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Oracle SOA Suite 12c: Simplifying Cloud, Mobile, and MFT-based Integration with a Developer-centric Approach

A unified platform for on-premise, B2B, cloud, and mobile integration

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Summary

Catalyst

Enterprises continue to struggle to maintain fragmented integration infrastructure that offers limited development flexibility and adaptability to new business requirements. IT often needs to balance competing requirements, for example performance versus total cost of ownership (TCO) and homogeneity versus manageability, to select a suitable mix of integration approaches to meet “hybrid integration” (a simpler term for a mix of on-premise, B2B, cloud, and mobile integration) needs. Oracle SOA Suite 12c has introduced several new features and capabilities in the areas of cloud, mobile, and “Internet of Things” (IoT) integration, and managed file transfer (MFT), to offer a cohesive approach to meeting pressing integration requirements.

Ovum view

Time and budget constraints often force IT to look for makeshift solutions that seem “good enough” for current integration requirements. Over time, such moves result in an accumulation of disparate integration platforms that cater only to specific requirements and cannot be combined into a homogenous middleware stack. This heterogeneity also leads to an overall increase in the development effort and costs involved in integration projects. Oracle’s integration middleware stack, with Oracle SOA Suite at its core, is a good example of how substantial performance improvements can be achieved with a homogeneous integration middleware stack, which is also easy to maintain and manage.

Oracle SOA Suite 12c has introduced several new features and capabilities that resonate with the current integration priorities of enterprises, especially cloud and mobile integration. What differentiates Oracle SOA Suite 12c from competing platforms is its emphasis on simplifying the process involved in the development, testing, and execution of integration flows connecting a wide range of applications. This developer-centric approach is evident in the simple approach offered by the Oracle Cloud Adapter software development kit (SDK) for the development of new adapters to software-as-a-service (SaaS) applications. Furthermore, Oracle Cloud Adapters handle several inherent intricacies of SaaS integration, such as session management, data mapping, and specific security requirements to help reduce development efforts and costs. The developer-centric approach is also evident in the developer tooling enhancements introduced as part of Oracle SOA Suite 12c release.

Another noteworthy feature is the integration between Oracle MFT and Oracle SOA Suite and Oracle B2B 12c, which provides support for complex orchestration use cases, such as the extension of enterprise applications to B2B e-commerce and cloud integration scenarios.

Key messages

- Oracle has further refined its approach to cloud and mobile integration.
- Developer productivity is a key theme for Oracle SOA Suite 12c.
- Oracle MFT strengthens the overall value proposition of Oracle’s integration middleware stack.

Recommendations for enterprises

The benefits of using an integration platform provided by a major middleware vendor are not limited to better customer support and long-term relevance and viability. With the latest release of Oracle SOA Suite, Oracle has again proved that it can swiftly respond to customer requirements while ensuring continuity in product strategy to offer a unified platform for a wide range of integration requirements. Existing customers will benefit from developer tooling enhancements and new features and capabilities relating to cloud and mobile integration that help reduce development effort and costs. The introduction of Oracle MFT, as well as IoT integration capabilities based on the deployment of Oracle Event Processing on top of Oracle Engineered Systems, has strengthened the overall value proposition of Oracle's integration middleware stack for large enterprises.

Oracle has further refined its approach to cloud and mobile integration

Oracle Cloud Adapters and SDK help reduce the development effort and costs involved in SaaS integration

Oracle Cloud Adapters offered with Oracle SOA Suite 12c simplify integration with key SaaS applications and platforms such as Salesforce.com, Oracle Service Cloud, Oracle Sales Cloud, and Oracle Marketing Cloud. The cloud adapters extend the capabilities of Oracle SOA Suite 12c to enable standards-based SaaS-to-on-premise/legacy and SaaS-to-SaaS application integration. Furthermore, Oracle Cloud Adapters cater to the security requirements of specific SaaS integration scenarios. For example, the Salesforce.com adapter uses secure sockets layer (SSL) to secure messages in transit and exploits the WebLogic credential store framework to manage the credentials used for communications between different applications.

Another key feature of Oracle Cloud Adapters is "intelligent session management," which allows the reuse of authenticated sessions across several invocations of a SaaS application from a diverse set of SOA applications. This feature helps users overcome the challenges associated with the daily limit on the number of permissible requests to various SaaS applications. In the context of data mapping, Oracle Cloud Adapters shield the user from the need to work with complex polymorphic data definitions and ease graphical visualization and the development of integration flows.

Oracle has also introduced a cloud adapter SDK to allow customers and partners develop connectivity with new SaaS applications. The Cloud Adapter SDK provides design-time and runtime components offering a range of capabilities, such as defining connectivity to a SaaS application using the "Connection API" and configuring session management and security capabilities via the "Session API" and the "Security API," respectively. With its new features and capabilities, Oracle SOA Suite 12c handles several inherent intricacies of SaaS integration, thereby helping reduce development efforts and costs.

REST binding simplifies mobile integration

For mobile enablement, Oracle SOA Suite 12c has introduced a representational state transfer (REST) binding allowing simple object access protocol (SOAP) services, enterprise Java beans

(EJBs), and Java EE connector architecture (JCA) adapters connecting back-end services to be exposed as REST/JavaScript object notation (JSON) services/APIs.

There are several ways to define a REST binding within JDeveloper. It could be defined on an existing web *services description language* (WSDL), or the binding can itself create a WSDL. Oracle SOA Suite 12c allows REST/extensible markup language(XML), REST/JSON, or URL-encoded payload to be translated “on the wire” to and from SOAP/XML services. This is particularly helpful for developers that are conversant with SOAP/XML-style interactions, as they can use the existing integration layer (without any major changes) to interact with RESTful interfaces. Developers can expose back-end applications as REST APIs via an existing SOA composite or via Oracle Service Bus for integration with mobile applications. The latest version of the Oracle Service Bus testing console allows easier testing of REST services, with users having the option of displaying a response in either XML or JSON format.

IoT integration with Oracle Event Processing on top of Oracle Engineered Systems

IoT dramatically increases the number of integration points involved in the process of realizing a logical output from a complex ecosystem of connected things and users and the enterprise IT stack. In particular, the data collected at various endpoints of integration flows needs to be analyzed along with the "context" of usage to deliver valuable resources and functionality based on interactions between connected devices and different applications. Oracle Event Processing, when deployed on top of Oracle Engineered Systems, can handle a very large number of low-latency messages per second (ranging from millions to billions of messages, depending on the size of the Exalogic system). With this combination, real-time intelligence based on patterns and trends identified via the processing of multiple data streams from sensing devices can be easily extended to downstream applications.

Developer productivity is a key theme for Oracle SOA Suite 12c

SOA starter templates and BPEL sub-processes drive reuse and ease enforcement of best practices

SOA starter templates simplify the packaging and distribution of SOA composites and *business process execution language* (BPEL) fragments to facilitate the sharing of common use patterns across different development teams. Oracle SOA Suite 12c supports three types of SOA starter templates: project, component, and custom activity templates. The recently introduced project templates ensure that developers have access to pre-defined components, services, and references and do not need to recreate components or start with an empty composite for every new SOA project.

With component templates, developers can package a BPEL process with pre-defined fault handler and mandatory variables to share and enforce best practices across different teams and departments. Using custom activity templates, developers can simplify the packaging of a BPEL scope, comprising, for example, a complex transformation and invocation of an external web service, to minimize errors and promote reuse.

A BPEL sub-process is devoid of any interface and can be completely executed in the context of the parent process. Oracle SOA Suite 12c has introduced “inline” and “standalone” sub-processes offering reusable parts of business logic as modules. An inline sub-process is visible only to its parent process and can be invoked at any stage of the parent process. A standalone sub-process can be invoked by any BPEL process belonging to that specific SOA composite. BPEL sub-processes are similar to templates, reducing the need to recreate activities, and more, on a repeated basis. Another advantage of a BPEL sub-process is lesser runtime memory consumption. For an existing BPEL sub-process, memory consumption is independent of the number of invocations and therefore helps in realizing performance improvements.

Oracle SOA Suite 12c offers a wider range of on-premise application and technology adapters

Oracle has introduced several new on-premise application and technology adapters, including Oracle Adapter for SAP R/3, JD Edwards World ERP (JDE World ERP), Microsoft Message Queuing (MSMQ), Coherence, and *lightweight directory access protocol* (LDAP), to simplify integration across a wider range of enterprise and legacy applications and messaging standards. The new SAP adapter supports native bi-directional integration with SAP R/3 and offers a graphical browser, which can be used for discovery, search, and the selection of objects for integration. A key feature of the SAP adapter is that it allows developers to test API integrations in real time without having to deploy these to the server.

Oracle Adapter for JDE World ERP offers a JDeveloper-based system browser that allows search and data query from JDE World z-tables. In particular, the Java database connectivity (JDBC) driver for JDE World plays a key role in integration via this adapter.

Oracle Adapter for MSMQ, Microsoft’s asynchronous messaging middleware, is the latest addition to the Oracle messaging adapters list. The MSMQ adapter uses WebLogic jCOM for communicating with MSMQ server and supports message exchanges to and from public/private queues and distribution lists in MSMQ. The Coherence adapter enables real-time access to Oracle Coherence in-memory data grid solution, thereby allowing users to store, retrieve, and query data from local and remote coherence caches. Oracle Adapter for LDAP enables bi-directional integration with LDAP v3-compliant directory servers, such as Oracle Internet Directory (OID) and Microsoft Active Directory.

Developer tooling enhancements simplify SOA development environment setup and debugging and testing

Oracle SOA Suite 12c simplifies the installation and configuration of the SOA development environment by providing a quick-start installer, which can be downloaded as a single file from the Oracle Technology Network (OTN). The quick-start installer delivers a unified development environment across all key components of Oracle SOA Suite, including Oracle Service Bus, Oracle Technology Adapters, Oracle BPEL Process Manager, Oracle Human Workflow, Oracle Business Rules, and Oracle Mediator. Oracle Service Bus and Oracle Event Processing now share the same JDeveloper integrated development environment (IDE), offering a “drag and drop” approach for the creation of services and applications.

Another important enhancement is the availability of a visual debugger within Oracle JDeveloper, which allows developers to set breakpoints within an SOA composite, a BPEL process, or an

integration flow developed on Oracle Service Bus. The visual debugger provides a data window displaying visible variables and their values, which could be changed as part of the debugging process.

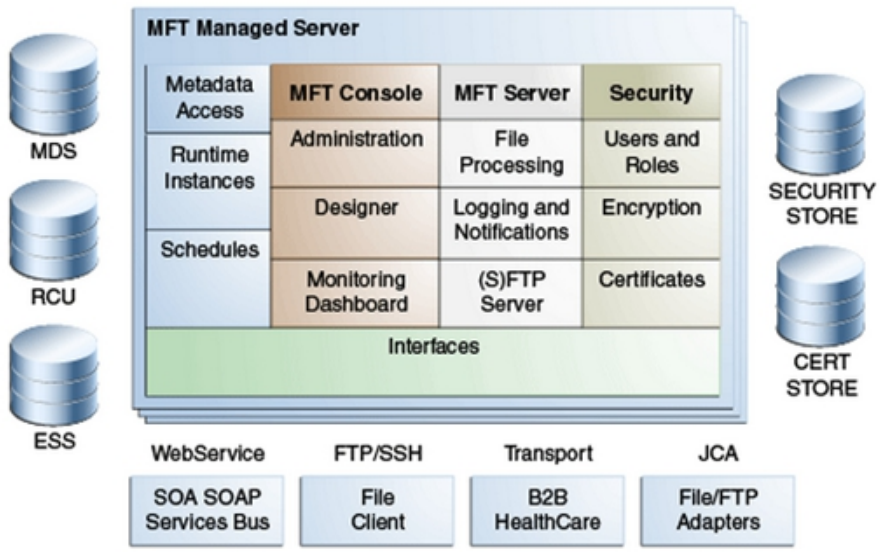
The updated version of the Oracle SOA Suite test framework allows emulation of external services and faults, thereby mitigating the need to test back-end systems. Furthermore, users can define, run, and analyze tests using JDeveloper, which also provides detailed reports on individual test executions.

Oracle MFT strengthens the overall value proposition of Oracle's integration middleware stack

A unified solution enabling, securing, and monitoring internal and external file transfers

A common issue for IT is governance and monitoring of file exchanges carried out via different file transfer solutions, some of which do not provide an enterprise-grade data security and governance framework. Furthermore, stringent data security and compliance mandates are forcing enterprises to look for suitable alternatives to existing file transfer solutions that fail to provide necessary auditing and logging capabilities. Oracle MFT overcomes this challenge by providing a unified, standards-based, end-to-end managed file gateway enabling, securing, and monitoring both internal and external file exchanges (see Figure 1).

Figure 1: Oracle Managed File Transfer architecture



Source: Oracle

Oracle MFT supports file transfers to and from a range of endpoints, including *file transfer protocol*-(FTP-) based and B2B endpoints and SOAP web services. In the context of file security, the MFT solution offers key-based authentication and file/message encryption, integration with Oracle

Access Manager for single sign-on, and support for FTP over SSL and secure FTP (SFTP) transport. It also offers a dashboard for monitoring key metrics related to file transfers, such as average and minimum/maximum payload file sizes and transfer speed, transfer status (completed, active, and failed), and failure ratio.

Integration with Oracle SOA Suite and Oracle B2B 12c provides support for complex orchestration use cases

Oracle announced the availability of its new MFT solution along with the release of Oracle SOA Suite 12c. Oracle MFT is well integrated with Oracle SOA Suite and Oracle B2B 12c, and in the latter case users have the option of configuring connectivity to both trading partners and back-end middleware. For integration with Oracle SOA Suite, Oracle JDeveloper provides a specific MFT component representing an Oracle MFT source or target in a BPEL process. Integration with Oracle B2B can be achieved by configuring either a B2B domain in Oracle MFT or anexternal delivery channel (representing a remote trading partner) in Oracle B2B for sending files to Oracle MFT.

The positioning of Oracle MFT is significantly different compared to competing MFT solutions. Oracle MFT is not just another run-of-the-mill solution limited to security, governance, and monitoring of file transfers within and outside the enterprise. Rather, it is developed from the bottom up as a key element of Oracle's middleware stack to support complex orchestration use cases, such as the extension of on-premise applications to B2B e-commerce and cloud integration scenarios. For example, in scenarios where business partners have different requirements for file formats, batch processing, transfer notification, and service level agreements (SLAs), integration between Oracle MFT and Oracle B2B 12c will help ensure guaranteed delivery and validation of origin or nonrepudiation, as well as enforce enterprise-wide encryption policy.

Appendix

Methodology

The views expressed in this brief are based on our ongoing research into the integration middleware market. It has taken into account the information provided by the vendor via product literature and briefings and the opinions of integration practitioners and industry consortiums, including those expressed on public forums like blogs and wikis.

Further reading

Oracle's Integration Middleware Stack: A Cohesive Approach to Hybrid Integration, IT016-001530 (August 2013)

"Oracle's integration middleware strategy is headed in the right direction", IT016-001494 (November 2012)

2014 Trends to Watch: Integration, IT016-001536 (October 2013)

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We hope that this analysis will help you make informed and imaginative business decisions. If you have further requirements, Ovum's consulting team may be able to help you. For more information about Ovum's consulting capabilities, please contact us directly at consulting@ovum.com.

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