

ADDRESS CHALLENGES FOR DESKTOP VIRTUALIZATION OVER THE WAN



PC DESKTOP CHALLENGES

The fully-featured “thick-client” PC has traditionally been the ubiquitous workhorse of desktop computing. However, in many situations, thick-client PCs are not the ideal solution.

Among their drawbacks:

- **Difficult to manage** - Centralizing and standardizing PC management is extremely difficult in the face of distributed PC hardware and workers who increasingly require access to their desktop environment from anywhere.
- **High total cost of ownership** - The relatively low cost of PC hardware is often more than offset by the high cost of PC management and support. Ongoing PC management tasks including deployment of software, updates and patches can be labor-intensive because of the need to test and validate a wide variety of PC configurations.
- **Difficult to protect and secure** - End-users often fail to back up critical files. Additionally, PCs are frequently and unpredictably not connected to backup networks.
- **Inefficient resource utilization** - The distributed nature of PCs makes it difficult to pool resources to improve utilization and reduce costs.

TAKE CONTROL OF YOUR DESKTOPS AND APPLICATIONS

Built on the industry-leading virtualization platform, VMware View is a Universal Client solution that lets you manage operating systems, hardware, applications and users independently of each other, wherever they may reside. VMware View streamlines desktop and application management, reduces costs and increases data security through centralization, resulting in greater end-user flexibility and IT control. VMware View enables customers to extend the value of VMware Infrastructure and Virtual Desktop Infrastructure (VDI) environments to encompass not only desktops in the datacenter but also applications and the delivery of these environments securely to remote clients.

SIMPLIFIED DESKTOP MANAGEMENT

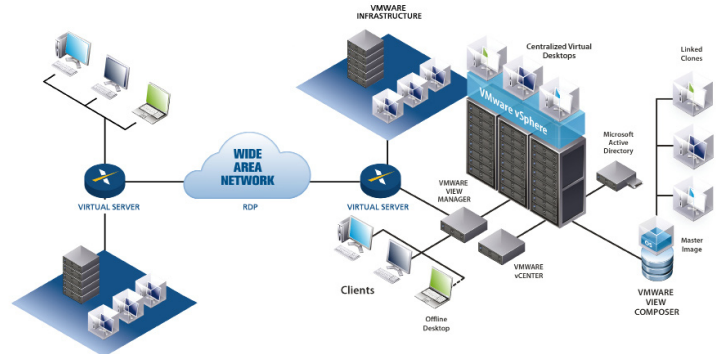
Desktop and application virtualization break the bonds between software, hardware and operating systems, eliminating the need to actually install or manage desktop environments on end user devices. From a central location you can deliver, manage and update all of your Windows desktops and applications in minutes. VMware View makes the testing, provisioning and support of applications and desktops much easier and less costly.

AUTOMATED DESKTOP PROVISIONING

Through View Manager, VMware View provides a single management tool to provision new desktops or groups of desktops, and an easy interface for setting desktop policies. Using a template, you can customize virtual pools of desktops and easily set policies, such as how many virtual

machines can be in a pool, or logoff parameters. This feature enables greater IT efficiency by automating and centralizing desktop provisioning activities.

ADVANCED VIRTUAL DESKTOP IMAGE MANAGEMENT



View Composer enables the rapid creation of desktop images from a master image. Updates implemented on the master image can be pushed out to any number of virtual desktops in minutes, greatly simplifying deployment, patches and reducing costs. Create instant clones from a central image and create dynamic pools of desktops for quick provisioning and rapid updating. The process does not affect user settings, data or applications; so the user remains productive on a working desktop, even while the changes are being applied.

VMWARE INFRASTRUCTURE

VMware View is built on VMware Infrastructure and as a result, IT organizations can extend the benefits of industry-leading virtualization to the desktop. Integrating desktop infrastructure with VMware Infrastructure lowers costs and provides unified management that improves performance, reliability and business continuity, including:

- **VMware Fault Tolerance and High Availability** provides true continuous availability for infrastructure and applications to further enhance service continuity, enabling critical applications to run with zero downtime or data loss due to hardware failures.
- **VMware VMotion™** reduces planned downtime from server maintenance activities by enabling the live migration of running virtual machines from one server to another with no disruption or downtime.
- **VMware Data Recovery** provides fully automated backup and recovery for all applications and data, with complete integration with VMware’s management client for simple deployment and efficient operation.

Expand Networks pioneered Wide Area Network (WAN) Optimization and is the market leader in providing WAN Optimization solutions for VDI environments.

Expand's Accelerator Platform

Achieves unprecedented bandwidth reductions using its transparent Real-Time All-IP engine. Additional performance optimizations are achieved using a special plug-in that optimizes Microsoft's RDP protocol.

Expand's Accelerator Benefits

- Reduced bandwidth footprint
- Supports up to 10x more users on the same bandwidth from the branch to the datacenter
- Faster response times of 1.5-2X with peak improvements of 5X
- Prioritization of business critical applications
- Manage WAN traffic flows with integrated QoS for control of all IP traffic including real-time and printing applications
- Extremely fast printing for network printing functions
- Offloading compression and encryption from the Server, supports more user sessions and extends Server life

Expand's Virtual Accelerator

Expand Accelerators can be deployed both as physical hardware appliances or as Virtual Appliances under VMware in both datacenters and branch offices.

- Easily integrates into your virtual infrastructure. The Virtual Accelerator utilizes VMware View utilities for management and backup.
- No additional storage is required. The Accelerator uses existing SANs, NAS or iSCSI arrays for storage.

WAN CHALLENGES FOR DESKTOP CONSOLIDATION

As companies increasingly embrace work-from-home programs and hosted desktops in remote offices, the physical distance between the remote user and the server hosting their desktop greatly increases.

While VMware View is the optimal desktop consolidation and management solution, there can be significant challenges for application performance and user experience over the WAN. Performance of applications delivered to remote locations can dramatically decrease, and the user experience can be severely diminished.

Reasons for the WAN challenges are:

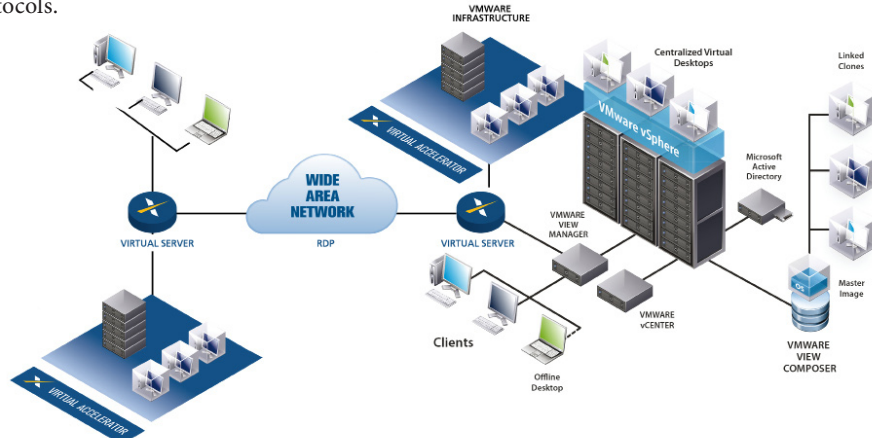
- No longer intermittent usage; users are always on the WAN
- No control and visibility of VDI delivered applications over RDP
- Bandwidth needs per user can increase from 20Kbps to over 200Kbps
- Application performance is dependant on WAN bandwidth and latency
- More graphical content running complete OS operations
- Bursty, bandwidth demanding tasks such as printing can have significant performance implications
- Cost/performance is limited; based on the number of simultaneously users

EXPAND'S ACCELERATOR (ACC)

The ACC is a tightly integrated, standards based, multi-service platform that delivers a complete WAN Optimization solution.

The interactive nature of the protocols used for desktop virtualization deployments are based on small request-reply packets that cannot be optimized using traditional WAN Optimization methods.

Expand's unique technology optimizes all TCP and UDP traffic; including RDP and other interactive protocols.



The Accelerators integrate transparently with advanced networking features such as router-based QoS, load balancing, WAN monitoring and MPLS tagging.

THE EXPAND VIRTUAL ACCELERATOR

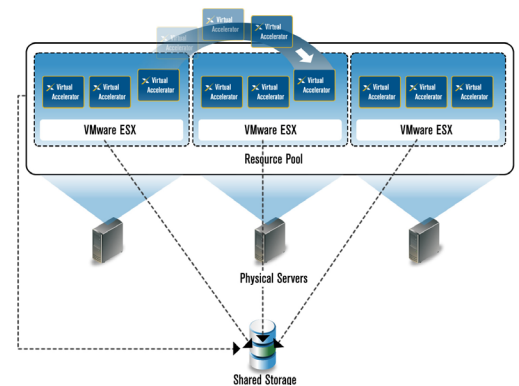
Deployed on VMware ESX, ESXi and VMware Server, the Virtual Accelerator (VACC) fully integrates into the virtual infrastructure.

Sitting within the virtualized environment, the VACC utilizes existing hardware, shared storage, management, back up policies and configuration tools. Additionally, it ensures existing SLA and support services are maintained.

The VACC supports View Manager; including HA, VMotion and DRS. This simplifies and facilitates datacenter management and reduces TCO.

FAIL SAFE OPERATIONS

VMware High Availability (HA) and VMotion ensure the VACC is protected against the effects of physical server failure, without the need for costly, 'redundant' solutions.



In the event of a failure, the VACC is restarted instantly on a different physical server without intervention from IT. This ensures business continuity and maintains application and user performance.