

What's new in Oracle SOA Suite 12.1.3 – Oracle Integration Adapters

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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.

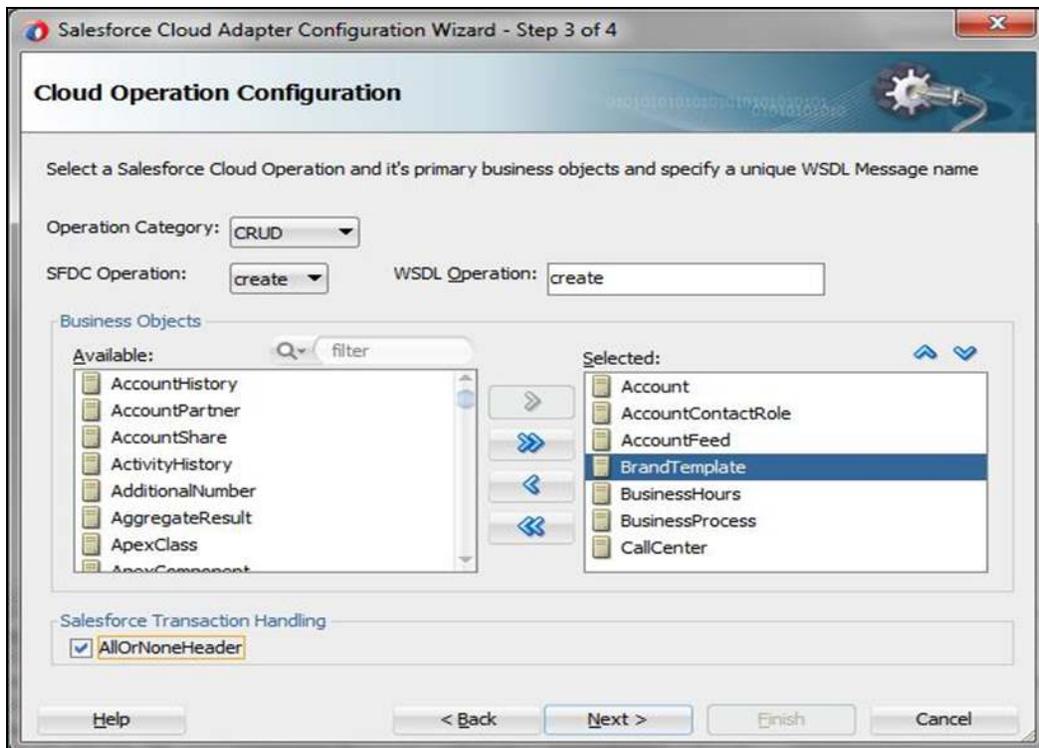


Figure 1 The Business Object Catalog Browser for Salesforce.com within the Cloud Adapter Configuration Wizard provides an intuitive and simple way to discover and integrate with Salesforce.com Business Objects

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.

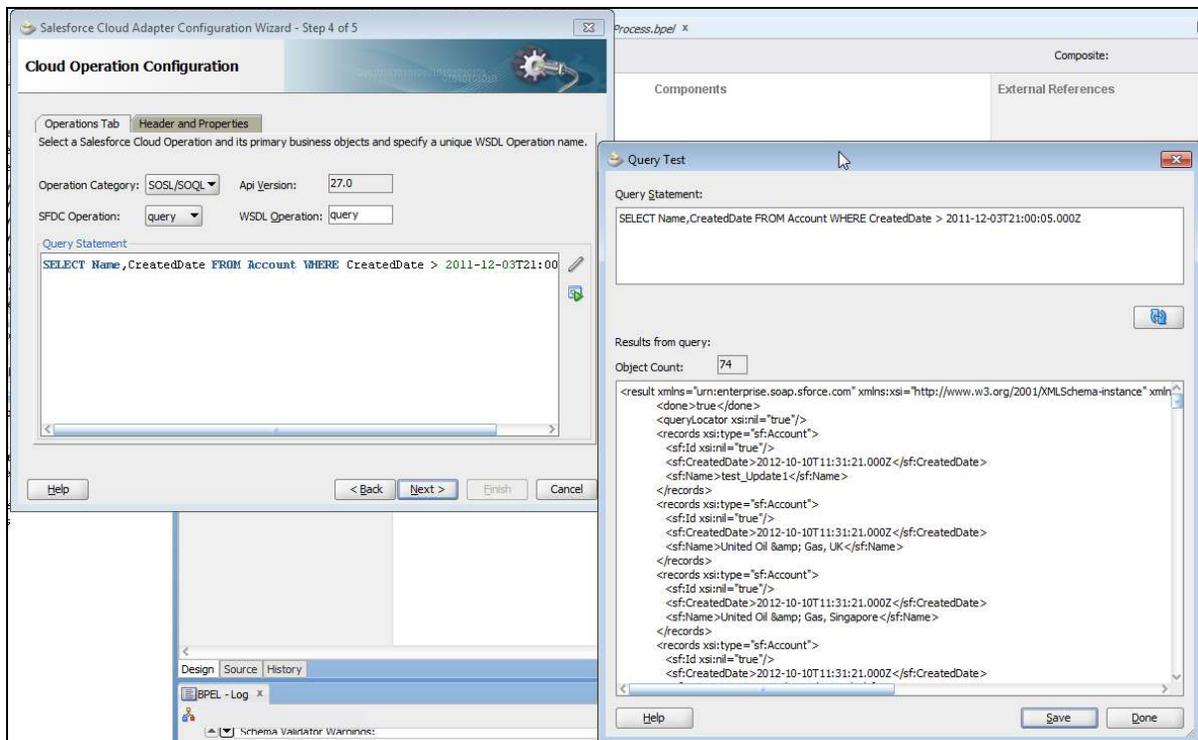


Figure 2 The Query Editor within the Adapter Design-time also provides a design-time test utility to validate the queries modeled by the User

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.

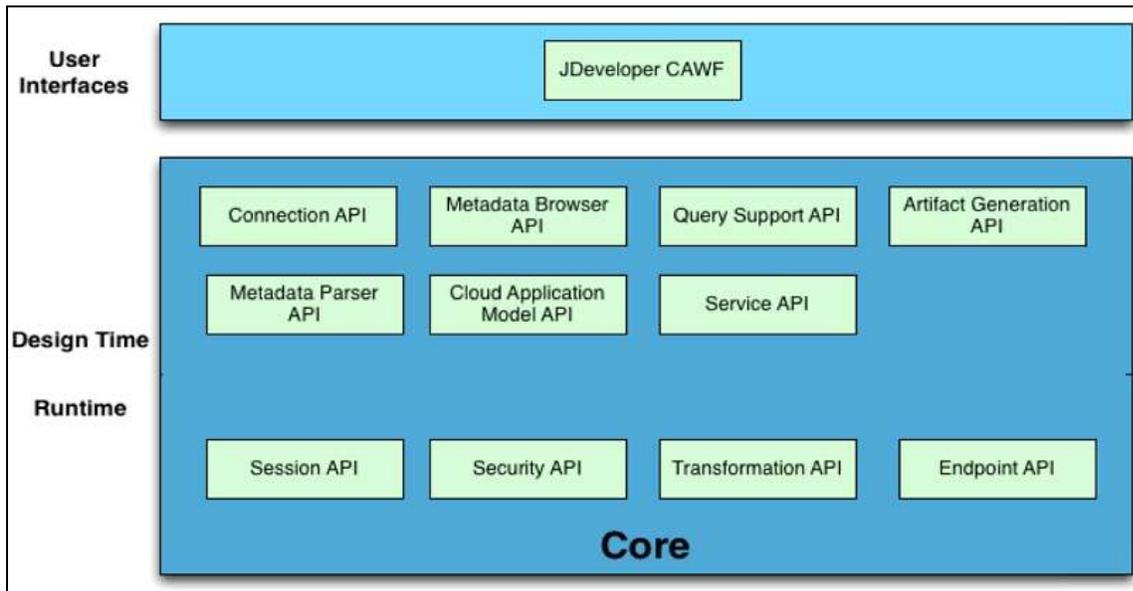


Figure 3 Tailored to integrate with Cloud Applications, the Cloud SDK significantly simplifies and accelerates development time for building adapters to SaaS Applications.

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.

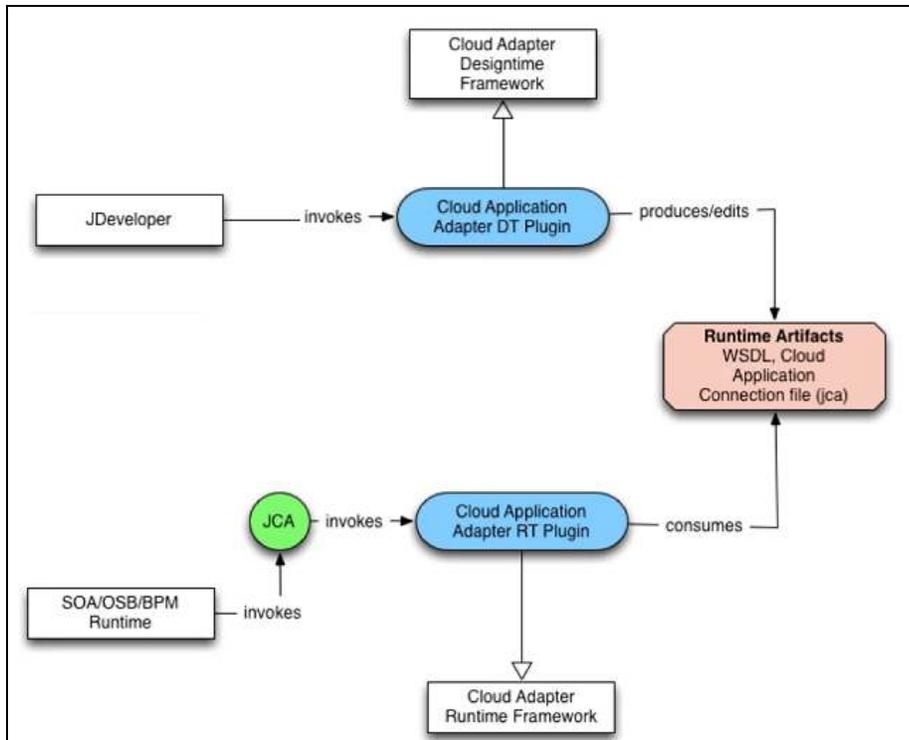


Figure 4 Illustration showing the integration between JDeveloper and the SOA Runtime with the Cloud SDK (Plugin)

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.

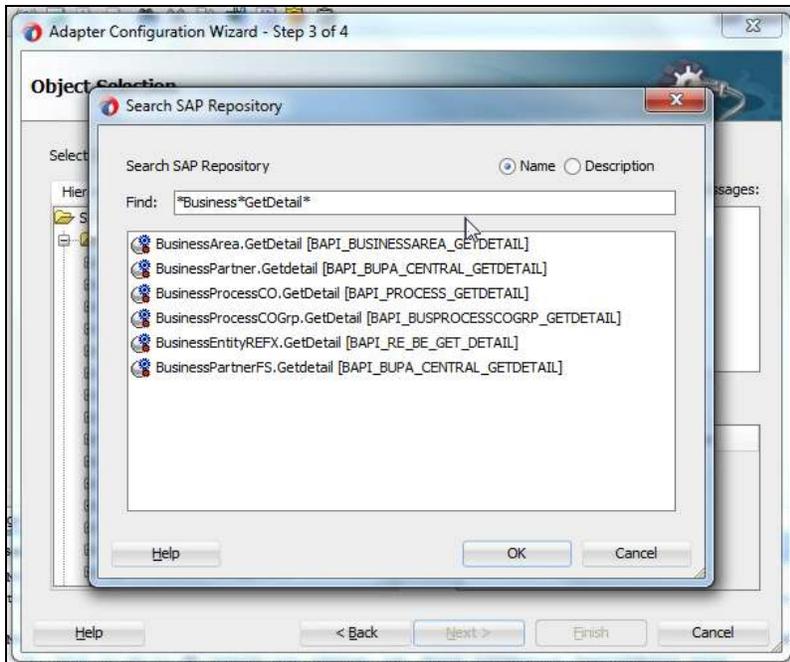


Figure5: Wildcard search for BAPI objects in the SAP Adapter design-time

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.

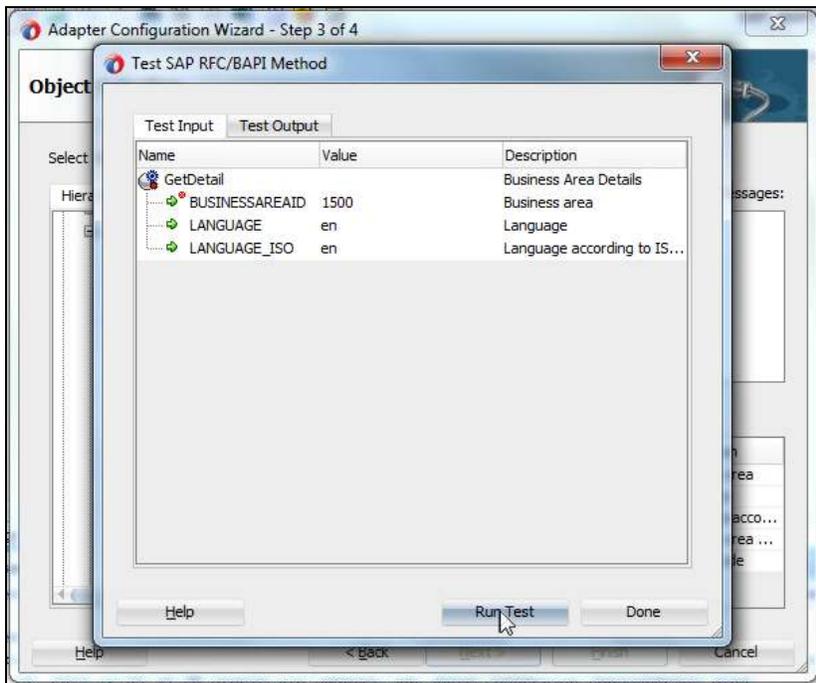


Figure 6 Testing the BAPI/RFC APIs at design-time

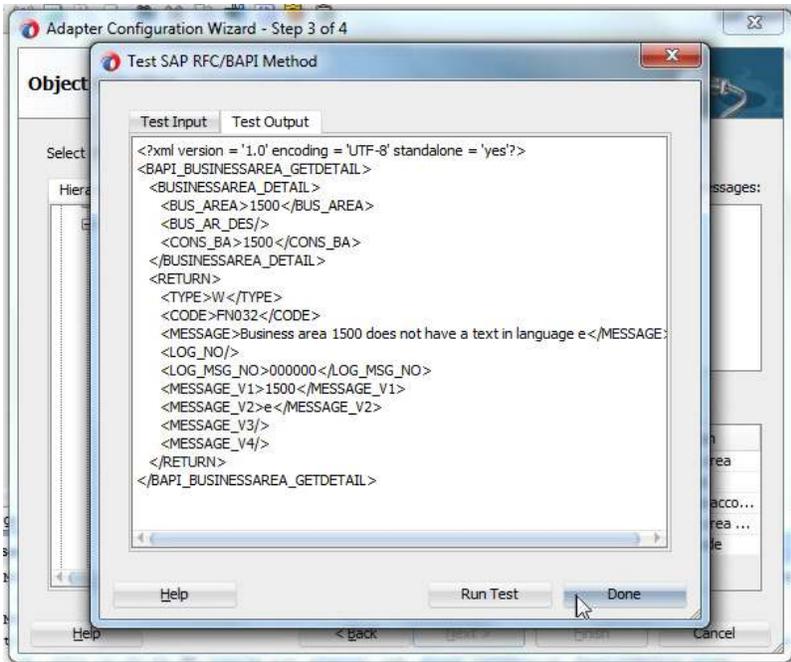


Figure 7 Viewing BAPI Execution Test Results at design-time

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.

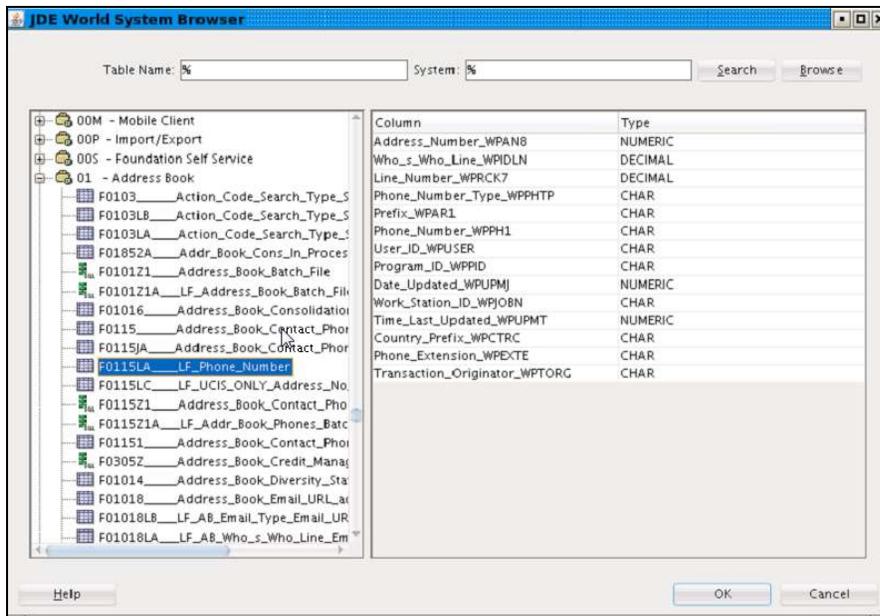
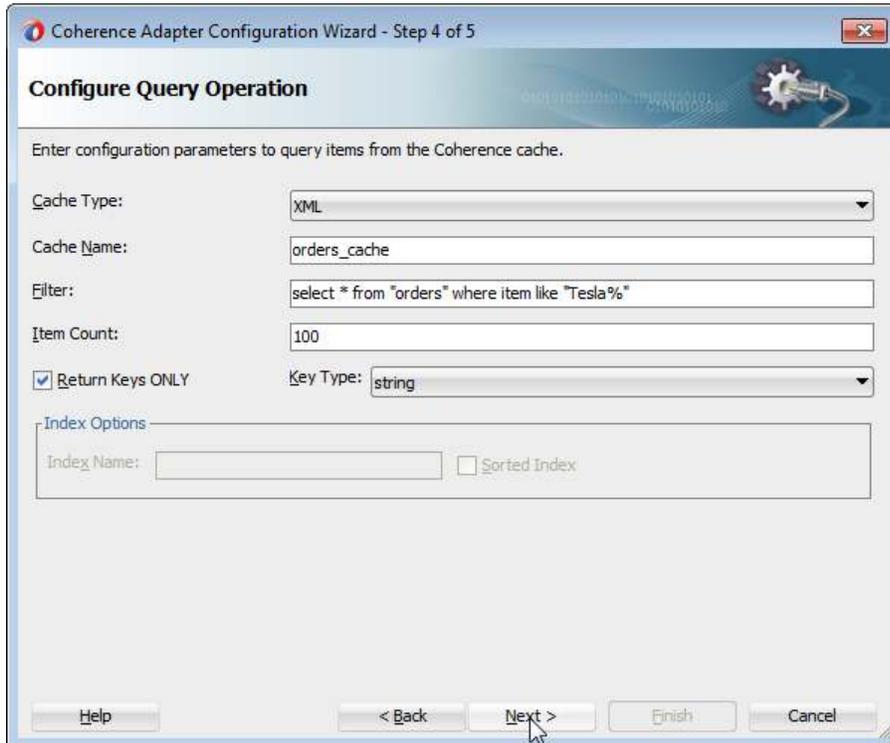


Figure8: The System Browser in the JD Edwards World Adapter enables users to search, browse, discover and integrate with z tables in JDE World.

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 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.



The screenshot shows a configuration window titled "Coherence Adapter Configuration Wizard - Step 4 of 5" with the subtitle "Configure Query Operation". The window contains the following fields and controls:

- Cache Type:** A dropdown menu set to "XML".
- Cache Name:** A text box containing "orders_cache".
- Filter:** A text box containing the SQL query "select * from 'orders' where item like 'Tesla%'".
- Item Count:** A text box containing "100".
- Return Keys ONLY:** A checked checkbox.
- Key Type:** A dropdown menu set to "string".
- Index Options:** A section containing an "Index Name:" text box and a "Sorted Index" checkbox (which is unchecked).

At the bottom of the window, there are five buttons: "Help", "< Back", "Next >", "Finish", and "Cancel". A mouse cursor is pointing at the "Next >" button.

Figure 9: 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.

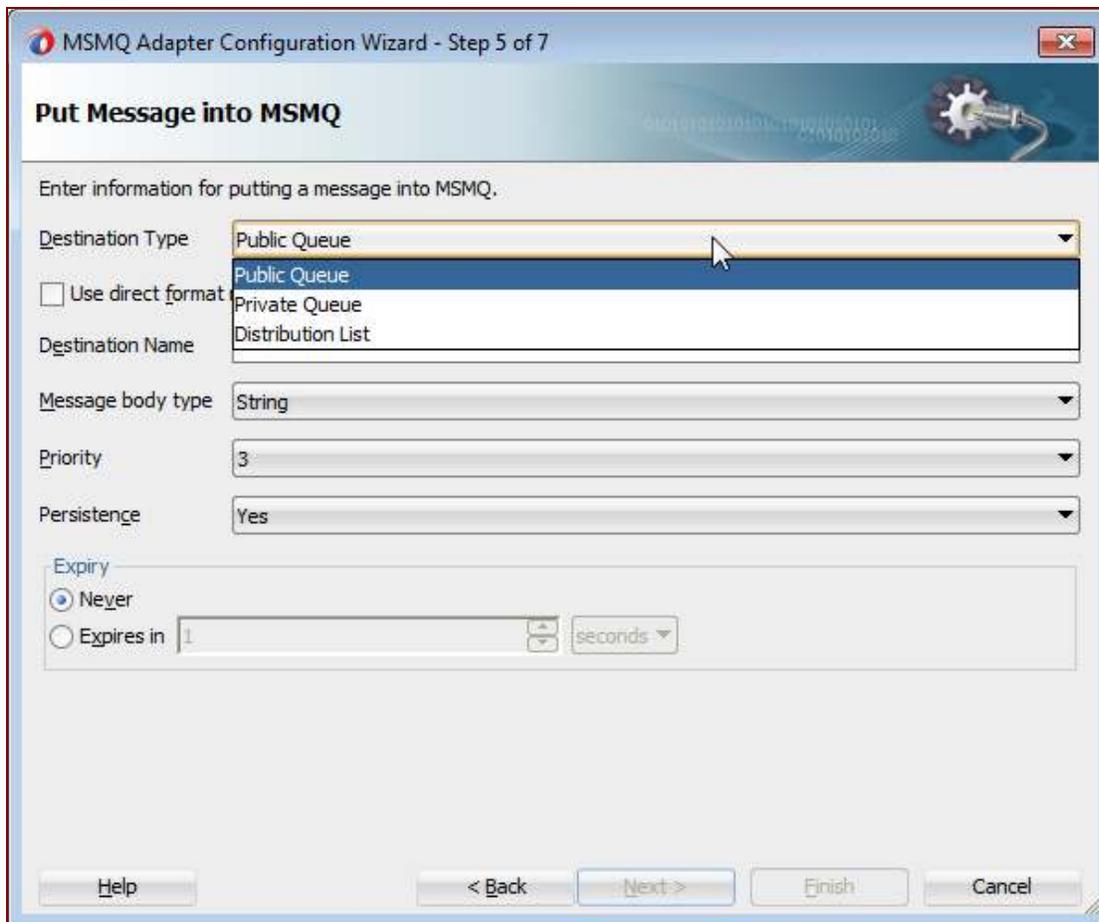


Figure 10: The MSMQ Adapter can be used to enqueue/dequeue messages from Queues and Distributed Lists

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.

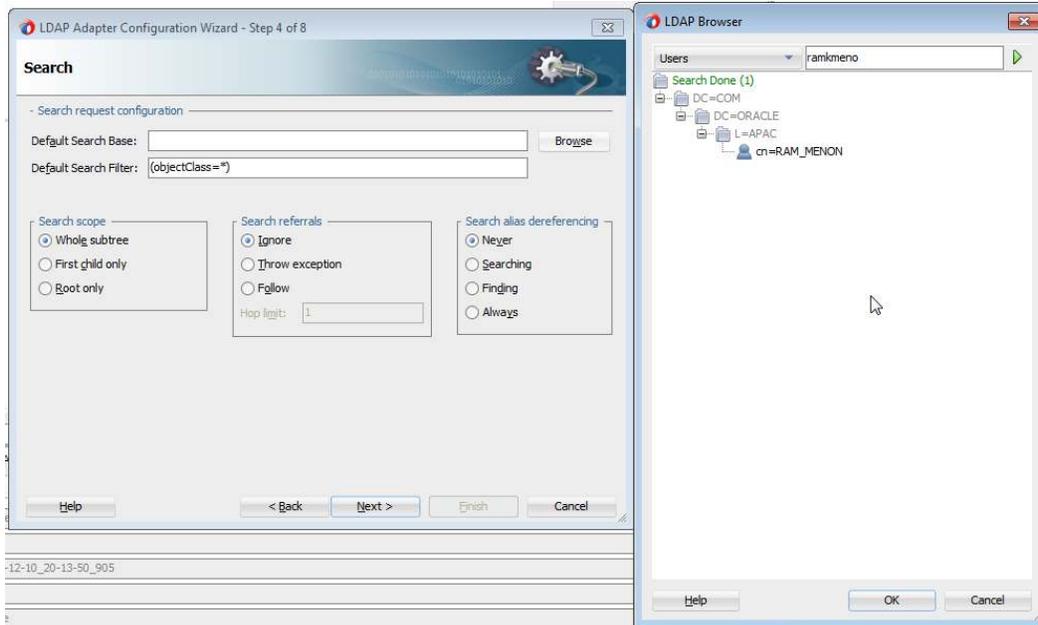


Figure 11: Search Configuration with a built-in LDAP Browser in the Adapter Design-time

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.

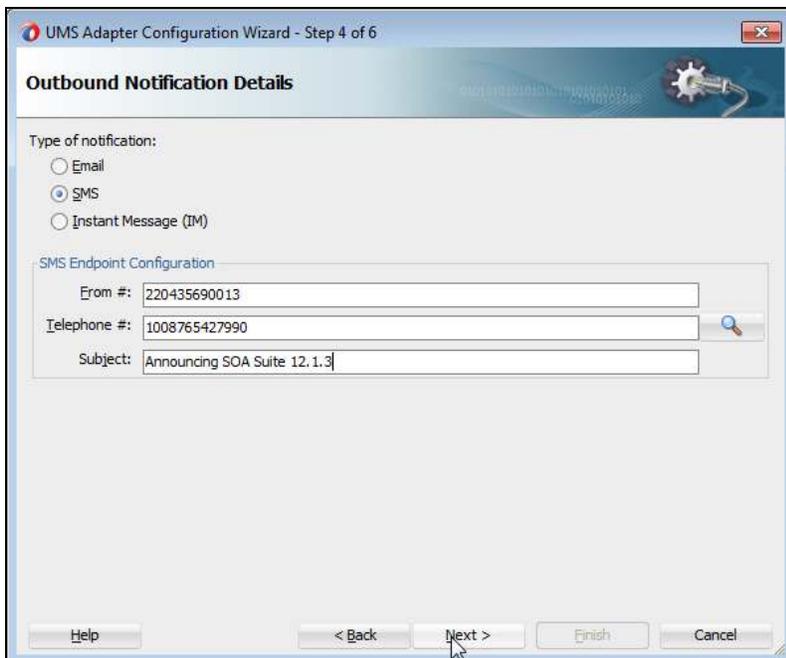


Figure 12: Send/Receive IM and Text Messages using the UMS Adapter in Oracle SOA Suite 12.1.3

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 **Error! Reference source not found.**), 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.

The screenshot displays the Oracle SOA Suite 12.1.3 Fusion Middleware Control interface for a 'writeCustomer (File Adapter)'. The page is titled 'PIIDemo [1.0]' and shows the user is logged in as 'weblogic1' with the ID 'adc4110219.us.oracle'. The page was refreshed on 'Jun 18, 2014 12:44:20 PM PDT'. The interface includes a navigation menu with 'Dashboard', 'Policies', 'Properties', and 'Adapter Reports'. The 'Adapter Reports' section is active, showing 'Diagnosability Reports' with an 'Enable reports' checkbox checked. Under 'Configuration Reports', there are two panels: 'EIS Connectivity' and 'Reference Properties'. The 'EIS Connectivity' panel shows properties like 'JndiName: eis/FileAdapter', 'OutboundLockTypeForWrite: none', 'IsTransacted: false', 'InboundDataSource: none', and 'ControlDir: \${user.dir}'. The 'Reference Properties' panel is divided into 'Definition Properties' (FileNamingConvention: customer_out.xml, PhysicalDirectory: d:\plout, NumberMessages: 1, Append: false, ChunkSize: 1) and 'Tuning Properties' (UseStaging: true, ConcurrentThreshold: 20). Below these is the 'Monitoring Reports' section, which includes a table of 'Managed Connections' for the 'AdminServer' node. The table shows 10.0 Currently Open connections, 0.0 Average Number Used, 10.0 Currently Free, and a Maximum Pool Size of 1,000. The last message publication was on Jun 18, 2014 12:44:17 PM. At the bottom, there is a 'Snapshot Reports' section with a 'Write to Database' checkbox and a 'Message Statistics' section with a 'Retrieve Data' button and a table with columns for Server Name, Average Message Size (bytes), Maximum Message Size (bytes), Minimum Message Size (bytes), Total Message Size (bytes), Number Of Messages, and Data Location. The current state shows 'No data found'.

Figure 13: New Fusion Middleware Control reports in Oracle SOA Suite 12.1.3