The Next-Generation Enterprise Network: Delivering Business Value

Why your organization needs a next-generation network

Increasingly, enterprise IT organizations are under pressure with new requirements arising from both employees and the overall business environment. As a CIO, it is your goal to anticipate and respond to these demands and help the business grow. Recent technology trends in enterprise computing are testing the limits of yesterday's networks—and many that were "good enough" for yesterday are no longer "good enough" for tomorrow. Unfortunately, some CIOs are learning that these low-cost, low-function networks hamper the IT department's ability to say "yes" to current technologies that deliver real business value, and to anticipate the future needs of the business. This white paper takes a look at how next-generation networks both support today's enterprise computing trends and offer investment protection with innovations that will accommodate business and end-user needs for years to come.

Trends in the Enterprise

Several enterprise trends are converging, placing increasing demands on the CIO. Mobility is perhaps the most significant trend, as it appeals to end users. Consider these numbers:

- By 2015, there will be nearly one mobile-connected device for every person on Earth. That's 7.1 billion devices.[1]
- 60% of employees believe they don't need to be in the office to be productive and efficient.[2]
- Two-thirds of employees believe they should be able to access either work or personal information using company devices at any time from any location.[2]

Mobility has progressed from an employee demand to a business necessity. Smartphones, tablet PCs and other mobile devices increase productivity and keep businesses operating around the clock. The business value is undeniable. The first requirement of a next-generation network is to help IT find a way to deal with multiple device types and multiple operating systems, while enabling secure access to network resources and protecting corporate assets.

At the same time, IT organizations are beginning to reap the benefits of another emerging trend: virtualization. But even as virtualization efforts expand to include business-critical and production systems, the workforce is already moving several steps ahead. Virtualization provides business with the agility to respond to user requests quickly, and to take advantage of both private and public clouds for further cost savings.

IT organizations are also starting to witness a substantial increase in video traffic. Consider that by 2014 Internet video alone will account for 57% of all consumer traffic, and one-third of corporations say they are using video at least once per week.

[1] Cisco Visual Networking Index: Global Mobile Data Traffic Forecast Update, 2010-2015. [2] Cisco Connected World Report, 2010.

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When the network is a commodity purchase based on initial capital purchase cost, the network becomes the lowest common denominator.

Further, businesses are making increasing use of other video technologies in areas like advertising, surveillance, conferencing, training and digital signage. A next-generation network must be video-aware, to allow the deployment, monitoring and troubleshooting of this rich media.

Meanwhile, increased complexity in the computing environment is introducing new vulnerabilities, resulting in more network attacks. Users are mobile, applications move from the data center to the cloud, and even the data-flow patterns are different. Security policies must be context- and data-aware to accommodate emerging technology trends.

Another Viewpoint: The Network as Just Connectivity

A differing viewpoint has the potential to come into direct conflict with strategic business efforts. This idea is the classification of the network infrastructure as a commodity purchase. Different businesses value the capabilities of the network in dramatically different ways. During times of belt-tightening, it is tempting to look at short-term cost as the only criterion in equipment purchase. Promoting this line of thought does a disservice to IT organizations that are left with networks unable to support the latest trends and user demands.

When calculating the total cost of ownership (TCO) for the network, CIOs should be careful not to underestimate the business value to be gained from strategic opportunities. If initial cost plays too large a part in the purchasing decision of a new network implementation, IT organizations risk having to say "no" to emerging technologies or business ventures because the network is not capable of supporting them. That means "no" to bring-your-own-device policies; "no" to expanding virtualization efforts to mission-critical business applications; "no" to cloud services; "no" to rich media. All of the cost savings, competitive advantage, productivity and agility benefits are lost because of a few dollars saved on the network. However, these same benefits can offset the total cost of a premium, next-generation enterprise network.

IT must become a service organization that drives strategy and value back to the business. As a CIO, you must say yes to the needs of the business, and do so with confidence in the network's ability to deliver reliability, agility and performance.

What is a Next-Generation Network?

CIOs must advocate the need for a next-generation network. A next-generation network goes far beyond simple connectivity. It is a strategically developed network that is optimized for today's requirements, but is also architected to accommodate future technology innovations and provide investment protection. In other words, a next-generation network is a dynamic network that can support mobility, cloud computing and the changing threat landscape. It also transforms the network into a service-delivery mechanism that enables CIOs and their IT organizations to say yes to strategic business efforts.

Let's take a closer look and contrast how a low-cost or good-enough network differs from a next-generation, business-enabling network:

- **Purpose of the network:** A good-enough network has a single purpose: to connect a user to IT resources. This may have been acceptable in 2005 when users sat at desktops that plugged into Ethernet ports. An enterprise next-generation network is a unified network consisting of wired and wireless, VPN, building and energy control.
- **Security:** With a good-enough network, security is bolted on. In other words, security consists of point products that don't necessarily integrate very well. A next-generation network integrates security capabilities from the premise to the cloud. Integration means less administrative overhead and fewer security gaps.
- **Application intelligence:** A good-enough network is application- and endpoint-ignorant. It operates on the notion that data is just data. A next-generation network is application- and endpoint-aware. It adjusts to the

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application being delivered and the endpoint device on which it appears.

- **Quality of Service:** Today's good-enough network is built on basic QoS standards, which can prove insufficient for video traffic and virtualized desktops. A next-generation network features media-aware controls to support voice and video integration.
- **Standards:** A good-enough network is standards-based without concern for the future. A next-generation network not only supports current standards, but drives innovations that lead to future standards.
- **Warranty:** Good-enough networks come with a form of limited support for maintenance and a warranty statement. Next-generation network providers offer a warranty, plus intelligent services with integrated management.
- **Acquisition cost:** Saving money on initial purchase costs can be more than offset by increases in operational expenses (OPEX) if there are higher integration costs, more downtime or serious security breaches. While good-enough network vendors downplay these costs, next-generation network vendors promote a systems approach that not only reduces OPEX costs, but also drives IT services improvements and new business opportunities.

Introduction to the Borderless Network Architecture

Cisco has positioned a framework for the next-generation network called the Borderless Network Architecture. This defines how the Cisco long-term vision is mapped out to deliver a new set of network services, to support the demands of the business and end users. Cisco is the only networking vendor that combines an extensive product portfolio with a systems-oriented approach to delivering critical IT services. As a result, Cisco has evolved beyond focusing solely on individual products.

Cisco's goal is to build out connected systems and allow customers to spend less time at the bottom of the stack working on basic network integration by providing a set of network services that enhance the ability of the network to meet the needs of the users and the business. Five services are key to achieving this goal and allowing customers to move forward:

1. Mobility

Mobility extends the scope of your business and helps make your employees more productive. Anywhere there is an IP network—and IP is increasingly everywhere—your business can operate. And, as users progressively use their personal devices as their work devices, your IT budget for PCs and laptops can be repurposed.

But, as mobility becomes more prevalent, it is critical to manage users consistently as they access the network, whether over a wired, wireless or VPN connection. Cisco Borderless Networks has converged user and access management for wired and wireless networks, while providing consistent access policy across all access methods. Businesses gain complete visibility into endpoint connectivity—regardless of device, network or location—and can monitor security policy compliance across the entire wired and wireless network. This allows your company to take advantage of the many benefits of mobility, without increased vulnerability to new security threats.

2. Energy Management

As regulations on carbon emissions are being developed and applied, especially in some European markets, businesses need to be ready to both monitor and manage carbon or face significant fines. Additionally, the ability to control energy costs through the network can help lower overall operational costs, delivering significant savings back to the business.

Cisco EnergyWise is an innovative feature of Cisco Borderless Networks that allows you to manage network power usage to improve energy efficiency. This network capability can also be extended to building management systems. The network can tell if a conference room is vacant, for example, and power down the lights, HVAC or other devices. An ecosystem of more than 85 partners extends support to a broad

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range of endpoints, including PCs, data centers and building control.

3. Security

These new business-enabling technology trends don't come without security concerns. In a survey of more than 200 CIOs, security concerns are the top roadblock to broader adoption of cloud services.[3] With virtualization, applications can move from machine to machine, or even across data centers. You need to ensure that their security policies travel with them.

Fortunately, Cisco Borderless Networks delivers pervasive visibility and control to accommodate these new trends. With full context-awareness to provide security across the network, from headquarters to branch offices, Cisco Borderless Networks can provide advanced security for in-house employees or remote workers on wired or wireless devices. Context-aware policy with distributed enforcement allows you to create, distribute and monitor policies based on a simple contextual language, such as who, what, where, when and how. This gives your IT department the necessary tools to adopt advanced technologies without endangering the network or the business.

4. Application Performance

Applications are the lifeblood of every business. But the way in which applications are being consumed is changing. Applications might reside on the desktop, the data center or on a virtual machine in the cloud. Whole desktops are being virtualized and delivered to a variety of remote devices. Video needs to accommodate low-resolution screens on smartphones as well as 1080p HD displays on Cisco TelePresence.

Cisco provides a holistic approach to enterprise-wide application performance through a collection of technologies that focus on visibility, optimization and agility. These technologies allow you to assess and diagnose detailed application performance across the entire network, or maximize application performance by choosing the best-performing WAN links. Imagine being able to instantly double WAN performance with a software upgrade to your routers, or improve your business agility through powerful branch application hosting with centralized management. When your business depends on your applications, your network needs to perform.

5. Multimedia Optimization

As video and rich media become increasingly important tools for communication, both within your organization and with your customers, IT is being understandably cautious. Video is hard. Understanding the impact of high-bandwidth video flows on your network can be unpredictable. And when video doesn't work, the evidence is there for all to see.

Cisco Borderless Networks understands the common types of video endpoints available and can auto-configure, tag and prioritize the video flows, saving many hours of configuration and providing an optimal-quality experience. With built-in capabilities to inject synthetic video traffic into the network, network planners have an easy tool for preplanning video deployments. For troubleshooting, IT administrators can look at the video flow on a hop-by-hop basis as it traverses the network to identify congestion or other potential problems.

Conclusion

CIOs are under increasing pressure to anticipate the needs of the business and say "yes" to new business-enhancing solutions; "yes" to personally owned mobile devices; "yes" to public cloud services; "yes" to videoconferencing and other rich media. But next-generation technologies require a next-generation network that is architected to deliver reliability, agility and performance.

A good-enough network with a temptingly low initial purchase cost is designed simply to connect users to IT. While a next-generation network may have more up-front costs than a good-enough network, the overall TCO should be significantly lower—and the return on investment higher.

Learn more about the return on investment and total cost of ownership of a next-generation network at www.cisco.com/go/enterprise.

[3] Cisco CIO Summit Survey, 2010.