

Using Services Oriented Architecture to Extend JD Edwards EnterpriseOne

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JD EDWARDS ENTERPRISEONE

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Using Services Oriented Architecture to Extend JD Edwards EnterpriseOne

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INTRODUCTION

Today many organizations are adopting the concept of a Service Oriented Architecture (SOA) as a means to provide greater flexibility to interoperate with external systems and to simplify and standardize integration processes within their IT infrastructure. This white paper describes the role that JD Edwards EnterpriseOne plays within a SOA based ecosystem and the native capabilities contained in JD Edwards EnterpriseOne that enable customers to take full advantage of the benefits of SOA.

QUESTIONS REGARDING SOA AND JD EDWARDS ENTERPRISEONE

(1) What is SOA?

Like many new industry trends, there is some confusion in the user community on what exactly SOA is. Most people have heard of the concept but many do not understand exactly what makes up SOA based architecture or the benefits gained from SOA adoption.

JD Edwards EnterpriseOne development has chosen a simple definition of SOA:

Service oriented architecture provides a standards-based platform that allows business services to be developed, published, discovered, and consumed by each other in a loosely coupled manner, in order to facilitate the creation of orchestrated business processes

Key concepts derived from this definition are:

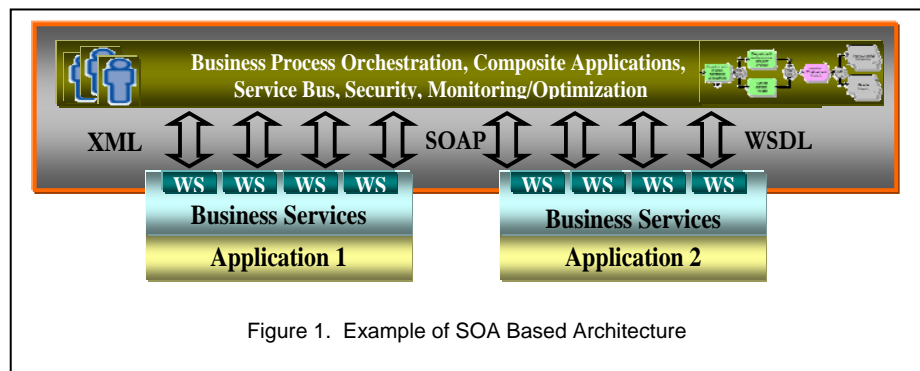
- **Business Services** – A set of self-contained, stateless business functions that accept one or more requests and returns one or more responses through a well-defined, standards based interface. These services perform discrete units of work such as editing and processing a transaction (i.e. Price Lookup, Add Order, Change Customer)
- **Loose Coupling** – An approach where business services are published and consumed with minimal assumptions between the sending and receiving

Service Oriented Architecture provides a standards-based platform that allows business services to be developed, published, discovered, and consumed by each other in a loosely coupled manner, in order to facilitate the creation of orchestrated business processes.

parties. This approach reduces the risk of a change occurring in a published business service that may in turn force a change in the applications that are consuming that service. The standardized method of exposing business services in a loosely coupled manner is a concept called *Web Services*, which utilizes open standards such as XML, SOAP, WSDL and UDDI.

- **Business Processes** – In the framework of Services Oriented Architecture, business processes typically take the form of either business process orchestration or composite applications. Business process orchestration is the compilation of multiple business services into a higher-level business process. Some examples of this are the “Order to Cash” or “Procure to Pay” processes. These processes are typically complex and involve multiple steps, which may be run in parallel or in an asynchronous manner, where human workflow capabilities may also be required. Composite applications are typically individual applications where the business logic layer is built through a combination of multiple services, each of which may consist of functionality drawn from different sources.

Figure 1 shows an example of a SOA based architecture. The diagram shows an architecture that is anchored by multiple applications. Each application has the ability to expose and consume business services based on web service standards. These business services can then be directly consumed from other web service enabled systems or through an integration layer that provides support for higher level capabilities such as business process orchestration composite applications.



Adoption of SOA based architecture provides many benefits to any IT organization:

- **Improved Interoperability** – SOA, and the industry standards underpinning it, enable existing applications in silos to interoperate seamlessly and in a more easy to maintain manner than any traditional EAI solution.
- **Increased Service Reuse** – Once legacy systems and applications are service enabled, these services can be reused, which results in reduced ongoing development costs and results in reduced time to market. Further,

business processes built as an orchestration of services can also be exposed as services - further increasing reuse.

- **Agile Business Processes** – SOA reduces the gap between the business process model and implementation. This enables changes to business processes already implemented as orchestrations of services to be easily captured and implemented.
- **Improved Visibility** – SOA can give improved business visibility by enabling business capabilities exposed as services, and the status of in-flight business processes automated with to be rapidly integrated into service-enabled enterprise portals aiding business decision-making.
- **Reduced Maintenance Costs** – SOA development encourages consolidation of duplicated overlapping business capabilities (services) that span multiple applications and systems into a small number of shared services. This eliminates redundant services and reduces the cost of maintaining systems by providing a single point of change for application logic. SOA gives IT the means to gradually phase out legacy systems and applications whilst minimizing disruption to the applications that are built on, or are integrated with, them using SOA principles. This frees up funds for new projects.

(2) How Does SOA Benefit JD Edwards EnterpriseOne Customers?

The ability for JD Edwards EnterpriseOne to be incorporated into Services Oriented Architecture greatly benefits you in many ways:

- **Improved interoperability through standards based technology** – The more web service standards that are natively incorporate into JD Edwards EnterpriseOne technology offerings the easier it is for customers to interoperate with third party systems, increase the re-usability of individual integrations points, and buffer the technical underpinnings of the services from the business process layer through loosely coupled interfaces.
- **Simplified integration architecture** – Many integration architectures today can be very complex. There are varied reasons for this including:
 - Maintenance of redundant business services that serve the same task but must be individually coded for use against multiple end points;
 - Tightly coupled interfaces that require changes across the system any time a lower level component is updated.
 - Maintenance of multiple platforms and runtime environments in order to support integration solutions that rely upon multiple, disparate technology components.

The introduction of SOA, based on web service standards, greatly simplifies integration architectures through service reusability and the concept of

loosely couple interfaces. By supplying integration solutions that are based on industry standards customers can consolidate their technology components onto a single platform. All of this tends to leads to a simpler technical architecture that JD Edwards EnterpriseOne customers need to maintain.

- **Fusion Path** – The current direction for Oracle’s Fusion application is based on SOA design principles. It will leverage the power of web service interfaces and many of the components available with in the Oracle Fusion Middleware product suite. The ability for customers to begin adopting web services, SOA and Fusion Middleware components will enable a simplified migration path toward the Oracle Fusion product suite.

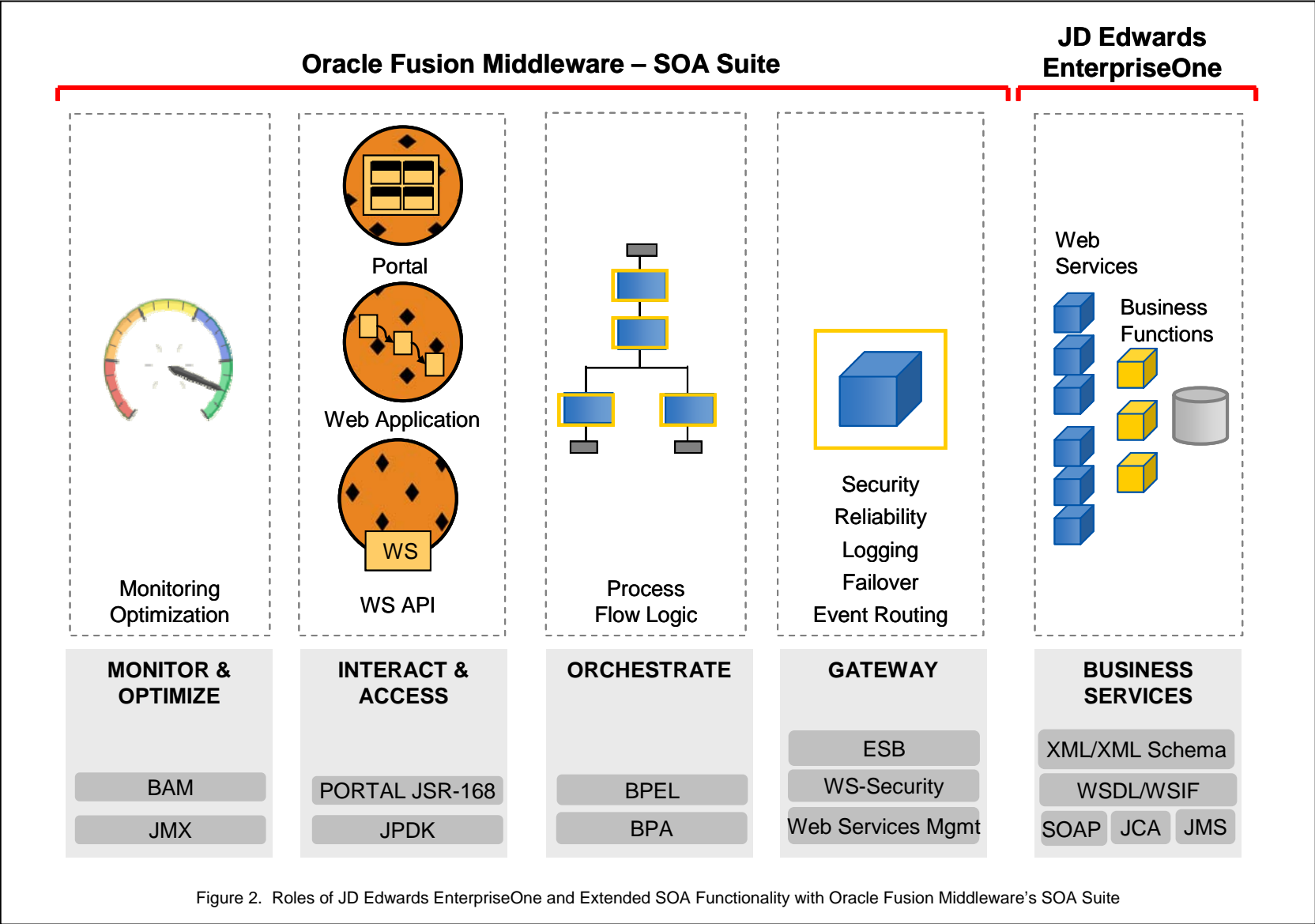
(3) What Specific Role Does JD Edwards EnterpriseOne Play Within a SOA-Based Ecosystem?

The JD Edwards EnterpriseOne product line is a set of first class business applications and our primary focus in regards to SOA is on the ability to extend our business services through web service standards. By exposing JD Edwards EnterpriseOne business services to a standards-based approach our customers are able to take full advantage of extended SOA functionality that is provide by other Oracle products (Oracle Fusion Middleware – SOA Suite) or by any other standards based third party products.

The role of JD Edwards EnterpriseOne within a SOA is primarily that of a web service producer and consumer.

Figure 2 (see next page) shows the relationship between the roles that JD Edwards EnterpriseOne plays versus extended SOA functionality provided by Oracle Fusion Middleware’s SOA Suite. The role of JD Edwards EnterpriseOne is to provide access to its native business services through clearly defined Web Service standards. The extended capabilities of a product such as SOA suite includes:

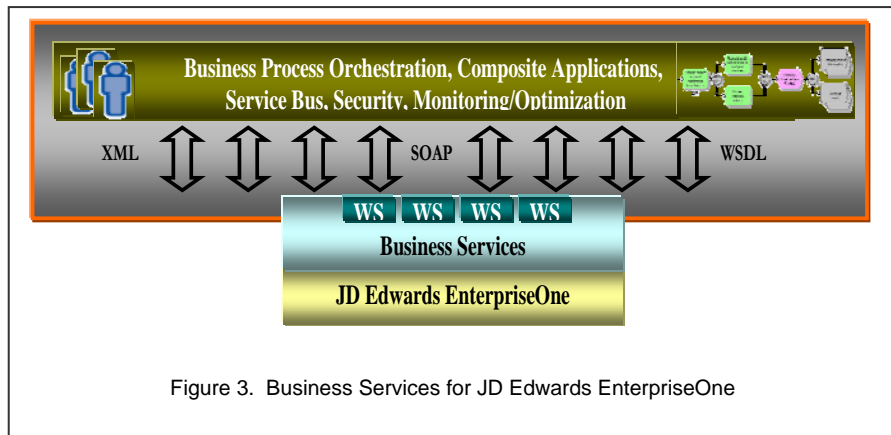
- **Gateway** – A set of components that extends the web service intefaces by allowing additional security, administration, event routing, and transformation capabilities.
- **Orchestrate** – This orchestration layer is primarily focuses on business process orchestration and composite applications. It enables more complex integration requirements, such as correlation of asynchronous business services, aggregation, workflow, long running stateful processes, and business process orchestration
- **Interact and Access** – In support of composite applications this provides for a single point of entry and a common user interface across multiple disparate applications.
- **Monitor and Optimize** – Real-time access to critical business performance indicators, along with the supporting information that improves the speed and effectiveness of a business operation. This set of components enables monitoring and optimization of processes, identification of bottlenecks in business processes, and the capturing of business events.



(4) What JD Edwards EnterpriseOne Components Support SOA Today?

To support interaction within a SOA framework, Oracle's JD Edwards EnterpriseOne provides native web services capabilities as depicted in Figure 3. This includes the capabilities to develop, publish, consume, and administer web services directly from JD Edwards EnterpriseOne Tools. The web service interfaces are built upon a JD Edwards EnterpriseOne object type called "Business Services".

Business services are a set of Java-based business functions created to perform discrete units of work and can interact with external systems in the form of a web service. Business services can accept an XML document as input and use that data to interact with other JD Edwards EnterpriseOne objects (for example, business functions and table I/O) to process a transaction.



Business services include:

- **Native support for the production of web services** – Business Services allow JD EnterpriseOne to become a native producer and consumer of web services. The ability to produce business services and expose those services as web services is a key concept within SOA. JD Edwards EnterpriseOne provides the following in regards to production of web services:
 - Developers can produce Java-based business services natively with the JD Edwards EnterpriseOne toolset.
 - Administrators can generate, deploy, and manage Web Service interfaces over select business services for consumption by external systems.
- **Native support for the consumption of third party web services** – SOA-based architectures let you better consume third party Web services. JD Edwards EnterpriseOne provides the following in regards to consumption of external web services:
 - Developers can develop applications that synchronously consume third party web services from within the JD Edwards EnterpriseOne business logic layer.

Business Services are developed and administered through standard JD Edwards EnterpriseOne applications and processes; thus allowing you to utilize existing resources.

- Administrators can manage the end point configuration related to third party web services, such as external user credentials and web service binding data.
- **Full integration with JD Edwards EnterpriseOne applications management** – JD Edwards EnterpriseOne has a long history of providing administrative tools to assist customers with the management of their JD Edwards EnterpriseOne systems. JD Edwards has continued this tradition by including support of Business Services within this framework. The process for managing and administering business service is fully integrated into the JD Edwards EnterpriseOne applications management process; thus allowing you to utilize existing resources for the development and management of Business Services. Three functional areas include:
 - (1) **Life Cycle Management** – All objects related to Business Services have been incorporated into standard JD Edwards EnterpriseOne LCM processes, including patching (applications and tools), installs, upgrades, object management and package management.
 - (2) **Configuration Management** – Business Services are supported in the standard JD EnterpriseOne processes that manage system configurations. An example of this is the inclusion of Business Services in the Security Workbench application for support for Business Service authentication and authorization.
 - (3) **Application Performance Management** – The tasks associated to the day-to-day administration operations of the Business Services servers are managed through standard JD Edwards EnterpriseOne applications. The functionality provided in this area includes monitoring of performance, usage, and general metrics related to the JD Edwards EnterpriseOne Business Service servers.
- **Standards based development platform** – Oracle’s JDeveloper IDE is the development tool used to development the Java based JD Edwards EnterpriseOne Business Services. JDeveloper’s native Java development capabilities will be coupled with new wizard based interfaces to allow developers a standardized method for building business services and interacting with other JD Edwards EnterpriseOne objects, such Business Functions and table I/O operations.

JD Edwards EnterpriseOne is fully capable of providing its business process functionality for use with Services Oriented Architecture.

CONCLUSION

SOA is gaining momentum in the industry as the prevalent design pattern not only for point-to-point integration needs but also to support enhanced features and functionality in areas such business process orchestration, composite applications, security, and business activity monitoring and optimization. JD Edwards EnterpriseOne is fully capable of extending its business process functionality for use within a Services Oriented Architecture. Through web service enablement provided by Business Services and the EDA capabilities contained in the Transaction Server, the JD Edwards EnterpriseOne product suite provides our customers with business solutions that fully capitalize on the benefits SOA.

ACRONYMS

BPA Business Process Analysis
EDA Event Driven Architecture
LCM Life Cycle Management
SOA Service Oriented Architect



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Original May 2007
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Author: Chris Walsh

Oracle Corporation
World Headquarters
500 Oracle Parkway
Redwood Shores, CA 94065
U.S.A.

Worldwide Inquiries:
Phone: +1.650.506.7000
Fax: +1.650.506.7200
oracle.com

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