Chapter 11
Service-Oriented Architecture and Net-Centric Principles

CHAPTER CONTENT

As you explore Chapter 11, it will cover the following topics:

• Service-Oriented Architecture for the Enterprise
• Key Service Oriented Architecture Concepts
• Benefits of SOA Adoption
• Service-Oriented Information Assurance
• Net-Centric Goals for Service-Oriented Architecture
• Net-Centric SOA Principles

CHAPTER FOCUS

This chapter introduces Service-Oriented Architecture and puts it in the context of the net-centric future. We discuss key service-oriented architecture concepts as it applies to the information industry and provide


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a set of open technical standards that everyone needs to adhere. We then define a set of SOA terminology and provide a description of each of the elements that make up a SOA within a large enterprise. We discuss the benefits of SOA adoption, how it helps application configuration and interoperability, and what points the enterprise needs to consider. Then we provide a set of DoD stated net-centric goals that helps to move forward from the current view of the enterprise to the future view. We discuss the net-centric SOA principles and SOA governance activities as it relates to large organizations.

**SERVICE-ORIENTED ARCHITECTURE FOR THE ENTERPRISE**

We have been using this buzzword throughout this book, and it is time to further define the term and provide context as to why this is such an important concept for achieving Net Centricity. Service-Oriented Architecture (SOA) is an information technology strategy that organizes the discrete functions contained in software applications into interoperable, standards-based services that can be combined and reused quickly to meet business user needs.

There is now a further concept of a service-oriented enterprise that poses to be the next-generation infrastructure state to allow the DoD and the military to achieve its design strategy for a net-centric future. A SOA environment helps military organizations to leverage their existing assets to manage the transition to network-centric warfare. For commercial organization, a SOA environment allows a direct exchange between service consumers and service producers. SOA serves as an overall framework that helps to provide the following functionality:

- Helps align information technology resources and personnel with organizational principles and practices by allowing software applications to inherit the goals and mission of the enterprise
- Allows organizations to gain the ability to create software solutions that deliver increased levels of agility, efficiency, and flexibility for constant modifications
- Allows the enterprise to align current technology with business needs and stakeholder concerns

Much of the power for SOA implementation begins with a basic yet powerful element, and that is the “Web Service”. A web service is a self-contained package of code that provides a defined functionality – this means that this independent piece of software by itself does something useful.

According to the Organization for Advancement of Structured Information Standards (OASIS):

"A Web Service is a software component that is described via WSDL and is capable of being accessed via standard network protocols such as, but not limited to, SOAP over HTTP."

In most settings, a web service can be a single command to perform scheduled maintenance on a system or facility, a mechanism to prepare design changes to an engineering unit, or ability to provide a different assignment to resource personnel. The web service piece of code needs to work within a business process, and needs to be orchestrated properly to create a useful software application.

A service-driven enterprise is optimized around a particular set of services. This includes efficiently servicing customers, partners and employees, and accelerating the service response time of the business. In a large enterprise that has adopted a service-oriented architecture, it is expected that the automated process provides the business logic so that services are acted upon and combined to quickly achieve the
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