The Challenge

The move to electronic health records (EHR) and medical imaging is revolutionizing healthcare—and creating significant challenges for IT. Virtual desktop infrastructure (VDI), where 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 traditional VDI solutions can 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 can put sensitive patient data at risk.

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

Medical imaging presents the following challenges with fixed workstations and workplaces:

- Difficult to manage distributed deployment
- Limited collaboration features
- Data security
- Reduced mobility and agility of users
- High cost of technology refreshes and patch management
- Ongoing maintenance cost
Key Benefits

• Addresses the needs of a mobile clinical workforce while keeping patient health records, medical images, and other medical data secure and in compliance

• Increases productivity by eliminating file copies, simplifying data access, and providing full access to 3D graphics such as Picture Archiving and Communication System (PACS) images

• Provides full access to graphics applications on mobile devices without sacrificing performance or responsiveness

• 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, Mechdyne TGX, Citrix, VMware, and NVIDIA in an integrated solution that’s fast and easy to deploy

The Solution

Accelerated 3D graphics in a fully integrated virtualization solution

FlexPod® Datacenter with VMware or Citrix virtualization, Mechdyne TGX, and NVIDIA virtual GPU technology addresses the needs of healthcare workers by providing VDI with full graphics acceleration. Patient health information remains secure in the data center, where it can be accessed only by authenticated users, enabling patient privacy as mandated by the Health Insurance Portability and Accountability Act (HIPAA), Health Information Technology for Economic and Clinical Health (HITECH) Act, and more recent legislation. Clinical workers can view their full desktops or individual applications from clients or mobile devices with excellent interactive performance wherever they are. The solution also enables easy collaboration by offering the ability to share the same session with anyone and to collaborate on the same view. For example, this virtual desktop solution enables a clinician to request a second opinion on a medical image from a clinical worker in the same organization or anywhere in the world. No data leaves the local data center because everything is shared in a remote desktop session where only changed pixels of the session are transmitted.

All data rendering happens in the data center on the FlexPod 3D infrastructure, providing very secure collaboration.

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

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

The Cisco Unified Computing System (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 rack servers feature large memory footprints 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 VMware or Citrix virtualization, Mechdyne TGX, and NVIDIA integrates NVIDIA virtual GPU technology with the proven FlexPod architecture to provide a complete high-resolution virtual desktop solution tailored to the needs of healthcare.
NVIDIA virtual GPU technology

In most VDI environments, all graphics processing is done by CPUs, which limits graphics performance. NVIDIA virtual GPU technology offloads graphics processing from the CPU to the GPU to eliminate this bottleneck. As the first virtualized GPU solution, NVIDIA vGPU allows multiple users to share the graphics processing power of a single GPU. As a result, you can use GPU resources efficiently and make graphics acceleration available to more users at lower cost per user. NVIDIA virtual GPU technology provides a highly responsive experience for demanding 3D graphics applications on any device, even tablets.

The NVIDIA virtual GPU solution is composed of both hardware and software licensing components:

- **NVIDIA Virtual GPU software.** Choose either GRID Virtual PC, GRID Virtual Apps, or Quadro Virtual Data Center Workstation, and the appropriate support, update, and maintenance (SUMs) option for your needs.

- **NVIDIA Tesla Data Center GPUs.** Pascal- and Maxwell-based GPU accelerators in certified server platforms run the NVIDIA virtualization software. Choose from density-optimized, performance-optimized, or blade-optimized solutions.

A Better Solution for Clinical Workers

The promise of EHR is that it speeds diagnosis, reduces time to treatment, and enables more efficient patient care with less cost and greater accuracy. The reality, however, can sometimes be different. Every time doctors and other clinical workers change location, they must log in, reopen applications, and find the right records. Accessing X-rays, MRIs, and other complex data takes even longer, and interactive performance can suffer. When health records or large image files must be moved to the local device, time is wasted, and risks arise from exposure of sensitive patient health information.

The FlexPod with Mechdyne TGX and NVIDIA virtual GPU solution solves these problems. EHR and imaging data remain protected inside your data center, so there’s less risk of patient data being compromised. No time is wasted in finding or copying records or files, and the risk of mistakes is reduced. Full graphics acceleration allows radiology and other imagery to be viewed without compromise.

Productivity from Any Location

FlexPod Datacenter with Mechdyne TGX and NVIDIA virtual GPU enables users to work more productively from any location. Clinical workers 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 might need to work from anywhere while still protecting patient information.

If a bring-your-own-device (BYOD) policy is in place, 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...
FlexPod Solution Based on Virtualization with Mechdyne TGX and NVIDIA Virtual GPU Technology

Stand Up New Infrastructure in Less Time

No matter how carefully you plan, unforeseen needs and opportunities can result in a requirement for more infrastructure in a hurry. Whether it’s an existing data center or a new location, the integrated and tested design of FlexPod Datacenter with Mechdyne TGX and NVIDIA means that you can have a new infrastructure up and running in less time with less effort, providing a distinct advantage over nonintegrated solutions. Your IT team can deliver robust clinical and business systems to any facility, device, or person in just 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, Mechdyne TGX, NVIDIA virtual GPU, and VMware or Citrix technologies, 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.

About NetApp

NetApp is the data authority for hybrid cloud. We provide a full range of hybrid cloud data services that simplify management of applications and data across cloud and on-premises environments to accelerate digital transformation. Together with our partners, we empower global organizations to unleash the full potential of their data to expand customer touchpoints, foster greater innovation and optimize their operations. For more information, visit www.netapp.com. #DataDriven

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