



## Why Service-Oriented Architecture?

Service-Oriented Architecture (SOA) is a business-driven concept that is based on a style of architecture that uses loosely coupled services and components to support the requirements of business processes and users. It is evolutionary in terms of its distributed computing approach (software running on multiple platforms) and modular programming style (i.e. building blocks of functions or services that can be connected).

### SOA Value

Previously, software programs were written as integrated programs. The addition of each new feature impacted

the entire program, requiring a full program test for each program code update. SOA's distributed computing approach and modular programming style create "building blocks" of functions or services that can be connected. Within a PBX, for example, a service such as ringing a phone, forwarding a call, conferencing a call, etc., is developed as a building block that can easily be modified or integrated into a new application. With SOA, a change to or addition of a new feature is a change to the building block of the service, without concern for how it might impact other functions in the

application. Further, building blocks can be combined ("mashed up" to use an SOA term) to create new "composite services".

We believe the major advantage of SOA is the ease in which one service can "talk" to another (by connecting the building blocks, where each block is a service) — without concern or even knowledge of the underlying interfaces or connections. Thus a business process expert can link and sequence services, in a process known as "orchestration," to meet new or existing business system requirements.

### Easy Integration

Web Services offer one method of implementing SOA and provide a standardized way (or technology) of integrating Web-based applications using standards-based interfaces such as XML, SOAP and others. Using Web Services, services or application components can publish functions to the rest of the world. Web Services support interoperable machine-to-machine (i.e., PCs) interaction or communication over a network such as the Internet. The primary protocol used in communicating Web Services is HTTP/HTTPS. SOAP (Service



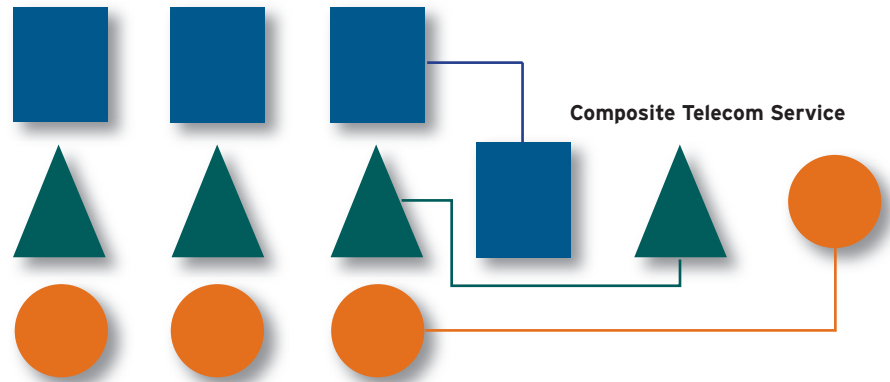
Oriented Architecture Protocol) is the message envelope format and can use HTTP/HTTPS, XMPP or SMTP as the transport protocol. As a service or application component, Web Services are self-contained and self-describing. They can be discovered using UDDI (Universal Description, Discovery and Integration), which acts like a registry and describes Web Services so that developers can find them easily (i.e., to incorporate into other applications). And to facilitate the connection of these services to one another there is WSDL (Web Services Description Language), which provides Web Services interface syntax to facilitate the connectivity between services. XML (Extensible Markup Language) provides a language that can be used between different platforms and programming languages and express complex messages and functions. Web Services use XML to code and decode data and SOAP to transport it using open protocols.

The key advantage of Web Services is that they use technologies such as XML, HTTP, SOAP and WSDL in order to recognize, identify and communicate with these building blocks of functions or services in order to develop new services (i.e., composite services) simply and easily.

For example, to increase the capacity of the “my conferencing service” feature now requires a simple code change in the conferencing service building block. The software developer can simply test that single building block, verify that it works and then launch it as an overall feature of the PBX.

Before SOA, that same software programmer would search for the specific line of code (out of million of lines) that impacted that conference service, make the change and then follow the impact of the change in other

### SOA-Enabled Service Components



services (i.e., how it connected to other services). Finally, those million lines of codes would be tested, then run in the labs for a couple of days with the hope nothing would go wrong.

### What Are the Business Benefits?

Enterprises that effectively align technology with business goals achieve competitive advantage. The adoption of Service-Oriented Architecture is an effective way to organize the discrete functions contained in enterprise applications into interoperable, standards-based services that can be combined and reused quickly to meet business needs. The IT world is already using SOA and Web Services to facilitate the integration of business processes and business applications. Nortel’s strategy is to take real communications capabilities such as location, presence, proximity and identity, turn them into applications and make them available as enablers for customers’ business processes. This adaptation and interaction between the communications capabilities and the business applications is made easier by the adoption of SOA-based software architectures and Web Services technologies within the communications domain. Communications capabilities will be available as services that be can be combined with IT-based services and reused quickly to meet business needs.

By organizing enterprise IT (with telecomm) around services instead of around applications, SOA provides key benefits:

- Improves business agility, productivity and speed (for both business and IT )
- Allows IT and telecomm to deliver services faster and align closer with business
- Allows the business to respond quicker and deliver optimal user experience
- Masks the underlying technical complexity of the IT, network and telecomm environment

This results in more rapid development and more reliable delivery of new and enhanced business services.

Organizations that have adopted Service-Oriented Architecture environments within their IT domains are experiencing dramatic results, including increased revenues, increased customer satisfaction, lower operational costs and higher returns on their existing technology investments.

In summary, we believe SOA is superior because it uses a modular, distributed, building block approach to create, develop and deliver new products and features faster, more simply and in a less resource-intensive way. And building blocks may be mixed and matched these to create new applications — providing yet another benefit to those already described.

**In the United States:**

Nortel  
35 Davis Drive  
Research Triangle Park, NC 27709 USA

**In Europe:**

Nortel  
Maidenhead Office Park, Westacott Way  
Maidenhead Berkshire SL6 3QH UK

**In Canada:**

Nortel  
195 The West Mall  
Toronto, Ontario M9C 5K1 Canada

**In Asia:**

Nortel  
United Square  
101 Thomson Road  
Singapore 307591  
Phone: (65) 6287 2877

**In Caribbean and Latin America:**

Nortel  
1500 Concorde Terrace  
Sunrise, FL 33323 USA

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