

Case study: Dealing with virtual desktop I/O bottlenecks

Networking and storage are two areas often overlooked in a virtual desktop infrastructure project. Cliff Saran looks at what can go wrong.

Tackling network overload with WAN optimisation

Networking can make or break a [virtual desktop infrastructure \(VDI\) roll-out](#), as one business found out. The company, a global law firm, operates a multiprotocol label switching (MPLS) wide area network (WAN) between its three global sites, supporting 7,000 staff. Approximately 75% of traffic on the network was Citrix, 20% was taken by print services, while the remainder was used by web and authentication protocols.

Sometimes the Citrix client on users' desktops would not keep up with their typing due to [congestion on the WAN](#). Given that the cost of upgrading links in certain regions can be around £250,000 per annum, the law firm could not justify buying more network capacity.

Deploying [quality of service \(QoS\)](#) to prioritise Citrix traffic could work, but at the cost of slower print traffic.

The law firm rolled out Silver Peak, a WAN optimisation product to tackle the network issues, resulting in a 50% improvement on Citrix performance. Rather than use the Citrix server to compress network traffic, optimisation occurs on the Silver Peak appliance, freeing up Citrix so the same server can handle more user sessions.

Silver Peak works by handling error correction before data is transmitted across the WAN. This reduces the need to retransmit TCP/IP packets, which can materially affect the performance of a fast WAN connection.

Flash improves desktop virtualisation

Storage is the other major bottleneck for virtual desktop users. On a client PC, users can have local storage and access to network drives. When the PC is virtualised, the users will still demand storage, but as the storage is now shared on a virtual machine, physical access to the storage can become overloaded if too many users access the storage device simultaneously.

Flash drives and solid state disks (SSD) offer fast storage to tackle this bottleneck, but they are extremely expensive.

One option is to use tiered storage with three levels: a relatively small flash array, a high-performance hard disk array, and slower storage. Frequently accessed files should migrate to the faster - and more expensive - tier.

Another law firm, US-based Miles & Stockbridge, is using flash memory to ensure storage is not a bottleneck for its VMware View users. In Computer Weekly's sister title [SearchDataCenter](#), Ken Adams, CIO at the law firm, said he uses Dell Equallogic and an EMC fibre channel storage array, and has put local storage on servers to improve performance.

But it was not enough to support virtual desktops, particularly those that run video and dictation devices.

Miles & Stockbridge uses V3 Systems Strato SSDs as a storage layer that sits between the hypervisor and the hardware. Strato remaps the storage stack so that Windows desktops running above it take advantage of the [solid-state storage \(SSS\)](#) with minimal latency.

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