

## Delivering Microsoft Exchange across a Distributed Enterprise

### A New Outlook for Enterprises with Centralized E-mail Servers

It has historically been difficult to deliver Microsoft® E-mail (Outlook and Exchange) over a WAN or dial-up connection. That is because e-mail transfers typically require a lot of bandwidth, which is often limited when communicating to remote or branch offices. In addition, the underlying architecture for communication with a Microsoft Exchange Server, called the Mobile-based Messaging API (MAPI), causes significant delay when communicating across a WAN.

Without the right form of application acceleration, many enterprises are still struggling with how to centralize Microsoft Exchange Servers in a reliable and cost-effective way without suffering from the performance limitations inherent to most WAN environments. Silver Peak has the answer. By delivering a unique blend of data reduction, compression, latency/loss mitigation, and Quality of Service (QoS), Silver Peak delivers on the promise of centralized Microsoft E-mail.

#### CHALLENGES WITH EXCHANGE SERVER 2000

Microsoft Exchange Server 2000 has several limitations that make performance over a WAN or dial-up connection less than desirable at times. This can make it impractical to deploy Exchange 2000 servers in a centralized manner.

One of the primary limitations with Exchange 2000 is that MAPI is extremely “chatty”. When an e-mail is transferred, MAPI sends information in small (8 KB or 16 KB) blocks, with each block requiring an ACKnowledgement.

To make matters worse, all e-mails and content are stored on Exchange 2000 servers. If a user pages through a list of e-mails, the information for each e-mail is downloaded to the Outlook client, causing the user interface to sit suspended until the download is complete. (Exchange 2000 users will recall that it is often impossible to interrupt a transfer once it was started.) To compound this, once a user logs off, Outlook begins a synch process pulling a copy of the message locally for later viewing (offline). The same message is sent twice — once for viewing and once for folder synchronization.

The problem is further exacerbated by the fact that the Outlook client sends the entire message to keep the ‘Sent Items’ folder in synch between the Exchange Server and Outlook client. As a result, a single e-mail can cross the network 4 times using MAPI.

## EXCHANGE 2003 - IMPROVEMENTS AND LIMITATIONS

Exchange 2003 introduced “Cached” mode to address some of the limitations inherent to Outlook 2000. With Cached mode, the first time an e-mail is downloaded for viewing, it is stored locally. Using a feature called *quickflagging*, messages are marked as read, replied, or edited with only a small amount of data pushed up to the server to keep the mailboxes synchronized. Operations on that same client (such as re-reading the same e-mail or paging up/down) now operate on the local cached version. This eliminates the user from having to sit in a suspended state while these operations proceeded, as was the case with Outlook 2000.

Since many common user operations now do not require server interaction, Exchange 2003 is substantially better for operations over a WAN. This has the added benefit of improving Exchange 2003 server scalability. As a result, most Enterprises have transitioned or are transitioning to Exchange 2003.

But Exchange 2003 comes with a tradeoff. By default, when an e-mail is sent it is “pushed” instantly, as opposed to using a pulling mechanism like Outlook 2000. This can create spikes in network utilization. For example, if a user sitting in headquarters sends a 1-Mb e-mail to 100 users, 100 Mbytes of traffic will immediately hit the network. In a network that is not properly engineered, traffic spikes like this can cause performance “brown-outs”, potentially starving other applications. This has a particularly adverse effect on real-time applications, like VoIP and streaming media.

While Exchange 2003 does improve the performance of Microsoft e-mail across a WAN, it does not negate the need for a robust application acceleration solution. To centralize MS Exchange servers, enterprises still require advanced tools to eliminate repetitive data, maximize WAN bandwidth, and ensure that all enterprise applications are treated appropriately.

## USING SILVER PEAK TO ACCELERATE E-MAIL PERFORMANCE

Silver Peak leverages a variety of technology components to improve Microsoft Exchange performance across Enterprise WAN links.

### Reduce Data on the WAN and Localize Information Delivery

Silver Peak’s Network Memory™ eliminates duplicate information from traversing the WAN, resulting in a significant reduction in WAN traffic and a major improvements in perceived e-mail response time across the WAN — as much as 50x for Exchange 2003.

Intra-office e-mail is a perfect example of how this can provide enormous benefits to Enterprises. When Exchange servers are centralized, e-mails transferred between co-workers in the same office are sent across the WAN, wasting bandwidth and causing an unnecessary delay. With Silver-Peak’s Network Memory, while the request transparently goes back to the server, actual e-mail content is intercepted and delivered locally.

Consider what happens when an e-mail is sent to 200 people across 10 different offices. Without Silver Peak, approximately 200 copies of the e-mail would traverse the WAN. With Silver Peak, only 10 copies of the e-mail are sent — one for each WAN link. All remaining e-mails on the same link are delivered instantly via Network Memory, preventing duplicate data from traversing the network by a factor of 20x. In addition, Silver Peak provides additional compression techniques to further reduce data traversing the WAN, providing an additional 4x improvement in some instances. In total, this is an 80x improvement when handling intra-office e-mail!

#### Same Data, Different Application

Network Memory recognizes byte patterns instead of cached “objects”. Therefore, if the same data is included in multiple types of files (for example, PowerPoint, Word, Excel, etc.), Silver Peak will detect the repetitive information and prevent it from traversing the WAN during e-mail exchanges.

#### Advanced Compression

Silver Peak uses crossflow payload and header compression to reduce the amount of traffic that is sent via e-mail, improving performance across the WAN — even on the first transmission.

#### Quality of Service (QoS)

Large volumes of e-mail traffic can have a negative impact on other business critical applications. Silver Peak provides a robust set of Quality of Service (QoS) capabilities to prioritize real-time traffic, like VoIP, avoiding delay and jitter and ensuring adequate bandwidth.

#### Security and Exchange Server Offload

Even though Exchange 2003 supports encrypted content, this places a serious load on server CPU, slowing performance and reducing server scalability. With Silver Peak, all content is encrypted both locally and over the wire using advanced 128-bit AES encryption, eliminating the need to encrypt traffic directly on the Exchange Server.

#### SILVER PEAK DELIVERS

Silver Peak NX Series appliances reduce WAN load and accelerate the performance of Microsoft Exchange, enabling e-mail servers to be centrally located for easier management and better scalability. Furthermore, Silver Peak uses a combination of data reduction, protocol acceleration, loss mitigation, and advanced QoS techniques to solve the WAN performance issues that often plague centralized e-mail deployments. When it comes to consistent and reliable Microsoft e-mail, Silver Peak always delivers.