

I D C T E C H N O L O G Y S P O T L I G H T

WAN Application Delivery: Networking Solutions for a Tough Economy

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Despite a slowing economy — indeed because of it — enterprises need IT solutions that help them improve customer service and cut overall operating expenses. As market competition heats up and organizations fight for every customer dollar, the battle focuses on the branch office, often the site of the only customer contact with an organization. This Technology Spotlight paper looks at a critical networking technology, WAN application delivery, and how it can cut branch office IT costs and improve service by providing LAN-like communications across the WAN. The paper also describes the strategic implementation of WAN application delivery products and Cisco Systems' Wide Area Application Services (WAAS) solution specifically. Guidelines are provided for IT organizations selecting a WAN application delivery solution.

Role of the Branch Office in a Down Economy

In difficult economic times, the importance of the remote office will continue to increase for one simple reason: It is the company resource closest to end customers. As a result, enterprises must continue to invest in IT resources for remote sites.

But the need for IT at the branch is balanced by the costs associated with having server and storage resources replicated across hundreds and/or thousands of remote branch locations. As such, IDC believes that a technology referred to as WAN application delivery will increasingly enable customers to achieve the best of both worlds at the branch — responding in real time to business needs while reducing IT spending.

To provide better customer service, enterprises are changing WAN usage. Employee traffic patterns are moving away from traditional hub-and-spoke networks and toward new dynamic communications that take into consideration the need for employees to go directly to business-critical applications and utilize unified communications based on voice over IP (VoIP), regardless of location. The ability to resolve performance issues quickly, with minimal to zero impact on the network architecture, makes WAN application delivery technology an important consideration for enterprises interested in a quantifiable return on investment (ROI).

Straightforward implementation, combined with decreased bandwidth costs and fewer help desk calls, is pushing this technology into a strategic role within enterprise network architectures. Ongoing server consolidation and centralization projects are similarly driving growth in this market. Consolidation of the datacenter, however, can carry a latency penalty for the branch office. WAN application delivery solutions help mitigate this problem by delivering LAN-like performance to the branch office.

WAN Application Delivery Defined

Essentially, WAN application delivery products optimize WAN communications. These products are deployed at the branch and in the datacenter, and they not only provide bandwidth savings but also enable secure consolidation of file servers, emails, and print services across the WAN, as well as business-specific applications such as retail point-of-sale and bank teller transactions.

Typically, WAN application delivery products compress data streams, monitor traffic flow, prioritize traffic, optimize bandwidth, and provide file caching. They also optimize and accelerate the performance of particular applications. These features and associated cost benefits helped the WAN application delivery market grow over 60% in 2007, according to IDC, to \$825 million in revenue.

Despite current market uncertainty, revenue for the WAN application delivery market surpassed \$1 billion in 2008 — two years ahead of the previous forecast. IDC expects the worldwide WAN application delivery market to achieve a CAGR of 14% over the five-year forecast period, reaching \$1.6 billion by 2012. We believe there are several structural reasons the WAN application delivery market will continue to grow faster than the rest of the IT market, even in the current economic cycle, for at least the next five years.

The projected market growth is due to the following factors:

- **Cost/performance advantages.** When a technology solution such as WAN application acceleration solves a major pain point for IT, is easily deployed, results in cost savings for the company, and offers a readily quantifiable ROI, then it will enjoy stronger growth than other technology solutions despite a sluggish economy.
- **Consolidation.** Datacenter consolidation continues as organizations seek to leverage best practices in datacenter design implementations and IT staff expertise.
- **Application centralization.** Applications are being pulled out of the branch and back into the datacenter, and application performance issues continue to fuel the demand for WAN application delivery solutions.

At the same time, more data will need to be stored and accessed at the remote office to ensure prompt customer service. Also, legacy applications are not going away; therefore, as companies look to squeeze everything they can out of existing investments, they will look to find ways to connect the old with the new.

With telecommunication companies making the transition to IP, latency-sensitive VoIP will be the only deployment option for new voice rollouts at the branch — thus impacting other centrally delivered applications. In addition, globalization will continue and organizations will seek new markets, or companies will merge to better compete. Similarly, offshoring will drive a need to provide LAN-like communications on a global basis.

The use of WAN application delivery for the purpose of speeding up backup procedures associated with disaster recovery efforts also has been gaining ground. Companies have found that WAN application delivery solutions are eliminating the need to purchase additional bandwidth to crunch backup windows, thereby saving money over the long run.

IDC sees a future for this technology to enable and support virtual client deployments.

Prime Candidates for WAN Application Delivery

Globally distributed enterprises continue to be prime candidates for this technology. Some smaller remote sites not only are challenged geographically but also have difficulties when faced with slower fractional T1 connections. WAN application delivery solutions can address both of these areas, which makes them attractive as an integral component of enterprise networks.

Service provider networks are likewise fertile territory for application delivery products. These products are being deployed for multiple purposes within service provider networks. They are supporting the internal IT departments of service providers, just like any large enterprise organization. Additionally, they are being deployed in support of new Web hosting, content delivery, or managed service offerings.

WAN application delivery has proven to be more than a quick fix for speeding up sluggish protocols that were not originally designed for distribution outside the LAN. There are several reasons for this, and perhaps the most compelling is the changing role of the branch. The branch is no longer viewed as a far-flung outpost; rather, it is viewed as a viable extension of the business. There are direct benefits between improved performance at the branch and higher user productivity. In the case of retail companies, for example, the branch *is* the business.

The easy and measurable ROI of WAN application acceleration solutions has moved the technology from the "nice to have" category into the "must have" category for many types of WAN deployments. As the branch grows, WAN application delivery solutions can save money by avoiding costly upgrades to existing bandwidth. These products are also proving to solve customer pain points around remote backup. They are accelerating WAN traffic between datacenters to improve disaster recovery.

The combination of features, including the ability to improve application performance, availability, and security over the WAN, is creating explosive growth.

Mobility is proving to be a new and growing opportunity as well, with most enterprises emphasizing a mobile workforce to better meet customer needs, especially in the areas of backup and recovery, VoIP, and video, as companies look to standardize their telephony infrastructure across the enterprise. Video, in the form of training and teleconferencing, has emerged as a money-saving strategy while also helping companies "go green."

Strategically Implementing WAN Application Delivery

However, the implementation of WAN application delivery solutions should not be taken lightly — especially as IT expenditures come under greater scrutiny. First and foremost, organizations must understand their WAN traffic now and in the future and make sure the WAN application delivery solution can meet their needs now and two years from now. This includes understanding which sites/users are experiencing performance issues, what applications are at the sites, and the bandwidth requirements and characteristics of each of these applications.

Part of this understanding will come from answering the following questions:

- Will the product/service help reduce the hardware footprint at the branch?
- Is faster access to data the most important thing, or do other considerations such as network visibility dominate?
- Are there data protection and compliance issues to consider?
- Who will manage the product, and where?

It's also important to consider security requirements. If enterprises do not have a security policy, they must create one. Then organizations can develop IT policies that ensure adherence to the security policy.

In addition, enterprises must determine how they will go about selecting and implementing WAN application delivery. Does the IT department have the ability to create its own solutions or to purchase and install solutions without outside help? If not, selecting a supplier with extensive support experience is critical.

If possible, enterprises must test solutions from more than one vendor under the same conditions to be optimized. Every solution has its strengths and weaknesses, and the right one needs to mesh not only with the network environment (specifically routers and security, as well as VoIP) but also with staff and in-house expertise. Enterprises should select the testing scenario and ensure that all products are evaluated similarly, as this is a multifaceted technology impacting applications, networks, and storage.

Organizations also are advised to look for the following:

- **A well-designed, graphical management console.** IT managers must understand the traffic out on the WAN and be able to manage it as effectively as possible. Latency must be reduced, and that means providing metrics that track when and where the network might be experiencing "latency creep" on the WAN links. Managers need an easy-to-use console to make the tweaks necessary to squeeze out every last drop of performance gain.
- **Easy setup and deployment, as well as ongoing operations that are self-educating.** The system must do the discovery not just on day one but also on an ongoing basis so that as the network topology changes, performance continues to be optimized. The solution must minimize management and configuration once it is deployed, given that networks and other parameters will continue to evolve and change. Otherwise, the solution will be perceived as not delivering or not scaling to meet growing needs.

Considering Cisco's Wide Area Application Services

Cisco Systems offers WAN application delivery solutions as part of its Application Networking Services (ANS) portfolio. ANS is a key pillar of Cisco's vision for next-generation datacenters, called Data Center 3.0. Cisco refers to its WAN application delivery technology as WAAS.

WAAS software is designed to accelerate applications over the network, delivering video to the branch office and providing local hosting of branch office IT services while reducing the overall branch office device footprint. Cisco's WAN application delivery solution allows IT departments to centralize applications and storage in the datacenter while maintaining high levels of application performance. In addition, the company's WAAS solution enables locally hosted IT services.

WAAS is a comprehensive WAN optimization solution designed to accelerate applications, reduce branch infrastructure costs, improve IT agility, and simplify remote data protection. Cisco's WAAS offers the following advanced technology:

- Data redundancy elimination (DRE) for improving application performance for all TCP applications
- Application-specific acceleration through improved Layer 7 performance, based on licensed protocols validated by application vendors that use techniques such as read-ahead, operation batching, multiplexing, and safe caching

- Transport flow optimization to improve WAN efficiency and handling conditions such as packet loss, congestion, and recovery
- Autodetection and single streaming of live video, enabling a single video to be delivered to a remote office and then distributed to multiple end users
- Transparent integration with existing infrastructure, including dynamic autodiscovery of endpoints and seamless use of existing router quality of service specifications
- Virtualized hosting to enable local deployments of IT services such as Microsoft Windows Server directly on WAAS appliances

The benefits of Cisco's WAAS solution include LAN-like performance for centralized applications across the WAN and increased application reach to users in branch offices and mobile environments. The technology also enables wide-scale delivery of live video by eliminating bandwidth upgrades and complex configuration. By enabling centralization of branch office server and storage into datacenters, bandwidth optimization, and simplified remote data protection, WAAS provides IT cost control for remote sites. Delivery of applications is streamlined, which improves the ability of the services.

By reducing the risk of integration and operations through application-specific acceleration and hosted services, simplifying operations by preserving existing network services, and ensuring secure WAN acceleration, Cisco's WAAS can lower the total cost of ownership of branch office networking solutions.

Market Challenges

Cisco does face market challenges, however. First and foremost, in a tightening economy, the company must help IT managers justify the costs of implementing a WAAS solution. This includes demonstrating immediate benefits while ensuring long-term ROI.

From a technology perspective, Cisco has aggressively focused on performance and recently achieved performance test results that are very similar to those of other vendors in its 4.1 release. The company has also recently added SSL security and application intelligence.

But Cisco needs to continue focusing on improving performance for advanced applications such as desktop virtualization and improving integration across the company's portfolio — e.g., video.

IDC believes that if Cisco does not rest on its accomplishments in application networking and meets enterprise needs for cost-effective branch office application delivery solutions, WAAS will continue to be a leading solution in IDC's predicted growth of the WAN application delivery market — despite tough economic times.

Conclusion

IDC believes that WAN application delivery technology has proven to be flexible enough to meet a variety of IT needs, including performance and disaster recovery, while providing good ROI. The network is the link for the remote branch back to the datacenter and headquarters. IT organizations will continue to look to the WAN to support key goals at the branch.

Organizations will also continue investing in network solutions that increase the bandwidth, reliability, and security of the remote branch, even in a sluggish economy, because these solutions ultimately lower operating costs. If Cisco can successfully address the challenges described in this paper, such as improving integration across its product portfolio, the firm has a significant opportunity to expand the scope of the value proposition it delivers to IT through solutions for the remote branch.

Enterprises should evaluate solutions such as Cisco's based on the unique needs of individual IT environments. Because there are many different types of remote branches, enterprises must evaluate a combination of the following areas:

- WAN bandwidth availability
- Application performance requirements
- IT staffing at the branch, in order to evaluate requirements for centralized management
- Business continuity and data protection needs
- The appropriate location to enforce security policies
- How remote branch infrastructure supports compliance mandates
- Technologies in the branch to address changing traffic patterns, such as WAN optimization and multipoint VPNs

Given the current economy, WAN application delivery solutions must focus on the needs of both network managers and managers of remotely accessed applications, servers, and storage whose joint objectives are to reduce overall branch IT costs, improve employee and IT staff effectiveness, and increasingly prepare the network.

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