Cisco 4000-Seat Mixed-Workload Desktop Virtualization Solution

From Cisco in Collaboration with Citrix, EMC

Name: Cisco® 4000-Seat Mixed Workload Desktop Virtualization Solution	A reference architecture-based design for desktop virtualization
Solution Objective	4000-seat mixed use-case desktop virtualization scale-out solution
Major Solution Components	Citrix Xen Desktop 5.6 built on Cisco Unified Computing System™ (Cisco UCS®), Cisco Nexus® 5500 platform, EMC VNX7500 storage and FAST Software, and VMware ESXi 5.0

Cisco, Citrix, and EMC deliver a linearly scalable solution for desktop virtualization.

Highlights

Reduced Risk with Investment Protection

Based on a tested and certified Cisco® Validated Design

Is highly available and reliable, helping ensure continuous virtual desktop access

Hyper-Performance and Validated Design

Zero to 4000 mixed use-case Citrix virtual desktop users logged-in and working in 30 minutes

Using Cisco Nexus® switching, Cisco Unified Computing System™ (Cisco UCS®), Citrix Desktop Virtualization software, EMC VNX storage, and VMware vSphere hypervisor, provides intelligent infrastructure that is validated to work seamlessly together

Massive Linear Scalability and Uncompromised Performance With Tier 0 Storage for Nonpersistent Data

Linear scalability with Cisco UCS across three workloads to support 4000Citrix desktop virtualization users on 25 Cisco UCS blades, incorporating on-board flash memory storage for volatile data; supported by a powerful EMC VNX7500 storage array equipped with EMC Fast Cache to easily handle performance at scale (I/O operations per second [IOPS])

Challenges

Large enterprises are facing increasingly complex challenges in deploying scalable desktop virtualization architecture that delivers rapid deployment of virtual desktops tailored to diverse groups of users and also and provides outstanding end-user experience at an optimal total cost of ownership (TCO). One size fits all does not work for desktop virtualization any more. Organizations can no longer absorb the high cost of persistent virtual desktops for every user. But scalability, manageability, security, and control are all requirements for every virtual desktop use case. For virtual desktops, the cost of absorbing the high number of write I/O operations per second (IOPS) that virtual desktops generate is a significant factor.

Cisco 4000-Seat Mixed-Workload Desktop Virtualization Solution

Working together with desktop virtualization industry leaders Citrix and EMC, Cisco offers the Cisco® 4000-Seat Mixed-Workload Desktop Virtualization Solution. This solution delivers a portfolio of three virtual desktop delivery models that work together to address a broad set of end-user requirements. The virtual desktop models are:

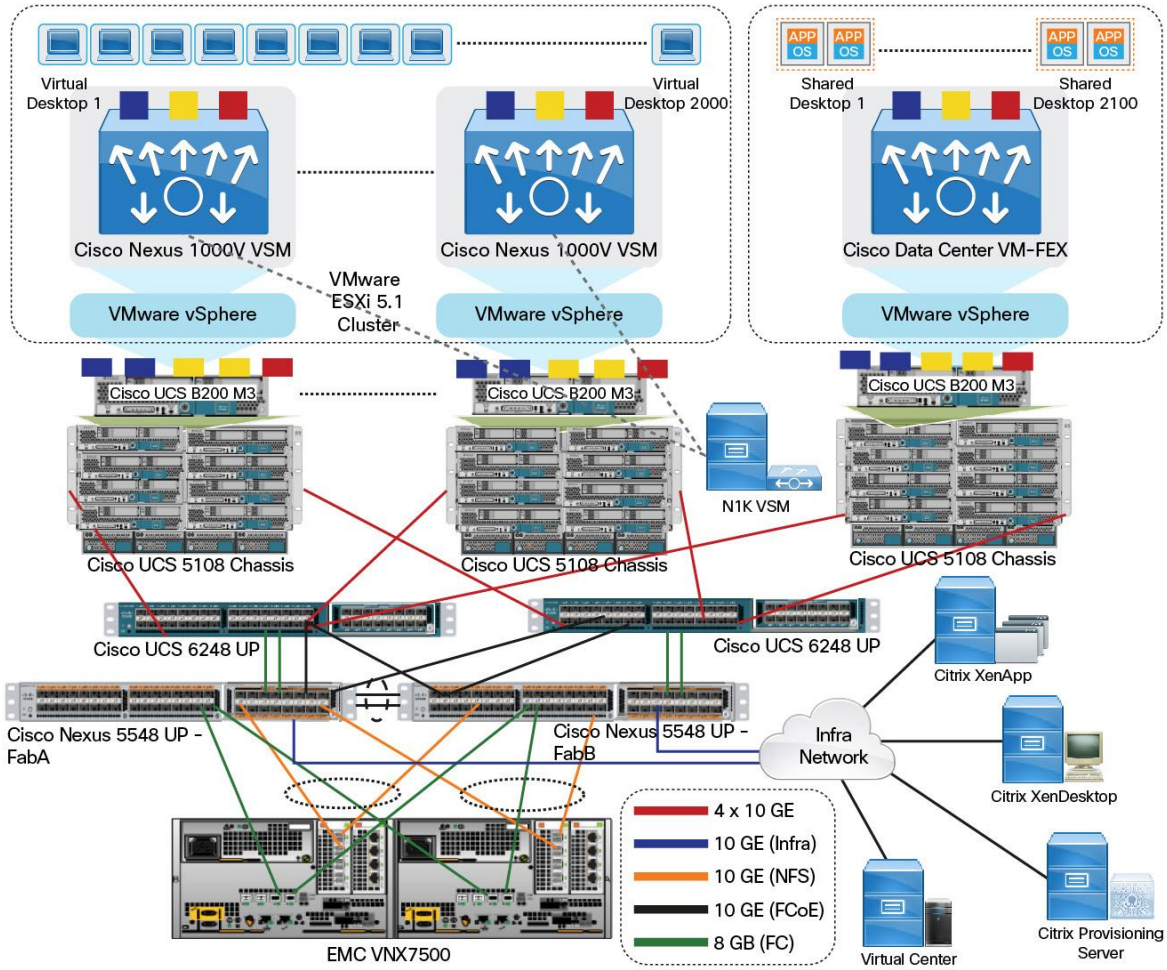
- Task Worker Desktop: Citrix XenApp 6.5 Hosted Shared Desktops
- Knowledge Worker Desktop: Citrix XenDesktop5.6 Pooled Shared Desktop
- Professional Desktop: Citrix XenDesktop5.6 with Personal vDisk

The three desktop models were created with Citrix Provisioning Server 6.1. Each desktop model used a single master virtual disk (vDisk,) greatly reducing the storage footprint compared to persistent desktops. For the Professional Desktop user, who needs to install noncore applications, Citrix XenDesktop with a 5GB Personal vDisk was provisioned.

To reduce costs and to provide server-side acceleration of write IOPS to the EMC VNX7500 for the Knowledge Worker Desktop, a pair of solid-state drives (SSDs) was installed on each of the seven Cisco UCS® B200 M3 Blade Servers hosting that workload. Citrix Provisioning Server 6.1 created the write-cache drives, containing nonpersistent data only, for the Knowledge Worker Desktop virtual machines on the SSDs.

The solution integrates all the components necessary to quickly deploy a scalable, mixed-workload desktop virtualization solution to meet the needs of businesses. It consists of the Cisco UCS B200 M3 Blade Servers for infrastructure and for virtual desktop blade servers; Cisco Nexus® 5548UP Switches; Cisco UCS 6248UP 48-Port Fabric Interconnects; VMware ESX 5.1; and EMC VNX7500 unified storage infrastructure with four data movers, 10 200-GBSSD drives, and 111 600-GB SAS drives. Figure 1 shows the solution logical architecture.

Figure 1: Cisco 4000-Seat Mixed-Workload Desktop Virtualization Solution Logical Architecture



Main Business Benefits

The Cisco 4000-Seat Mixed-Workload Desktop Virtualization Solution enables enterprises to quickly deploy the resources they need to lower TCO, reduce complexity, and improve operation efficiency for their desktop virtualization initiatives.

Cisco desktop virtualization technologies, services, and best practices combine with partner offerings to deliver:

- Zero to 4000 mixed-workload Citrix virtual desktops logged in and working in 30 minutes
- Cisco UCS service profiles, which make the addition of capacity and repurposing of computing resources fast, simple, and efficient
- Open, industry-leading approach for resource efficiency and control
- Linear desktop virtualization scale-out architecture for each workload from up to 155Citrix XenDesktop hosted virtual desktops and up to 200 Citrix XenApp Hosted Shared Desktops (HSDs) per blade server to up to 4000 Citrix mixed-workload virtual desktop users on 25blades spread over three VMware ESX clusters
- Use of Cisco Nexus 1000V Series Switches and Cisco Data Center Virtual Machine Fabric Extender (VM-FEX) extend the capability to control quality of service (QoS) across the entire system and provide the network team with the familiar Cisco Nexus operating system (Cisco NX-OS Software) to control the VMware ESXi 5.1 networking environment
- Cisco Validated Design that reduces the risk of moving from a proof-of-concept to a full-scale production environment

The Citrix XenDesktop desktop virtualization solution transforms desktops and applications into a secure, on-demand service available to any user, anywhere, and on any device. With Citrix XenDesktop, you can deliver individual Microsoft Windows, web, and software-as-a-service (SaaS) applications, or full virtual desktops, to PCs, Macs, tablets, smartphones, laptops, and thin clients with a high-definition user experience.

Citrix XenApp is a server shared-desktop virtualization solution that provides high-performance published server desktops and applications to targeted user groups.

EMC VNX7500 unified storage delivers both SAN storage and network-attached storage (NAS) in a single platform and is optimized for server and desktop virtualization. The EMC VNX architecture and FAST Suite in combination with flash-memory technology optimizes the performance of virtual desktop infrastructure environments, enabling performance at scale while also reducing TCO (cost per gigabyte and cost per IOPS). EMC VNX storage is designed for five-nines availability, is simple to manage, and includes built-in efficiency capabilities such as snapshots, compression, and deduplication. Table1 shows the bill of materials (BOM) for the solution.

Table 1: Bill of Materials

Quantity	Component
7	Cisco UCS B200 M3 running VMware ESXi 5.1 hosting 1000 Microsoft Windows 7 SP1 32-bit Citrix XenDesktop 5.6 virtual desktops with Citrix Personal vDisk
7	Cisco UCS B200 M3 with two Cisco 300-GB enterprise SSDs running VMware ESXi 5.1 hosting 1000 Microsoft Windows 7 SP1 32-bit Citrix XenDesktop 5.6 pooled virtual desktops with their Citrix PVS 6.1 write cache drives on local SSDs
11	Cisco UCS B200 M3 running VMware ESXi 5.1 hosting 2000 Microsoft Windows 2008 R2 Citrix XenApp 6.5 hosted shared desktops

Quantity	Component
5	Cisco UCS B200 M3 running VMware ESXi 5.1 hosting infrastructure virtual machines, including Cisco Nexus 1000V Virtual Supervisor Modules (VSMs) and Cisco Data Center VM-FEX
2	Cisco UCS 6248UP fabric interconnects (with 16 universal port expansion modules) running Cisco USC Manager 2.1(1a)
2	Cisco Nexus 5548UP access-layer switches providing unified Ethernet and Fibre Channel connectivity, including Fibre Channel zoning
1	EMC VNX7500 with 2 service processors, 4 data movers, 10 200-GB SSDs, and 111 600-GB SAS drives supporting the infrastructure and virtual desktop workloads on Network File System (NFS) storage and using Fibre Channel boot logical unit numbers (LUNs)

Easy Ordering

The Cisco 4000-Seat Mixed-Workload Desktop Virtualization Solution for commercial and enterprise environments is available through the Cisco SmartPlay program. All hardware components are available by ordering only a single part number, enabling you to quickly deploy a powerful, secure, virtualized environment in your enterprise without the expense or risk entailed in designing and building your own custom solution.

For More Information

For more information about the Cisco 4000-Seat Mixed-Workload Desktop Virtualization Solution, please visit http://www.cisco.com/go/dcdesignzone.

For more information about Cisco Desktop Virtualization Solution bundled solutions, please visit http://www.cisco.com/go/quickcatalog.

For more information about the Cisco SmartPlay program, please visit http://www.cisco.com/go/smartplay.

Citrix Systems, Inc. (NASDAQ:CTXS) is a leading provider of virtual computing solutions that help companies deliver IT as an on-demand service. Founded in 1989, Citrix combines virtualization, networking, and cloud computing technologies into a full portfolio of products that enable virtual workstyles for users and virtual datacenters for IT. More than 230,000 organizations worldwide rely on Citrix to help them build simpler and more cost-effective IT environments. Citrix partners with over 10,000 companies in more than 100 countries. Annual revenue in 2010 was $1.87 billion.

C22-728248-00 05/13