

White Paper

Is Your Network Infrastructure Helping or Hurting Your High-Performance Business Goals?

The Role of Network Infrastructure in the High-Performance Enterprise—Changing the Rules of the Game



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Executive Summary

CIOs and IT executives should read this white paper to discover how different attributes of the network infrastructure can help them achieve their aggressive business goals. This white paper will show how Juniper Networks, Inc. high-performance networking infrastructure, which provides fast, reliable and secure access to applications and services over a single network, will meet all three levels of business goals: staying in the race, winning the race and changing the rules.

Introduction

Today's CIOs face conflicting priorities. On one hand, they are under pressure to deliver service-enabling applications that will build competitive differentiation for their business. On the other, they constantly wage a battle to control costs. Operating costs in particular keep climbing as organizations are obliged to add IT solutions to manage threats, control access, assure service levels and sustain compliance.

The dilemma is: how do enterprises balance their IT budgets while simultaneously freeing up resources to support their goals for growth? Somehow, there must be a balance between driving down operating costs and investing in the innovations that will create differentiation and new opportunities for growth.

Certainly, the right network infrastructure plays a key role in controlling IT costs. But a business network should also be viewed as a platform for innovation. Juniper Networks defines high-performance networking as a comprehensive infrastructure designed to provide fast, reliable and secure access to applications and services over a single network. High-performance enterprises invest in IT not only to maintain their existing services through growth and change, but also to create new services that differentiate them from the competition.

This paper will examine how enterprises can align their network infrastructure spending to meet their business goals.

Trends/Challenges

Enterprise business models are evolving, which is causing a corresponding evolution in IT. Distributed workforces, extended supply chains and business process outsourcing (BPO) are just a few examples of the changes that IT must keep up with. With all this change, building in some flexibility in IT systems helps enterprises adapt to new business models more easily. Flexibility is a key reason that virtualization has become so popular. According to Gartner, "Virtualization 2.0" is one of the top 10 IT trends for 2008. While the first wave of virtualization focused on consolidating servers and storage in the data center, the next phase will focus on maximizing investments for disaster recovery and business continuity throughout the enterprise. With the promise of better security and easier mobility, virtualization will begin to move outside the data center to the desktop and even to mobile devices.

Flexibility and mobility are also key drivers behind the gradual move to Service-Oriented Architecture (SOA). Building blocks to SOA, such as Web platforms and Software as a Service (SaaS), are also on the Gartner top 10 list for 2008. As enterprises deliver network services in new ways to their distributed workforce, their underlying network infrastructure will have to adapt. Are these enterprises' networks up for the challenge?

Different Types of IT Investment

McKinsey¹ identified three ways that successful enterprises differentiate their IT investments:

- *Scale IT investments* are the IT investments that enterprises must make in order to remain competitive or “stay in the race.” Generally, this accounts for the largest chunk of an enterprise’s IT budget.
- *Competitive advantage investments* improve an organization’s market position or “win the race” over its competitors.
- *Rule-changing innovations* create a difficult-to-replicate advantage over an enterprise’s competitors.

In 2007, Ziff Davis and Juniper surveyed 173 enterprise technology decision makers about their IT priorities and budgets. The survey indicated that on average, 70 percent of enterprise IT budgets is currently spent on keeping IT running, corresponding to the “staying in the race” idea of McKinsey. According to survey respondents, only 30 percent of an IT budget goes towards Innovation/Strategic Progress. Strategic progress is in line with competitive advancements made in order to “win the race,” while innovation can help enterprises create new or unique products or services that help “change the rules” in that market space. The decision makers surveyed felt that they wanted to move to a more balanced, 60/40 split between keeping IT running and creating innovation/strategic progress.

Trends and Challenges in Network Infrastructure

The Ziff Davis and Juniper Networks survey also asked about the concerns and spending habits surrounding network infrastructure. A key concern was network performance, with a majority of respondents reporting little or no tolerance for network downtime. Eighty-four percent of respondents agreed that “increasing the efficiency and quality of my network infrastructure will help reduce operational costs, increase agility, and drive business goals.” Other concerns around network equipment purchases were security, cost, scalability and flexibility. The next few sections will explore how enterprises can minimize these network concerns while accommodating the three different types of IT network investments.

Step 1: Staying in the Race

IT managers, like mechanics, need to keep their machines running in order to compete. Typical objectives of stay-in-the-race investments are reducing costs, maintaining service levels and addressing and managing risks to business continuity, corresponding to the top network concerns of cost and safety. How are high-performance enterprises achieving these objectives today? Consolidating applications, equipment and networks is a good first step in reducing the cost of IT operations. Second, any new IT infrastructure investments must be flexible enough to meet growth and performance expectations without big capital or operating cost hits. Network performance is a particular worry, with enterprises reporting² that having a negative corporate image and losing customers were their key concerns arising from impaired network performance.

Staying in the Race with Juniper Networks

Since its inception, Juniper Networks has been helping its customers drive down the cost of doing business by reducing operational expenses. Juniper made its name in the industry with resilient, high-performance, standards-based routing platforms that improve business continuity while integrating more easily into existing networks and systems. The company then expanded its focus to security, further improving business continuity and reducing costs associated with potential security breaches. Juniper is now the market leader in keeping businesses safe with high-performance network security solutions, including enterprise firewalls³, intrusion prevention⁴ and SSL VPN⁵.

¹“Divide and Conquer: Rethinking IT Strategy” McKinsey, 2006

²Ziff-Davis/ Juniper Survey, June 2007

³Gartner Magic Quadrant for Enterprise Network Firewalls, 2H07

⁴Gartner Magic Quadrant for Network Intrusion Prevention System Appliances, 2H06

⁵Gartner Magic Quadrant for SSL VPN, 3Q06

Beyond a stable, standard, available, high-performance environment for application consolidation, Juniper Networks delivers network consolidation solutions of its own. Application acceleration solutions help reduce the amount of equipment and maintenance required in the data center, and voice/data integration in Juniper routing platforms consolidate communications onto a single infrastructure.

A Large Financial Services Firm Improves Business Safety While Reducing Costs with SSL VPN

One of the largest financial services firms in the U.S. needed to extend remote access to a growing base of far-flung employees, contractors and auditors. It had been using an IPSec VPN to secure its highly sensitive information. As demand for secure remote access grew, however, the company needed a solution that was easier to deploy and maintain while still preserving strict security controls. It decided on the award-winning SSL VPN solution from Juniper Networks.

Juniper Networks Secure Access SSL VPN solution immediately began reducing IT costs for the company. The solution was up and running quickly, requiring no training or new software on remote endpoints. Eliminating a piece of client software not only reduced the capital cost of the solution—it also reduced calls to the help desk. Centralized administration made it easy to troubleshoot any problems and reduced the time it took to perform any maintenance. Adding more users to the remote access network would not be complex or costly, since the Juniper Networks solution easily scales to a large number of users.

Juniper Networks SSL VPN also reduced the risk of disrupting the business due to a security breach. Embedded host check functionality ensured that remote endpoint devices were always up to par with the firm's security policies. Granular access control policies let the IT department tailor individual user access down to the application or even file level, reducing the risk of a security breach due to a remote user.

Step 2: Winning the Race

Organizations have loftier goals than just staying in the game. They want to increase margins or market share by offering better service levels or decreased prices, thereby besting the competition and “winning the race.” High-performance enterprises achieve these objectives by increasing organizational efficiency and productivity, often with the help of improved business processes and IT tools. But how can network infrastructure help increase efficiency and productivity? Boosting network performance is the most effective way to increase productivity⁶, according to high-performance enterprises surveyed by Information Week. Extending business applications securely to users with wireless technology, voice over IP (VoIP), CRM and collaborative applications also improves productivity, according to at least one-fifth of Information Week respondents. But the network has to be able to support these tools without undoing the gains of Step 1.

Winning the Race with Juniper Networks Solutions

Juniper Networks is focused on improving enterprise productivity on two levels—first, at the IT level, and second, for the entire organization.

IT departments in the world's largest enterprises and service providers have relied on Juniper Networks to deliver infrastructure that can be managed and administered from central locations, and can be easily deployed without extensive training or on-site support. Simplifying deployment and ongoing support makes expansion to new locations or groups of users faster, easier and more cost effective. Independent research⁷ confirms that Juniper Networks JUNOS software, which underlies all Juniper solutions, improves IT productivity by reducing the average time spent monitoring, upgrading or adding services to the network. JUNOS software was also found to reduce the average frequency and duration of unplanned network events, increasing service availability.

⁶Information Week 500, 2007

⁷Lake Partners, How Operating Systems Create Network Efficiency, 2007

At the user level, Juniper Networks has always been known for great performance. Juniper has moved beyond just the feeds and speeds to deliver excellent performance for enterprise business applications. This enhances business productivity, particularly for remote or mobile users, who are typically frustrated by applications not designed for delay between client and server. In terms of business applications, application acceleration solutions selectively increase the performance of business applications sensitive to delay. With Juniper's secure mobile access solutions, remote or mobile users now can also gain efficient, secure access to enterprise business applications where it was not possible before.

A Restaurant Chain Increases Business Speed by Boosting Ordering and Reporting Productivity

With over a thousand restaurants, 100 suppliers and half a billion pounds of food and goods purchased annually, a restaurant chain realized that it needed an IT overhaul. It decided to update point of sale, inventory and financial electronic reporting from restaurants to corporate; implement a secure, central ordering system to minimize inventory; and deploy a faster credit/debit system. To support these applications, it chose integrated firewall/IPSec VPN appliances from Juniper Networks, with wireless capability in each restaurant. VPN tunnels between each restaurant and headquarters transmit real-time restaurant inventory, POS and financial data. The result? Juniper Networks security products reduced the time it took store managers to complete inventory orders and end-of-day reports by 45 minutes a day. Multiply that by 7 days a week times hundreds of stores, and that's a big gain in productivity.

The company also used the Juniper firewall/IPSec VPN appliance with integrated wireless capability for its new customer wireless Internet application. Juniper's unique home zone/work zone feature allows the restaurant to separate customer wireless traffic from corporate traffic on the same network, offering a better customer experience than the competition at no extra cost.

Step 3: Changing the Rules

Sometimes, innovative enterprises use their IT budget to help create new products or services that change the way they do business. They move from their existing race by "changing the rules" to create a new race in which many competitors find difficult to follow.

How do high-performance enterprises achieve these objectives? First, they have the IT budget for it, achieved by gaining cost efficiencies in Step 1 and organizational efficiencies in Step 2. They also align their objectives with corporate strategy. According to Gartner, over half of enterprise CIOs have duties outside of core technology, such as helping craft corporate strategy. IT is expected to help the business drive competitive advantage. Network infrastructure can help achieve these objectives by having the flexibility to be able to adapt quickly to new, unforeseen events.

Changing the Rules with Juniper Networks Solutions

Innovation does not happen in a vacuum or even only inside the organization. In fact, innovative ideas also come from business partners, customers, consultants, academic institutions and even competitors⁸. IT can help this innovation by allowing ideas to come to fruition between separate organizations. In terms of network infrastructure, open standards and architectures benefit innovation since they can interoperate with other organizations' equipment, accept new applications or be put to new uses without taking excessive cost or time. Open standards and architectures help give businesses the control and flexibility they need to innovate quickly, which means they can be proactive instead of reactive in their IT investments.

⁸IBM "The Global CEO study 2006"

Juniper Networks is a keen supporter of open standards and architectures. As an example, Juniper Networks is a partner in the Trusted Network Connect (TNC) group, which is an open Network Access Control (NAC) architecture and standard. TNC members deliver multi-vendor access control support for diverse networking environments, giving organizations the flexibility to work with other networking environments. Organizations also can deploy TNC and Juniper Networks solutions quickly by leveraging their installed products.

A Large Stock Exchange Changes the Rules of Securities Trading with an Optical Mesh Network

A major securities exchange in the U.S. wanted to move to an electronic trading model that would enable it to greatly increase equity trading volume, disseminate real-time market data and report quotes and trades faster to national markets. Electronic trading models require considerable performance and application delivery, but this organization wanted to set its own tougher benchmark: quality-of -execution reports for equity transactions in less than 5 ms roundtrip. As a solution, the organization chose Juniper's M-series routers and created virtual data centers closer to traders in major U.S. centers. The network design uses Juniper Networks M320 routers connected in a full mesh topology with multiple parallel Gigabit Ethernet links residing over a DWDM network, configured as a logically meshed MPLS backbone.

The resulting excellent performance—with little application latency or downtime—is not only a benefit, it's a competitive advantage. The exchange can disseminate real-time market data, report quotes and trades faster to the national markets, while continually meeting the demands for increased capacity to keep up with exponential growth of the industry's real-time quote feeds. In the words of a senior executive, "This is more than a new network. It's the foundation upon which we're meeting our customers' needs and building the Exchange of the future."

Juniper Networks Solutions for High-Performance Enterprises

Whether companies are looking to stay in the race, win the race or change the rules, Juniper Networks provides comprehensive solutions for high-performance enterprises. Together or separate, Juniper's security, application acceleration and network infrastructure solutions create a trusted and responsive environment for supporting existing IT projects, as well as deploying new services and innovations, all over a single network. The world's top 40 service providers, 94 of the Fortune 100 and more than 20,000 businesses have chosen Juniper to provide a high-performance network infrastructure to enable business speed, reduce risk and lower operational costs.

Juniper Networks Security Solutions

For enterprises focused on business safety, Juniper Networks security solutions reduce remediation costs and protect the corporate image by protecting users, devices, data, applications and the network from threats. Protecting against all manner of threats and security breaches also reduces the risk of costly downtime. Juniper Networks security solutions also manage user application and file access by providing access control, visibility and policy enforcement of the network, reducing the chance for a security breach. For enterprises investing in productivity gains, Juniper Networks security solutions increase productivity by allowing enterprises to implement a secure mobility strategy. Users can apply their time efficiently regardless of location with Juniper Networks SSL VPN solutions.

Juniper Networks Application Acceleration Solutions

Juniper Networks application acceleration solutions help high-performance enterprises reduce operating costs by optimizing WAN bandwidth between locations, delaying or eliminating the need for network upgrades as traffic intensifies. Juniper data center acceleration solutions help organizations control costs in the data center by consolidating both the number of data centers and the equipment contained in them. All Juniper application acceleration solutions work seamlessly for both new and legacy applications, supporting existing infrastructure while ensuring the successful rollout of new applications.

These solutions also boost workforce productivity by accelerating response times to the broadest set of business applications while providing secure anytime, anywhere access to all users. Juniper Networks application acceleration solutions deliver LAN-like application availability for users regardless of location.

Juniper Networks Network Infrastructure Solutions

Juniper Networks next-generation network infrastructure platforms, based on JUNOS software, provide a consistent end-to-end IP infrastructure for the delivery of multiple real-time, critical applications and services. For organizations concerned about business safety, the advanced JUNOS software is designed for very high availability even under adverse conditions and offers protection even while under attack. It also provides integrated VoIP solutions that consolidate voice and data networks and further reduce costs.

JUNOS software also contributes to enterprise productivity, offering high performance through its innovative modular architecture and advanced operations features. It is simple to plan, design, implement and operate, and offers centralized management, improving IT productivity. With standards-based products based on the same operating system connecting remote, branch, regional offices, central sites and data centers, Juniper Networks routing solutions provide unmatched flexibility for the enterprise planning new IT innovations. Enterprises can roll out new applications without worrying about being affected by performance or security hits. Innovations can be implemented quickly, since JUNOS software takes less time to deploy, upgrade or change than the competition.

Juniper Networks Product Appendix

	Infrastructure			Services		Policy and Management
	Routing	Switching	Firewall/VPN/UTM	Access Control	WAN Optimization	Policy and Management
Data Center	MX960	EX 4200-24T	ISG 2000 ¹	SA 6000	WXC 590 stack	IC 6000
	MX480	EX 4200-48T	ISG 1000 ¹	IC 6000	WXC 500 stack	IC 4000
	MX420	EX 4200-24F	NetScreen-5400	IC 4000	WX 60 stack	NSMCMS
	M320		NetScreen-5200		WXC 590	SBR
	M120				WXC 500	
	M10i				WX 100	
Campus	M10i	EX 4200-24T	ISG 2000 ¹	SA 6000	Typically no	IC 6000
	M7i	EX 4200-24T	ISG 1000 ¹	IC 6000	application	IC 4000
		EX 4200-48F	NetScreen-5400	IC 6000	acceleration	NSM
		EX 4200-48T	NetScreen-5200	IC 4000	needed in	OAC
		EX 4200-24F	IDP 1100		campus	SBR
		EX 3200-24P	IDP 600		environment	
		EX 3200-24T				
		EX 3200-48P				
Branch/Regional Office	J6350 ²	EX 4200-24P	SSG 550	SA 2000	WXC 500	OAC
	J4350 ²	EX 4200-24T	SSG 520	SA 700	WXC 250	SBR
	J2350 ²	EX 4200-48P	SSG 140	IC 4000	WX 60	Provided from central location
	J2320 ²	EX 4200-48T	SSG 20 ³		WX 20	
		EX 4200-24F	SSG 5 ³		WX 15	
		EX 3200-24P	IDP 200			
		EX 3200-24T	IDP 50			
		EX 3200-48P				
	EX 3200-48T					
Teleworker			SSG 20 ³ SSG 5 ³			
Extended Enterprise			Secure client access via SSL VPN			
Mobile Worker			OAC; Secure clientless access via SSL VPN			

¹Optional Integrated IDP

²Optional Avaya IG550 Integrated Media Gateway and modules

³Optional Integrated Wireless

Conclusion

Juniper Networks helps companies build high-performance networks that meet their goals to enhance business safety, business speed or business flexibility.

Through both its technologies and partnerships, Juniper Networks works to extend the value of an enterprise's network on its terms. Where some vendors require businesses to lock into particular network solutions,¹⁰ Juniper Networks gives organizations the flexibility to assess the merits of solutions based on their objectives, without being locked into any single vendor relationships now or in the future. Juniper's solutions can work in an organization's existing environment, with other vendors' solutions, or as part of a strategic Juniper network, and can scale as the business grows. Juniper's strategic partnerships with other industry-leading companies extend the value of an enterprise's network by making sure its future IT infrastructure benefits from best-in-class solutions that are tested and verified to work together seamlessly.

Whether an enterprise's goal is to stay in the race, win the race or change the rules, Juniper Networks provides the critical network elements that are the foundation for reducing operational costs, improving productivity and driving innovation.

About Juniper Networks

Juniper Networks, Inc. is the leader in high-performance networking. Juniper offers a high-performance network infrastructure that creates a responsive and trusted environment for accelerating the deployment of services and applications over a single network. This fuels high-performance businesses. Additional information can be found at www.juniper.net.

¹⁰Gartner Vender Influence Curve: A Model for Dealing with Major Vendors, Feb. 2007

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