MAPI transparent pre-population white paper

Eliminating "first hit" penalty during the first access of remote Exchange email

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Introduction

HP StorageWorks Enterprise File Services (EFS) WAN Accelerators employ groundbreaking techniques in protocol acceleration and compression to provide dramatic performance improvement for applications that run across wide area networks (WANs). One such application is Microsoft® Exchange, in particular configurations where an Outlook client is connected to an Exchange server over a WAN.

These remote email environments pose great performance problems in executing day-to-day email operations such as downloading an email attachment.
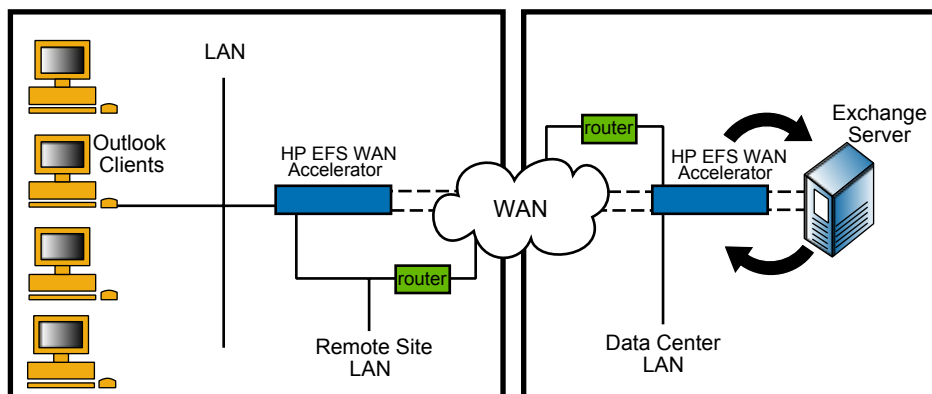
Problem: The "first hit" penalty

HP EFS WAN Accelerators provide tremendous performance increases when viewing email attachments that are similar to others that were previously sent through the WAN to users who are actively reading their email. However, there is a potential for even greater performance improvements by transparently preloading email when users are not connected. In this case, the mail can be sent across the wide area even before the user asks for it without requiring a local exchange server.

Solution: Transparent pre-population

Transparent pre-population provides a mechanism for sustaining Microsoft Exchange Messaging Application Programming Interface (MAPI) connections between the client and server after the Outlook client has shut down. This allows mail data to be delivered between the Exchange server and the client-side EFS WAN Accelerator while the Outlook client is offline or inactive. When a user logs into his Outlook client, the mail data has already pre-populated on the client-side EFS WAN Accelerator. This allows the first access of the client's email to be accelerated.

MAPI pre-population creates virtual MAPI connections to the Exchange server for Outlook clients who are offline. Connections are triggered when the remote EFS WAN Accelerator detects that an Outlook client has shut down. The remote EFS WAN Accelerator uses the virtual connections to "pull" mail data from the Exchange server over the WAN link.

Figure 1.

Functional steps

1. EFS WAN Accelerator optimizes Outlook client connection during normal operation.
2. EFS WAN Accelerator detects when Outlook clients log off.
3. EFS WAN Accelerator creates a virtual MAPI connection for the logged-out client.
4. Mail data is pulled from the Exchange server to the EFS WAN Accelerator.
5. When the Outlook client logs back on, the data stores of the EFS WAN Accelerator are already pre-populated, allowing the client to experience fast access to new email.

Performance impact

As illustrated in the following table, MAPI transparent pre-population results in dramatic performance gains when accessing remote email for the first time.

1.5 Mbps, 100-ms round trip time (RTT) WAN

	Time to retrieve and save a 6.4-MB attachment
First access without EFS WAN Accelerator	116.6 seconds
First access with EFS WAN Accelerator	24.4 seconds
First access with EFS WAN Accelerator and transparent pre-population	**3.7 seconds**

Note: Maximum possible performance for this operation on a LAN is 1.91 seconds.

Configuration options

Maximum number of sustained virtual connections

This specifies the maximum number of virtual MAPI connections that can be sustained to the Exchange server for Outlook clients who have shut down. When this number of virtual Outlook connections has been reached, no more MAPI connections are sustained for additional Outlook clients who shut down. This virtual connection limits the aggregate load on all Exchange servers through the configured EFS WAN Accelerator.

This parameter is configured on both the client-side and server-side EFS WAN Accelerator. Possible settings include "unlimited" and 0 (zero), the latter of which disables MAPI pre-population. The default value is dependent on the EFS WAN Accelerator model. Virtual connections count toward the maximum number of connections supported by that EFS WAN Accelerator.

Virtual connection timeout

This specifies the time limit for sustaining virtual MAPI connections. After this timeout has been exceeded, the virtual MAPI connection is terminated. This timeout is enforced on a per-connection basis. The default value is 96 hours. This parameter prevents a buildup over time of stale or unused virtual connections.

Polling interval

This specifies the polling interval configured on the EFS WAN Accelerator that determines the frequency at which it shall check the Exchange server for newly arrived email for each of its virtual connections. The polling interval is a user-configurable parameter and its default value is 20 minutes.

HP StorageWorks EFS WAN Accelerator

HP EFS WAN Accelerators are the first IT infrastructure products that truly eliminate the WAN as an obstacle to achieving your IT goals. Whether you are focused on site consolidation or higher throughput and productivity, EFS WAN Accelerators can help by improving throughput by up to 100 times.

For more information

For more information on HP StorageWorks EFS WAN Accelerators, visit:

http://www.hp.com/go/efs

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