



Next-Generation Networks: Business Value for Today and Tomorrow

Why your organization needs a next-generation network

IT can be easy to forget how much depends on the enterprise network—until you have to tell the VP of sales that he can't use his iPhone on the corporate network because the appropriate security controls aren't in place. Or you must tell the CIO that expanding the virtualization initiative to include business-critical applications will severely tax bandwidth. The truth is, nearly everything in modern businesses is dependent on the enterprise network, and every decision you make is based on whether the network can handle it. This paper takes a look at a common pitfall in IT circles that can have a serious impact on the IT decision maker's ability to say "yes" to new business initiatives. It also offers recommendations for IT organizations that wish to act as business enablers.

The Network as a Commodity

During difficult economic times, it is tempting for IT decision makers to implement the lowest cost networking components, even if that means building a multivendor network. This approach to enterprise networking promotes the perception of the network as a commodity.

Businesses value the capabilities of the network in dramatically different ways. The network as a commodity is an appealing concept because it makes the purchasing decision a straightforward one, based solely on capital expenditure. There's no need to

quantify soft business costs like uptime, security risk, or even hard costs like maintenance and support.

Least-cost network solution providers support the perception of the network as a commodity. It is in their favor to position their solutions based on capital expenditure. Unfortunately, considering only CAPEX, and not functionality and total cost of ownership, does IT decision makers and their organizations a disservice.

The Reality

Not long ago, the network served solely to connect users to IT, and a low-cost, "good enough" network may have been sufficient for that purpose. But the enterprise-computing environment is undergoing significant changes. The consumerization of IT, mobility, virtualization and cloud computing are putting increasing demands on the "good enough" network. In order to meet those demands, organizations end up deploying multiple point solutions. For example, in order to accommodate bring-your-own-device policies and protect corporate assets, IT organizations are deploying endpoint security and data leak prevention solutions. Cloud computing and virtualization may require more network throughput, which is addressed with additional bandwidth or optimization solutions.

In today's rapidly evolving IT environment, the low-cost, good-enough network is no longer good enough, and IT decision makers are being forced to say "no" to the business value provided by

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today's enterprise-computing trends.

Providers of low-cost networks can offer competitive pricing because their technology hasn't evolved with the rest of the enterprise-computing environment. They are not investing in network innovations, finding new ways to optimize the network to support business-enabling computing trends. This is one instance where IT organizations get what they pay for.

Network Recommendations for Increased Business Requirements

The alternative to this least-cost approach is to invest in a next-generation network that is built to enable business capabilities for today and tomorrow. Those capabilities include the following:

Video

IT organizations are starting to witness a massive 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. Businesses are also making increasing use of YouTube and other video technologies in diverse use cases like surveillance, conferencing and digital signage.

Recommendation: *Ensure that networking investments provide the needed intelligence to preplan, auto-configure and troubleshoot video endpoints and video flows.*

Mobility and device consumerization

By 2015, there will be nearly one mobile-connected device for every person on Earth. That's 7.1 billion devices. 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. IT must find a way to accommodate multiple device types and multiple operating systems, and enable secure access to network resources while protecting corporate assets.

Recommendation: *Architect your network with the assumption that you will be supporting a mobile workforce using devices they select.*

Energy management

Currently, office buildings account for 70% of business energy consumption. This includes lighting, heating and cooling systems in addition to the IT infrastructure. As regulations on carbon emissions are being developed and applied, especially in some European markets, businesses need to be ready both to monitor and manage carbon or face significant fines. Innovations in network technology can drive a consolidated energy-efficiency strategy.

Recommendation: *Ensure that your network infrastructure can monitor and manage energy usage and carbon emissions.*

Security and network policies

Network security has to keep pace with an ever-changing threat profile and the increased use of mobile devices. Security risks are everywhere. There was a 46% increase in the spread of malware on mobile devices in 2010. At the same time, 20% of workers have left devices unattended, and 46% have let others use their devices. Addressing these risks with point solutions results in isolated collections of security information, making it difficult to implement consistent security policies across the IT environment and creating gaps in protection.

Recommendation: *Provide pervasive visibility and control using the network to enforce security policies.*

The Next-Generation Network

A next-generation network is a strategically developed network that is optimized for today's requirements, but is also architected to accommodate future technology disruptions and provide investment protection. In other words, a next-generation network is a dynamic network that supports trends around 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 not only say “yes” to strategic business efforts, but also roll out these services broadly and deliver value back to the business. The deployment of a next-generation network

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has the ease-of-use and management capabilities to allow the IT organization to react to new business needs quickly, therefore easing implementation and reducing burdens.

When calculating the total cost of ownership, procurement teams and the IT manager should be careful not to underestimate the business value to be gained from strategic opportunities. With a low-CAPEX network, IT organizations risk having to say “no” to new 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.

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 your 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. It can serve multiple purposes, including machine-to-machine connectivity, as may be required for new sensor networks or for data center backup applications.
- **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 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 CAPEX can be more than offset by increases in 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 networking costs related to OPEX, but also drives IT services improvements and new business opportunities, thereby increasing ROI.

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. These services enhance the ability of the organization to meet the requirements of users and IT.

Cisco's goal is to build out systems and allow IT to spend less time at the bottom of the stack working on basic network integration and more time providing intelligent network services that enhance the ability of the network to meet the

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needs of the users and the business. Five services are key to achieving this goal and allowing customers to move forward:

1. Mobility

As mobility demands increase, it becomes critical to manage users consistently as they access the network, whether over a wired, wireless or VPN connection. Cisco has converged user and access management in products like Cisco Prime Network Control System for unified management. Access policy is also administered through integration with the Cisco Identity Services Engine (ISE). Businesses gain complete visibility into endpoint connectivity—regardless of device, network or location—and can monitor security policy compliance across the entire network infrastructure.

2. Energy Management

Businesses need to be ready to comply with new carbon emission regulations. Cisco EnergyWise is an innovative feature of Cisco Catalyst switches, routers and endpoints that manages building systems to improve energy efficiency. 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 range of endpoints, including PCs, data centers and building control.

3. Security

The Cisco SecureX framework delivers pervasive visibility and control with full context-awareness to provide security across the network, from headquarters to branch offices, for in-house employees and remote workers on wired or wireless devices. An important aspect of SecureX is context-aware policy with distributed enforcement delivered through the Cisco ISE. As the industry's only networkwide policy engine appliance, ISE creates, distributes and monitors policies based on contextual language, such as who, what, where, when and how. Enforcement may include actions such as blocking access to data or devices, or initiating data encryption.

4. Application Performance

Cisco provides a holistic approach to enterprise-wide application performance through a collection of technologies that focus on visibility, optimization and agility. Visibility is achieved via Flexible Netflow, which allows IT organizations to assess and diagnose detailed application performance across the entire network. WAAS on Service Ready Engine can instantly double WAN performance with a software upgrade to the router, while application-aware routing maximizes application performance by selecting the best-performing WAN links. UCS Express improves agility through powerful branch application hosting with centralized management.

5. Multimedia Optimization

Medianet technology in 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. While a good-enough network can certainly carry some video flows, a next-generation network—like Cisco Borderless Networks—is designed around carrying video with simplicity, quality and at scale.

Conclusion

The IT decision maker's ability to obtain business value from current computing trends like video, mobility and the cloud is based on the capabilities of the enterprise network. A "good enough" network is the wrong choice, unless you're willing to trade off business capabilities for up-front capital savings.

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