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# ACCESSING E-MAIL WITH DELL ON-DEMAND DESKTOP STREAMING

The Dell™ On-Demand Desktop Streaming™ solution can enhance IT manageability, reliability, and security, but may limit software features not designed for networked storage. This article outlines four approaches organizations can take to help accommodate end-user requirements for offline storage of e-mail when using a platform such as Microsoft® Exchange.

**F**lexible computing solutions such as desktop streaming, application streaming, virtual remote desktop, virtual client desktop, and dedicated remote desktop are increasingly becoming attractive for IT departments because of their centralized management capabilities and reduced total cost of ownership. These solutions can help ease the traditional requirements for deploying and maintaining software on individual local hard drives, helping increase the manageability, reliability, and security of IT operations related to these systems.

The Dell On-Demand Desktop Streaming solution utilizes Dell OptiPlex™ client desktops, Dell PowerEdge™ servers, and Citrix® Provisioning Server for Desktops software to enable diskless client systems to boot from a networked server.<sup>1</sup> For common enterprise e-mail platforms such as Microsoft Exchange, accessing e-mail in an On-Demand Desktop Streaming environment using traditional applications like the Microsoft Office Outlook® e-mail client can introduce several challenges. This article highlights one of these challenges and outlines several approaches organizations can take to help overcome it.

## E-MAIL ACCESS CHALLENGES IN A STREAMING ENVIRONMENT

Standard-mode deployments of the Dell On-Demand Desktop Streaming solution include a read-only gold virtual disk (vDisk) image on the server, which is presented as a local hard drive to client systems booting from that server. Because the image is read-only, client disk writes are temporarily cached on the server; these writes are not persistent, so noncommitted data is lost at the end of each boot session. End-user data that requires persistent storage, such as files and personal e-mail folders, must be stored on the network and accessible to clients—for example, by using standard networked attached storage (NAS) systems that offer storage space as home drives. Administrators can use such systems in the standard-mode deployment to store persistent end-user data, as shown in Figure 1. The NAS system depicted in the figure is for sample architectural reference only; a variety of commercial external storage NAS solutions are available that incorporate various types of storage hardware and can be deployed in the solution to store user data.

E-mail platforms such as Microsoft Exchange typically provide end users with a mailbox hosted on a

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<sup>1</sup> For more information on Dell On-Demand Desktop Streaming and its components, see "Simplifying IT with Dell On-Demand Desktop Streaming," by Aaron Prince and Bharath Vasudevan, in *Dell Power Solutions*, February 2008, [DELL.COM/Downloads/Global/Power/ps1q08-20080175-Prince.pdf](http://DELL.COM/Downloads/Global/Power/ps1q08-20080175-Prince.pdf).

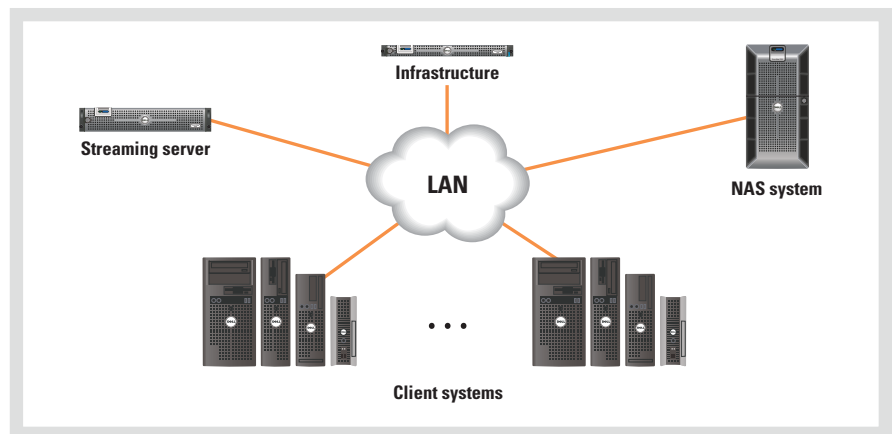
server. Administrators designate a mailbox quota for users, who would then be unable to send or receive messages if they exceeded this quota. Users often overcome this limitation by archiving or filing excess e-mail in offline e-mail folders stored as files on their local hard drive. These files may also be backed up to other persistent storage such as optical media, hard drives, or tape systems that can be centrally managed by IT departments.

Because the local hard drive is non-persistent in standard-mode deployments of the On-Demand Desktop Streaming solution, it cannot be used for storing offline e-mail folders; these folders must be stored and accessed from a network location such as a NAS system. However, Microsoft Office Outlook only supports storing these personal folders—stored as .pst files—on local hard drives, not on networked storage.<sup>2</sup> Similarly, when Outlook is configured in cached mode, an offline e-mail folder is created on the local hard drive as an .ost file, with the user's mailbox hosted on the e-mail server cached in this file and periodically synchronized with the server. Outlook does not support .ost files hosted on networked storage. Other Microsoft Windows® OS-based network methods such as folder redirection and domain profiles are also generally unsuitable for storing e-mail folders, because they are typically based on NAS systems as well.

Because these folder files cannot be stored on networked storage in an environment using Microsoft Exchange and Outlook, organizations using the On-Demand Desktop Streaming Solution must consider alternative methods of storing offline user e-mail. They should also keep in mind that cached-mode operation of Outlook is not supported with standard-mode deployments.

## SOLUTIONS FOR E-MAIL ACCESS IN A STREAMING ENVIRONMENT

Organizations can consider four possible methods of accessing e-mail in Dell



**Figure 1.** Dell On-Demand Desktop Streaming environment using a NAS system to store persistent end-user data

On-Demand Desktop Streaming environments: using private-mode deployments, implementing an e-mail archiving solution, using e-mail Web access, and increasing user mailbox size.

### Using private-mode deployments

In private-mode deployments of the On-Demand Desktop Streaming solution, each client system has its own image stored on the streaming server, which is then streamed and presented as the hard drive to the client. Client disk writes, including writes to .pst folder files, are stored on this server image—meaning that offline user e-mail folders stored on the client hard drive are stored in the image. This approach offers a number of advantages, including increased data security and reliability. For example, storing user e-mail data on an image in the data center rather than on a local hard drive helps protect against physical theft and enable centralized backup and restore operations.

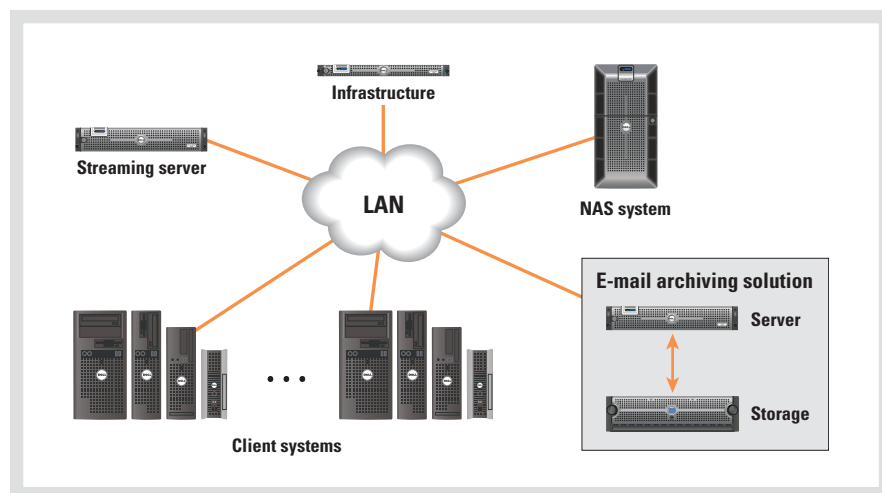
This approach does have drawbacks, however. For example, administrators can no longer take advantage of the simplified single-image management of standard-mode deployments, meaning they must perform maintenance activities such as upgrades and patches on each client image individually, as they would with traditional clients using local hard drives. In

addition, if multiple users share a single client, their offline e-mail data would be stored in the same image. Administrators must therefore set up security and access permissions to help ensure proper segregation on the image, giving users access to only their own e-mail data.

Administrators should also keep in mind that offline user e-mail data does not automatically migrate across client systems: if a user requires access to e-mail data on a different system, then the data from the first system must be copied to the second system directly or over a temporary network share. They should also consider the overall performance of the solution: because the server must stream a separate image to each client, the caching advantages of using a single image are lost, and the significant amount of client e-mail data stored on each image could lead to an increase in data flowing across the network to the server.

In addition, when using a private-mode deployment, administrators must still deploy antivirus and anti-spyware software that can continuously scan the user's image for threats. Running these constant I/O operations simultaneously for numerous clients may have adverse effects on server resources. Organizations should design their streaming server and network infrastructure suitably to handle these situations.

<sup>2</sup>For more information, visit [support.microsoft.com/kb/297019](http://support.microsoft.com/kb/297019).



**Figure 2.** Dell On-Demand Desktop Streaming environment integrated with an e-mail archiving solution

### Implementing an e-mail archiving solution

E-mail archiving solutions such as Symantec Enterprise Vault and EMC® EmailXtender® software are becoming increasingly important to many enterprises. These solutions enable users to extend the size of their mailboxes by offering an offline storage repository for storing and archiving user e-mail that exceeds the quota assigned to user mailboxes in the e-mail server. The archiving solution repository is separate from the mailbox server and typically includes its own hardware and software components, and can provide end users with seamless access to offline e-mail storage directly from their client systems even when the server is not available. Organizations can support a standard-mode deployment of the On-Demand Desktop Streaming solution with a suitable e-mail archiving solution for hosting offline user e-mail (see Figure 2).

Archiving solutions typically offer several features and advantages in addition to providing an offline repository for user e-mail. For example, they can help organizations comply with legal and regulatory requirements by providing mechanisms to manage, store, and retain user e-mail data based on specific policies. Features such as journaling allow classification and storage based

on enterprise policies, and allow users to manage and store messages based on personal policies. E-mail archiving solutions can also provide the advantages of centralized physical security and reliability to help protect against data loss.

Limitations of e-mail archiving solutions can include the additional cost, planning, and maintenance associated with a separate data center solution. Implementing this type of solution simply to overcome the offline e-mail storage problem in a standard-mode On-Demand Desktop Streaming deployment may not be cost-effective.

### Using e-mail Web access

A final option to still allow access to e-mail in a standard-mode On-Demand Desktop Streaming environment involves accessing e-mail differently. In addition to console-based clients, many e-mail solutions typically provide Web browser-based access to user mailboxes; Microsoft Exchange, for example, provides Outlook Web Access, which enables users to connect to the Exchange server through a Web browser, log in, and access their mailbox. In a standard-mode On-Demand Desktop Streaming deployment, users can typically access e-mail from any streaming client system on the network; user e-mail resides centrally on the mailbox server, with no

user e-mail data stored on the client image. Users' ability to store e-mail data on the client image can be restricted by not installing e-mail management client applications such as Outlook on the client image.

Because e-mail Web access solutions typically do not require the installation and maintenance of e-mail client applications on the shared client image, they can help administrators avoid the challenge of maintaining individual mailboxes. Additional advantages of this method can include reduced associated licensing and maintenance costs: applications like Outlook Web Access are typically distributed as part of server software such as Microsoft Exchange rather than as part of client application packages such as Microsoft Office. In this method, user access to e-mail can become OS agnostic, typically allowing users to access e-mail through a standard Web browser from any client system. Higher-education environments often utilize Web access to accommodate the needs of mobile students and support the variety of OS environments that may be used on campus.

Web access solutions may limit user experience, however, by not including all the features available on a console-based e-mail client application, and they still require users to manage their mailbox size themselves. Because of these limitations, this approach is typically best suited for deployments where end users require e-mail access but do not incur heavy usage. This approach can be combined with an increased mailbox size to provide additional options for managing e-mail in On-Demand Desktop Streaming environments.

### Increasing user mailbox size


Perhaps the simplest approach to allowing storage of personal e-mail folders when using a single shared client image is increasing end-user mailbox sizes. By allowing all user e-mail data to be stored in the mailboxes hosted on the e-mail server while typically remaining accessible

from any client on the network, this approach helps avoid the need for users to store e-mail as personal folders on the client image.

Advantages of this approach include centralized management of e-mail data and increased physical security. However, this approach can increase the cost per mailbox for IT operations because of the additional storage hardware required to support the increased mailbox size and associated maintenance costs. In addition, organizations may need to modify existing IT procedures and policies related to mailbox quotas to support this approach.

### **FLEXIBLE DESKTOP STREAMING ENVIRONMENT**

The Dell On-Demand Desktop Streaming solution can provide significant advantages

to IT departments, including increased manageability, reliability, and security. However, this client computing model can also introduce new challenges for traditional client-server applications, including the storage of user e-mail as offline folders on the local hard drives of client systems. In addition to the approaches outlined in this article—using private-mode deployments, implementing an e-mail archiving solution, using e-mail Web access, and increasing user mailbox size—other options may also help address this problem depending on the requirements of the deployment. Organizations should carefully assess application and environment requirements before deployment to help ensure that their approach meets the needs of both end users and the enterprise IT department. 

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