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DATA INTEGRATOR

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Take SOA Deployments to the Next Level with Oracle Data Integrator

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Executive Overview

Service-Oriented architecture (SOA) is a key component of the information enablement strategy for an enterprise. It plays a critical role in integrating business processes and abstracting information services. However, the value of a service-oriented architecture is only as good as the availability of the information assets that feed it. Having a performant, timely and robust bulk data movement strategy that goes hand-in-hand with SOA is critical for the success of a SOA approach in the enterprise.

This whitepaper will discuss the importance of Oracle Data Integrator, Oracle's flagship solution for data movement and data transformation for any SOA implementation. Designed to work with Oracle SOA Suite, Oracle Data Integrator integrates data embedded in services, BPEL flows and composite applications. In addition, this paper will cover how Oracle Data Integrator arms SOA projects that demand high performance, data-driven, powerful data loading with best-in-class capabilities, while providing real-world examples and case studies to illustrate the benefits of the combined approach.

Introduction

Service-oriented architectures focus on component reuse, are intrinsically agile due to their loose coupling of services, but what happens when data volumes increase, and enterprise systems need integrated information? While standards and technologies have matured to help IT organizations turn application logic into services, not enough effort has been spent to ensure that these services have reliable and consistent access to and knowledge of the underlying data they depend on. This has lead to serious re-use challenges, increased development time for services, increased complexity, and higher maintenance costs.

The problem is a complex one. Underneath the ideal of a simple, standards-compliant SOA interface is a huge mess of heterogeneous data that varies by format, semantics, and hierarchy while being controlled and manipulated by multiple applications. These problems are made even worse by the presence of multiple enterprise systems keeping similar information (a natural consequence of growth through acquisitions), and increasingly now, the availability of cloud-based applications.

For example, in a scenario where a company acquires another company, both companies would typically have pre-existing order and inventory systems, which are crucial for day to day operations. In order to surface SOA-based components that provide global visibility to orders and inventory, it is critical to establish an effective bulk data movement strategy that moves the critical order and inventory information in a timely fashion to a single point of deployment. The choice of an effective bulk information framework is therefore an integral part of SOA success for an enterprise.

The SOA Approach

Services-Oriented Architecture is an architectural strategy for building software applications inside a company—more like an architectural blueprint, except that in this case, the architecture calls for all the pieces of software to be built using a particular software development methodology. The service-oriented approach allows the creation of services and composite applications that exist independent of the underlying technologies. Rather than requiring that all data and logic reside on a single computer, the services model facilitates access and consumption of IT resources over the network. Since services are designed to be standalone, autonomous, and loosely coupled, they can be readily combined and recombined into composite applications according to the changing needs of the organization. SOA provides the framework to help integrate composite applications whose purpose is to enable

businesses to improve and automate manual tasks, to realize a consistent view of customers and trading partners, and to orchestrate business processes that comply with internal mandates and external regulations. The net result is that organizations adopting service orientation can create and reuse services and applications as business needs evolve, and are thereby able to gain the agility necessary for superior marketplace performance. Here are a few of the benefits of a SOA deployment approach:

- Flexible layer of abstraction consisting of "loosely coupled" services for faster development
- Component-based services which may be reused and across projects and applications to reduce development time and cost
- Leverages open standards such as: XML, SOAP and WSDL for interoperability and heterogeneity across platforms.

Overall, SOA-based architectures offer ample flexibility and work well with requirements centered around application integration, services, and component integration. However, what happens when project requirements demand integration of large data volumes such as terabytes or hundreds of terabytes of data, bulk data processing and data transformation with attention to semantics or possibly even data quality? SOA provides a loose coupling approach to systems that are not yet integrated and in order to be successful with SOA, timely and efficient movement of bulk information is critical for integration. Here is where Oracle Data Integrator is needed.

ODI and SOA : A Match Made in Heaven

Solving the aforementioned problems through a hybrid approach combining best-in-class solutions like SOA and Enterprise Data Integration is an additional option for SOA success with best-of-breed data integration technology. A key component of the enterprise data integration in this context is timely access and movement of bulk/batch data from disparate systems.

Oracle SOA Suite and Oracle Data Integrator complement each other very well in this regard. Together, they seamlessly bring together events, transactions and processes and are complemented by a data-driven architecture. As additional business processes are added over time to a SOA architecture, scalability turns into a challenge, plus the services that have been deployed already need to be supplied data from the addition of new data sources. Oracle's flagship product for bulk/batch data movement

and processing is designed to handle changing IT infrastructures that rely on information being present, available and able to transform quickly.

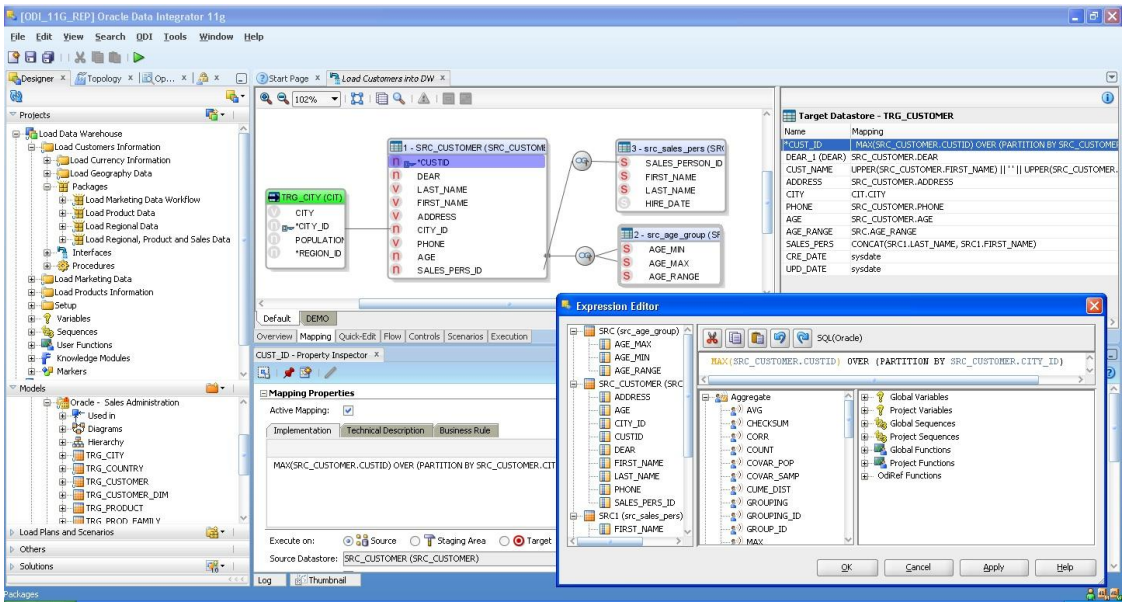

Figure 1: Oracle Data Integrator and the target data store fields.

Oracle Data Integrator offers organizations the power of high performance, increased productivity, coupled with data movement and transformation capabilities across different platforms. It is the tool of choice for data integration projects. ODI makes it possible to connect to most major databases, data warehouses, service-oriented architectures, BI systems and helps lower the total cost of ownership among information-centric architectures in the enterprise. In addition, the combination of Oracle Data Integrator and Oracle GoldenGate brings key elements of data integration—real-time data movement, transformation, synchronization,—to ensure that information is timely, accurate, and consistent across complex systems. Oracle GoldenGate brings a cost-effective and low-impact real-time data integration and continuous availability solution. A large component of data integration projects, ODI specializes in bulk data movement without compromising performance and maintaining existing data relationships and transformations. Here are a couple of key areas that set ODI apart from other data integration solutions and make it very well suited along side of SOA in any type of integration project:

- High Performance- Oracle Data Integrator's design uses an E-LT (Extract Load Transform) approach which optimizes how transformation is done on the target system. ODI exploits database optimizers as opposed to transformation that is performed in-flight or requiring a

separate intermediary. The ELT approach directly impacts performance and has proven to make data loading fast, efficient and incredibly reliable. No dependency on an intermediary server - ODI Agent runs directly on the source or target.

- Heterogeneity- Built to work on different platforms and vendor agnostic, Oracle Data Integrator can easily supply multiple composite applications and services with data and act as a key data loading mechanism in batch. ODI's heterogeneity enables it to connect to all possible enterprises sources, thereby providing a uniform mechanism for data integration. In addition, ODI acts as a layer that can handle data access and integration from sources to target, without having to use point-to-point connections like SOA and BPM.
- Easy Interoperability/Communication with SOA: ODI is 100% Java and can natively integrate within a Service-Oriented Architecture. ODI can be used in a number of ways within a Service-Oriented Architecture. ODI can be called from a SOA web service for ETL or ELT. In addition, ODI can be orchestrated/called from the SOA process directly for bulk data needs.
- Run-time and Design-time Integration: Oracle Data Integrator uses Oracle WebLogic Server along with SOA for integration during run-time. Specifically, ODI and SOA Suite both use JDeveloper and the benefit is uniform tooling and a common user interface at design-time. Depending on the use case, ODI and SOA Suite can be deployed on a separate or same JVM, for either run-time or design environments. The run-time and design-time integration ensures that both solutions work together and the entire information flow process can be designed, managed, deployed and maintained from a single place. This is in contrast to having an unmaintainable mess of ad-hoc scripts that are expensive to develop, deploy and maintain due to being scattered around different IT systems in the enterprise.

A holistic integration approach that includes Oracle Data Integrator is essential to effectively executing complex data transformations and resolving semantic differences in data, both of which are crucial components of an effective SOA strategy.

ODI and SOA Suite: Real-Life Customer Examples

Oracle Data Integrator has enabled customers to realize success, quick time-to-value and seamless integration without interruption to existing systems. Let's examine two customers and the challenges their businesses faced and how ODI along with Oracle SOA Suite helped them achieve better, complete integration both at the application and data levels.

Major Off-Price Apparel and Home Fashion Retail Chain

A major US-based, Fortune 500 retail chain with revenues of $7.9 billion was looking for ways to gain better business insight of their product inventory as well as consolidate disparate information from multiple sources to present a consolidated view to the business. Over 800 retail store chains were involved with this effort which spanned across merchandising, supply chain and financial applications. Furthermore, the initiative includes integration with over 20 B2B trading partners. Oracle Data Integrator played a key role in developing fast & reliable ETL, bulk load transfers. The retailer faced the following challenges: 1) Challenges with integrating, consolidating and combining inventory information, 2) Lack of visibility to errors to the business, 3) Higher cost and time to delivery of information, 4) Current IT state was complex, didn't scale, and difficult to manage, 5) Non-standard approaches required ad-hoc coding, lack of single uniform approach, inconsistencies in development practices. To help them solve the issues with integration, they chose Oracle SOA Suite and Oracle Data Integrator for data integration across heterogeneous data sources while using a standards-based approach. The benefits experienced include:

- 73% Bulk data transfer performance improvement
- ODI with Oracle SOA Suite (Oracle BPEL PM) provided business optimization, process visibility, exception handling
- Closed loop processing using BAM and Data Integrator reduced ordering/replenishing inventory errors by reducing inaccurate data

Oracle Data Integrator was used for over 120+ ETL/bulk data transfer interfaces between applications, trading partners and enterprise data warehouses. On the SOA side, they are running over 200 integration services. Significant performance gains were seen due to having Oracle Data Integrator handle the complex data transformations and data movement functions. ODI was able to provide high performance data integration with ETL/ELT so that Oracle SOA Suite could focus on process

and service-level integration. Overall, the retailer saw results that reiterated the value of Oracle Data Integrator and Oracle SOA Suite to yield real-time visibility into business processes, seamless integration from heterogeneous sources and a standards-based approach that enabled centralized exception management.

Major Telecommunications Company

As a global leader in delivering innovative communications, information and entertainment, this telecommunications company offers voice, data and video products and services. Their services and products are offered over intelligent wireless, broadband and global IP networks while meeting customers' growing demand for speed, mobility, security and control. The primary business challenges they faced which led them to a hybrid approach for better business agility, data management are:

- Streamline and automate business processes around new hire on boarding
- Provide better business insight and manage supply chain
- Many different EAI infrastructures leading to inherently high TCO (learning curve, licenses, physical infrastructure required)
- Lower the cost of rewriting SAP, PeopleSoft & Legacy interfaces (about 209) through custom code
- Lower the cost of IT infrastructure due to multiple redundant systems and need for greater automation vs manual production processes.

The solution they turned to involved ODI + SOA to help build out a shared services layer which helped provide greater flexibility. These shared services were deployed to consolidate databases (DB2, Sybase, Informix to Oracle), consolidate ERP (PeopleSoft HR/Payroll, Decommissioning SAP), consolidate middleware (Oracle Fusion Middleware) and consolidate BI/ETL. One of the customer's key requirements was to minimize the pain of integration and help adhere to standards. Oracle Data Integrator was an integral technology to help them create a shared services organization that created, and maintained services that could be used throughout the company. ODI helped reduce their infrastructure complexities, which consisted of thousands of physical servers to hundreds of virtual servers and over a 1000 applications to slightly over 200 applications in the enterprise. With a shared services approach, they saved US $562million, all by utilizing common technologies, strong product synergies, process, technology and people savings.

Conclusion

Oracle Data Integrator provides a key data extraction, abstraction, access layer for SOA-based deployments. Customer successes have illustrated that services-based integration is only as effective as the data that is available to spread across the entire enterprise. To be successful at integrating multiple heterogeneous applications, consider the triumvirate - service, process and data level integration. Compromising on any one of these, leaves organizations with incomplete integration efforts and poor business insight.

Having a seamless design and run time environment between ODI and SOA simplifies the design, maintenance, and management of both functions. In addition, the high performance nature of ODI for bulk information movement ensures that the SOA layer surfaces timely and relevant information, a characteristic that is critical for the modern real time information enabled enterprise.

The combination of ODI coupled with Oracle SOA Suite packs a powerful one-two punch for accomplishing business information integration at all levels: application-tier, process-tier and the data-tier. This in turn helps organizations get the insight, agility and flexibility they need for success.

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