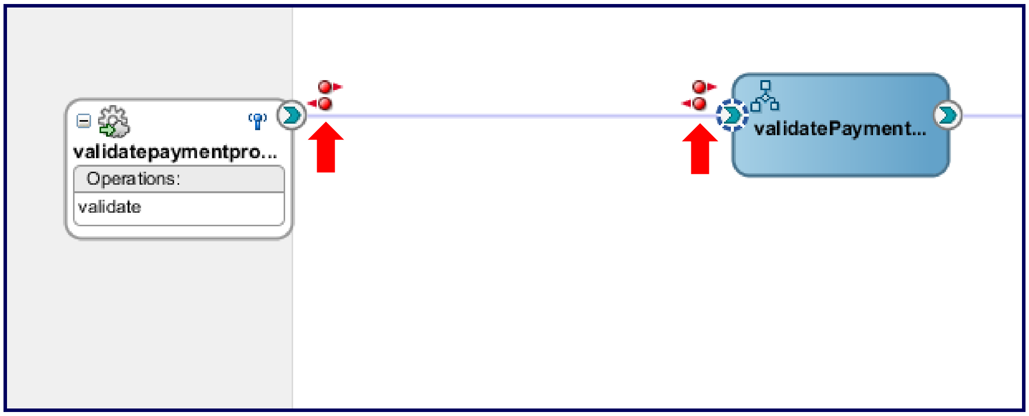


Figure 15: Breakpoints in a SOA composite highlighted by arrows

Within a BPEL process, breakpoints can be set for every activity.

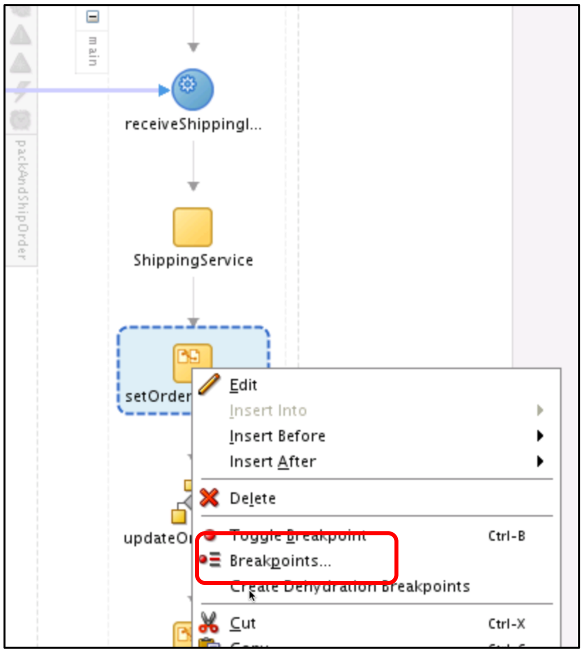
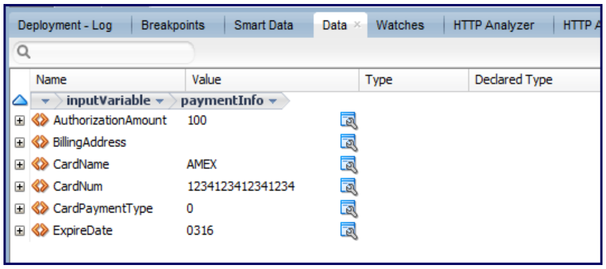


Figure 16 Setting a breakpoint in a BPEL process

The debugger provides stepping into, out and over, just like a java debugger, and provides you with a data window that shows all currently visible variables and their values. Variable values can be changed during the debug process. Debugging is only allowed in development environments, on local or remote servers, but not in production systems,



Name	Value	Type	Declared Type
AuthorizationAmount	100		
BillingAddress			
CardName	AMEX		
CardNum	1234123412341234		
CardPaymentType	0		
ExpireDate	0316		

Figure 17: Data window during debug

The **SOA Suite test framework**, already available in previous releases, has been enhanced in Oracle SOA Suite 12c. As part of a test definition, input and output messages can be auto-generated or loaded from an existing sample file. Request and response messages as well as faults can be asserted and external services and faults can be emulated to avoid testing of backend systems. The actual test can be run directly within JDeveloper, which also shows detailed reports of every test run. There’s no need anymore to switch between JDeveloper and Enterprise Manager Fusion Middleware Control to define, run and analyze tests.

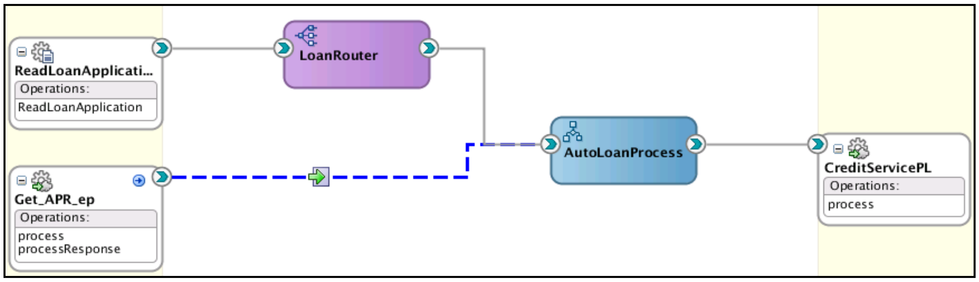
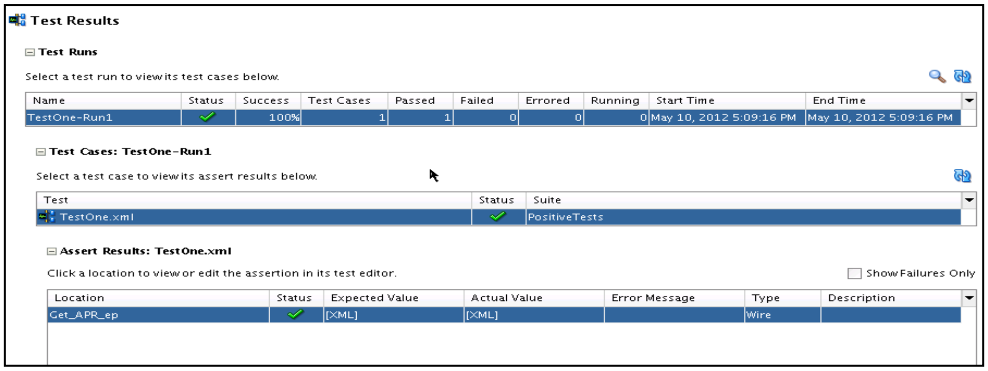


Figure 18: Test definition in JDeveloper



Test Results

⊟ **Test Runs**

Select a test run to view its test cases below.

Name	Status	Success	Test Cases	Passed	Failed	Errored	Running	Start Time	End Time
TestOne-Run1	✓	100%	1	1	0	0	0	May 10, 2012 5:09:16 PM	May 10, 2012 5:09:16 PM

⊟ **Test Cases: TestOne-Run1**

Select a test case to view its assert results below.

Test	Status	Suite
TestOne.xml	✓	PositiveTests

⊟ **Assert Results: TestOne.xml**

Click a location to view or edit the assertion in its test editor. □ Show Failures Only

Location	Status	Expected Value	Actual Value	Error Message	Type	Description
Get_APR_ep	✓	[XML]	[XML]		Wire	

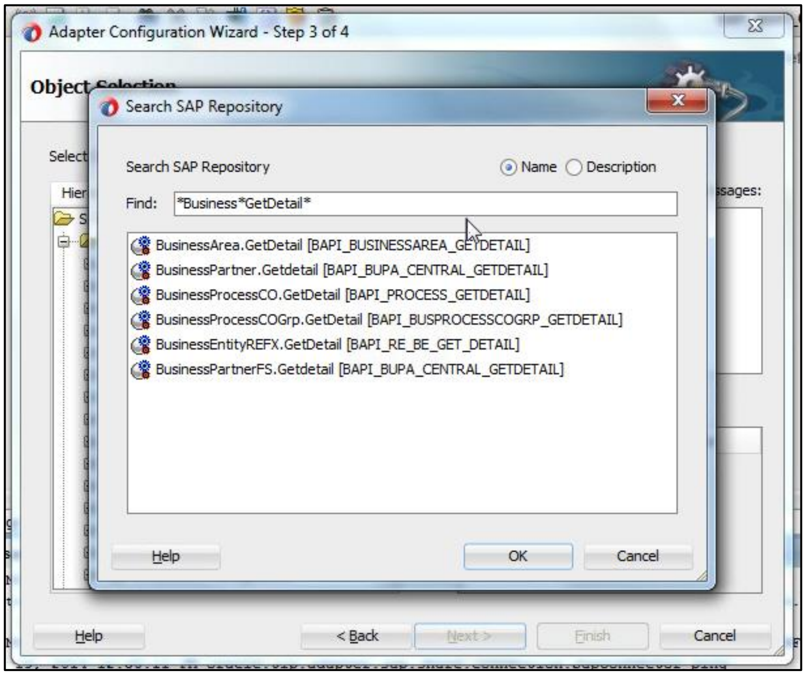
Figure 19: Test Results in JDeveloper

New Adapters for On-Premise Integration

Adapter are the critical last mile components that simplify integration across enterprise applications, legacy and homegrown systems, and now also allow integration with cloud applications. Several new on-premise **Application** and **Technology Adapters** are available for Oracle SOA Suite 12c.

Oracle Adapter for SAP R/3

Along with Oracle SOA Suite 12c, Oracle introduces the new SAP Adapter that provides native bidirectional integration with SAP R/3. It supports invocation of BAPI/RFC and IDOCs to send and receive data from the SAP R/3 application. The Adapter is natively integrated into JDeveloper and communicates with the SAP Business Object Repository to provide a graphical browser of the objects in SAP for the user to discover, search and select for the integration. In addition to browsing the objects in the repository, the adapter design-time allows searching for the objects by name or wild card expressions.



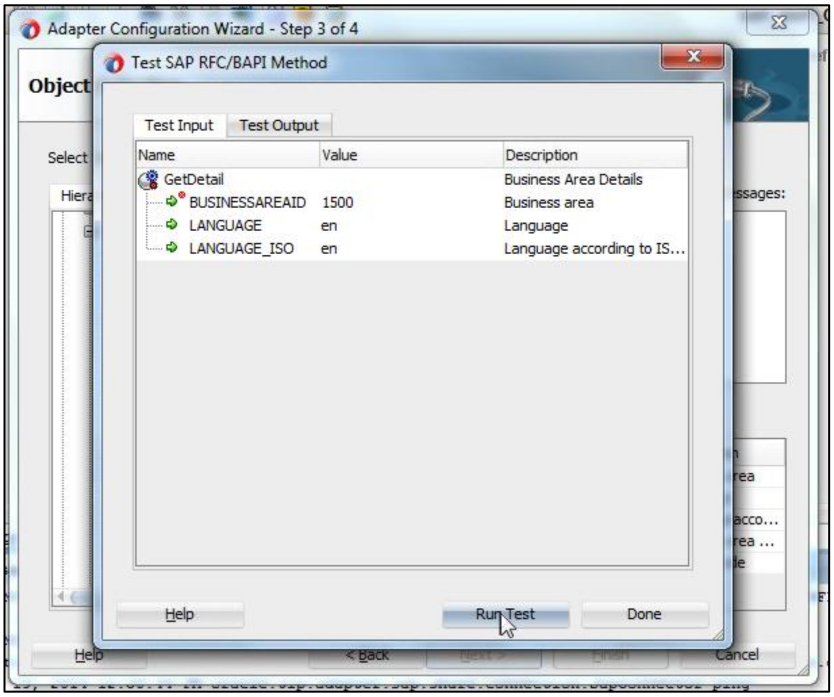
Search SAP Repository ● Name ○ Description

Find: *Business*GetDetail*

- BusinessArea.GetDetail [BAPI_BUSINESSAREA_GETDETAIL]
- BusinessPartner.Getdetail [BAPI_BUPA_CENTRAL_GETDETAIL]
- BusinessProcessCO.GetDetail [BAPI_PROCESS_GETDETAIL]
- BusinessProcessCOGrp.GetDetail [BAPI_BUSPROCESSCOGRP_GETDETAIL]
- BusinessEntityREFX.GetDetail [BAPI_RE_BE_GET_DETAIL]
- BusinessPartnerFS.Getdetail [BAPI_BUPA_CENTRAL_GETDETAIL]

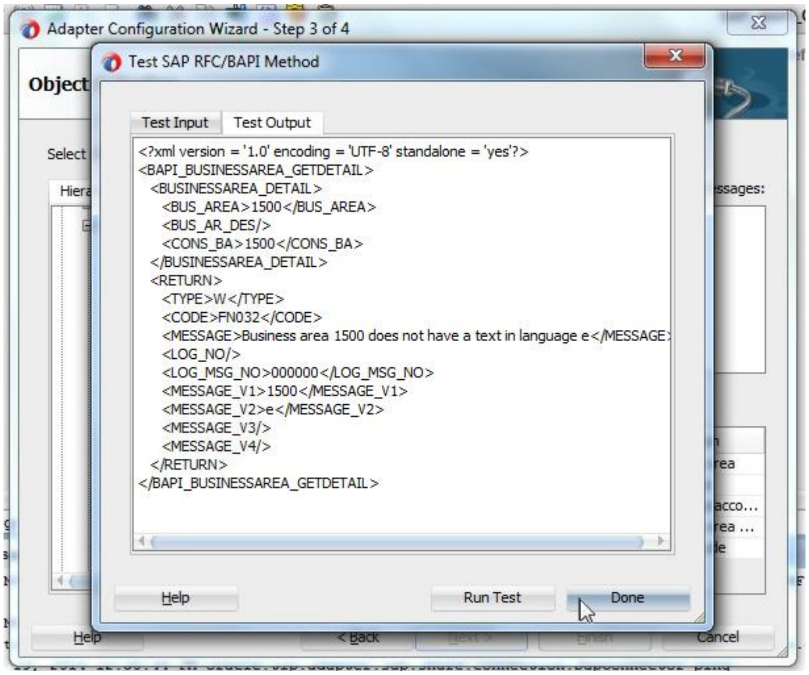
Figure 20: Wildcard search for BAPI objects in the SAP Adapter design-time

The design-time wizard provides great detail on each of the objects, such as the detailed view of the definition and the corresponding XML Schema. Most importantly, it enables users to test the APIs in SAP R/3 at design-time, without needing to deploy the SOA application to the application server.



Name	Value	Description
GetDetail		Business Area Details
BUSINESSAREAID	1500	Business area
LANGUAGE	en	Language
LANGUAGE_ISO	en	Language according to IS…

Figure 21: Testing the BAPI/RFC APIs at design-time



```
<?xml version = '1.0' encoding = 'UTF-8' standalone = 'yes'?>
<BAPI_BUSINESSAREA_GETDETAIL>
  <BUSINESSAREA_DETAIL>
    <BUS_AREA>1500</BUS_AREA>
    <BUS_AR_DES/>
    <CONS_BA>1500</CONS_BA>
  </BUSINESSAREA_DETAIL>
  <RETURN>
    <TYPE>W</TYPE>
    <CODE>FN032</CODE>
    <MESSAGE>Business area 1500 does not have a text in language e</MESSAGE
    <LOG_NO/>
    <LOG_MSG_NO>000000</LOG_MSG_NO>
    <MESSAGE_V1>1500</MESSAGE_V1>
    <MESSAGE_V2>e</MESSAGE_V2>
    <MESSAGE_V3/>
    <MESSAGE_V4/>
  </RETURN>
</BAPI_BUSINESSAREA_GETDETAIL>
```

Figure 22: Viewing BAPI Execution Test Results at design-time

Oracle Adapter for JD Edwards World

The JDE World Adapter enables users to natively integrate with JD Edwards World ERP systems through a JDeveloper based design-time that enables users to perform integration with the JDE World ERP Application. In Oracle SOA Suite 12c, the adapter supports insert and query of data from the JDE World z-tables.

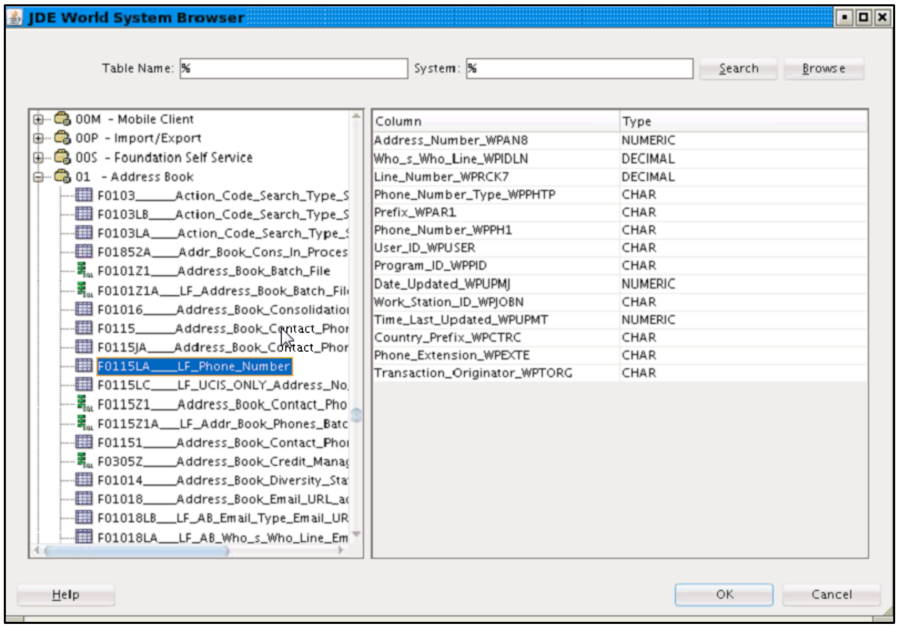


Table Name: %

System: %

```
00M  - Mobile Client
00P  - Import/Export
00S  - Foundation Self Service
01   - Address Book
    F0103______Action_Code_Search_Type_S
    F0103LB____Action_Code_Search_Type_S
    F0103LA____Action_Code_Search_Type_
    F01852A____Addr_Book_Cons_In_Proces
    F0101Z1____Address_Book_Batch_File
    F0101Z1A___LF_Address_Book_Batch_Fil
    F01016_____Address_Book_Consolidatio
    F0115______Address_Book_Contact_Phor
    F0115JA____Address_Book_Contact_Phor
    F0115LA____LF_Phone_Number
    F0115LC____LF_UCIS_ONLY_Address_No
    F0115Z1____Address_Book_Contact_Pho
    F0115Z1A___LF_Addr_Book_Phones_Batc
    F01151_____Address_Book_Contact_Phoi
    F0305Z_____Address_Book_Credit_Mana
    F01014_____Address_Book_Diversity_Sta
    F01018_____Address_Book_Email_URL_a
    F01018LB___LF_AB_Email_Type_Email_UR
    F01018LA___LF_AB_Who_s_Who_Line_Em
```

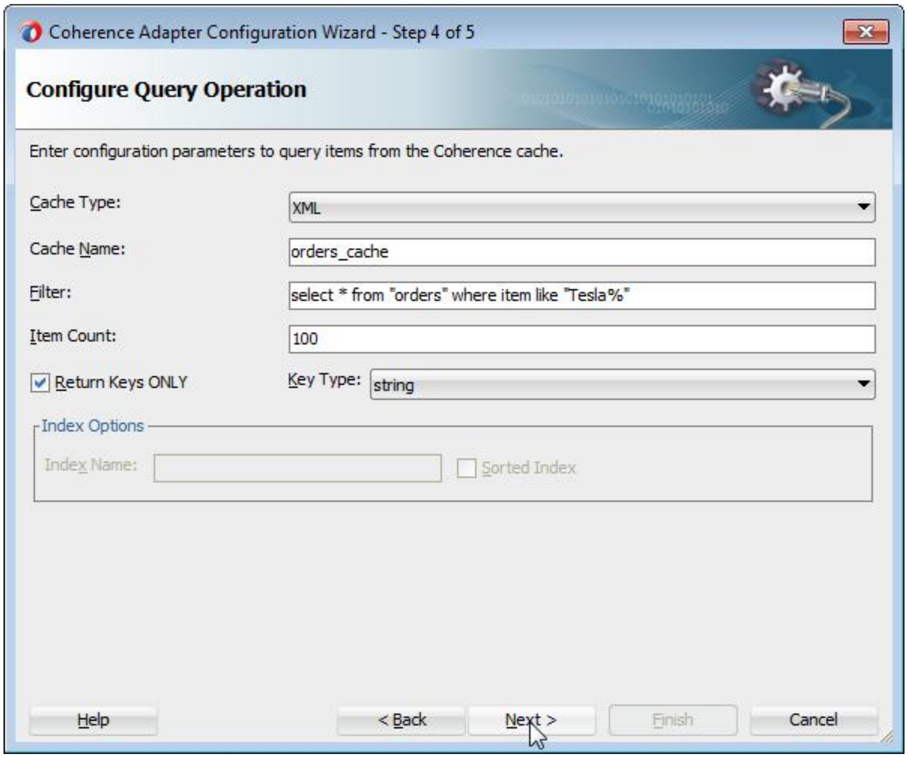
Column	Type
Address_Number_WPAN8	NUMERIC
Who_s_Who_Line_WPIDLN	DECIMAL
Line_Number_WPRCK7	DECIMAL
Phone_Number_Type_WPPHTP	CHAR
Prefix_WPAR1	CHAR
Phone_Number_WPPH1	CHAR
User_ID_WPUSER	CHAR
Program_ID_WPPID	CHAR
Date_Updated_WPUPMJ	NUMERIC
Work_Station_ID_WPJOBN	CHAR
Time_Last_Updated_WPUPMT	NUMERIC
Country_Prefix_WPCTRC	CHAR
Phone_Extension_WPEXTE	CHAR
Transaction_Originator_WPTORG	CHAR

Figure 23: The System Browser in the JD Edwards World Adapter enables users to search, browse, discover and integrate with z tables in JDE World.

The adapter uses the JDBC Driver for JDE World for connecting to the Application. Note that it requires availability of jt400.jar library to access the access the AS/400 system that serves as the foundation for the ERP application.

Coherence Adapter

The Coherence Adapter allows seamless integration with Oracle Coherence, the industry leading in-memory data grid solution that enables organizations to predictably scale mission-critical applications by providing fast access to frequently used data. In many cases, data in backend applications or databases doesn't change very often. Retrieving data like this by directly accessing these systems every time is too costly. The coherence adapter provides the ability to push the data to the coherence cache and access it directly from the cache when needed. The adapter supports outbound integration with local and remote coherence cache and allows users to insert, retrieve, remove and query XML and POJO data from coherence. Users can use the coherence query language to filter and query data from the cache.



Coherence Adapter Configuration Wizard - Step 4 of 5

Configure Query Operation

Enter configuration parameters to query items from the Coherence cache.

Cache Type: XML

Cache Name: orders_cache

Filter: select * from "orders" where item like "Tesla%"

Item Count: 100

☑ Return Keys ONLY   Key Type: string

Index Options

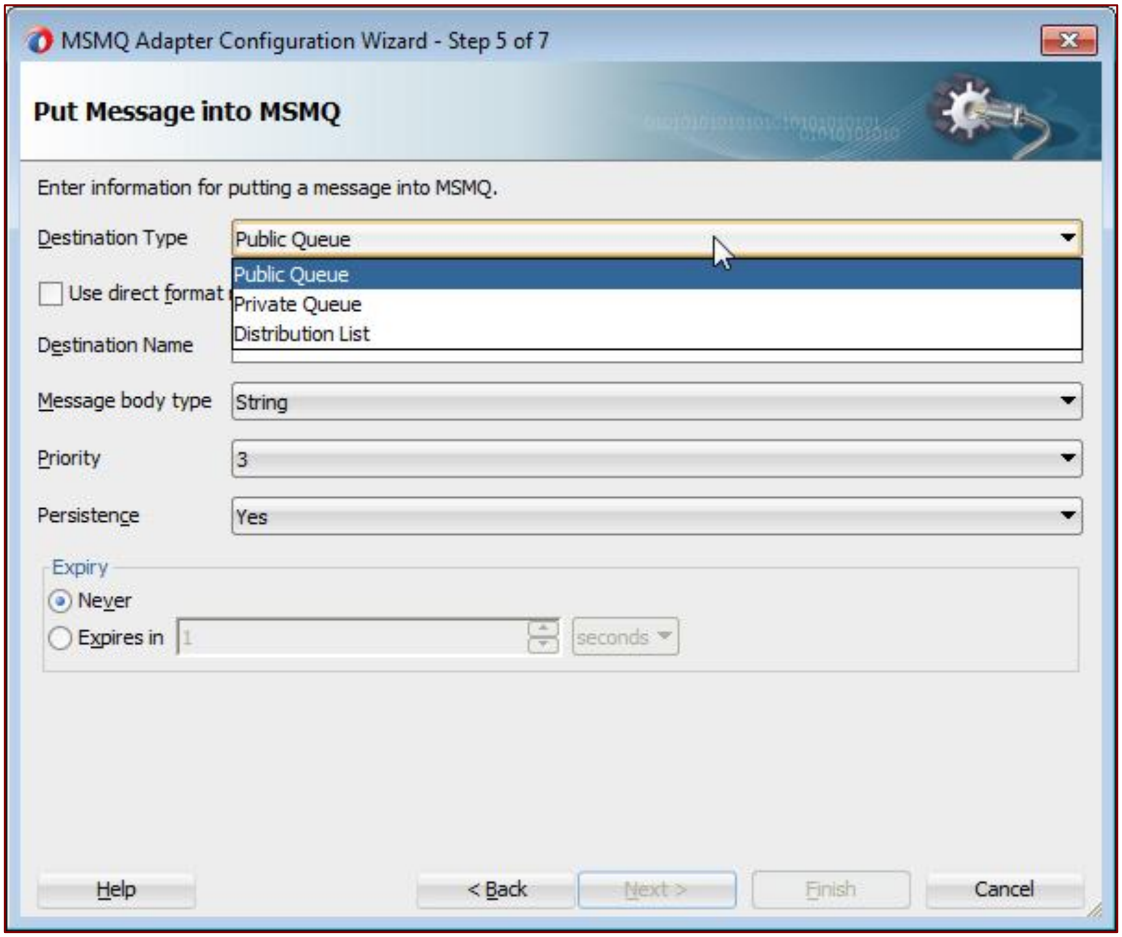
Index Name: □ Sorted Index

Figure 24: The Cache Query configuration in the Coherence Adapter

Oracle Adapter for MSMQ

The messaging adapters also got a new addition in Oracle SOA Suite 12c - the **MSMQ adapter**. MSMQ is the messaging middleware from Microsoft, running on the Windows operating system. The adapter allows you to send and receive messages from private, public queues and Distributed Lists. It uses WebLogic jCOM to communicate with the MSMQ Server and exchange messages.

If the MSMQ Server and SOA are on the same Windows machine, the adapter provides superior performance by using a native mode of communication.



MSMQ Adapter Configuration Wizard - Step 5 of 7

Put Message into MSMQ

Enter information for putting a message into MSMQ.

Destination Type: Public Queue

☐ Use direct format

Destination Name:

Message body type: String

Priority: 3

Persistence: Yes

Expiry

● Never

○ Expires in 1 seconds

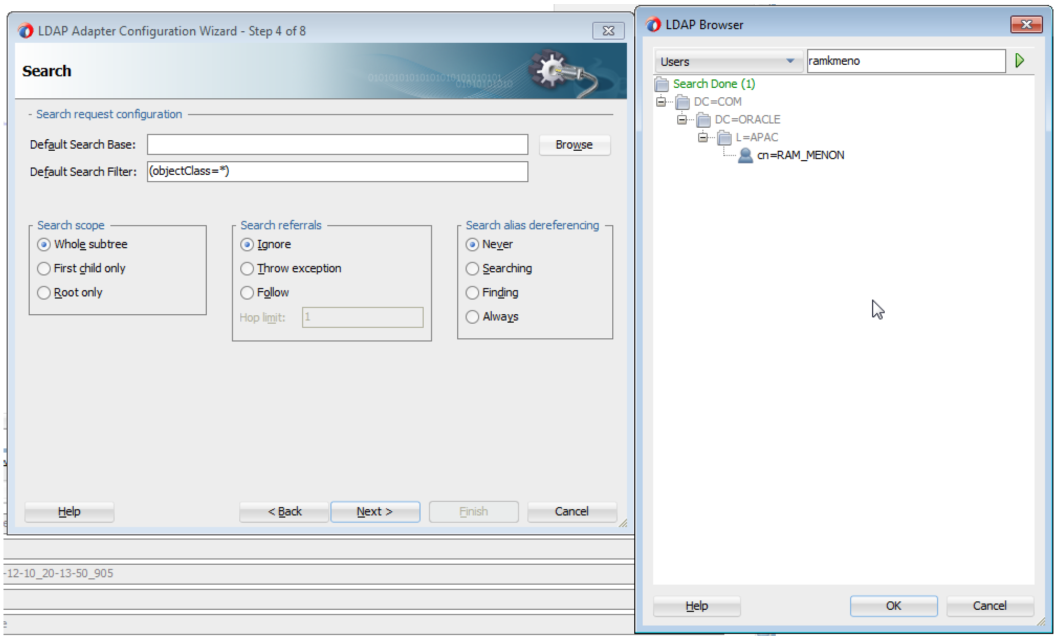
Figure 25: The MSMQ Adapter can be used to enqueue/dequeue messages from Queues and Distributed Lists

Oracle Adapter for LDAP

The **LDAP adapter** provides bi-directional integration with several LDAP V3 directory servers and enables users to perform real-time query, CRUD, compare, search and also issue DSML requests to the server (outbound). It also enables business processes to be triggered on changes to data in the directory server (inbound). The LDAP adapter support the following operations:

- Inbound: Change log notification, Entry change notification
- Outbound: Add, Delete, Modify, Modify DN, Compare, Search, Execute a DSML Request

It also has a rich LDAP Browser built in at design-time that enables users to configure the search requests accordingly at design-time.



Search request configuration

Default Search Base:

Default Search Filter: (objectClass=*)

Search scope: ● Whole subtree ○ First child only ○ Root only

Search referrals: ● Ignore ○ Throw exception ○ Follow

Hop limit: 1

Search alias dereferencing: ● Never ○ Searching ○ Finding ○ Always

-12-10_20-13-50_905

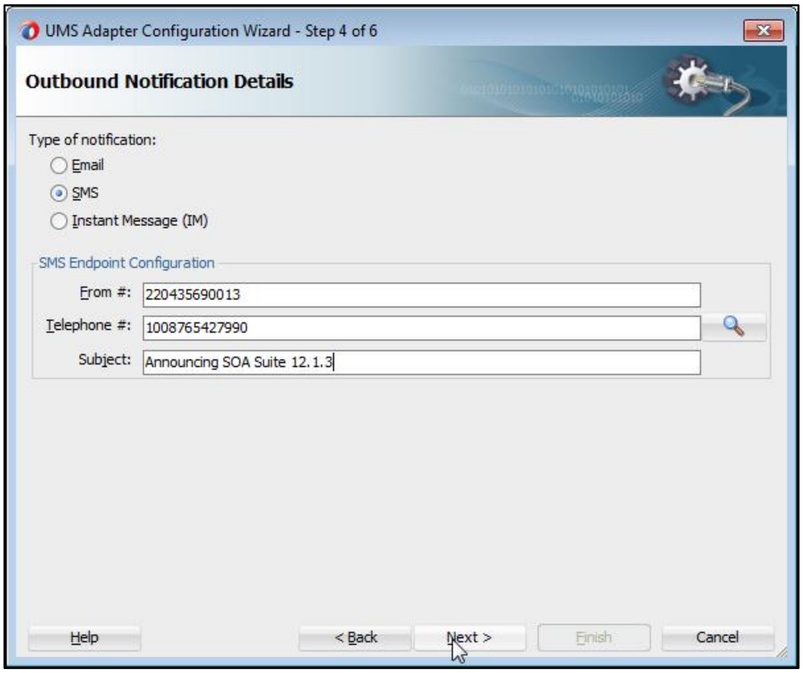
LDAP Browser: Users | ramkmeno

Search Done (1)
- DC=COM
  - DC=ORACLE
    - L=APAC
      - cn=RAM_MENON

Figure 26: Search Configuration with a built-in LDAP Browser in the Adapter Design-time

The Enhanced UMS Adapter

The UMS Adapter was introduced in Oracle SOA Suite 11.1.1.7 with bidirectional support for email communication - i.e. enable email communication from SOA composites, as well as ability to trigger SOA composites on arrival of emails. The adapter has been enhanced to enable bidirectional communication with additional messaging channels such as SMS and instant messaging.


UMS Adapter Configuration Wizard - Step 4 of 6
Outbound Notification Details
Help
< Back
Next >
Finish
Cancel

Type of notification:
○ Email
● SMS
○ Instant Message (IM)

SMS Endpoint Configuration

From #: 220435690013

Telephone #: 1008765427990

Subject: Announcing SOA Suite 12.1.3

Figure 27: Send/Receive IM and Text Messages using the UMS Adapter in Oracle SOA Suite 12.1.3

Other new key features in Adapters

Cross-Platform Support

From Oracle SOA Suite 12c forward, all adapters will be supported within SOA Suite, Service Bus and BPM projects.

Scheduled Activation and Deactivation

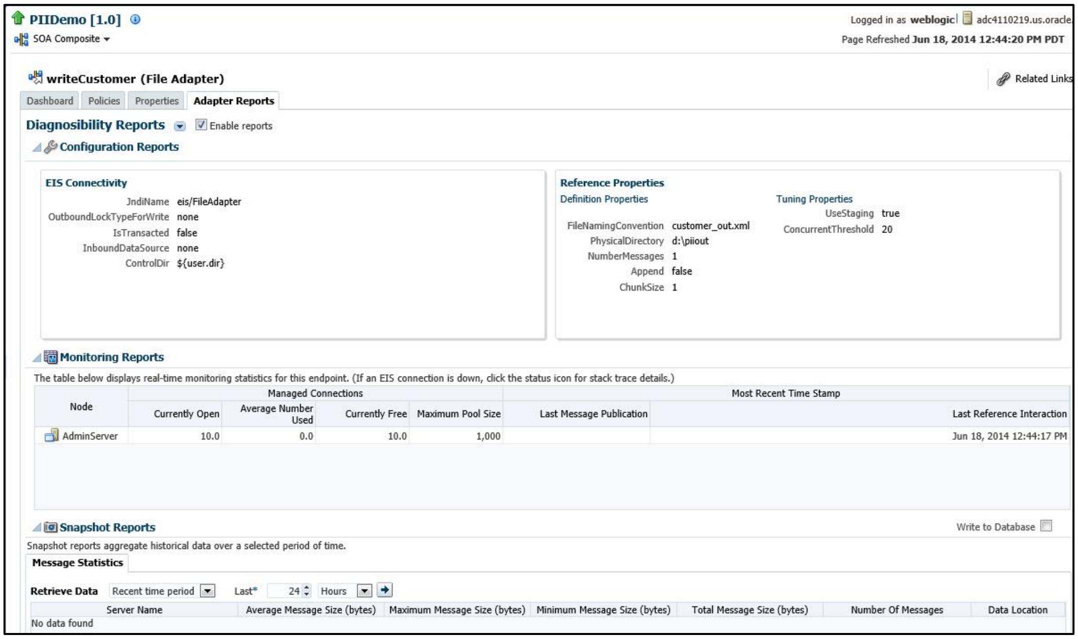
Thanks to the addition of the new Enterprise Scheduler Service (see Enterprise Scheduler Service), polling adapters can now be restricted to certain times of the day, for example outside of business hours, to avoid resource overload. Users can associate an inbound adapter for a SOA Service with ESS schedules to customize timings for processing of messages.

Debugger Integration

Users can enable debugging at the adapter binding components to troubleshoot issues. The debugger enables users to view native and translated data from the adapter for inbound and outbound interactions.

Monitoring and Diagnostics

The Enterprise Manager Fusion Middleware Control now provides diagnosability reports for all adapter binding components for SOA applications. These reports provide real-time visibility into availability and message exchange statistics with the Application or endpoint. The three new report types are Configuration Reports, Monitoring Reports and Snapshot Reports.



Page Refreshed Jun 18, 2014 12:44:20 PM PDT

writeCustomer (File Adapter)

☑ Enable reports

EIS Connectivity

JndiName	eis/FileAdapter
OutboundLockTypeForWrite	none
IsTransacted	false
InboundDataSource	none
ControlDir	${user.dir}

Reference Properties

Definition Properties

FileNamingConvention	customer_out.xml
PhysicalDirectory	d:\piiout
NumberMessages	1
Append	false
ChunkSize	1

Tuning Properties

UseStaging	true
ConcurrentThreshold	20

The table below displays real-time monitoring statistics for this endpoint. (If an EIS connection is down, click the status icon for stack trace details.)

Node	Managed Connections				Most Recent Time Stamp	
	Currently Open	Average Number Used	Currently Free	Maximum Pool Size	Last Message Publication	Last Reference Interaction
AdminServer	10.0	0.0	10.0	1,000		Jun 18, 2014 12:44:17 PM

Write to Database □

Snapshot reports aggregate historical data over a selected period of time.

Retrieve Data: Recent time period, Last* 24 Hours

Server Name	Average Message Size (bytes)	Maximum Message Size (bytes)	Minimum Message Size (bytes)	Total Message Size (bytes)	Number Of Messages	Data Location
No data found						

Figure 28: New Fusion Middleware Control reports in Oracle SOA Suite 12.1.3

Data Translations & Transformations

Data is at the heart of every integration project. It can be received and transmitted through a number of different protocols and many different shapes, for example XML, JSON, comma separated lists and many more.

Native XSD (nXSD)

In previous versions of Oracle SOA Suite, adapters provided the ability to **translate** messages from non-XML formats to XML and vice versa through native XSD (nXSD). Only XML could be processed within a SOA composite. Oracle SOA Suite 12c extends this ability to use nXSD translation as a first class citizen within a BPEL process, Service Bus and Mediator. Now messages can be translated anywhere within the integration flow, not only on the edges. Data **transformation** from one XML format to another can be performed through either **EXtensible Stylesheet Language (XSLT)** or **XQuery**. Oracle JDeveloper now includes graphical mappers for both transformation types.

XQuery

The new **XQuery Mapper** provides a bi-directional view to construct XQuery 1.0 modules and libraries. The left pane of the XQuery Mapper shows the source tree, and the right pane shows the target tree. Tree nodes can be XML elements, attributes, and some other XQuery constructs. In addition to the mapper design view and the source view, expressions can also be edited in the properties window. The properties window can also be used to create more complex XQuery expressions either from pre-defined functions or by defining your own.

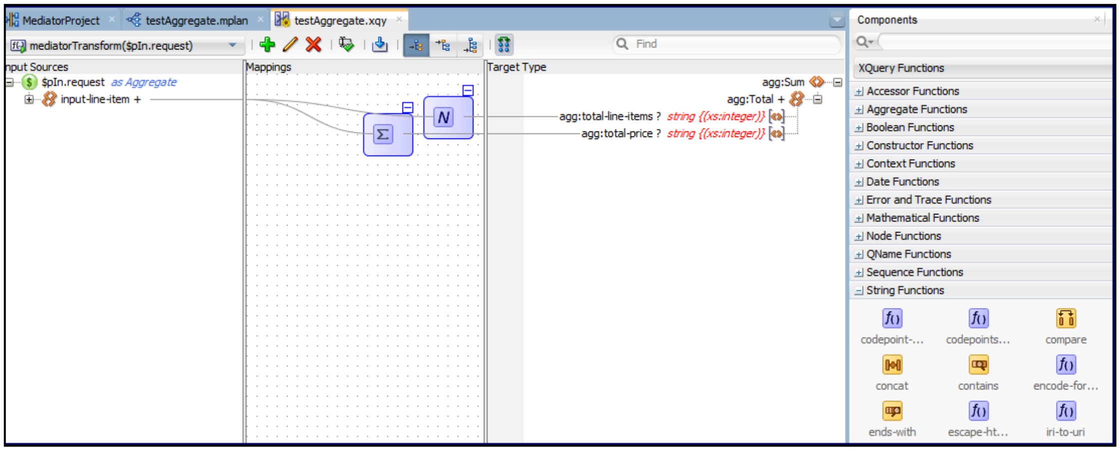
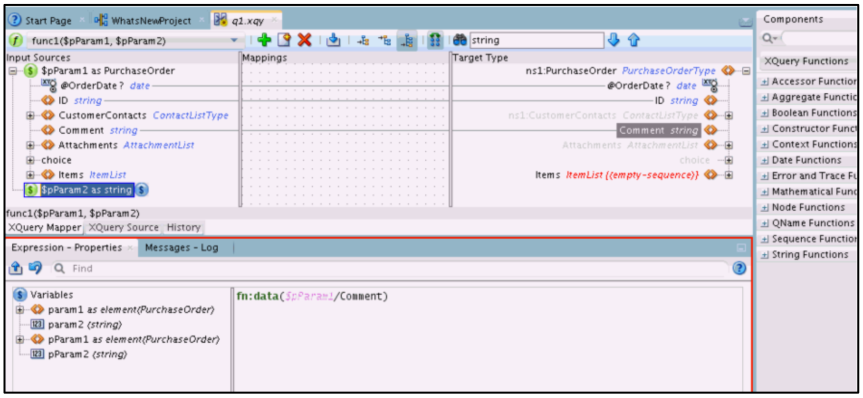


Figure 29: XQuery Mapper in JDeveloper



```
fn:data($pParam1/Comment)
```

Figure 30: XQuery Properties window

EXtensible Stylesheet Language (XSLT)

Oracle SOA Suite has always provided a graphical XLST Mapper. In the 12c release, this mapper has been enhanced to support **large** and **complex** stylesheets in the design view without the need to switch to source view through the introduction of two different views: **Map View** and **XSLT View**.

Map View is the traditional view of the XSLT mapper that was available in previous releases and can be used for simpler maps. In Map View the user sees a simple single template rule that contains all the XSLT instructions to be executed. Possible output nodes from the target schema are displayed under the template for easy drag and drop mapping. The user may also add simple XSLT instructions to create loops and conditional statements.

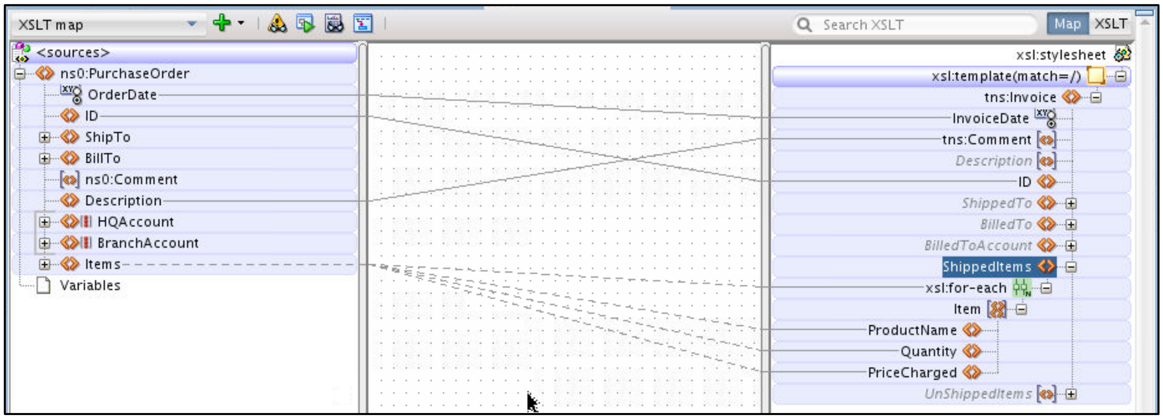


Figure 31 XSLT Map View for simpler maps

XSLT View is a more **advanced mode** that supports several new features, including Named Templates, Template Rules, Execution View, Completion Status and Testing.

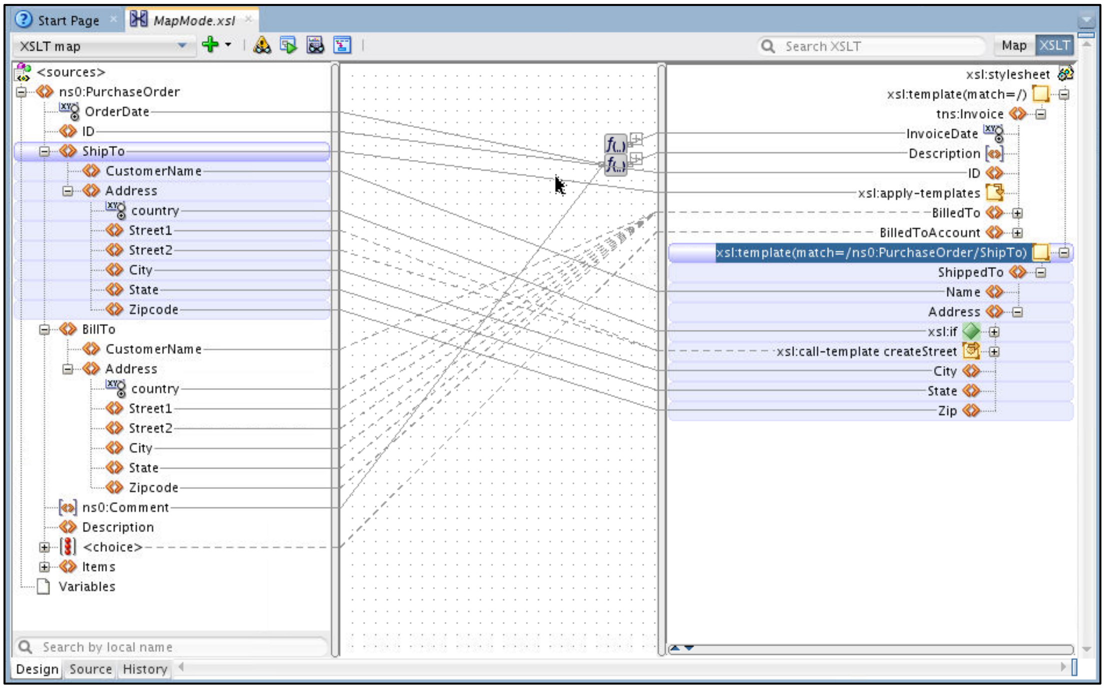


Figure 32: XSLT View

The XSLT view is intended for the advanced user who would normally edit XSLT in source view. The XSLT View includes the same panes as the Map View, except that the right target pane is divided into two panes. The top pane is called the XSLT pane and the lower pane is called the target pane. If no target schema is defined, then the lower pane is not shown. If no source schema is defined, the source pane is still displayed to enable you to add parameters and variables, whose values can be referenced by the XSLT. The XSLT View enables you to graphically display and edit any XSLT stylesheet, irrespective of the complexity involved.

XSLT templates are used for modularity – similar to SOA and pipeline templates – and can be compared to a method in an object-oriented programming language. They allow a single XSLT stylesheet to be broken into multiple logical units, each of which performs a specific transformation. These units can be reused by placing them into XSLT files that can be imported or included into other stylesheets.

Named templates can be invoked by calling the template explicitly by name. **Template Rules** are template statements that include "match attributes" to specify a pattern. A template rule executes when the pattern specified by the match attribute matches the node currently being processed by the XSLT processor. This node is referred to as the context node for the template rule and XPath expressions used within that template are usually relative to the context node for the template. The XSLT Map Editor now supports editing of both template rules and named templates in the XSLT View. More specifically, the XSLT View provides a graphical view of all XSLT statements that can **highlight context nodes** for the selected template rule allow the immediate error detection when creating multiple templates.

For example, Figure 33 shows the reuse of a single template rule to process all Item nodes. Note that all Item nodes in the source tree are highlighted. This highlighting indicates that the "match = 'Item'" template on the right will process these Item nodes. The absence of highlighting for a defined template can indicate a problem in the definition of that template.

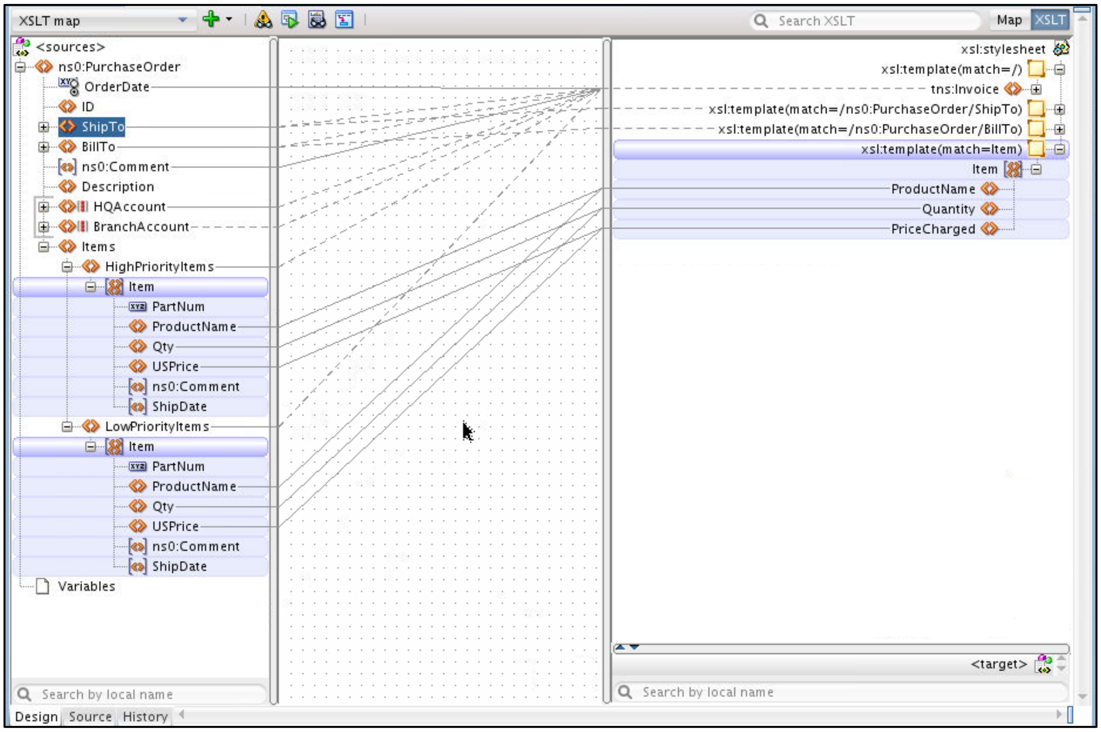


Figure 33: XSLT Map View – multiple templates and context highlighting

Figure 34 shows context highlighting when using an identity template. An identity template can copy the incoming XML document using only 3 lines of XSLT. We are copying all nodes in the incoming document except for the Item nodes, which will be modified as the rest of the document is copied. The second template in the figure will process the Item nodes, while the first template (the identity template) will process all the other nodes in the document with a simple copy. The highlighting indicates the nodes each template will process.

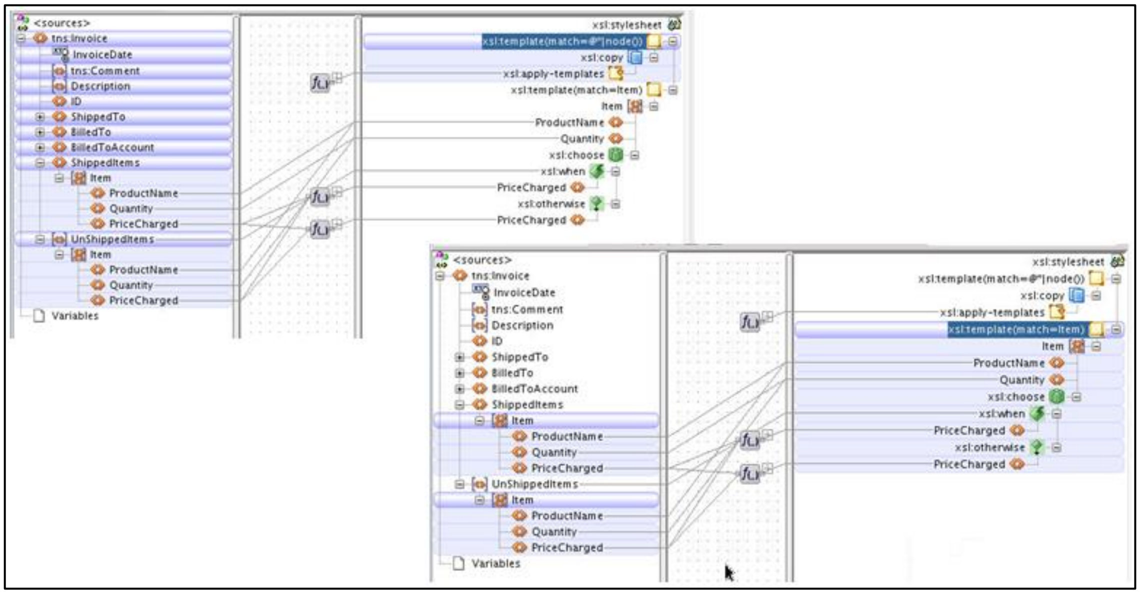
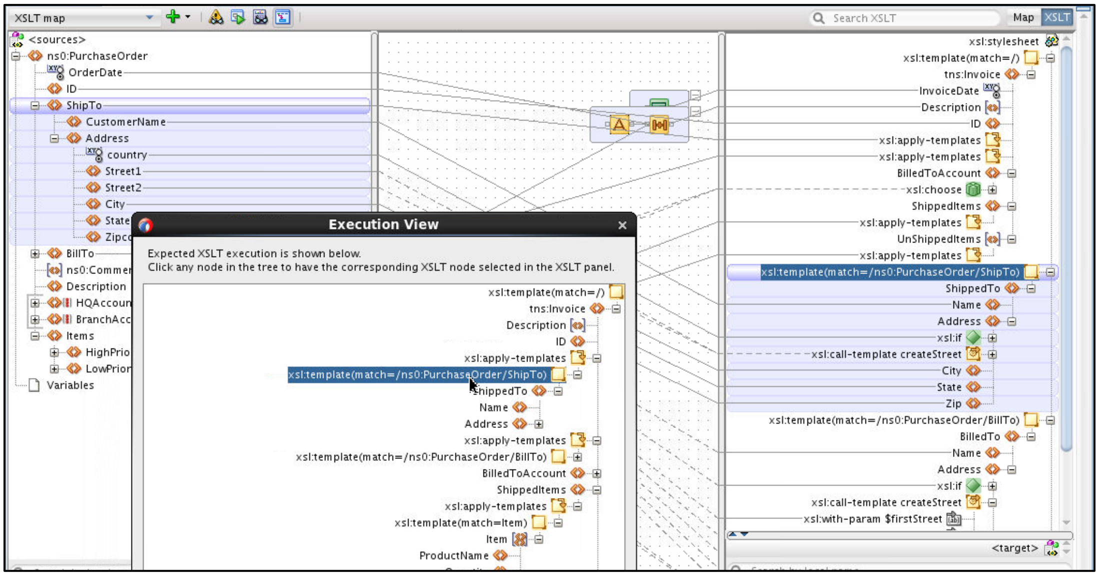


Figure 34: XSLT Map View - identity template and context highlighting

The **Execution View** shows the order of execution of templates (both named and matched) as they would be executed by the processor. You can see the overall flow of a complex XSLT process and provides a means to troubleshoot problems in template creation before executing the XSLT. In addition, the user can use the execution view to navigate to any section of the stylesheet by clicking on the desired node in the execution view dialog.



Expected XSLT execution is shown below.
Click any node in the tree to have the corresponding XSLT node selected in the XSLT panel.

Figure 35: Execution View

Figure 36 shows the editing of a named template called “createStreet”. The graphical editor provides the same drag and drop mappings as the Map View, allowing you to rearrange XSLT statements, work on XSLT with or without defining source and/or target schemas, and create reusable template rules. These features make it possible to create complex XSLT much faster and more easily than it would be to edit text in source view.

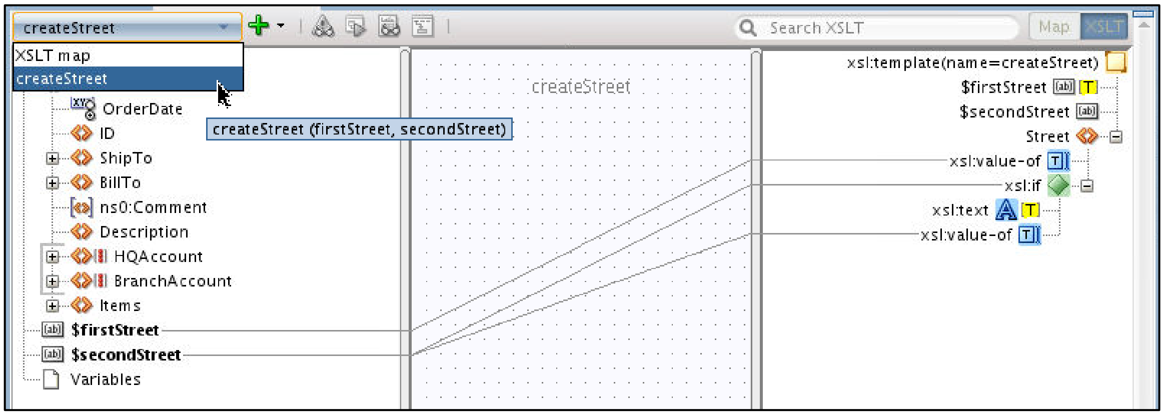
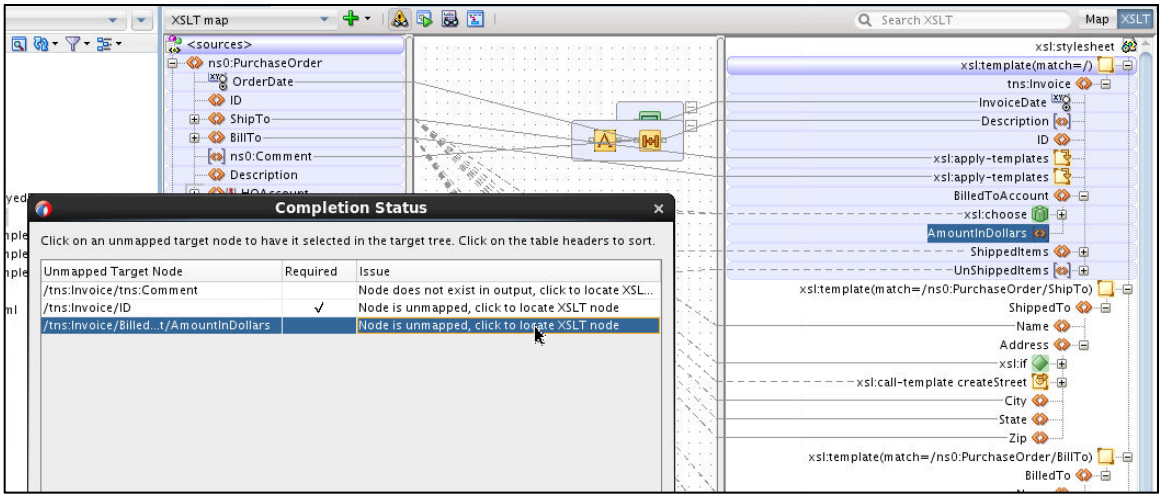


Figure 36: Graphical editing of Named Template

XSLT View also eliminates the display of possible target schema nodes as are shown in Map View. This allows the user to construct more complex XSLT stylesheets and to work against extremely large schemas more effectively. XSLT View still provides support for inserting target schema elements through a context menu and drag and drop from a target schema tree.

If you are using a target schema for your map, you can check the **completion status** of the map at any time. The completion status dialog lists all unmapped target elements and attributes, target elements mapped with incomplete XPath expressions, and all missing target elements and attributes.

Figure shows the completion status dialog. Note that the user can navigate to the problem area of the map by clicking the desired line in the dialog.



Completion Status

Click on an unmapped target node to have it selected in the target tree. Click on the table headers to sort.

Unmapped Target Node	Required	Issue
/tns:Invoice/tns:Comment		Node does not exist in output, click to locate XSL...
/tns:Invoice/ID	✓	Node is unmapped, click to locate XSLT node
/tns:Invoice/Billed...t/AmountInDollars		Node is unmapped, click to locate XSLT node

Figure 37 Completion Status

The XSLT Map Editor provides a tool to **test** your map by right-clicking the canvas pane, and selecting “Test” from the context menu. You can use the test tool in both Map View and XSLT View. Figure 38 shows the invocation of the test tool.

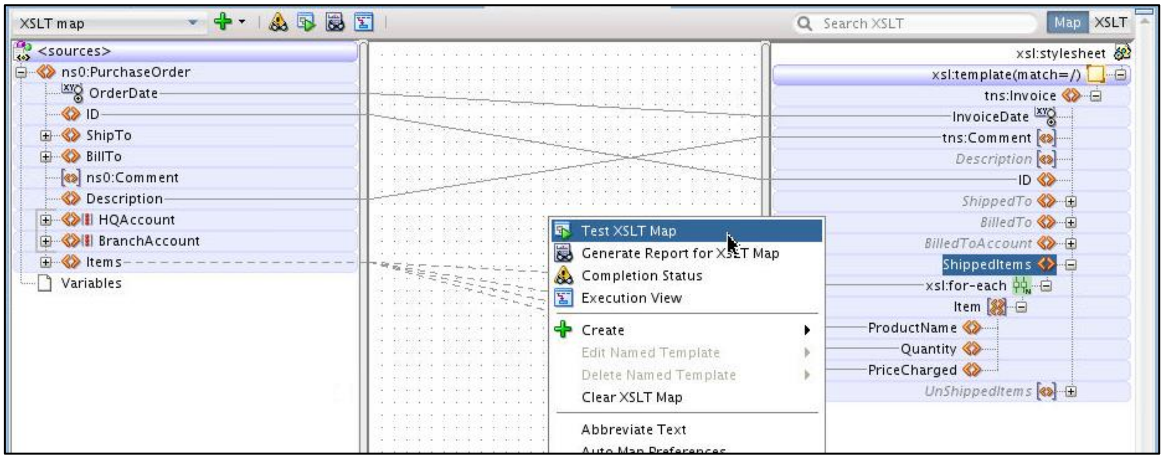


Figure 38: Testing an XSLT Map

If you are working with large schemas it can be useful to zoom into a specific portion of the map. The XSLT Map Editor provides a scoped view option to zoom into an area of the mapping. The user can continue to work in this scoped view, shown in Figure 39.

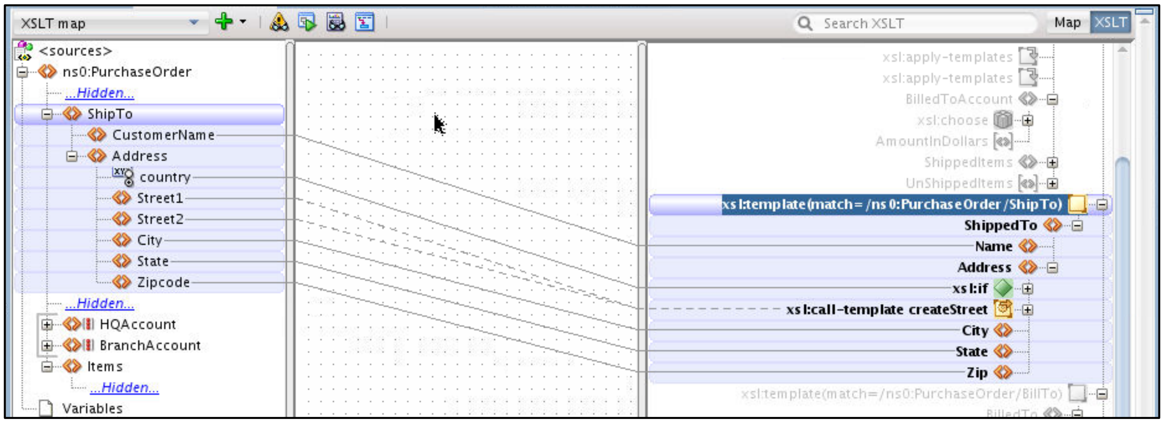


Figure 39: Scoped View

Management Improvements

While the previous sections mainly focused on features improving developer productivity, this section will discuss new features for operations and management.

Dashboards, Instance Tracking and Error Hospital

The main tool for Oracle SOA Suite administrators is Enterprise Manager Fusion Middleware Control. In Oracle SOA Suite 12c, this now also includes the management of **Oracle Service Bus projects**. The Service Bus 11g console has been divided into two parts: configuration of services is still available in the browser-based console, in addition to the JDeveloper IDE. All operations and management tasks have been moved into Enterprise Manager Fusion Middleware Control to provide a **single administration console** for the core SOA components.

Enterprise Manager Fusion Middleware Control itself has undergone a number of changes to improve responsiveness and simplify day-to-day administration and troubleshooting.

The main **SOA dashboard** has been redesigned to focus on system health and a consolidated view of faults and issues.

Figure 40 shows five summary sections in one view:

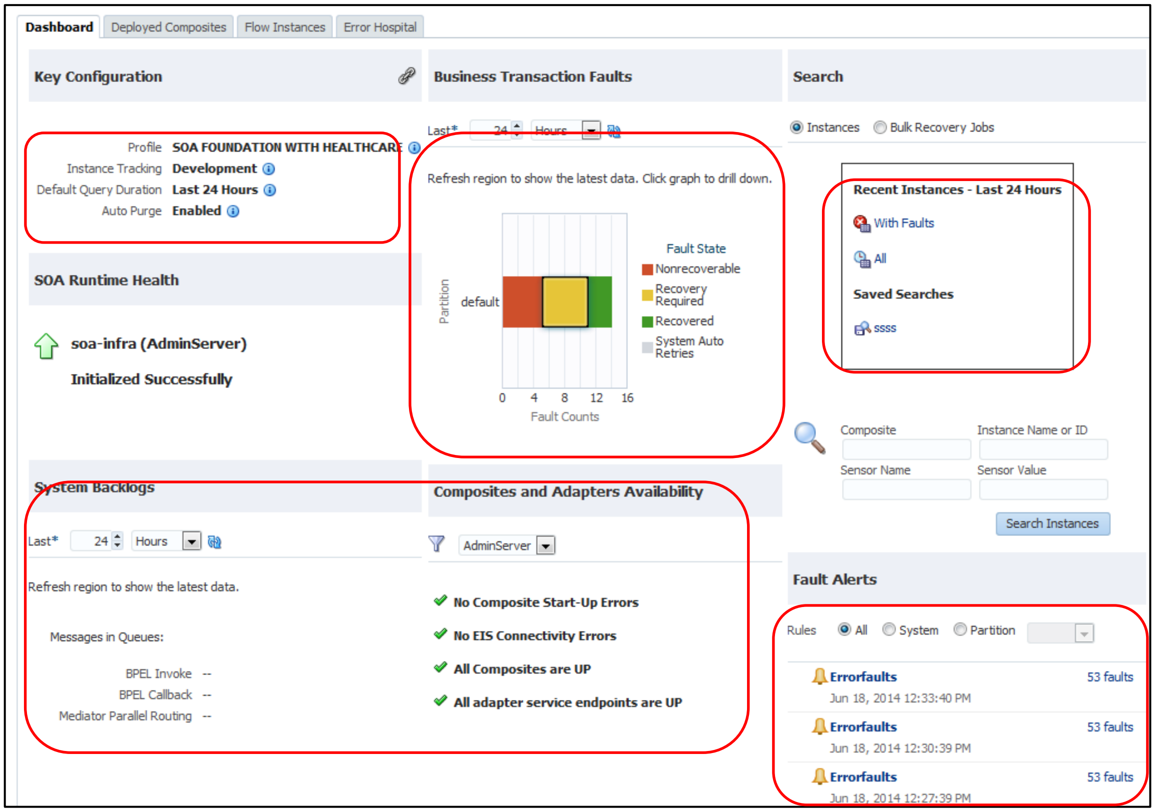
» **Key Configuration** shows the modularity profile, instance tracking value, default query duration and auto purge state with links for more information and ability to change these configuration parameters.

» **SOA Runtime Health** and **System Backlogs** show a quick overview of your composites. The system backlogs are not populated by default. This is a new feature of Oracle SOA Suite 12c to improve performance and responsiveness of Enterprise Manager. The refresh 🔄 icon populates the backlogs.

» **Business Transaction Faults** is also not displayed until refreshed. The default query duration (as displayed in the key configuration area) can be changed at any time.

» The **Search** section provides quick options for some common searches plus any searches that you have saved. This search will take you to the **Flow Instances** tab.

» The **Fault Alerts** section shows any alerts that have been generated.



Key Configuration

Profile SOA FOUNDATION WITH HEALTHCARE
Instance Tracking Development
Default Query Duration Last 24 Hours
Auto Purge Enabled

SOA Runtime Health

soa-infra (AdminServer)
Initialized Successfully

System Backlogs

Last* 24 Hours

Refresh region to show the latest data.

Messages in Queues:

BPEL Invoke --
BPEL Callback --
Mediator Parallel Routing --

Business Transaction Faults

Last* 24 Hours

Refresh region to show the latest data. Click graph to drill down.

Composites and Adapters Availability

AdminServer

✓ No Composite Start-Up Errors
✓ No EIS Connectivity Errors
✓ All Composites are UP
✓ All adapter service endpoints are UP

Search

● Instances ○ Bulk Recovery Jobs

Recent Instances - Last 24 Hours
With Faults
All
Saved Searches
ssss

Composite
Instance Name or ID
Sensor Name
Sensor Value

Fault Alerts

Rules ● All ○ System ○ Partition

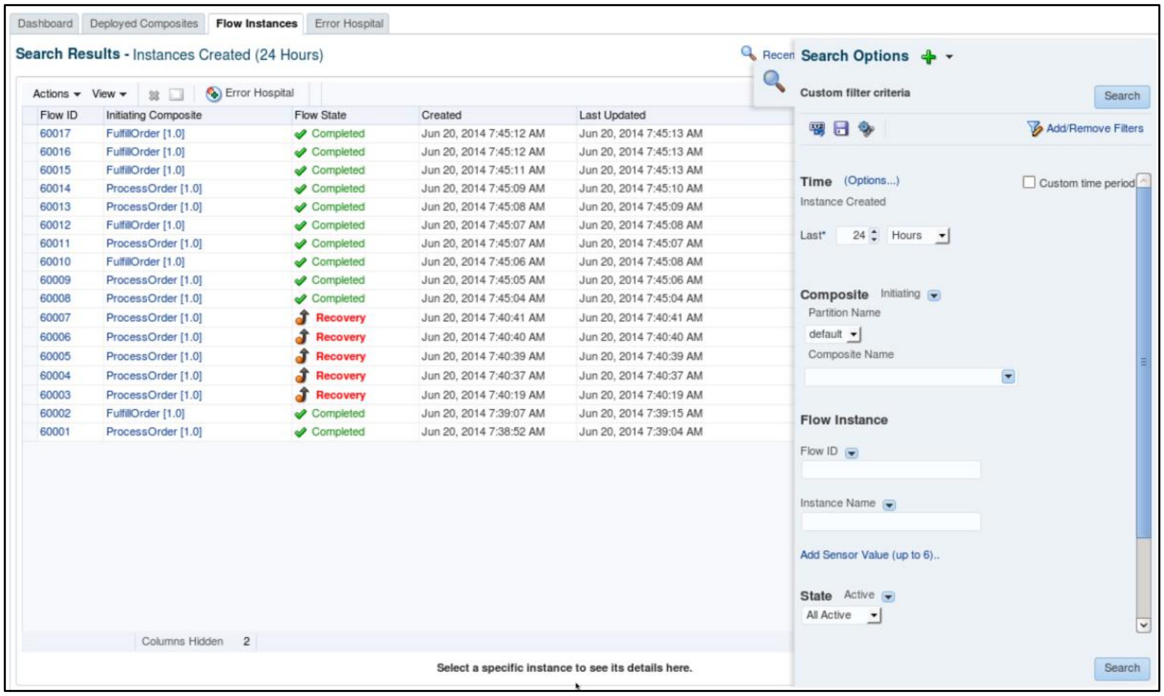
Errorfaults Jun 18, 2014 12:33:40 PM	53 faults
Errorfaults Jun 18, 2014 12:30:39 PM	53 faults
Errorfaults Jun 18, 2014 12:27:39 PM	53 faults

Figure 40: Enterprise Manager Fusion Middleware Control Dashboard

In the past, retrieval of large amounts of data has caused performance problems. In order to improve this, searches have been enhanced to allow for finer grained queries, including composite sensor values, to track specific business cases. Searches can also be saved and bookmarked for quicker access.

To prevent initial overload of a page, the user has to actively choose a search before a list of items is displayed.

The instance tracking experience in Oracle SOA Suite 12c is highly enhanced and not just on usability but also in the underlying architecture to improve performance, visibility, and traceability of your end-to-end transactions, which now also include Service Bus, B2B and MFT. Figure 41 shows a list of flow instances and the search pane that allows the creation, saving and bookmarking of fine-grained searches.



Search Results - Instances Created (24 Hours)

Flow ID	Initiating Composite	Flow State	Created	Last Updated
60017	FulfillOrder [1.0]	✓ Completed	Jun 20, 2014 7:45:12 AM	Jun 20, 2014 7:45:13 AM
60016	FulfillOrder [1.0]	✓ Completed	Jun 20, 2014 7:45:12 AM	Jun 20, 2014 7:45:13 AM
60015	FulfillOrder [1.0]	✓ Completed	Jun 20, 2014 7:45:11 AM	Jun 20, 2014 7:45:13 AM
60014	ProcessOrder [1.0]	✓ Completed	Jun 20, 2014 7:45:09 AM	Jun 20, 2014 7:45:10 AM
60013	ProcessOrder [1.0]	✓ Completed	Jun 20, 2014 7:45:08 AM	Jun 20, 2014 7:45:09 AM
60012	FulfillOrder [1.0]	✓ Completed	Jun 20, 2014 7:45:07 AM	Jun 20, 2014 7:45:08 AM
60011	ProcessOrder [1.0]	✓ Completed	Jun 20, 2014 7:45:07 AM	Jun 20, 2014 7:45:07 AM
60010	FulfillOrder [1.0]	✓ Completed	Jun 20, 2014 7:45:06 AM	Jun 20, 2014 7:45:08 AM
60009	ProcessOrder [1.0]	✓ Completed	Jun 20, 2014 7:45:05 AM	Jun 20, 2014 7:45:06 AM
60008	ProcessOrder [1.0]	✓ Completed	Jun 20, 2014 7:45:04 AM	Jun 20, 2014 7:45:04 AM
60007	ProcessOrder [1.0]	Recovery	Jun 20, 2014 7:40:41 AM	Jun 20, 2014 7:40:41 AM
60006	ProcessOrder [1.0]	Recovery	Jun 20, 2014 7:40:40 AM	Jun 20, 2014 7:40:40 AM
60005	ProcessOrder [1.0]	Recovery	Jun 20, 2014 7:40:39 AM	Jun 20, 2014 7:40:39 AM
60004	ProcessOrder [1.0]	Recovery	Jun 20, 2014 7:40:37 AM	Jun 20, 2014 7:40:37 AM
60003	ProcessOrder [1.0]	Recovery	Jun 20, 2014 7:40:19 AM	Jun 20, 2014 7:40:19 AM
60002	FulfillOrder [1.0]	✓ Completed	Jun 20, 2014 7:39:07 AM	Jun 20, 2014 7:39:15 AM
60001	ProcessOrder [1.0]	✓ Completed	Jun 20, 2014 7:38:52 AM	Jun 20, 2014 7:39:04 AM

Columns Hidden 2

Select a specific instance to see its details here.

Search Options

Custom filter criteria

Time (Options...) □ Custom time period
Instance Created
Last* 24 Hours

Composite Initiating
Partition Name
default
Composite Name

Flow Instance
Flow ID
Instance Name

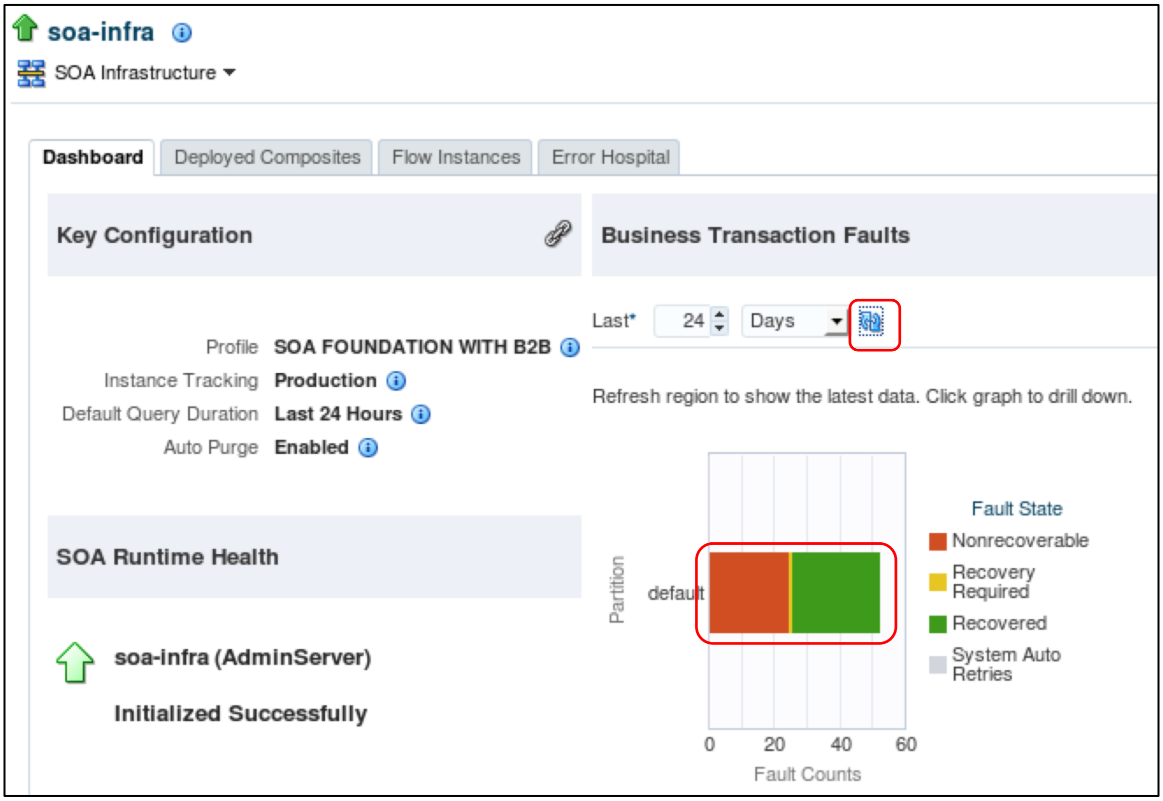
Add Sensor Value (up to 6)..

State Active
All Active

Figure 41: Flow Instances

The new **Error Hospital** in Oracle SOA Suite 12c is used to aggregate flow instances that have generated faults and be able to perform actions on instances with common faults collectively. The aggregations can be based on various criteria based on fault types, names or composite level aggregations.

Some faults can be recovered after the reason for the fault has been fixed. For example, if a database was unavailable, the administrator can recover the faulted instances after the database has been restarted. This recovery can be done one-by-one, or a group of instances can be recovered together in a bulk operation, either immediately or at a later point in time to optimize on resources. Figure 42 shows the dashboard populated with faults. Clicking on the fault area opens the new Oracle SOA Suite 12c Error Hospital with faults, which can be grouped by composite.



Profile SOA FOUNDATION WITH B2B

Instance Tracking Production

Default Query Duration Last 24 Hours

Auto Purge Enabled

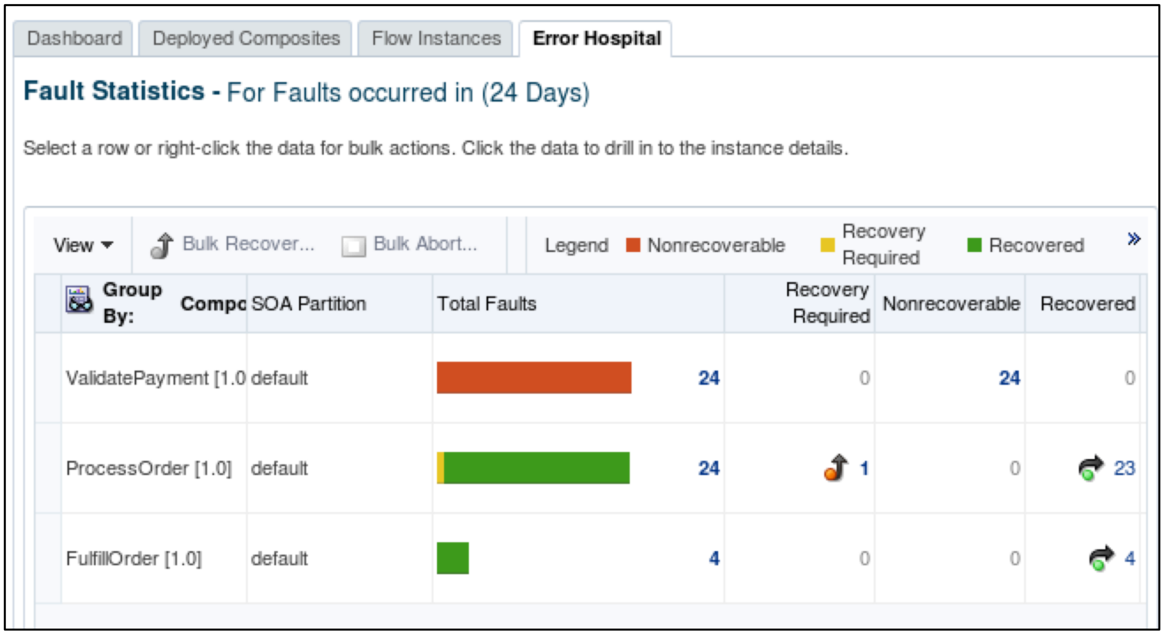
soa-infra (AdminServer)

Initialized Successfully

Last* 24 Days

Refresh region to show the latest data. Click graph to drill down.

Figure 42: SOA Dashboard with Faults



Fault Statistics - For Faults occurred in (24 Days)

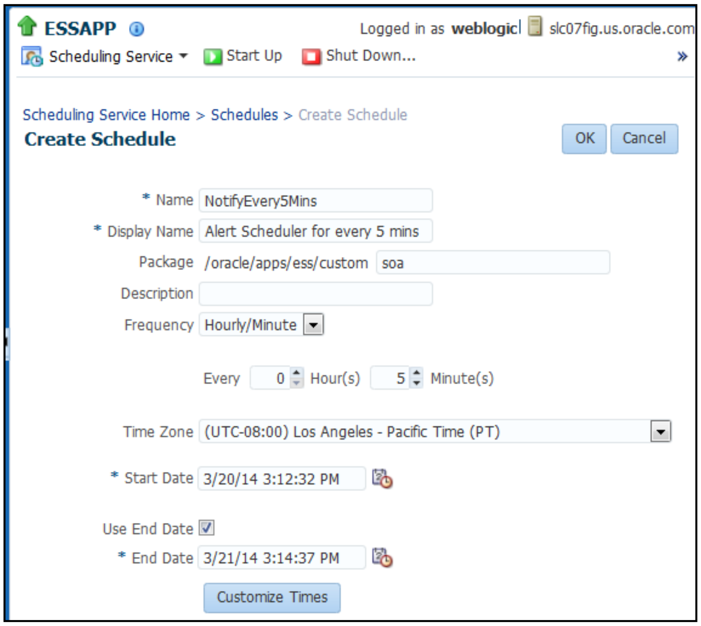
Select a row or right-click the data for bulk actions. Click the data to drill in to the instance details.

Group By: Compo	SOA Partition	Total Faults	Recovery Required	Nonrecoverable	Recovered
ValidatePayment [1.0	default	24	0	24	0
ProcessOrder [1.0]	default	24	1	0	23
FulfillOrder [1.0]	default	4	0	0	4

Figure 43: Error Hospital with faults grouped by composite

Fault Notification Alerts

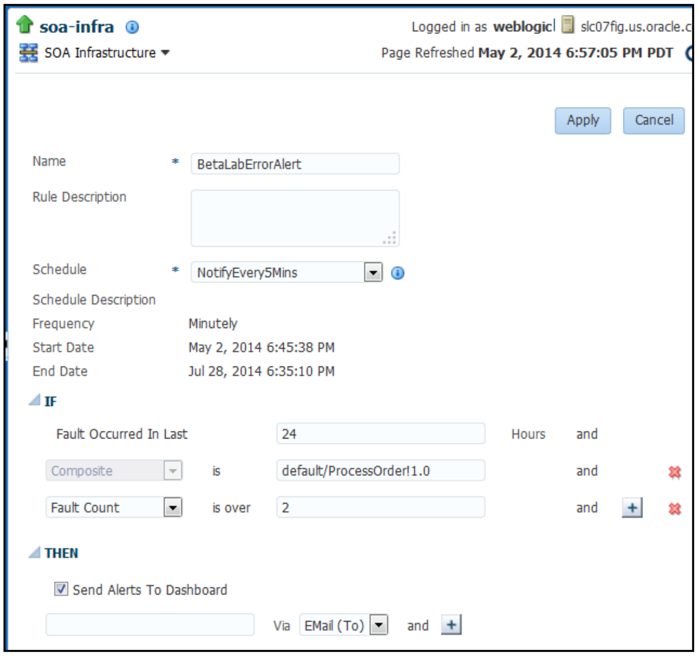
While dashboards provide an overview of the system and application health, administrators need to be alerted **automatically** when something goes wrong in the system. **Fault alerts** can be routed to communication channels such as email, SMS and IM, while at the same time being posted to the dashboards. Instead of always sending the alerts immediately, they can be scheduled to trigger an alert based on a predefined error notification rule.



Create Schedule

* Name	NotifyEvery5Mins
* Display Name	Alert Scheduler for every 5 mins
Package	/oracle/apps/ess/custom soa
Description	
Frequency	Hourly/Minute
Every	0 Hour(s) 5 Minute(s)
Time Zone	(UTC-08:00) Los Angeles - Pacific Time (PT)
* Start Date	3/20/14 3:12:32 PM
Use End Date	☑
* End Date	3/21/14 3:14:37 PM

Figure 44: Recurring Schedule for fault notification alerts



Name *	BetaLabErrorAlert
Rule Description	
Schedule *	NotifyEvery5Mins
Schedule Description	
Frequency	Minutely
Start Date	May 2, 2014 6:45:38 PM
End Date	Jul 28, 2014 6:35:10 PM

IF

Fault Occurred In Last		24	Hours	and
Composite	is	default/ProcessOrder!1.0		and
Fault Count	is over	2		and

THEN

☑ Send Alerts To Dashboard

Via EMail (To) and

Figure 45: Create Notification Rule

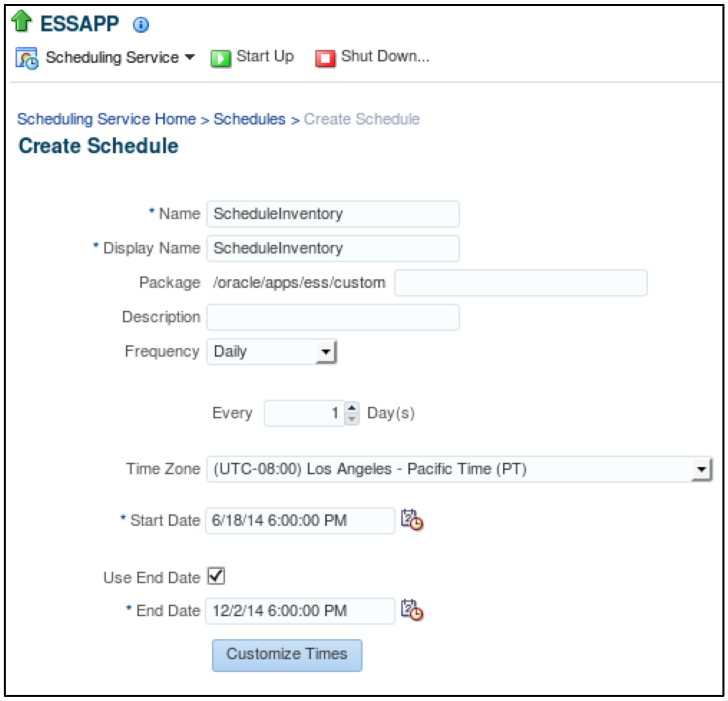
Performance Tuning

Oracle SOA Suite 12c makes use of WebLogic Server work managers to optimize scheduled work across SOA components. This simplifies the thread pool configuration and allows SOA to effectively use the existing resources. This also provides self-tuning which gives additional resources to specific components if they are otherwise idle.

For a SOA production system to be performant, the dehydration data store needs to be optimized, including appropriate database partitioning and regular purging of obsolete data. Oracle SOA Suite 12c provides pre-tuned database profiles to automatically enable appropriate performance features, based on the expected data size. It also enables auto-purge to prevent bloating of the database.

Enterprise Scheduler Service

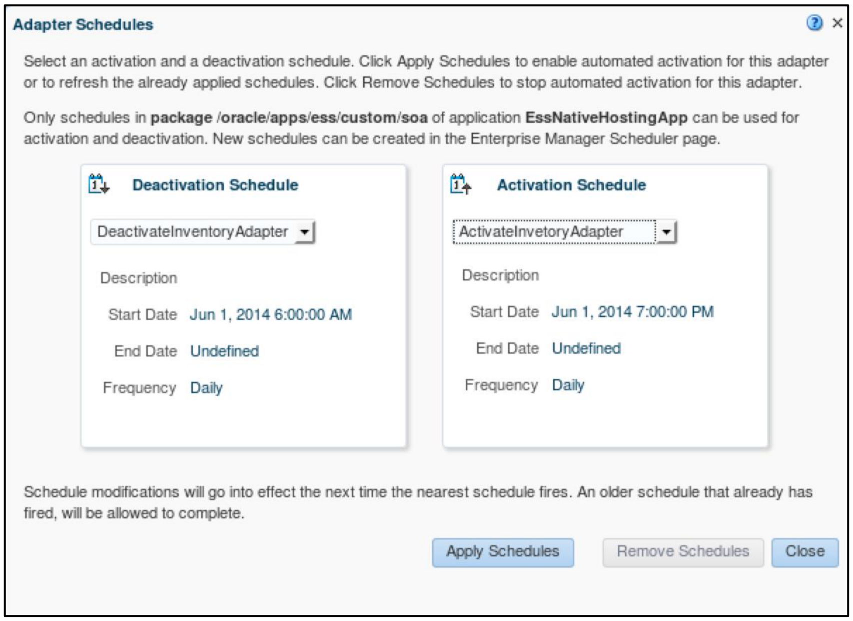
Enterprise Scheduler Service (ESS) is a new component within Oracle SOA Suite 12c, which was previously only available through Fusion Applications. It provides the ability to schedule SOA components or services and manages the complete life cycle of a job definition: development, distribution, scheduling, and monitoring.



* Name	ScheduleInventory
* Display Name	ScheduleInventory
Package	/oracle/apps/ess/custom
Description	
Frequency	Daily
Every	1 Day(s)
Time Zone	(UTC-08:00) Los Angeles - Pacific Time (PT)
* Start Date	6/18/14 6:00:00 PM
Use End Date	☑
* End Date	12/2/14 6:00:00 PM

Figure 46: Enterprise Scheduler Service Job Definition

In addition, polling adapters can be activated or deactivated at specific times to minimize resources during busy hours. For example, an application that checks and re-fills the inventory should run outside of business hours, to not interfere with the daily business.



Adapter Schedules

Select an activation and a deactivation schedule. Click Apply Schedules to enable automated activation for this adapter or to refresh the already applied schedules. Click Remove Schedules to stop automated activation for this adapter.

Only schedules in **package /oracle/apps/ess/custom/soa** of application **EssNativeHostingApp** can be used for activation and deactivation. New schedules can be created in the Enterprise Manager Scheduler page.

Deactivation Schedule

DeactivateInventoryAdapter

Description

Start Date Jun 1, 2014 6:00:00 AM

End Date Undefined

Frequency Daily

Activation Schedule

ActivateInvetoryAdapter

Description

Start Date Jun 1, 2014 7:00:00 PM

End Date Undefined

Frequency Daily

Schedule modifications will go into effect the next time the nearest schedule fires. An older schedule that already has fired, will be allowed to complete.

Figure 47: Enterprise Scheduler Service adapter activation/deactivation schedule

The Enterprise Scheduler Service is also used for bulk error recovery, as described in the Error Hospital section, and the triggering of fault alerts.

Continuous Integration

Continuous Integration brings **agility** to the **systems development lifecycle** (SDLC) by completing packaging, testing and deployment of every change to the code. In order to accelerate development and to reduce the time-to-production of new features, development teams seek ways to automate the build, test and deploy processes. Many development teams have selected Maven for standardizing their projects choosing convention over configuration.

Oracle SOA Suite 12c provides a **Maven plugin** that allows development teams to use Maven to create, build, package and deploy SOA projects. Through the SOA application and project archetypes, development teams can automate the instantiation of a developer's working environment. Through the Maven plugin goals, a Continuous Integration server such as **Hudson** can be used to manage SOA projects through the complete lifecycle. Using Maven, teams can increase their agility and accelerate solutions to production with lower cost and higher confidence. Figure 48 shows how the running of Maven phases has been integrated into JDeveloper.

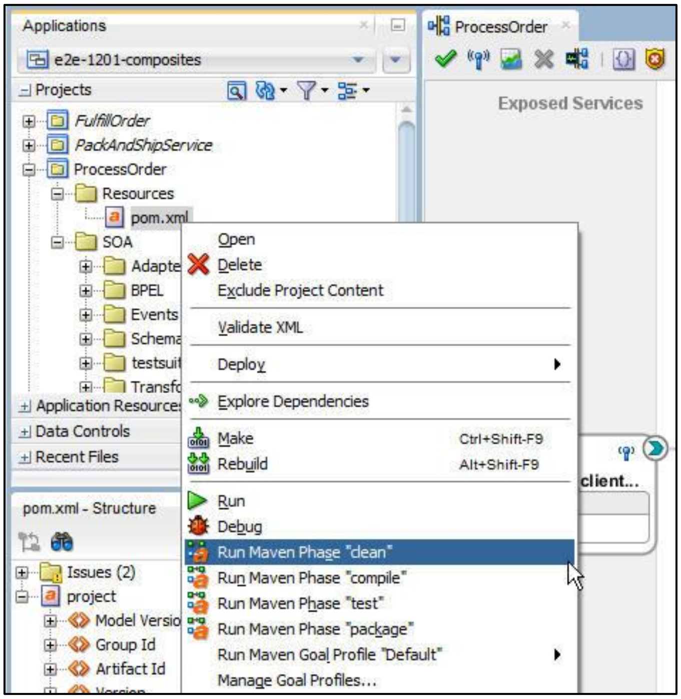
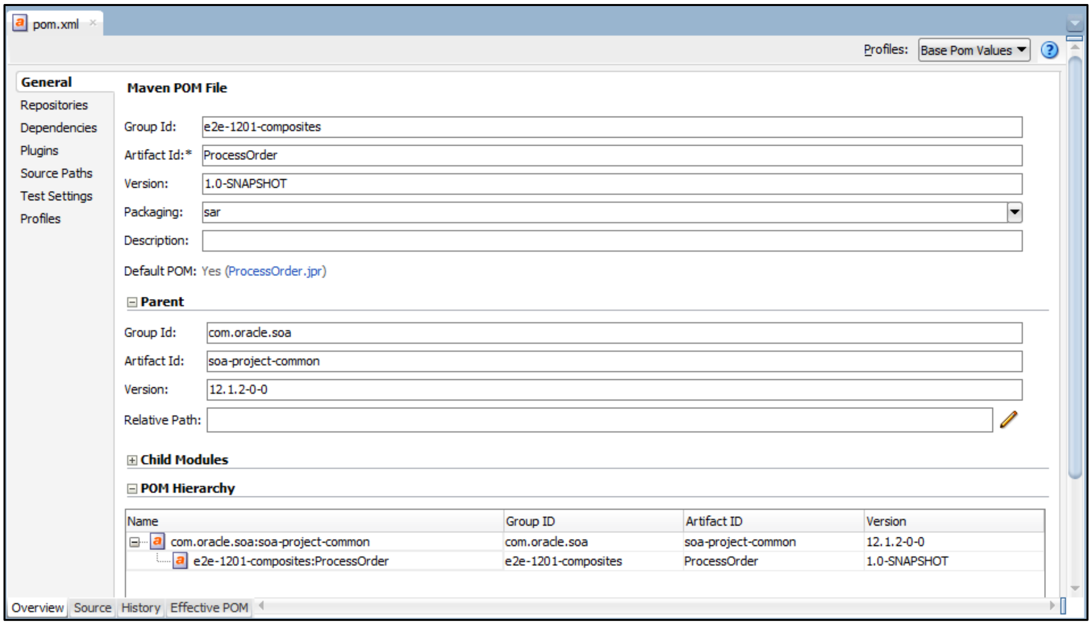


Figure 48: Contextual menu to execute standard Maven build phases

Figure 49 shows a graphical editor to edit Maven POM files. POM stands for "Project Object Model". It is an XML representation of a Maven project held in a file named pom.xml. A project contains configuration files, as well as the developers involved and the roles they play, the defect tracking system, the organization and licenses, the URL of where the project lives, the project's dependencies, and all of the other little pieces that come into play to give code life. It is a one-stop-shop for all things concerning the project.



Profiles: Base Pom Values

Maven POM File

Group Id: e2e-1201-composites

Artifact Id:* ProcessOrder

Version: 1.0-SNAPSHOT

Packaging: sar

Description:

Default POM: Yes (ProcessOrder.jpr)

Parent

Group Id: com.oracle.soa

Artifact Id: soa-project-common

Version: 12.1.2-0-0

Relative Path:

Child Modules

POM Hierarchy

Name	Group ID	Artifact ID	Version
com.oracle.soa:soa-project-common	com.oracle.soa	soa-project-common	12.1.2-0-0
e2e-1201-composites:ProcessOrder	e2e-1201-composites	ProcessOrder	1.0-SNAPSHOT

Figure 49: Graphical editor to edit Maven POM files

Additional Enhancements

Encrypt/Decrypt Personally-Identifiable Info (PII)

Instance tracking within Enterprise Manager Fusion Middleware Control often exposes message payloads to administrators. In most cases that is not a problem, unless the message includes **sensitive data**, like a social security number. The new PII feature enables the encryption and decryption of specific fields in your message to protect this kind of sensitive data directly in Oracle JDeveloper by applying Oracle Web Services Manager (OWMS) policies.

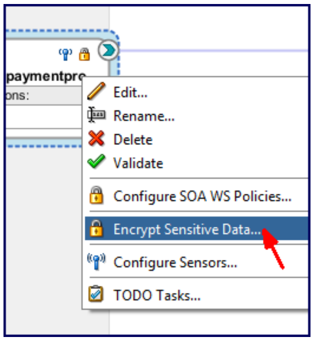
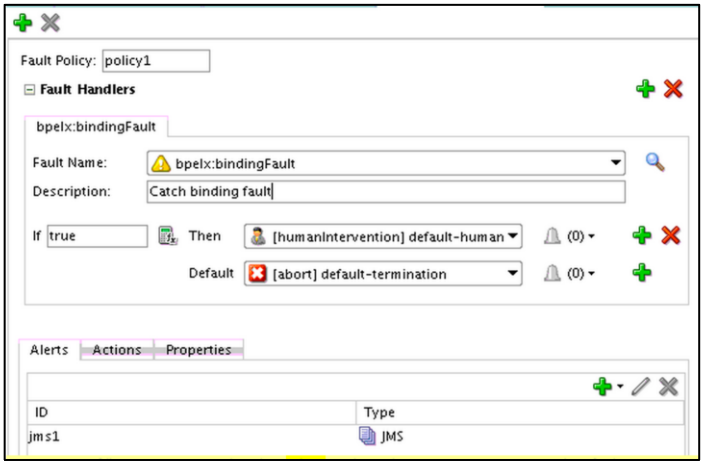


Figure 50: Encrypt Personally Identifiable Information

Fault Policy Editor in BPEL

Oracle SOA Suite provides a fault management framework for handling faults in BPEL processes. If a fault occurs during runtime in an invoke activity in a process, the framework catches the fault and performs a user-specified action defined in a fault policy file associated with the composite or component. Fault policies are applicable to the faults that result from the invoke activity. A fault policy bindings file (fault-bindings.xml) associates the policies defined in a fault policy file (fault-policies) with the SOA composite application or the component. Within the fault policies file, you can define what actions should be taken when a specific fault occurs. In Oracle SOA Suite 12c, fault policies can be configured using the new **Fault Policy Editor** instead of editing the XML file source.



Fault Policy: policy1

Fault Handlers

bpelx:bindingFault

Fault Name: bpelx:bindingFault

Description: Catch binding fault

If true Then [humanIntervention] default-human (0)

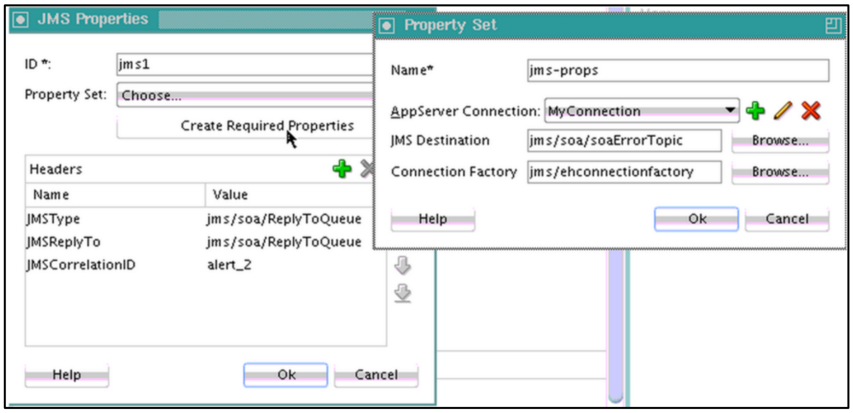
Default [abort] default-termination (0)

Alerts | Actions | Properties

ID	Type
jms1	JMS

Figure 51: Fault Policy Editor

With the editor you can also configure alerts to notify an administrator or enqueue the fault to a JMS queue or publish it to a JMS topic.



ID *: jms1

Property Set: Choose...

Headers

Name	Value
JMSType	jms/soa/ReplyToQueue
JMSReplyTo	jms/soa/ReplyToQueue
JMSCorrelationID	alert_2

Name* jms-props

AppServer Connection: MyConnection

JMS Destination jms/soa/soaErrorTopic

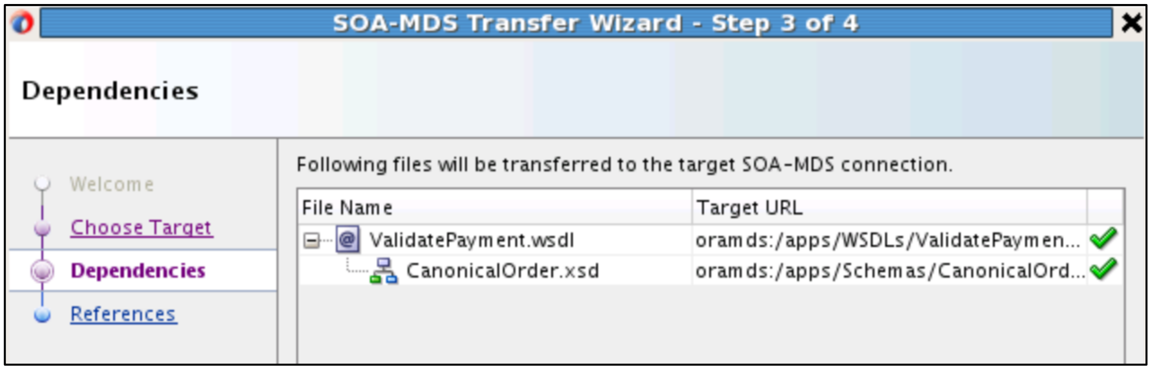
Connection Factory jms/ehconnectionfactory

Figure 52: JMS alert configuration

SOA Design-Time Meta Data Services Repository

In addition to the existing run-time Meta Data Services Repository, Oracle SOA Suite 12c adds a file-based SOA **Design-Time** MDS Repository for use during design time. The repository is automatically created when you create a SOA composite application and will typically point to the version control system location.

The SOA Design-Time Meta Data Services Repository provides a wizard to **share design time artifacts** such as WSDLs and XML Schemas and eliminates the need to duplicate these resources across projects and applications. When artifacts are moved into the repository, all dependencies are included and references to the transferred artifacts are updated with the correct MDS URLs on transfer.



Following files will be transferred to the target SOA-MDS connection.

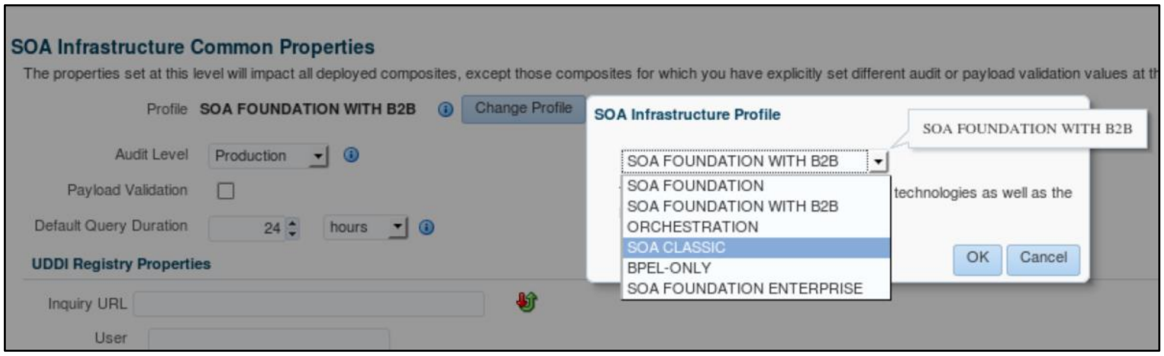
File Name	Target URL	
ValidatePayment.wsdl	oramds:/apps/WSDLs/ValidatePaymen...	✓
CanonicalOrder.xsd	oramds:/apps/Schemas/CanonicalOrd...	✓

Figure 53: Transfer of a WSDL with referenced schema file to SOA Design-Time Meta Data Services Repository

Startup acceleration through modularity profiles and lazy loading

New modularity profiles provide support for starting up the SOA platform in subsets of functionality, reducing the overall memory footprint of the SOA instance, thus reducing the **overall startup time of the platform**. To achieve this, subsets of SOA functionality are separated into groups. For example, “SOA Foundation”, the default for new domains, reflects the same configuration as exists in Oracle SOA Suite 11g today. “BPEL-Only” is a very lightweight profile that supports composites with BPEL processes, but does not include Mediator or Rules.

A significant difference of up to 30% in footprint has been observed between the largest profile “SOA_CLASSIC” and the smallest “BPEL_ONLY” profile. The profiles can be changed at any time in Enterprise Manager Fusion Middleware Control after the domain has been created.



SOA Infrastructure Common Properties

The properties set at this level will impact all deployed composites, except those composites for which you have explicitly set different audit or payload validation values at th

Profile SOA FOUNDATION WITH B2B

Audit Level Production

Payload Validation □

Default Query Duration 24 hours

UDDI Registry Properties

Inquiry URL

User

Figure 54: Changing of modularity profile in Enterprise Manager Fusion Middleware Control

The second feature in this category reduces the startup time of the SOA platform by **staggered – “lazy” - loading** of composite artifacts and spreading out bootstrap costs. This is especially important for disaster recovery and active-active setups where fast server startup is essential. By loading composites minimally at server startup, overhead from rarely used and retired composites is reduced. The first runtime request for a composite loads the components and resources (Schemas/WSDL/XSLTs etc) fully. When using the lazy loading feature, you need to consider whether a delay in the first invocation of a composite is acceptable.

Re-sequencer in Service Bus

Business transactions often span multiple technical transactions and require groups of messages to be processed in **exactly the right order**. Sometimes, these messages already arrive in the correct order and need to be prevented from getting out of order, or they arrive in random order and need to be re-sequenced. The re-sequencer in Oracle Service Bus orders messages based on sequential or chronological information, and then sends the messages to the target services in an orderly manner. The sequencing is performed based on the sequencing strategy selected.

The re-sequencer works with two central concepts: **groups** and **sequence IDs**. The sequence ID is an identifying part of the message, and messages are rearranged based on this identifier. The messages arriving for re-sequencing are split into groups and the messages within a group are sequenced according to the sequence ID. Sequencing within a group is independent of the sequencing of messages in any other group. Groups in themselves are not dependent on each other and can be processed independently.

Groups and sequence IDs are identified through XPath expressions in the message payload and header. You specify XPath expressions that point to the elements in the message payload on which grouping is done and on which sequencing is done. Incoming messages are sequenced based on one of the following strategies:

» **Standard**: The standard re-sequencer is useful for applications that use identifiers from a simple numeric identifier sequence in their messages. The standard re-sequencer receives a stream of messages that might not arrive in order; it then stores the out-of-sequence messages until a complete sequence based on the sequence IDs is received. The in-sequence messages are then processed asynchronously based on their sequence ID.

» **FIFO**: Sequencing is based on the time of the arrival of the message and supports a standard first in, first out (FIFO) pattern.

» **Best Effort**: The best effort pattern is useful for applications that produce a large number of messages in a short period and cannot provide information to the re-sequencer about the identifier to use for sequencing. Typically, the identifier used in such scenarios is of a dateTime type or numeric type. Using the dateTime field as the sequence ID XPath enables you to control the sequencing. The messages are expected to be sent in sequence by the applications, thus the date and time the messages are sent can be used for sequencing. The best effort is made to ensure that the messages are delivered in sequence.

Managed File Transfer

With all of the discussion of Cloud computing, it may be tempting to lose track of the core needs and requirements for a fully integrated file transfer solution. Organizations still makes heavy use of files utilizing bulk, batch and real-time updates for application integration. If anything, file integrations look to increase in both size and volume as you incorporate cloud Software as a Service (SaaS) into your IT landscape. You will find that the general approach for on premise and partner file integrations using Managed File Transfer (MFT) will not be not much different than any other IT infrastructure: plan, scope and delivery incrementally.

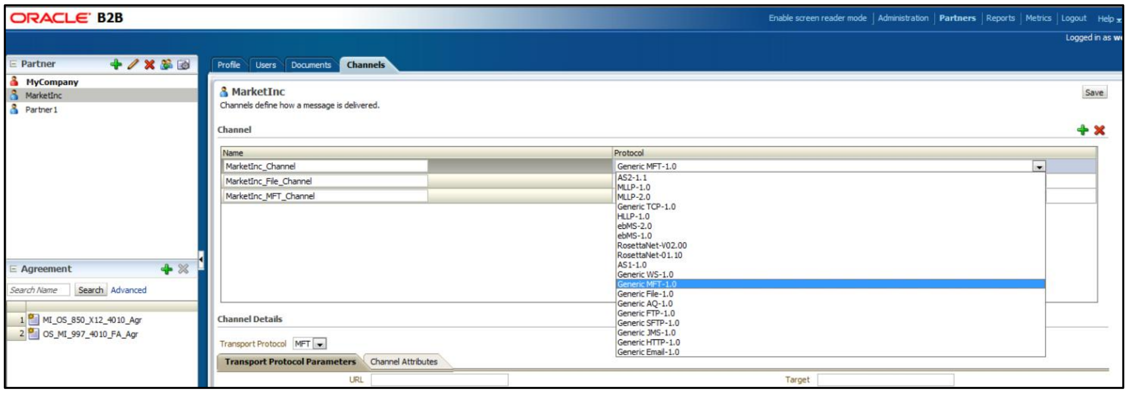
Oracle Managed File Transfer (Oracle MFT) is a new product, released with Oracle SOA Suite 12c, which enables secure file exchange and management between internal departments and external partners. It protects against inadvertent access to unsecured files at every step in the end-to-end transfer of files. It is easy to use especially for non-technical staff so you can leverage more resources to manage the transfer of files. The extensive reporting capabilities allow you to get a quick status of a file transfer and resubmit it as required. You can protect data in your DMZ by using the SSH/FTP reverse proxy.

For most organizations, MFT is not new but there is a need for a single enterprise wide file transfer solution that scales to partners and the cloud. Changes in security and compliance requirements are driving IT organizations to replace aging or custom script based file transfer technologies. Encryption such as PGP and Secure FTP servers are still the norm but they must utilize existing Identity Management to define users, groups and roles for remote access. Finally, the need to integrate MFT with existing integration tooling cannot be overstated. Since MFT typically does not support document transformations and other complex orchestration use cases, it is critical for MFT to act as a file gateway when used in tandem you're your existing integration platform. More information on Oracle Managed File Transfer is available in separate documents.

B2B

Oracle B2B 12c is tightly integrated with Oracle SOA Suite and Oracle Managed File Transfer. B2B users will be able to send and receive messages in Oracle B2B by using Managed File Transfer. The connectivity through Managed File Transfer is supported in both directions, towards trading partners and towards the backend middleware. In Oracle B2B, users are able to select Managed File Transfer as a new option while creating delivery channels and listening channels.

Figure 55 and Figure 56 show how Managed File Transfer can be configured as a new option while creating these channels in Oracle B2B.



MarketInc
Channels define how a message is delivered.

Channel

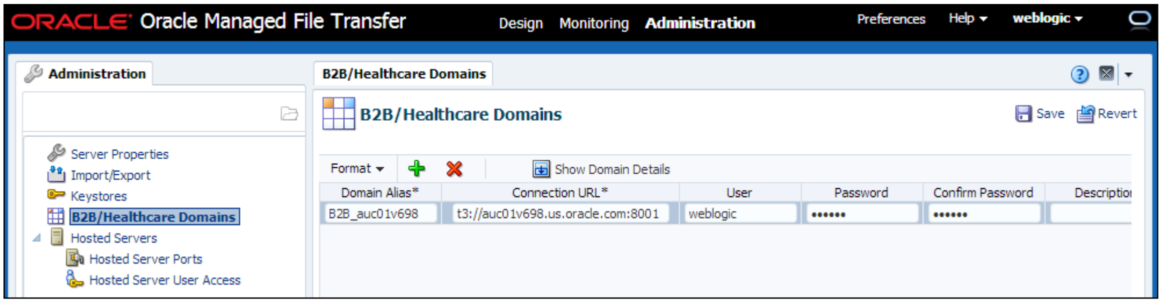
Name	Protocol
MarketInc_Channel	Generic MFT-1.0
MarketInc_File_Channel	
MarketInc_MFT_Channel	

Protocol list: AS2-1.1, MLLP-1.0, MLLP-2.0, Generic TCP-1.0, HLLP-1.0, ebMS-2.0, ebMS-1.0, RosettaNet-V02.00, RosettaNet-01.10, AS1-1.0, Generic WS-1.0, Generic MFT-1.0, Generic File-1.0, Generic AQ-1.0, Generic FTP-1.0, Generic SFTP-1.0, Generic JMS-1.0, Generic HTTP-1.0, Generic Email-1.0

Transport Protocol: MFT

	Agreement
1	MI_OS_850_X12_4010_Agr
2	OS_MI_997_4010_FA_Agr

Figure 55: On the Managed File Transfer side, in order to send a message to B2B, a B2B domain can be created which can be used to send messages to B2B from MFT.



B2B/Healthcare Domains

Domain Alias*	Connection URL*	User	Password	Confirm Password	Descriptio
B2B_auc01v698	t3://auc01v698.us.oracle.com:8001	weblogic	••••••	••••••	

Figure 56: With this integration between Oracle B2B and Oracle Managed File Transfer, a lot of customer use cases can be addressed because many B2B customers have a Managed File Transfer requirement and vice versa.

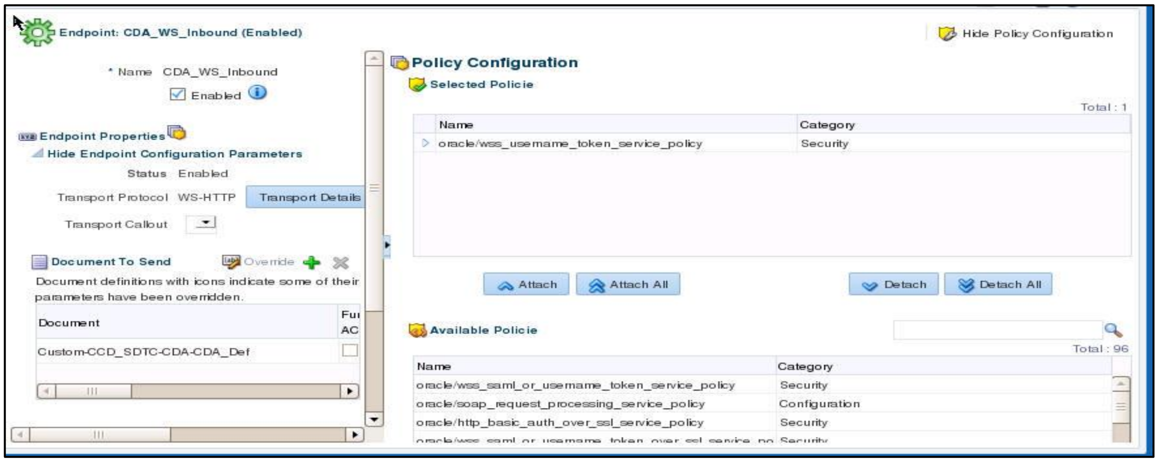
Oracle B2B 12c also introduces document streaming for large payloads. Many customers had asked for this capability in order to process very large files. Since large files can now be processed as streams, this feature will be very valuable for high volume customers processing large payloads. For enhanced management and monitoring B2B is also integrated with the SOA Error Hospital. It is very simple to track messages end to end by adding direct links to Enterprise Manager Fusion Middleware Control from B2B Reports and vice versa. Support for Local Policy Attachment for Web Services security configuration have also been added, which will simplify the user experience for customers using Web Services in B2B.

Oracle SOA Suite for healthcare integration

The Oracle SOA Suite for healthcare integration is designed to provide healthcare organizations with comprehensive integration capabilities within a unified middleware platform. It helps to reliably exchange information while adhering to important industry standards and initiatives. Oracle SOA Suite for healthcare integration 12c comes with new features specifically for providers including new wizard based installer, enhanced web-services support, support for large documents, Oracle Managed File Transfer (MFT) integration and enhanced end-to-end monitoring.

Wizard based Installer: Oracle SOA Suite for healthcare integration 12c comes with wizard based installer with a new ‘Oracle SOA Suite for healthcare integration template’. The template ensures that all healthcare components are installed and configured. A Healthcare Integration Repository Creation Utility (RCU) is added for the creation of healthcare tables and set up of materialized views in the database schema.

Enhanced Web-services-Support: Oracle SOA Suite for healthcare integration allows you to exchange web service (SOAP) based messages between endpoints. You can exchange messages in both inbound and outbound direction. The web service feature not only enables endpoints to receive or send messages, but it is also layered as a protocol implementation and supports other general features such as reporting, tracking, and auditing. In Oracle SOA Suite for healthcare integration 12c, the web-services support has been enhanced even further. You can now attach OWSM policies from the endpoint screen.



Endpoint: CDA_WS_Inbound (Enabled)

* Name CDA_WS_Inbound

☑ Enabled

Endpoint Properties

Hide Endpoint Configuration Parameters

Status Enabled

Transport Protocol WS-HTTP

Transport Callout

Document To Send

Document definitions with icons indicate some of their parameters have been overridden.

Document	Ful AC
Custom-CCD_SDTC-CDA-CDA_Def	□

Policy Configuration

Selected Policie

Total : 1

Name	Category
oracle/wss_username_token_service_policy	Security

Available Policie

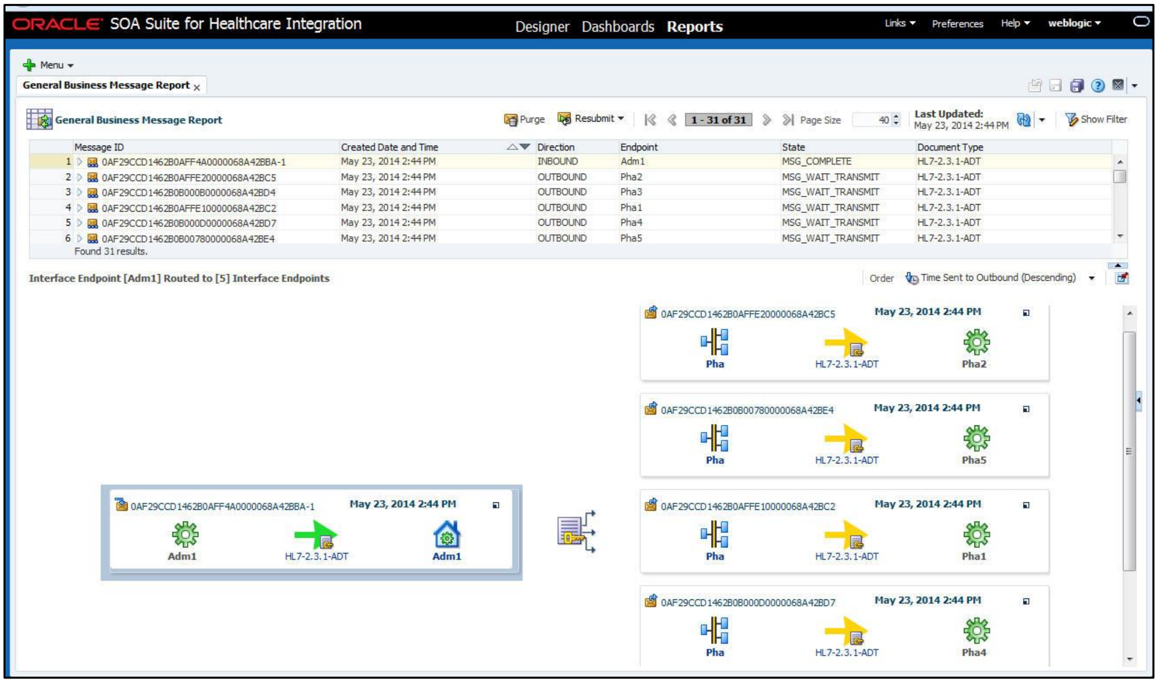
Total : 96

Name	Category
oracle/wss_saml_or_username_token_service_policy	Security
oracle/soap_request_processing_service_policy	Configuration
oracle/http_basic_auth_over_ssl_service_policy	Security
oracle/wss_saml_or_username_token_over_ssl_service_po	Security

Figure 57: OWSM policies can be associated with web service endpoints using the Policy Configuration wizard

Managed File Transfer (MFT) Support: Oracle SOA Suite for healthcare integration recognizes Oracle Managed File Transfer as a Remote Endpoint. MFT is added as additional transport protocol in the endpoint configuration: outbound endpoints are used to send files to Oracle Managed File Transfer and inbound endpoints to receive files.

End to End Monitoring: The Reports page of the Oracle SOA Suite for healthcare integration user interface (see Figure 58) lets you view the status of the messages being processing through Oracle Healthcare components in real-time. You can view all messages or you can narrow down the messages displayed by a variety of criteria, including endpoints, date ranges, document information, and payload fields. The Reports page is further enhanced to provide end-to-end monitoring for healthcare transactions providing a capability to associate the source endpoint to target endpoints. This is very useful specifically in fan-out scenarios where one source endpoint is sending data to multiple target endpoints.



General Business Message Report

Last Updated: May 23, 2014 2:44 PM

	Message ID	Created Date and Time	Direction	Endpoint	State	Document Type
1	0AF29CCD1462B0AFF4A0000068A42BBA-1	May 23, 2014 2:44 PM	INBOUND	Adm1	MSG_COMPLETE	HL7-2.3.1-ADT
2	0AF29CCD1462B0AFFE20000068A42BC5	May 23, 2014 2:44 PM	OUTBOUND	Pha2	MSG_WAIT_TRANSMIT	HL7-2.3.1-ADT
3	0AF29CCD1462B0B000B0000068A42BD4	May 23, 2014 2:44 PM	OUTBOUND	Pha3	MSG_WAIT_TRANSMIT	HL7-2.3.1-ADT
4	0AF29CCD1462B0AFFE10000068A42BC2	May 23, 2014 2:44 PM	OUTBOUND	Pha1	MSG_WAIT_TRANSMIT	HL7-2.3.1-ADT
5	0AF29CCD1462B0B000D0000068A42BD7	May 23, 2014 2:44 PM	OUTBOUND	Pha4	MSG_WAIT_TRANSMIT	HL7-2.3.1-ADT
6	0AF29CCD1462B0B00780000068A42BE4	May 23, 2014 2:44 PM	OUTBOUND	Pha5	MSG_WAIT_TRANSMIT	HL7-2.3.1-ADT

Found 31 results.

Interface Endpoint [Adm1] Routed to [5] Interface Endpoints

0AF29CCD1462B0AFF4A0000068A42BBA-1 May 23, 2014 2:44 PM
Adm1 HL7-2.3.1-ADT Adm1

0AF29CCD1462B0AFFE20000068A42BC5 May 23, 2014 2:44 PM
Pha HL7-2.3.1-ADT Pha2

0AF29CCD1462B0B00780000068A42BE4 May 23, 2014 2:44 PM
Pha HL7-2.3.1-ADT Pha5

0AF29CCD1462B0AFFE10000068A42BC2 May 23, 2014 2:44 PM
Pha HL7-2.3.1-ADT Pha1

0AF29CCD1462B0B000D0000068A42BD7 May 23, 2014 2:44 PM
Pha HL7-2.3.1-ADT Pha4

Figure 58: The Oracle SOA Suite for healthcare integration report page shows end to end monitoring for a fan-out scenario showing association of single source endpoint to multiple target endpoints

Summary

Oracle SOA Suite 12c and its associated products, Oracle Managed File Transfer, Oracle Cloud and Application Adapters, B2B and healthcare integration, offer the industry's most highly integrated platform for solving the rapidly increasing challenges of integrating with cloud applications, mobile applications, and the Internet of Things. Rather than introducing new toolsets for each new integration challenge, Oracle SOA Suite 12c expands on the proven principles, practices and tools of on-premise application integration to embrace this new world. Enterprises who choose Oracle SOA Suite 12c to connect with SaaS providers, business partners, and the explosion of new automated sensors, will avoid the "accidental architecture" of separate proprietary "silos" and will deliver business-critical solutions faster, with less effort, and with greatly reduced long-term maintenance costs.

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