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Accelerating Today's Internet-Driven Enterprise with WAN Optimization

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The enterprise networking market will grow 12.7% to \$39.3 billion in 2011 with the buildout and adoption of the next generation of IT. The Internet is rapidly replacing the private WAN for business-critical application delivery. In response, networks will have to adapt to support a staggering number of mobile devices, application virtualization, public and private cloud delivery models, and video, which are already multiplying bandwidth demands. Beyond just adding bandwidth, the real challenge for enterprises will be finding the solutions that can handle increased traffic flows and complex application and quality-of-service requirements. A new generation of WAN optimization solutions can help network managers not only optimize consolidated data architectures internally but also harness the power of the Internet to reshape the way businesses use Web, cloud, and rich media applications.

The following questions were posed by Blue Coat, on behalf of Blue Coat customers, to Cindy Borovick, Program Vice President for IDC's Enterprise Communications and Datacenter Networks program.

Q. What applications and initiatives are driving network traffic growth in today's enterprises?

A. The increase in network traffic is being driven by an expansion of video, the proliferation of network-attached and wireless devices, virtualization, and the adoption of both public and private cloud delivery models. IDC expects the total number of mobile devices including laptops to grow from 500 million to 1.2 billion in 2012. In addition public cloud services will grow to \$55 billion by 2014. This increase in network traffic and the proliferation of newer technologies requires enterprises to upgrade their networks and be able to support more video-based and interactive IT-supported business applications.

More importantly, it also requires enterprises to find ways to achieve greater efficiencies within their IT infrastructure, including optimizing various forms of network traffic such as applications deployed from mobile phones and/or cloud services, new types of IPv6 content, and more. Network traffic may also entail multiple Web protocols such as HTTP and SSL or multimedia video formats such as Flash, Silverlight, and HTML5. In the case of video, companies must not only be able to handle the different formats but also differentiate between business-centric or consumer-oriented video traffic to determine how they want to handle the different classifications.

Q. Do datacenter consolidation and enterprise virtualization remain the driving forces behind WAN optimization initiatives, or are other business needs now also driving WAN optimization deployments?

- A. Datacenter consolidation and virtualization will continue to drive IT operational efficiency and cost savings. However, as business cost efficiencies drive data and applications away from the datacenter toward Web-based public and private cloud deployments, new types of WAN optimization technologies will be critical to the overall success of these initiatives.

These modern Web applications require advanced WAN optimization techniques to mitigate unexpected bandwidth spikes that can result in costly downtime. Today's business not only needs to optimize network investments at the datacenter, but optimization now needs to extend to the cloud, and all the way to the remote user. Furthermore, IT will benefit from including optimization requirements for these new cloud-based deployment models during the design phase of any WAN optimization initiatives.

Q. What has been the impact of video on corporate networks — business video (hosted internally or from external cloud provider) as well as recreational video (YouTube, BBC, etc.) — and how will this affect an organization's WAN optimization plans?

- A. Enterprises are using social media and video to foster communications with external audiences, including customers, partners, and suppliers, and to improve internal collaboration among employees. Business video has become an important enterprise technology for various types of training purposes and an effective marketing and messaging medium. Increasingly, network managers are also using video feeds of major events as an employee perk. For example, some companies have allowed their employees to view World Cup matches or other global events on their corporate Internet.

While the use of video in the enterprise as a business-enabling tool continues to garner critical mass, it also places a greater burden on the network. Enterprises will continue to throw additional bandwidth at the problem. Over the LAN, this will be reflected in the rapid increase of 1GbE and 10GbE switch port shipments; the WAN is a bigger issue as it's not just ports but increased costs of WAN services. And bandwidth alone is not the answer. Depending on the location of the user or site, bandwidth can be expensive and/or unavailable. Additionally, very often more bandwidth doesn't solve the low latency requirements of these new traffic types. In addition to increasing bandwidth, the real challenge for enterprises is to build intelligence into their network to handle the significant rise in traffic flows. The business is expecting IT to become a business partner, in support of its quality-of-service requirements, to ensure that applications and other modern business technologies are aligned with business priorities.

Video has two issues: enabling enterprise video for training and communications and managing recreational video. Since video can adversely impact network performance, it's important for a network manager to take a proactive approach to ensure video doesn't impact other business-critical WAN traffic. This is especially important for non-business video viewing, which not only impacts employee productivity but can actually bring down the network. WAN optimization solutions can significantly reduce the amount of traffic on the network and free up additional bandwidth for video using a variety of techniques. On the other hand, bandwidth and cost constraints have limited enterprise adoption of video for training and communications. It's now easy to produce video — just very expensive to deliver it to a distributed organization. Advanced optimization techniques such as live stream splitting, video-on-demand caching, and enterprise content delivery network (eCDN) can provide substantial performance gains that enable enterprise video use and reduce the impact of recreation.

Q. How do cloud infrastructures and business-critical SaaS applications change the approach that organizations must take to WAN optimization?

- A. Public/private cloud and critical SaaS applications will boost IT market growth and expansion for the next 20 years by dramatically lowering traditional cost and complexity barriers for both new solution development and expanded customer adoption. To support these initiatives, the network must support a mix of applications and services, including voice and video, enhanced security, Wireless LAN (WLAN) deployments, and wireless and mobile applications. This places an additional burden on the network in terms of increased demands for security, functionality, and resiliency. Many enterprises rely on a traditional type of architecture where secure network traffic utilizes the company's private WAN. There is a gateway between the private WAN and the Internet controlling the traffic and limiting or prohibiting its access to the public Internet to maintain security.

However, funneling traffic through a central point in this manner can be expensive. It can also introduce latency that may not be acceptable for a particular application. As more applications are deployed through cloud services, it is more efficient from a cost and a latency perspective to enable end users to go directly to the public cloud — directly to the Internet. This can be accomplished by building intelligence into the network and using specialized optimization techniques that work asymmetrically. By enabling distributed offices to go directly to cloud services via the Internet, backhauling through the datacenter is reduced — lowering WAN costs and improving performance. These solutions also mitigate the security threats inherent with and compounded by increased complexities caused by the mix of users and applications that have to be supported.

Q. As companies increasingly embark on new SaaS and cloud initiatives, what level and type of convergence will we see between WAN acceleration and Web security technologies?

- A. Network architecture has some inherent security as long as traffic is confined to the private WAN. However employees are demanding direct connection to the Internet and using their own mobile devices to access friends, family, and social media as well as corporate data and applications. Access to cloud services and applications often does not rely exclusively on the private WAN. For that reason, network managers have to extend their datacenter security measures to protect sensitive corporate data that is accessed by and resides on the mobile devices.

Security solutions also have to protect SaaS and cloud-based applications and data without impacting traffic. They must be able to detect and prevent malware and potential data leaks quickly from the datacenter to the mobile user and enable the company to meet regulatory compliance and risk management objectives. WAN optimization and security technologies working together help companies identify and protect sensitive and unsecured information on the network without impacting traffic throughput, productivity, cost, and security requirements.

ABOUT THIS ANALYST

Lucinda (Cindy) Borovick is the Program Vice President for IDC's Enterprise Communications and Datacenter Networks services. The Enterprise Communications program covers areas such as switching, routing, WLAN, IP telephony, application delivery, and unified communications. Ms. Borovick is responsible for the program's consulting and advisory services, research offerings, and client relationships, and she oversees IDC's team of enterprise communications analysts. Currently, Ms. Borovick is researching the impact of cloud computing and converged infrastructures on the network.

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