

IP WAN Optimization—Caveat Emptor (Let the Buyer Beware)

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Read through just about any trade magazine dealing with information technology these days and you are likely to find articles, product evaluations, and advertisements for an emerging class of products that perform WAN optimization functions. This is a very “hot” area of product and technology development at present, and for good reason. Numerous industry trends are helping to drive the need for such technology and the plethora of products now on the market. Among these trends are the following:

Temendous pressure to get the most out of “high-profile” IP networks that now regularly carry extremely delay-sensitive traffic, such as IP voice and video;

Increasing complexity of network architectures and associated corporate network infrastructures;

Growing number of applications being deployed on a typical corporate network and the “mission critical” nature of many such applications;

Rising complexity of the applications themselves;

Increasing threat from worms, viruses, hackers, malware, etc.;

Greater focus on data protection/privacy and regulatory compliance.

In response to these trends, many organizations are looking for ways to consolidate, centralize, and simplify their operations, while improving their ability to manage and secure vital information. WAN optimization is probably the most common means of facilitating consolidation and centralization while minimizing or negating impact to application performance.

Other organizations are simply looking for ways to improve application performance and response times across existing high latency WAN links. Still others are trying to delay or avoid additional investment in WAN bandwidth deemed necessary to alleviate oversubscription problems.

WAN optimization products can certainly be used to address each of these issues, but that does not imply that any WAN optimization product will do the job for a given environment.

As a class of products, WAN optimization devices employ numerous techniques or technologies to achieve their stated purpose. Some products implement traffic shaping, prioritization, and/or Quality of Service (QoS) mechanisms to enhance performance. Others rely on data compression and caching techniques. Some provide generic protocol optimization for common protocols, such as TCP and HTTP. Still others offer protocol- or application-specific optimization for things like Citrix applications or Microsoft’s Common Internet File System (CIFS). And some even offer products that focus on WAN optimization in the presence of VoIP infrastructure. To complicate the choice, some products or solutions only offer one of these mechanisms, while others may offer several.

Given this dizzying array of options, how is a network manager or IT director to know if employing WAN optimization products is the right approach? And if so, whether an explicitly VoIP-focused product is best, or even appropriate, for his or her specific network and application environment?

The answer is quite simple to state but not so simple to achieve. Before choosing or deploying a WAN optimization product, the prudent network manager or IT director needs to have a thorough knowledge of his or her network and application environment.

This implies that he or she needs to know what constitutes normal network and application behavior. In other words, what applications are running on the network, who uses these applications, how and when are they used, what constitutes normal application traffic volumes and patterns for a given time of day or day of the week, month, or quarter, and how do the various applications and network components interact? It also means that he or she must already know how the applications and the network are performing against an established baseline, and, where there are problems or issues, exactly what is causing them. In a nutshell, there is a need for real-time visibility across the entire network and all of the applications that traverse it as well as historical knowledge and perspective of past network and application performance. Undeniably, it is a very challenging goal to achieve!

One way to gain this level of knowledge and visibility is through the use of another emerging set of technologies and products classified as network behavior analysis (NBA) tools. These products can provide the real-time network-wide visibility necessary to allow the network manager or IT director to make informed decisions about the appropriateness of WAN optimization technologies as well as which specific optimization methods or techniques will work best for his or her particular circumstances.

Once the decision has been made as to which optimization methods or techniques are appropriate and which product or products have the desired capabilities, the prudent network manager or IT director should insist on a non-binding pilot or trial of each of the designated products. Better still, if possible, conduct a side-by-side performance comparison ("bakeoff") of the competitors. In this way, the best overall solution for the organization's specific needs can be determined and the chances of achieving desired application performance enhancements can be maximized.

Only when true performance enhancements have been achieved can the full promise of IP technology be fulfilled.

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