Accelerating IBM Lotus Notes, Domino, and Domino Web Access

Overcoming the challenges of collaboration across the WAN

IBM Lotus Notes® and Domino® are robust platforms for enterprise collaboration, including a wide variety of tools for messaging and directory services, discussion, calendaring, and document management services. While the IBM Lotus family was designed for deployment across distributed enterprises, there are inherent challenges associated with collaborating across a Wide Area Network, including poor application response time and excessive bandwidth usage. These are solved using Silver Peak NX Series appliances.

SILVER PEAK ADVANTAGES

Silver Peak has demonstrated 50-100x performance improvements when delivering Lotus Notes and Domino services to remote offices. This is achieved via the following techniques:

Data reduction

Silver Peak uses Network Memory™ technology to inspect all traffic that is sent between clients and servers, storing information as a local instance in Silver Peak appliances. Duplicate information is delivered locally rather than sent across the WAN, improving application performance and WAN utilization. In addition, advanced crossflow payload and header compression techniques further reduce the amount of e-mail traffic traversing the WAN, resulting in maximum bandwidth utilization and LAN-like e-mail performance.

Data reduction can dramatically improve the performance of Lotus Notes and Domino. This is best illustrated in the following user examples:

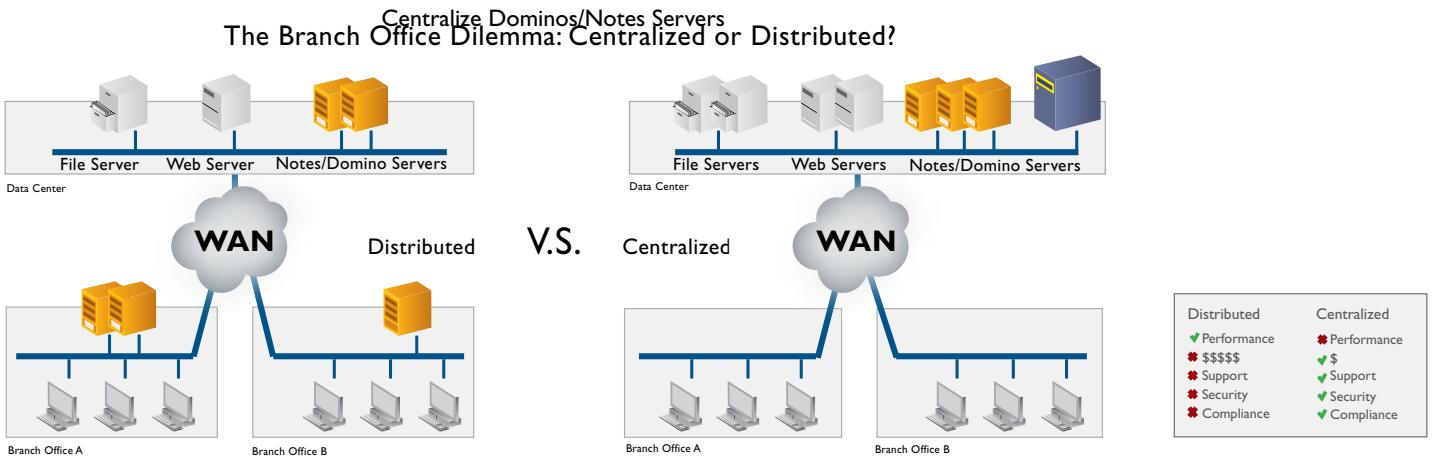

Figure 1. Silver Peak enables enterprises to centralize branch office e-mail servers for improved cost, security, management, and compliance.

Example 1 – Intra-office e-mail

If a Domino server is 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 in 10 offices. Prior to Silver Peak, at least 200 copies of this e-mail will traverse the WAN. With Silver Peak, the first 'instance' of data is compressed and then sent across each WAN link (10 total links). All remaining e-mails on the same link are delivered instantly via Network Memory, and do not traverse the network. The number of traversals can be reduced from 200 to 10, and compressed by a factor of 4, yielding an 80x improvement in performance.

Example 2 – E-mail forwarding and replies

When users in one office forward e-mails to users in other offices or reply to e-mails sent from different locations, they are generating significant amounts of WAN traffic. Much of this traffic is repetitive information. Local Silver Peak NX appliances can detect duplicate data and send instructions to remote appliances to deliver this information locally. If the e-mail or its attachments have been slightly modified, only the "delta" is sent across WAN. This saves significant amounts of bandwidth and ensures LAN-like application performance.

By working at the Network layer of the ISO stack, the Silver Peak solution does not alter client/server communications in any way. Therefore, existing Domino authentication schemes remain in place, and Silver Peak ensures 100% data coherency across an enterprise. Assuming content is being served in real-time (as opposed to from a local database that is not replicated), Silver Peak eliminates the risk of delivering stale or inaccurate information to remote users.

Silver Peak appliances perform data reduction across all enterprise applications. Information sent via one application (for example, a file downloaded from an Intranet using HTTP) is compared to information sent using other applications (for example, an e-mail attachment). If there is a match, the duplicate information is always delivered locally. As a result, Notes and Domino users can experience significant performance improvements through data reduction even if the data was never previously sent via e-mail.

Latency and Loss Mitigation

Silver Peak uses various TCP acceleration techniques, such as window scaling and selective ACK, to improve e-mail performance across the WAN. In addition, Silver Peak NX Series appliances use Forward Error Correction (FEC) to mitigate the effects of packet loss across enterprise WANs and avoid unnecessary retransmissions.

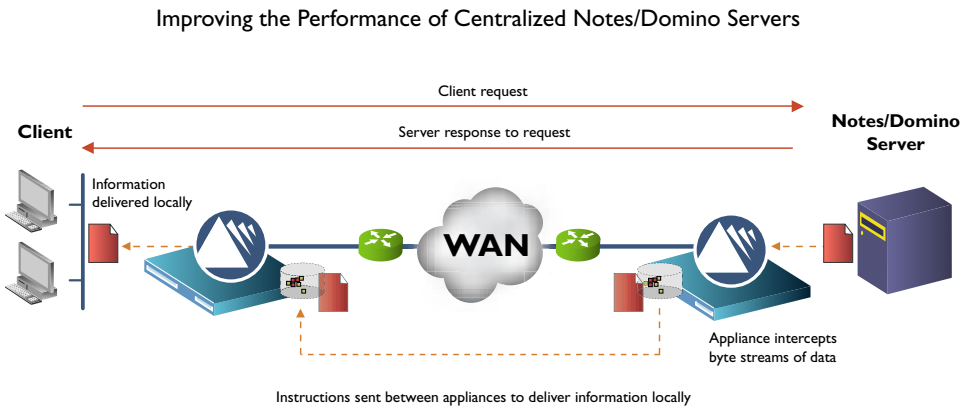

Figure 2. Network Memory reduces e-mail traffic over the WAN and provides LAN-like performance without altering communications between clients and Notes/Domino servers.

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 Voice over IP (VoIP), avoiding delay and jitter and ensuring adequate bandwidth for all enterprise applications.

NOTES/DOMINO DEPLOYMENT GUIDELINES

There are two ways that enterprises can deploy IBM Lotus Notes and Domino. The first method is to work with a mail database that is located directly on the Domino server. The second method is to create a local replica of the mail database on the user's workstation and synchronize it periodically. In the first scenario, access is easy to configure and ensures that up-to-date information is always delivered, but it can significantly increase WAN utilization and hamper application performance. The second method typically ensures faster application response time, but it is more complex to configure and manage.

Silver Peak provides significant performance improvements in both deployment scenarios. However, to receive the full benefits of the Silver Peak solution, network traffic should be unencrypted and uncompressed prior to reaching an NX series appliance. While advantages can still be attained using Silver Peak's latency/loss mitigation techniques, QoS, and data reduction will not be optimal when these features are enabled on the Lotus Notes and Domino servers.

Compression and encryption can be disabled on Domino servers by using the Domino Administrator tool (under *Server→Setup* in the *Configuration* tab). These features can also be disabled on Notes by going to *File→Preferences→User preferences*, selecting the appropriate port, and unchecking the *Encrypt network data* and *Compress network data* boxes.

For maximum effectiveness in a Silver Peak environment, e-mail attachments should also be uncompressed. Currently, this can only be done via a dialog box in Notes that appears when creating the actual attachment.

NOTES/DOMINO WEB ACCESS

IBM Lotus Notes/Domino Web Access leverages web browser technology to access the messaging and collaboration capabilities of IBM Lotus Notes and Domino servers. This improves the flexibility with which clients can access the Lotus suite of software, but subjects Notes/Domino to the WAN performance issues that plague traditional web applications. For example, Web applications typically include more interactive data with larger embedded images and file attachments. In addition, they sometimes require a substantial amount of code that must be downloaded to the client browser before operation. All of these attributes make it difficult to deliver web applications across a WAN.

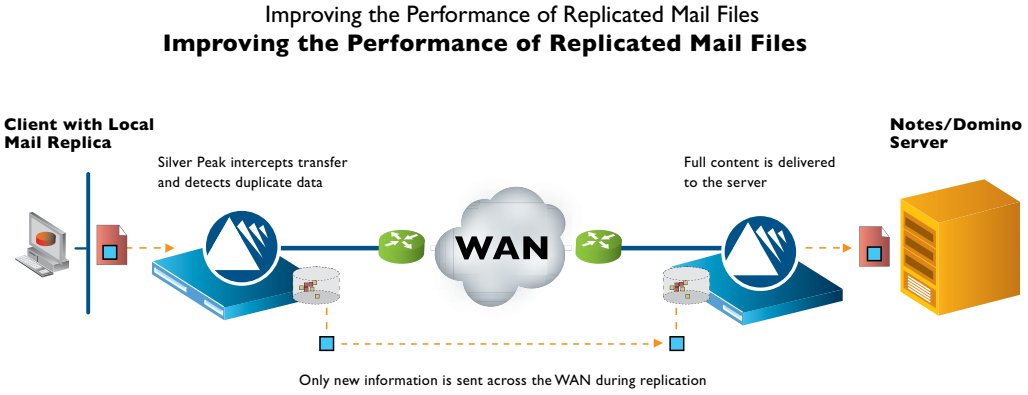

Figure 3. Silver Peak eliminates the transfer of duplicate data across the WAN, improving the efficiency of Notes/Domino replication.

Silver Peak provides significant performance improvements when using Notes/Domino Web access. As described above, Network Memory is application-independent. As a result, data reduction works on HTTP traffic, which is the protocol used by Lotus Web Access. In addition, Silver Peak's payload and header compression, latency/loss mitigation, and QoS techniques all work equally well on web-enabled Notes/Domino environments.

CONCLUSION

Silver Peak addresses many facets of Notes/Domino deployment, including server-to-server and client-to-server interactions. This includes the following specific functions:

- Real-time access to Domino servers using Lotus Notes, Web Access, and other e-mail clients.
- Replication between distributed Domino servers
- Replication between Domino servers and Notes clients
- Mail routing between Domino servers and e-mail clients

Silver Peak is a vital tool for supporting distributed Notes/Domino deployments. Silver Peak enables real-time collaboration to take place across low-bandwidth and high-latency enviroments, allowing for broader integration of data across more business activities. In addition, Silver Peak substantially reduces bandwidth requirements. This enables more users to take advantaged of limited resources, while also ensuring that data replication happens more quickly and efficiently.

Silver Peak

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