FlexPod®

FlexPod Datacenter with Citrix XenDesktop and NVIDIA GRID

Delivering Accelerated Clinical Graphics to Meet the Needs of Healthcare Providers

The Challenge

The move to electronic health records (EHR) is revolutionizing healthcare—and creating significant challenges for IT. Virtual desktop infrastructure (VDI), in which application processing is performed in the data center and output is sent to wherever clinicians happen to be, at first glance seems like a great fit, but VDI solutions may fail to deliver the required graphics performance. However, provisioning more capable workstations at the point of care is prohibitively expensive, has usage challenges of its own, and may put sensitive patient data at risk.

An alternative is needed to meet the needs of healthcare workers as they move within and between facilities and need to review and update patient data while keeping it secure from unauthorized access.

The Solution

Accelerated 3D Graphics in a fully integrated desktop virtualization solution

FlexPod® Datacenter with Citrix XenDesktop and NVIDIA GRID addresses the needs of healthcare workers by providing virtual desktop infrastructure with full graphics acceleration. Patient health information remains secure in the data center, where it can only be accessed by authenticated users, ensuring patient privacy as mandated by HIPAA, HITECH, and other recent legislation. Clinical workers can view their full desktops or individual applications from thin clients or tablet devices with great interactive performance.

Key Benefits

- Addresses the needs of a mobile clinical workforce while keeping patient health records secure and in compliance
- Increases productivity by eliminating file copies, simplifying data access, and providing full access to 3D graphics such as PACS images
- Provides full access to graphics applications on mobile devices
- Makes 3D images available to a wider range of users
- Lowers TCO by decreasing reliance on expensive, difficult-to-maintain desktop workstations and standalone software licenses
- Incorporates leading technologies from NetApp, Cisco, Citrix, and NVIDIA in an integrated solution that's fast and easy to deploy

CITRIX®

NVIDIA

CISCO

NetApp®

By combining validated, best-in-class technologies from industry leaders in storage, networking, desktop virtualization, and graphics, FlexPod Datacenter with Citrix and NVIDIA delivers a complete virtual desktop solution with full GPU acceleration, providing enhanced performance for EHR, PACS, and other graphics-intensive applications. All application and graphics processing is performed by the FlexPod solution, and only encrypted visual output and mouse/keyboard input are sent over the network.

FlexPod Datacenter with Citrix and NVIDIA is a fully integrated solution designed to meet the demanding requirements of healthcare. This solution:

- Makes the output of EHR and other graphics-intensive applications viewable anywhere without sacrificing performance, even on mobile devices
- Helps you keep patient health records secure inside your data center
- Improves collaboration by allowing medical personnel in different locations to view the same images and records
- Allows graphical patient data to be accessed and shared across geographical distances without time-consuming and potentially noncompliant file copies/transfers
- Makes interactive 3D graphics such as PACS images viewable by more users and in a wider range of settings, including the operating room

Proven FlexPod technology

FlexPod is a proven data center solution from NetApp and Cisco, offering a flexible, shared infrastructure that easily scales to support growing workload demands without affecting performance.

NetApp® FAS storage hardware reduces your overall storage costs while delivering the necessary performance for VDI in conjunction with demanding healthcare applications. FAS storage supports both all-flash and hybrid storage configurations, creating an optimal storage platform for dynamic healthcare environments.

Cisco UCS® unites computing, networking, storage connectivity, and virtualization in a single cohesive system that meets the unique demands of graphics-intensive applications. Cisco UCS C240 M3 rack servers feature extended memory for faster rendering, bigger datasets, more desktops per server, and the lowest latency.

Cisco UCS integrates computing resources with Cisco Nexus® switches and a unified I/O fabric, which identifies and handles different types of network traffic, including storage I/O, streamed desktop traffic, management, and application access.

FlexPod Datacenter with Citrix and NVIDIA integrates Citrix XenDesktop with HDX 3D Pro and NVIDIA GRID with the proven FlexPod architecture to provide a complete VDI solution tailored to the needs of healthcare.

Citrix XenDesktop with HDX 3D Pro

Citrix XenDesktop delivers applications and desktops as secure mobile services to improve mobility and provide greater security for sensitive patient data with centralized control. XenDesktop with HDX 3D Pro delivers a native, touch-enabled experience that is optimized for the type of device, as well as the network.

HDX 3D Pro technologies are specifically designed to enhance visual performance for graphics-intensive applications with multiple WAN optimization technologies,

deep compression and quality of service (QoS) controls, hardware-level GPU acceleration, and full support for OpenGL applications.

By complementing XenDesktop with integrated GRID software and NVIDIA GPUs, this FlexPod solution empowers users with full graphics capabilities regardless of location or device.

NVIDIA GRID

In most VDI environments, all graphics processing is done by CPUs, limiting graphics performance. NVIDIA GRID technology offloads graphics processing from the CPU to the GPU to eliminate this bottleneck. As the first virtualized GPU hardware solution, NVIDIA GRID vGPU allows multiple users to share the graphics processing power of a single GPU. As a result, you can efficiently utilize GPU resources and make graphics acceleration available to more users at lower cost per user.

NVIDIA GRID provides a highly responsive experience for demanding 3D graphics applications on any device, even tablets. The NVIDIA GRID K2 boards used in the FlexPod Datacenter solution feature two high-end Kepler-based GPUs with a total of 3,072 CUDA cores.

A Better Solution for Clinical Workers

The promise of EHR is that it will speed diagnosis, reduce time to treatment, and enable more efficient patient care with less cost and greater accuracy. The reality, however, can sometimes be a little different. Every time a doctor or other clinical worker changes location, they have to log in, reopen applications, and find the right records. Accessing X-rays, MRIs, and other complex data takes even

longer, and interactive performance may suffer. When health records or large image files have to be moved to the local device, that wastes time and risks exposure of sensitive patient health information.

The FlexPod with Citrix and NVIDIA solution solves these problems. EHR and imaging data remains protected inside your data center, so there's less risk of patient data being compromised. There is no time wasted finding or copying records or files and a reduced risk of mistakes. Full graphics acceleration ensures that radiology and other imagery can be viewed without compromise.

Productivity from Any Location

FlexPod Datacenter with Citrix and NVIDIA enables users to work more productively from any location. Clinical workers in your facilities can work from their offices, nurses' stations, patient rooms, or other locations, accessing their full desktop environments with no loss of productivity. Doctors can leave the office and pick up where they left off at home, giving them more flexibility and better access to clinical data. This flexible work environment adapts to the time-slicing needs of today's clinicians, who may need to work from anywhere while still protecting patient information.

If you have a bring-your-own-device (BYOD) policy, users can work from their own devices such as smartphones or tablets without the risks associated with storing patient data on a personal device. Medical personnel who are off duty can be consulted at home—or wherever they happen to be—with full access to necessary patient data. If clinicians want a second opinion, they can
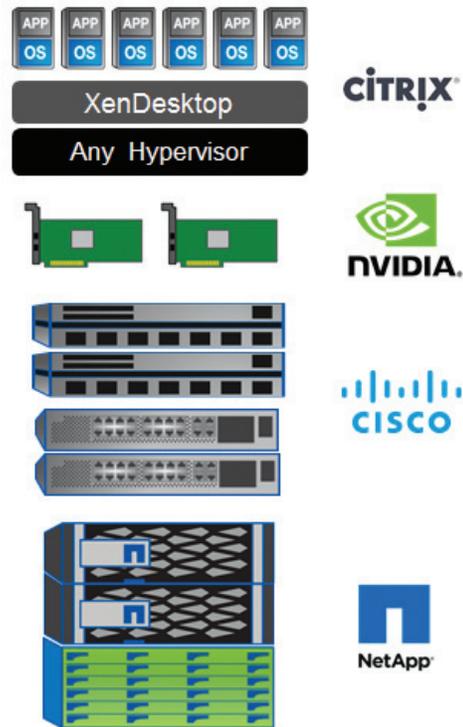

Figure 1) FlexPod Datacenter with Citrix XenDesktop and NVIDIA GRID combines the proven capabilities of FlexPod with leading visualization technologies to address demanding healthcare needs.

easily share the output of an application or an entire desktop with another user so they see the same information immediately with less time wasted and less chance of miscommunication.

This solution extends the availability of 3D graphics beyond traditional uses. Clinical workers can view PACS imagery and other graphical and visual output at the point of care; surgeons in the operating room can review 3D images without having an expensive graphics workstation inside the OR.

Improve Efficiency and Reduce Costs

FlexPod Datacenter with Citrix and NVIDIA can be significantly less expensive than solutions that require a full desktop in every exam room and patient room. Lower cost thin clients are easier to manage, provide

better protection for patient data, and require much less frequent updates and upgrades.

FlexPod Datacenter with Citrix and NVIDIA eliminates the expense and complexity of dedicated workstations, replacing them with a much more efficient and scalable shared resource capable of supporting clinical workers in almost any location on any approved device and making interactive visual output accessible to a broader range of employees.

The solution delivers higher resource utilization for greater return on investment and can reduce the total number of expensive software licenses required. Because almost everything resides in the data center, this solution is much more reliable than dispersed workstations, where unforeseen events can interrupt work and cause data loss.

A Better Solution for Electronic Health Records

In addition to virtual desktop infrastructure, this solution can be configured to support and run your entire EHR software suite. The FlexPod Datacenter architecture adapts readily to a variety of workloads. Need more storage? You can easily scale FlexPod storage capacity and performance. Need more compute horsepower? Simply add more Cisco UCS servers.

With all patient health information stored on NetApp FAS storage, the solution provides the tools to help you effectively manage and protect your data while increasing storage efficiency with deduplication, compression, and cloning technologies. Disaster recovery and continuous data availability options let you easily address specific data protection and availability objectives.

Stand Up New Infrastructure in Less Time

No matter how carefully you plan, there can be unforeseen needs and opportunities that result in a requirement for more infrastructure in a hurry. Whether it's in an existing data center or a new location, the integrated and tested design of FlexPod Datacenter with Citrix and NVIDIA means that you can have new infrastructure up and running in less time with less effort, providing a distinct advantage versus nonintegrated solutions. Your IT team can deliver robust clinical and business systems to any facility, device or person in a matter of days rather than weeks or months.

Open Delivery Ecosystem

You can choose from a broad network of world-class solution delivery partners to implement FlexPod. These partners understand your business requirements and are all certified and trained on NetApp, Cisco®, NVIDIA GRID, and Citrix, as well as complementary technologies, to deliver a complete enterprise or cloud solution that fits your business needs.

Getting Started

To learn how FlexPod enables you to build a flexible and efficient shared infrastructure today as your foundation for future-ready IT, contact your local data center partner.