

FlexPod®

FlexPod Datacenter with Citrix XenDesktop and NVIDIA GRID

Enabling Remote 3D Visualization for Upstream Oil and Gas

The Challenge

The workflows that upstream oil and gas depend on continue to evolve due to the rapid growth in dataset size and the need to integrate diverse, multi-disciplinary data types to more accurately understand the earth's subsurface. Feeding data to visualization workstations has become difficult, and workflows increasingly span organizational boundaries and domains. There's a strong desire in most organizations to improve collaboration, but there's also a need to make sure that sensitive data is not exposed.

Allowing a mobile workforce to visualize the latest subsurface data—wherever they happen to be—is becoming an essential part of upstream oil and gas processes. This requires either a local copy of the dataset, which can be difficult and potentially risky to provide, or remote visualization. Up to now, remote visualization solutions have been complicated to deploy and manage and haven't provided the quality or responsiveness that users expect.

The Solution

Fully Integrated Desktop Virtualization with Advanced Visualization

FlexPod Datacenter with Citrix XenDesktop and NVIDIA GRID addresses the critical need for secure, remote 3D access to geology and geophysics applications and data for geographically dispersed, cross-disciplinary teams to improve collaboration and accelerate decision-making.

By combining validated, best-of-breed technologies from industry leaders in storage, networking, desktop virtualization, and graphics, FlexPod Datacenter with Citrix and NVIDIA delivers a complete virtual desktop solution with the proven 3D visualization capabilities your organization needs and the ability to scale rapidly to address future requirements.

Key Benefits

- Extends 3D visualization to engineers, geoscientists and other workers wherever they happen to be: local, remote office, in the field
- Incorporates leading technologies from NetApp, Cisco, Citrix, and NVIDIA in an integrated solution that's fast and easy to deploy
- Eliminates bottlenecks and enhances collaboration to decrease time to decision
- Keeps valuable datasets inside the data center where they are protected and secure
- Lowers TCO by decreasing reliance on expensive, difficult-to-maintain desktop workstations and increasing utilization of software licenses
- Increases user productivity by providing ubiquitous fast access to data and applications



FlexPod Datacenter with Citrix and NVIDIA is a fully integrated solution designed to meet the demanding requirements of upstream oil and gas workflows and:

- Eliminate the infrastructure challenges created by ever-growing datasets
- Improve collaboration within your organization
- Make visualization available where and when it's needed, including on mobile devices—without local data copies
- Allow you to share the results of visualization across organizational boundaries while keeping valuable datasets secure

Proven FlexPod Technology

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

FlexPod is the number one integrated infrastructure solution, according to the IDC Worldwide Integrated Infrastructure and Platforms Tracker for Q1 2014.

NetApp FAS storage hardware reduces your overall storage costs while delivering the necessary I/O performance for virtual desktop infrastructure (VDI) in conjunction with demanding geology and geophysics applications. FAS storage supports both all-flash and hybrid storage configurations to create an optimal storage platform for your visualization needs.

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

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 access to geological and geophysical applications.

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 oil and gas.

Citrix XenDesktop with HDX 3D Pro

Citrix XenDesktop delivers applications and desktops as secure mobile services to improve mobility and provide greater security for intellectual property 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 and delivery of high-performance, 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, FlexPod empowers users everywhere with full graphics capabilities, resulting in an optimal end-user experience.

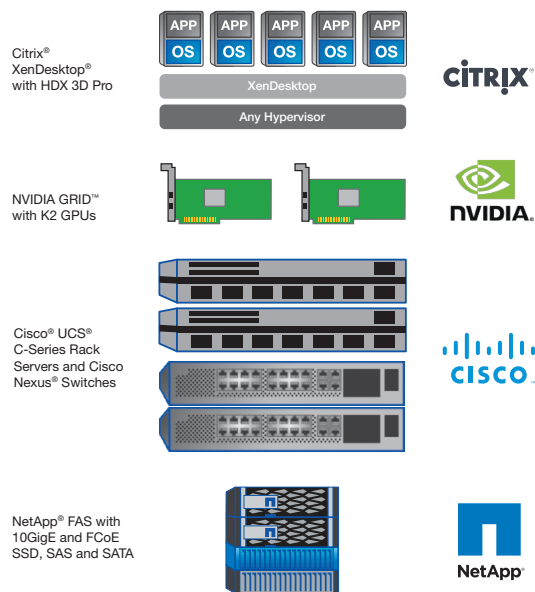


Figure 1) FlexPod Datacenter with Citrix XenDesktop and NVIDIA GRID combines the proven capabilities of FlexPod with leading visualization technologies, delivering rich and interactive remote visualization to accelerate oil and gas workflows and improve decision-making.

NVIDIA GRID

NVIDIA GRID™ technology offloads graphics processing from the CPU to the GPU in virtualized environments. As the first virtualized GPU hardware solution, NVIDIA GRID vGPU allows multiple users to access the graphics processing power of a single GPU. As a result, you can efficiently share GPU resources and broaden the reach of advanced visualization.

For users, 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.

Fully Tested

FlexPod Datacenter with Citrix and NVIDIA has been tested with geology and geophysics (G&G) applications and datasets from leading providers such as Schlumberger, Halliburton Landmark and Paradigm, so you can feel confident that the solution will work seamlessly with the applications you rely on.

Achieve Deeper Insight in Less Time

Collaboration is the key to effective decision-making. Removing data silos and being able to visualize diverse data sets independent of location helps close information gaps between domains to improve the safety, speed, and accuracy of reservoir decisions. Remote visualization can enable collaboration between a well site and remotely located experts to expedite decisions.

It can also reduce the personnel required at a well site; reducing health, safety, and environmental (HSE) risks; decreasing costs; and simplifying logistics.

FlexPod Datacenter with Citrix and NVIDIA enables you to centralize important datasets in one or a few locations and make the results of visualization available wherever they're needed. Centralizing data simplifies data integration between systems and accelerates workflows across functions (geophysics, geology, reservoir and simulation). Your geoscientists, engineers, and business decision makers can see important results in near real time, without the bottlenecks that result from transferring huge data sets over network connections or by mail.

Geoscientists and engineers access their workspaces, data, and applications instantly and seamlessly without the need for heavy-duty workstations. Collaborators view and manipulate the same images, eliminating potential points of confusion and miscommunication and saving valuable time.

FlexPod Datacenter with Citrix and NVIDIA lets you better support and communicate with remote field operators and address the visualization and collaboration needs of geoscientists and engineers around the world. As a result, end users of all types have better access to information for deeper insight and faster decision-making.

Improve Data Security and Quality

Dataset copies are not only time consuming, every copy is an opportunity for data to be corrupted, lost, or compromised by prying eyes. When data is copied and made available from multiple sources, data quality issues arise. Centralizing data helps mitigate these issues, improves data quality, and reduces risks that can cost you millions of dollars annually.

With FlexPod Datacenter with Citrix and NVIDIA, your valuable data and IP remains in your data center—protected and secure. For those cases where you have to ensure compliance with national data export restrictions and in-country content laws, remote visualization facilitates analysis and collaboration that would otherwise be difficult or impossible.

Because data is stored on NetApp FAS storage, the solution also 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 business continuance options let you easily address specific data protection and data availability objectives.

Simplify Operations and Lower Costs

Graphics-intensive G&G applications have traditionally required specialized workstation hardware for best performance. These systems represent an expensive resource that has to be deployed and managed outside the data center. Software licenses for each workstation add to the overall expense.

As datasets grow in size and complexity, these workstations require more computing and visualization power, more local storage, and faster network connections to move data—which can mean frequent and expensive 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 workers wherever they happen to be. The solution delivers higher resource utilization for greater return on investment and

typically reduces the total number of expensive software licenses required. Because almost everything resides in the data center, this solution is much more reliable than workstations in dispersed locations where power loss and other events can interrupt work and cause data loss.

The FlexPod architecture is designed to scale easily as your needs change and grow. Need more storage? You can easily scale FlexPod storage capacity and performance. Need more compute horsepower? Simply add more UCS servers.

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 compute infrastructure in a hurry. Whether it's in an existing data center, or a remote 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 competitive advantage in situations where time is of the essence.

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 private 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.

