The Challenges of Integrating Into The Cloud

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Introduction

Cloud computing is a vision that is increasingly turning to reality for many companies. Enterprises, both small and big, are evaluating cloud computing and, in increasing numbers, are moving their IT infrastructure to the cloud. As a matter of fact, Forrester Research predicts that, by the year 2020, enterprises will be investing more than $241 billion in cloud computing each year – that's six times what they're spending today.

Cloud computing solutions are widely hailed as a way to reduce capital expenditures and move to an inexpensive, subscription-based IT model. However, many organizations don't stop to consider all of the nuances of integrating cloud applications with their existing information systems.

While deploying a cloud app or subscribing to a cloud-based service may be relatively straightforward, how will this new IT asset fit in with the rest of the enterprise, including on-premise systems and other cloud applications? What is the system of record from which data will be derived? Which business processes are involved? Do you need an enterprise data model that is independent of the cloud data model?

But where does that leave our current investments for critical applications hosted on-premises or in other cloud service provider's data centre's. How does this impact your existing relational data stores, data warehouses, business intelligence systems, and business applications that consume data? What impact will cloud have on the world of connecting your critical applications and data sources?

Integration entails exchanging information among 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.

For example, an enterprise that relies on an on-premise CRM application might acquire a company that uses a SaaS-based CRM application. Account managers need to be able to access data from both systems in a cohesive way, share data between these systems, and ultimately establish an authoritative system of record

that encompasses all customers. Diversity also creeps into the enterprise when an individual department subscribes to its own SaaS based CRM application. Departmental users may enjoy the ease and convenience of a rapid cloud deployment, yet they probably still need to access data from the corporate CRM system—and possibly merge the two.

Introducing Oracle Fusion Middleware

Fortunately, with Oracle Fusion Middleware, one set of integration tools can handle all of these integration scenarios, with direct and interchangeable connections to cloud, on-premise, and legacy systems. Oracle SOA Suite, Oracle Data Integration and other components of the Oracle Fusion Middleware family provide a cohesive set of integration capabilities to simplify diverse IT environments.

Oracle's support for Web services enables you to easily connect to on-premise and cloud-based services through one cohesive middleware platform. Developers can initiate Web services calls to and from cloud applications and connect to on-premise information systems via adapters that mask the technical nuances between applications and data models such as connectivity options, session management, authentication, and authorization. Whether the systems at hand include

PeopleSoft, Oracle E-Business Suite, JD Edwards, SAP, Salesforce, or other common applications, Oracle exposes simplified web services to invoke the on-premise applications. Modern applications built using standards-based web services technologies such as Oracle Fusion Applications don't need such adapters. Oracle also offers native connectors to legacy databases and file systems.
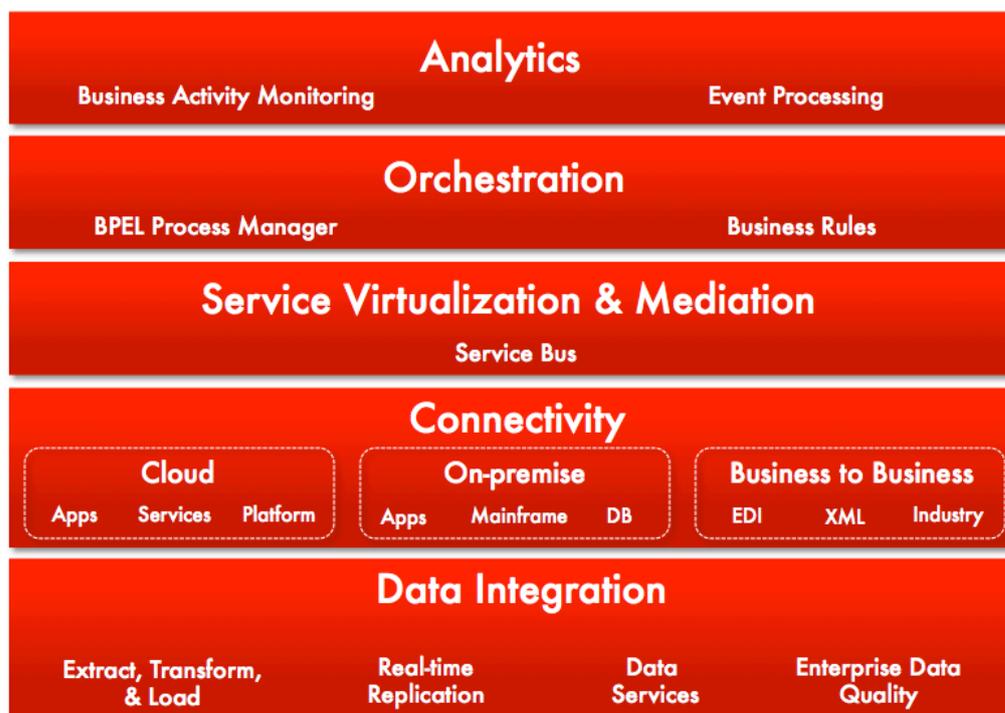

Figure 1 - A unified approach to integration with Oracle SOA Suite and Data Integration components

Types of Integration

Cloud integration scenarios fall into a couple of familiar models. *Application integration* refers to interfaces that are event- driven, near real-time, and impact business operations. For example, if you are an online retailer selling products to customers, orders accepted through a customer-facing website must be routed to a back-end fulfillment system, which initiates processes related to order confirmation, inventory management, and shipping. The processes are relatively similar whether the front-end system is on premise or in the cloud: the CRM application sends information to the destination application, such as routing an order to a back end fulfillment system.

Data Integration scenarios come into play when you are moving large volumes of data in batch mode, such as when your sales database is migrated to the cloud to populate a cloud-based contact management system. In these instances you must consider the volume and frequency of data integration – daily, nightly, weekly, etc. You might begin with a batch upload of historical data followed by periodic data updates each day, week, or month. If these integrations are done on-premise, security is less of an issue. If you are interfacing with a cloud app, the security requirements will undoubtedly be stricter.

For both real time and batch-level interfaces, developers can always set up point-to-point interfaces. However, the protocols, file formats and metadata will vary from one cloud vendor to another. Rather than manually coding for these distinctions, they will save time by coding once to a data integration platform that can mask these distinctions, especially as the number of cloud providers in the IT ecosystem expands.

Oracle provides a simple and consistent method to create and maintain these interfaces. It doesn't matter if the interfaces are from SaaS to SaaS, SaaS to on-premise, on-premise to SaaS, or on-premise to on-premise, Oracle can connect to any kind of SOAP or REST Web service using Oracle Fusion Middleware.

Addressing the Cloud Integration Challenges

One fact remains with the emergence of the cloud computing phenomenon. While businesses are making new economic investments in public cloud computing, they continue to rely heavily on their existing on-premise IT investments. This strategy of straddling between the two infrastructure types poses its own set of challenges.

To integrate data between public cloud and private data center solutions, organizations face two major challenges. First, they must be able to rapidly load data to get cloud applications up and running in a timely fashion. Second, that data must be kept synchronized – often in real time, or near real time.

For public cloud architectures, Oracle offers a complete and extensible set of integration options. Specifically for Oracle Cloud, Oracle SOA Suite excels at integrating on-premise systems with Oracle cloud based services for application and service level integrations. For example, it can integrate with the Oracle Messaging Cloud Service using REST APIs, and with Oracle Fusion Applications services using SOAP APIs. Furthermore, it supports best practices for application service level integration with cloud services, including service virtualization, mediation, result set caching, service aggregation, process orchestration, centralized security policy management etc. This complements the data integration features to provide one of the most comprehensive on-premise to cloud service integration offerings in the industry.

For data loading and transforming in the cloud, Oracle Data Integrator supports a knowledge module for Salesforce.com—now available on AppExchange. Other third-party knowledge modules are being developed by customers and partners every day. All of these data integration solutions, like Oracle SOA, are built using the technology underpinnings of Oracle Fusion Middleware which include key elements for managing, securing, extending, and deploying both enterprise and cloud applications. Oracle Fusion Middleware is also the centerpiece of Oracle Cloud Platform Services. Oracle Cloud offers a broad portfolio of software as a service applications, platform as a service, and social capabilities, all on a subscription basis. Oracle Cloud delivers instant value and productivity for end users, administrators, and developers alike through functionally rich, integrated, secure, enterprise cloud services. With Oracle Cloud, you get enterprise-grade application and platform services based on best-in-class business applications and the industry's leading database and application server, managed by experts with over a decade of cloud delivery experience.

Conclusion

One lesson that has proven itself to be true over the last 20 years of software integration is to avoid rigid, unique, point-to- point connections between application providers and clients. Instead create logical connections to a service bus or virtualization later, so that you don't have to continually re-code each interface as your information systems change and evolve. This is especially important today, given the rapid churn in the SaaS market. Having a flexible integration platform helps enterprises to maximize their options and lower risk.

When moving from the on-premise world to a hybrid world that includes cloud vendors, external companies become an integral part of your infrastructure. Not all of these vendors uphold the same policies, procedures, and principles that you have established in your own business. One of the biggest issues in using public clouds is integrating them with on-premise applications. To solve this issue, you need to enable universal connectivity to a common platform that can seamlessly "bridge" dissimilar technologies in a consistent way.

Oracle Fusion Middleware components, including Oracle SOA Suite, Oracle Data Integrator, Oracle Enterprise Repository, and Oracle Enterprise Manager, deliver a cohesive and flexible integration platform bolstered by connectors and adapters to hundreds of popular databases and applications. This unified approach is superior to the patchwork strategy of managing an increasing number of disparate integration toolsets provided by each SaaS-only vendor. No matter how your information systems evolve, Oracle can mitigate the complexity with a cohesive integration platform that accommodates all types of cloud services, applications, and infrastructure.