



Cisco Virtualization Experience Infrastructure: Technology Partner NetApp

Overview

For IT departments deploying virtualization solutions, the Cisco® Virtualization Experience Infrastructure (VXI) system reduces total cost of ownership (TCO), enhances security, and maintains business continuity while helping ensure a high-quality user experience. The main Cisco VXI benefits include:

- Rapid deployment of desktops during mergers, acquisitions, and workforce expansion (Cisco Unified Computing System™ stateless computing and Cisco Unified Survivable Remote Site Telephony [SRST] for phone traffic)
- Improved control and security for centralized desktops through enhanced virtual machine-level visibility (Cisco Unified Computing System and Cisco VN-Link technology)
- Low TCO through improved resource utilization (for example, 50 percent more users)
- Integration of interactive multimedia and network services to improve performance and increase application responsiveness
- Open ecosystem to help ensure long-term industry alignment, positioning customers to adopt new capabilities
- Reduced energy footprint through endpoints using one-tenth the energy required by the PCs they replace

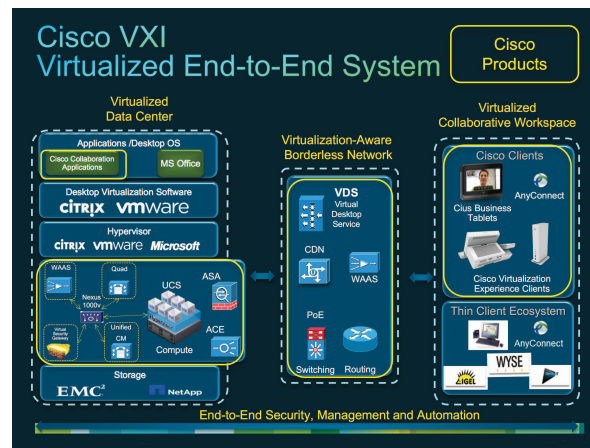
Emergence of Desktop Virtualization

Desktop virtualization is an increasingly popular way for enterprises to reduce capital and operating expenses, improve efficiency, increase control, and expand connectivity. With virtual desktops, the desktop images are hosted in data center servers as virtual machines, which users access by means of laptop computers, thin-client terminals, PDAs, or other devices. Organizations are implementing desktop virtualization to address these critical needs:

- **Support for older applications:** Enterprises migrating to Microsoft Windows 7 but using applications requiring prior OS versions can give workers easy access to both.
- **Business continuity:** Enterprises need to maintain high availability, respond rapidly in the event of a disaster, and quickly integrate new users during mergers, acquisitions, or off-shoring.

- **Security:** Company policies and new government regulations require protection against data leakage.
- **User experience:** End users want access any time from any device, while preserving the traditional PC user experience.
- **TCO:** Enterprise IT departments want to reduce costs by simplifying application upgrades, patches, and administration.

Figure 1. Cisco VXI System



Cisco VXI: End-to-End Virtualization System

The Cisco VXI system addresses these needs by transparently integrating virtualized data centers, networks, and endpoints with essential desktop virtualization services for interactive multimedia, security, and performance acceleration (Figure 1).

- **Cisco VXI Multimedia Services:** Desktop virtualization solutions typically lack mechanisms for managing congestion and optimizing bandwidth consumption for multimedia traffic. Cisco VXI integrates WAN optimization based on Cisco WAAS to improve performance for multimedia applications. Cisco is also delivering endpoints with embedded intelligence for hosting collaboration applications.
- **Cisco VXI Security Services:** Many desktop virtualization deployments have limited capability to apply security policies systemwide and limited visibility into virtual resources. Cisco VXI uses Cisco Unified Computing System and Cisco VN-Link to provide full visibility down to the virtual machine

level. The Cisco Nexus® 1000V Series virtual firewall protects traffic flowing between virtual machines. The Cisco AnyConnect™ Secure Mobility Solution provides secure access for mobile users.

- **Cisco VXI Performance Acceleration Services:** Virtual desktop infrastructure (VDI) deployments are often prone to server oversubscription, intensive SSL loads, and sluggish performance. Cisco Unified Computing System with extended memory supports up to 50 percent more users and improves application performance by 43 percent. Cisco WAAS improves performance while increasing user density by 2 to 7 times. Cisco ACE offloads SSL traffic and increases user density by up to 50 percent.

Desktop Virtualization Deployment Gaps

Although desktop virtualization has great promise, significant feature gaps exist that can reduce customer satisfaction. Voice and video multimedia fail to meet user expectations, and organizations struggle to provide a consistent high-quality user experience for all services across all connections. The complexity of scaling from hundreds to thousands of desktops may limit growth. Implementing system-level security and management policies is difficult in many environments. Today's IT departments want transparently implemented solutions that deliver a high ROI and align servers, networks, and desktops without vendor lock-in.

Cisco VXI Use Cases

Cisco VXI appeals to a wide range of organizations, including large enterprises, financial institutions, government agencies, and commercial customers. The most common applications for Cisco VXI are:

- **Microsoft Windows 7 migration:** Cisco VXI reduces migration errors, extends the life of existing software, and reduces application incompatibilities.
- **Business process outsourcing:** Cisco VXI enables customers to outsource critical processes while maintaining control of applications and data, so that security and compliance are not compromised.
- **Temporary workers:** Organizations can deploy and manage desktop images on employee-owned assets, thus maintaining separation between corporate and personal resources.

- **Remote- and branch-office support:** Cisco VXI enables organizations to reduce costs while maintaining centralized control of sensitive data. Cisco VXI also simplifies administration and management of remote- and branch-office resources.
- **Mobile users:** Cisco VXI customers can extend anytime, anywhere access to users on the go while maintaining security and control.
- **Bring your own technology (BYOT):** Companies grappling with supporting BYOT initiatives can now easily provide secure access to company work from a wide variety of desktop, laptop, and handheld devices, without the need to control or remotely wipe the devices.

Storage as an Enabler for Cisco VXI

Building on NetApp storage enables you to decrease costs and increase performance without trade-offs.

Did you know that storage can represent up to half the cost of a desktop virtualization project?

Cisco and NetApp are uniquely positioned to create end-to-end virtual desktop solutions. The combination of Cisco technologies and NetApp's unified storage platform and advanced storage capabilities enable solutions that are unique in the industry. The combination of capabilities such as NetApp FlexClone provisioning, thin provisioning, flash cache, and deduplication, among many others, enables customers to achieve the full potential of virtual desktops.

Cisco VXI with NetApp storage enables you to:

- Reduce VDI storage costs by deduplicating redundant data stored across virtual desktops, user directories, and backup, and disaster recovery copies
- Provision thousands of virtual desktops in minutes with nearly instant, low-overhead storage cloning
- Provide users continuous access to their virtual desktops with 99.999 percent storage availability, automated disaster recovery, and VDI performance acceleration that addresses desktop boot and login storms
- Back up all virtual desktops and user data directly on the storage system while cost-effectively keeping a daily history of every desktop for months or years
- Use one storage platform to accommodate all protocols (Fibre Channel, Fibre Channel over Ethernet [FCoE], Small Computer System Interface over IP [iSCSI], Network File System [NFS], and Common Internet File System [CIFS])

With NetApp you can get the flexibility, high availability, and cost effectiveness required to grow your virtual desktop environment.

Cisco VXI Technology Partner: NetApp

Integration Management

Improve the administrative efficiency of your Cisco VXI environment by reducing cost and complexity with integrated, end-to-end storage management for VDI.

Management is a critical component in a virtualized environment. Without the right tools to effectively manage the entire environment—including storage—Cisco VXI administrators must coordinate with storage administrators and ultimately spend more time than should be necessary on storage-related activities, hindering their ability to respond to rapidly changing business requirements and reducing overall efficiency.

The Solution

Cisco and NetApp have collaborated to create FlexPod™, a prevalidated and highly scalable data center solution including computing, networking, and storage components that can be optimized for a variety of mixed-application workloads, including virtual desktops, business applications, and cloud computing environments.

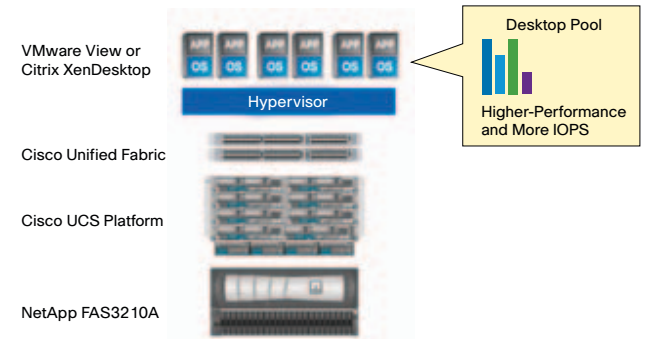
A critical advantage of FlexPod is its built-in unified management.

For Citrix XenDesktop and VMware View environments virtualized with VMware ESX, VMware vCenter provides a central framework for managing FlexPod resources as virtualized data center pools. Both NetApp Virtual Storage Console and the Cisco Unified Computing System integrate with VMware vCenter to enable well-coordinated management across server, fabric, and desktop layers from a single console. VMware administrators can access capabilities such as discovery, health monitoring, capacity management, provisioning, cloning, backup, restore, and disaster recovery directly from VMware vCenter without affecting the policies created by your storage administrators.

In addition, NetApp provides integrated storage management, through Citrix StorageLink for XenDesktop deployments on XenServer and Hyper-V, giving administrators access to advanced storage features of the NetApp storage system.

The open FlexPod architecture also provides APIs that enable IT service management using existing third-party infrastructure management solutions.

Figure 2. FlexPod



Unique advantages of FlexPod (Figure 2) include:

- Single unified architecture that builds on existing investments while easily scaling to support the largest data center requirements
- Capability to scale up or scale out and then be duplicated in modular fashion to fit your specific organizational needs
- Integrated components that enable you to centrally manage all your infrastructure pools
- Open design management framework that integrates with your existing third-party infrastructure management solutions

Five important questions to ask your solution vendor:

1. How can I simplify the creation and maintenance of thousands of disk images?
2. How can I keep per-seat storage costs near to the same level as the original desktops?
3. How can I provide performance to withstand boot, login, and virus scan storms?
4. How can I provide availability, data integrity, and recovery appropriate for all those desktops?
5. How can I achieve my goals with one integrated end-to-end infrastructure solution?

