

Cisco Unified Communications and Service-Oriented Network Architecture

Challenge

In today's complex, globally distributed business environment, decision makers in communications and IT face a number of challenges. How do they integrate disparate technologies and business applications from multiple suppliers into a system or architecture that improves communications, revenues, and customer loyalty? How do they design systems for maximum extensibility, while minimizing the requirements and costs for management and deployment? How do they optimize the network to create a rich collaborative environment that connects remotely located knowledge workers with their key constituents? In short, how do companies intelligently align their business, their communications, and their IT architectures to improve revenue and profit?

Solution

Over the past decade, the networking industry has seen a gradual trend toward service virtualization, which consolidates functions that are common across applications and virtualizes those functions in the network to be used across the enterprise. Capabilities such as multicast, encryption, load balancing, and data caching, which traditionally ran as applications on a dedicated server, have migrated to the network, where they can be shared by multiple applications that are delivered to users across multiple devices.

Cisco® has played a leading role in this innovation and in redefining the network with its Cisco® Service-Oriented Network Architecture (SONA) for integrated services. Cisco SONA delivers business solutions to unify network-based services such as security, mobility, and location with the virtualization of IT resources. By building intelligent networks, organizations can reduce complexity, decrease management costs, enhance system resiliency and flexibility, and greatly improve the usage and efficiency of networked assets and applications.

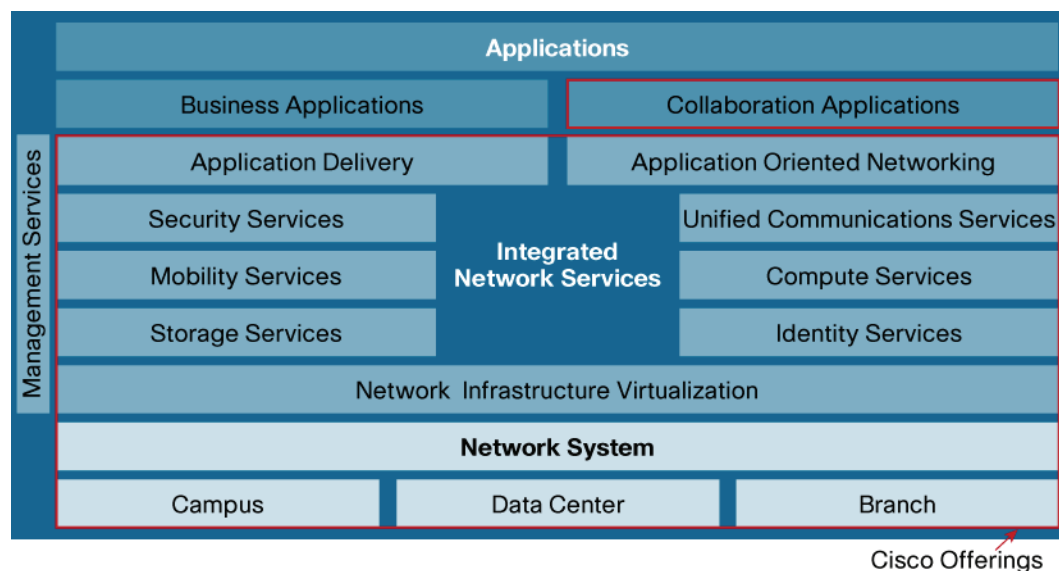
Cisco Unified Communications system is the first unified communications system built to take full advantage of converged networks and an architectural approach. It uses open standards such as Extensible Markup Language (XML), Voice Extensible Markup Language (VoiceXML), SIP/SIMPLE (Session Initiation Protocol/SIP for Instant Messaging and Presence Leveraging Extensions), HTTP, and Simple Object Access Protocol (SOAP) to virtualize voice, video, presence, and mobility services within the network. Once available within the IP fabric, these services can be delivered securely to any device, anywhere, anytime, across multiple applications—dramatically improving collaboration and transforming the user experience.

Cisco SONA—Architecture for the Future

You need an overarching, innovative vision to implement a new architecture for more-effective use of networked assets. The network touches every part of the IT infrastructure and every user within an organization, as well as most customer-facing applications and processes that affect the customer experience. Companies that learn how to harness the power of the network stand to realize enormous gains in terms of business agility, resource utilization, process quality, and customer satisfaction.

The Cisco SONA infrastructure provides a holistic, network-based approach to business and technology integration. Cisco SONA extends beyond traditional network and application design-and-deployment strategies that feature dedicated hardware-based applications. At its foundation, the integrated network services layer in Cisco SONA enables virtualized network services across the enterprise—from campus to branch to data center to WAN to individual teleworker.

Figure 1. Cisco SONA Infrastructure



The integrated network services layer holds key network infrastructure services, including security, mobility, storage, unified communications, computing, application delivery, and identity. Much of the power of SONA resides in this layer. Capabilities that were previously available to only one particular application can now become shared services. This approach breaks down the isolation of functions and enables the virtualization of common services across multiple applications, users, locations, and devices.

The applications layer in SONA supports traditional business applications from vendors like SAP, Oracle, Microsoft, and IBM, as well as the Cisco collaboration applications: telephony, unified messaging, video, web conferencing, customer contact, and instant messaging. One of the strong differentiators of Cisco SONA is its ability to provide a shared services platform that supports applications from Cisco as well as from many other vendors. To date, Cisco has more than 200 technology development partners for unified communications. They deploy Cisco's open standards framework to deliver thousands of innovative applications to customers.

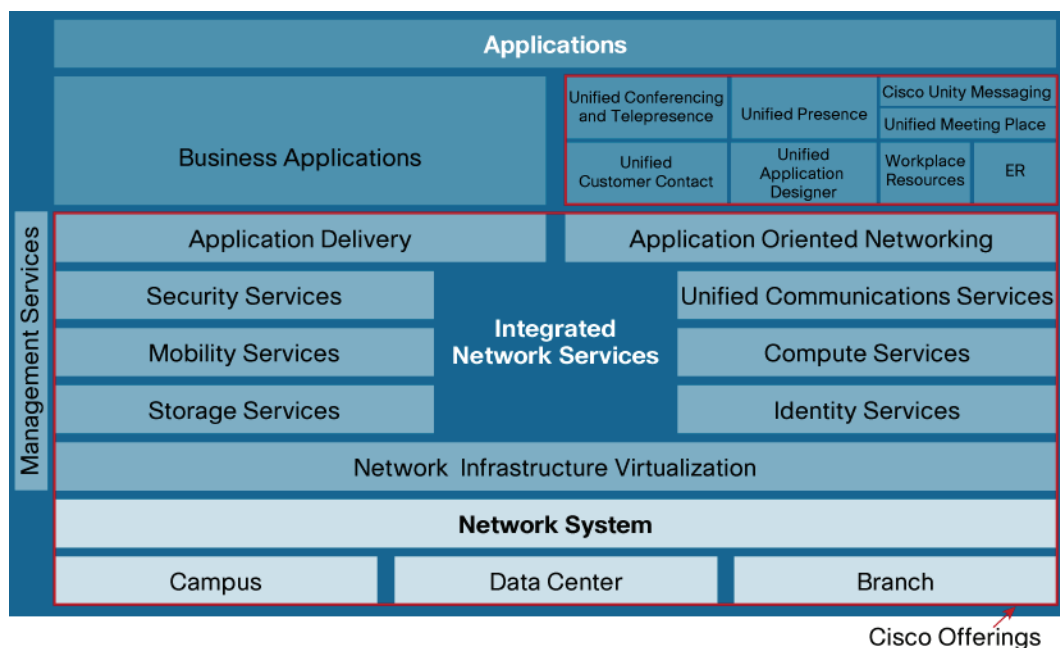
SONA uses the intelligence in the network to reduce complexity, transform the user experience, and decrease system-integration costs. It converges business components and IT infrastructure layers to promote enterprisewide productivity, process optimization, service delivery, and application responsiveness. Virtualization based on IP and broadband technology takes services that are integrated into any SONA layer and makes them accessible across the entire network as a shared resource.

Figure 2. Cisco Unified Communications



Cisco Unified Communications is a virtualized, full-featured system that ties next-generation services directly to business processes. Cisco Unified Communications seamlessly unifies voice, video, and data across a wide variety of devices and applications, creating a converged, media-rich environment. That environment supports today’s fast-changing enterprises, with employees who may work remotely from multiple locations; who use a variety of media and mobile devices; who may collaborate interactively across distances and time zones; and who communicate via e-mail, instant messaging, and videoconferencing.

Figure 3. Cisco Unified Communications and SONA



Cisco Unified Communications takes advantage of the SONA framework to provide unprecedented levels of business productivity and operational efficiencies. At the integrated services layer, Cisco Unified Communications enables critical networkwide functions by using many of SONA’s IP-based

services, including identity, mobility, security, and unified communication services. These services allow the system to easily and seamlessly integrate capabilities such as firewalls, survivable remote site telephony, quality of service, and load balancing throughout the network for maximum resiliency and operational efficiency.

Cisco Unified Communications uses the integrated services layer to provide virtualized user and communication services to business and collaboration applications. And it expands the range of unified communication services within that layer to include such powerful new services as:

- Identity services that map resources and policies to the user and device to create preferences for collaborative services and provide single sign-on capabilities for applications
- Authentication services that use multifactor methods to mutually authenticate users and transactions across applications and identify security threats, improving responsiveness, resilience, and security
- Session management services that enhance the quality of user communication applications by managing the creation and termination of sessions, bandwidth per session, and network performance
- Presence services that keep track of where users are on the network, whether they are available, what their preferred devices are, and who is permitted to communicate with them
- Speech services that enable interactive and automated self-service and text-to-speech capabilities.
- Policy services that manage and moderate routing rules, directory and application access, and collaboration privileges so that multiple, media-rich applications can interoperate properly
- Media services that promote collaboration by integrating voice, video, and Web conferencing capabilities

The Cisco commitment to open standards is a key element in its vision of shared services in Unified Communications and SONA. Virtually all Cisco Unified Communications products—including Cisco Unified Communications Manager, Cisco Unified Presence, Cisco Unified IP Phones, Cisco Unity™ software, Cisco Unified Contact Center, and Cisco Unified MeetingPlace—use SIP as a primary protocol.

It is this openness that allows Cisco applications to interoperate with IBM Sametime or Microsoft Live Communications Server. As part of a unified communications environment, these applications allow workers to see each other's status. Cisco Unified Personal Communicator users can set their status to "In a meeting" or "Do not disturb," and this information will be displayed to users of IBM Sametime or other SIP/SIMPLE-compliant presence applications. Cisco Unified Personal Communicator and IBM Sametime even support text strings, so that users can customize their greetings ("At lunch—back at 1PM" or "Traveling—call my mobile") for advanced presence capabilities. IBM Sametime instant messages display on Cisco Unified IP phones when a user's PC is off, so that he or she can respond instantly when only an IP phone is available.

The Cisco Unified Application Environment and Cisco Unified Call Studio, which take advantage of the integrated services layer, demonstrate how users and partners easily create value-enhancing communications applications that meet their business requirements. With these products, customers and partners can rapidly build customized communications applications that unify their IT infrastructure, applications, and contact centers.

Using Cisco Unified Call Studio and harnessing the power of VoiceXML, for example, customers can offer a development and management tool to build speech-enabled self-service applications that enhance productivity and customer satisfaction. Both the Cisco Unified Application Environment and Cisco Unified Call Studio allow the use of centralized data, policy, and business-process workflow services in Unified Communications applications.

Customers Solve Real-World Problems with Cisco SONA and Unified Communications

By exploiting the power of shared services in Cisco SONA, companies of all sizes can take full advantage of their IT resources and more fully align their business processes and technology. Following are several examples of customers using Cisco Unified Communications and Cisco SONA to increase the efficiency and quality of their core business applications and communication systems and to forge powerful new capabilities by creatively linking Unified Communications applications with business applications.

Significant Uses Cisco Technology to Create First IP Video Deaf Services Call Center

There are 70,000 hearing impaired people in the United Kingdom, and there are only 200 qualified sign language interpreters who can facilitate their access to public services. Significant, a British social enterprise that provides signing services to deaf citizens, has recently transformed its communications services by using Cisco Unified Communications to create a distributed video-enabled call center service.

The first of its kind within the United Kingdom, the Significant service uses Cisco Unified Communications and SONA to enable innovative new services to better use resources and increase customer satisfaction. SONA services enable Significant to maximize the time of its sign-language interpreters by letting them log in from anywhere in Great Britain. Routing technology in Cisco Unified Contact Center facilitates the easy transfer of video calls, so that customers can be routed to an interpreter who signs in their language. Media services deliver voice, video, and data into a converged infrastructure that shares sign language interpretation resources more efficiently than the disparate voice, data, and video ISDN networks formerly used.

As a result of its network implementation, Significant Contact Centre received national recognition with a certificate of excellence at Britain's prestigious e-Government National Awards, and customers give the innovative video-enabled service positive ratings of over 95 percent. Where deaf clients previously had to make appointments and then wait up to two weeks for a costly three-hour session with an interpreter, users today have immediate access to inexpensive signing services using video kiosks throughout London boroughs and British Health Trusts. Kiosks feature an IP video terminal equipped with a Cisco Unified IP Phone and a PC with Unified Video Advantage camera. They are accessible during regular business hours. The new communication system has opened up job opportunities for deaf people by enabling them to pursue training and education and to collaborate with local job centers and career services.

Cisco Technology Helps Create a Hospital of the Future

A large hospital complex in Germany has chosen Cisco to help it create a business and technology model for its "hospital of the future." Staffed with more than 1400 administrators and medical caregivers, this hospital delivers services to some 40,000 patients a year in 3 locations and 13 specialty departments.

Using Cisco Unified Communications with SONA, the hospital has built one of the most advanced Cisco Medical-Grade Networks in Europe, featuring a state-of-the-art IP network that provides the hospital with a single converged infrastructure for voice, data, and video communications, and for administration, medical, and patient applications.

The hospital's implementation uses several SONA services, including session management, identity, mobility, and presence, and allows the hospital to deliver a variety of Unified Communications technologies to doctors, nurses, patients, and administrators:

- A wireless network, for example, tracks RFID tags worn by doctors and nurses, so they can be located at any time.
- Multimedia terminals with an integrated IP phone at patient bedsides provide entertainment options and facilitate communications between nurses and patients.
- Software used throughout the hospital merges digital images with laboratory findings, treatment results, therapy schedules, and administrative data to form a multimedia medical record.
- Digital X-rays reach the ward via the hospital network in a matter of seconds, eliminating manual transportation of films and delays in diagnosis.
- Record archiving and retrieval, previously a time-consuming task, can be accomplished with only a few mouse clicks.

As a result of its innovative collaboration with Cisco, the hospital has been able to:

- Optimize point-of-care response to reduce medical errors, improve clinical productivity, and increase overall patient satisfaction
- Use the network's intelligence to make up-to-date information available when and where it is needed
- Enhance integration of applications and services to improve diagnostic capabilities, reduce time to treatment for patients, shorten billing cycles, and create new revenue sources
- Provide seamless communication among caregivers and patients, regardless of device or location

With its Cisco solution, the hospital has been able to build a solid communications infrastructure that helps optimize procedures and cut costs, without unnecessary operating expenses, and will be easily scalable in the future. Hospital executives expect to see a cost savings of approximately 20 percent due to increased efficiencies.

Facilities Management Application Helps Consulting Firm Increase Productivity and Decrease Costs.

One of the world's largest management consulting, systems integration, and managed services firms serving government agencies and Forbes Global 2000 companies has partnered with Cisco and Trirega Corporation to create an innovative virtual facilities management application for its consulting team. Because its employees travel constantly, working with clients in cities across the globe, the company wanted a technology solution that would improve consultant productivity, streamline its office space allocation process, lower real estate costs, and provide superior communications for its mobile workforce.

The solution it selected integrates Trirega's Facility Management software, Cisco Unified Communications Manager, and the Cisco Unified Application Environment. It uses standard SIP, XML, and Java Telephony Application Programming Interface to integrate the solution, and takes advantage of several SONA services, including session management, identity, mobility, voice, policy, and presence. Now, when a consultant arrives at a temporary office, he or she logs in on the Cisco Unified IP phone at that location. This activates automatic call and message forwarding and updates a database to note that the office space is the consultant reserved is now being used. The data from the reservation system and the data from the Cisco Unified Communications system can then be reconciled to understand estimated versus actual space use.

As a significant, added benefit, consultants now spend less time on administrative tasks and more time with clients.

This system has delivered considerable benefits to the accounting department as well. Because financial analysts can see office space use for every department and location across the company, they can do a better job of real estate planning, facility utilization, and charge backs. If use is down at a particular location, they can downsize. If more space is needed, they can increase their leased facilities. Leasing space based on actual use data rather than inflated estimates has enabled the company to realize significant annual cost savings. The company views its Unified Communications solution not just as a new technology, but as a fundamentally new business instrument with the potential to transform business processes and deliver significant competitive advantage.

SONA and Unified Communications—A Uniquely Differentiated Solution

Capitalizing on Cisco's long experience building intelligent networks that migrate technologies and capabilities onto the network, Cisco Service-Oriented Network Architecture delivers exceptional flexibility and business value to its customers. Companies of all sizes can realize possibilities that simply did not exist before, creating new and compelling applications to fit their business needs, and elevating business communication tools and processes to a new level of quality, productivity, and performance. It is this underlying architecture that differentiates Cisco—and customers who adopt the portfolio of Cisco Unified Communications products using the SONA approach—from the competition.

Cisco SONA virtualizes unified communications applications, making innovative voice, video, and data services such as video and presence rapidly and readily available across the entire enterprise. And unlike competing systems, Cisco Unified Communications with SONA allows companies to easily integrate communications services with existing business applications such as IBM Websphere, SAP, and Oracle in order to gain a further competitive advantage.

Cisco Unified Communications with SONA takes full advantage of open standards such as XML, SOAP, SIP/SIMPLE, and other service-oriented protocols. This lets customers easily add and integrate new features and functions through software upgrades and incremental hardware, building upon existing technology investments in their network infrastructure.

Summary

With its industry-leading breadth of solutions, its world-class partnerships, and its in-depth understanding of today's technical and business challenges, Cisco is uniquely able to help its customers take advantage of the best network architecture and communications system in the industry. Cisco SONA and Cisco Unified Communications represent the perfect pairing of intelligent network architecture and converged communications applications. Together they open up new possibilities for innovation and productivity breakthroughs. This helps businesses align applications

with technology, increase employee and IT staff efficiency, improve customer satisfaction and loyalty, and gain competitive advantage to enhance revenue and profits.

For more information, visit <http://www.cisco.com/go/sona>

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