ActualTech Media

Hewlett Packard Enterprise

Evolving Beyond Traditional VDI for Creative and Technical Professionals

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Businesses in manufacturing, media and entertainment, oil and gas, and architecture, engineering, and construction industries can use GPU-accelerated virtualization solutions for graphics-intensive applications to support their customers, clients, and staff from anywhere.

Highlights include:

- Extend VDI solutions to manufacturing use cases like product design and development

- Increase mobility and collaboration for creative professionals in media and entertainment

- Remotely access petabytes of sensitive, valuable modeling and simulation data securely and efficiently

Virtual desktop infrastructure (VDI) software, such as Citrix Virtual Apps and Desktops and VMware Horizon, enables organizations to deliver a full application or desktop experience to end users across a broad array of devices and locations. But apps with strong graphics needs, like CAD, weren't typically seen as good fits for VDI.

As applications become more graphically intensive, GPU hardware acceleration is increasingly required to deliver superior performance and return on investment (ROI) in VDI environments. By adding virtual GPU software to your VDI server infrastructure, the GPU can be virtualized and shared across multiple users, or multiple GPUs can be aggregated for a single user who needs a more powerful virtual machine (VM), as shown in **Figure 1**.

> As applications become more graphically intensive, GPU hardware acceleration is increasingly required to deliver superior performance and return on investment (ROI) in VDI environments.

NVIDIA virtual GPU (vGPU) software is available in three editions to address specific virtualization use cases:

- **NVIDIA GRID vPC and GRID vApps** deliver a user experience nearly indistinguishable from a native PC

- **NVIDIA Quadro Virtual Data Center Workstation** (Quadro vDWS) delivers the most powerful virtual workstations from the data center to any device, anywhere

- **NVIDIA Virtual Compute Server** (vCS) enables data centers to accelerate compute-intensive workloads such as artificial intelligence (AI), deep learning, and data science, run in a VM

NVIDIA Quadro vDWS software provides powerful virtual workstations for engineers, architects, designers, and artists accessing computer-aided design (CAD) or
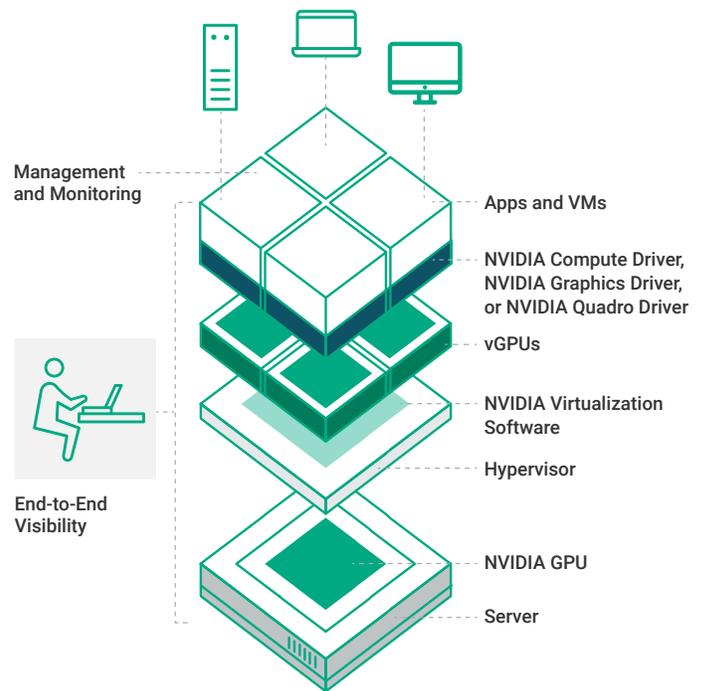

Figure 1: A high-level overview of a GPU-accelerated VDI architecture

engineering applications, animation and video editing software, geographic information systems (GIS) applications, and more. Across every industry, including manufacturing, media and entertainment (M&E), oil and gas (O&G), and architecture/engineering/construction (AEC), HPE VDI solutions with NVIDIA have been adopted to drive these applications while providing simplified management and increased security.

Let's explore how GPU-accelerated VDI solves common challenges for professionals and creative workers across the manufacturing, M&E, O&G, and AEC industries.

Manufacturing

Compressing design cycles and reducing unit costs are crucial for maintaining the competitiveness of any manufacturer. Designers on increasingly geographically dispersed teams face growing pressure to deliver innovations rapidly, respond to market demands, and support an ever-expanding product portfolio. With virtualization, manufacturers can now better meet the needs of users who can't afford to wait for hours-long data downloads before they can begin the real design and engineering work.

Traditional VDI solutions didn't include GPU acceleration, which limited manufacturing use cases. Today, manufacturers are looking to virtualization solutions to help their mobile and distributed teams collaborate on designing and producing a wide range of products—from aerospace and aviation to automotive and industrial machinery. GPU-accelerated virtualization supports different manufacturing user groups and applications, such as:

- **Researchers, analysts, and data scientists** for generative design, quality control, shortening design times, and reducing materials waste via AI and deep learning

- **Engineers, designers, computer-aided design/computer-aided engineering (CAD/CAE) users** for rendering or remotely viewing and editing very large 3D project files and images

- **Creative, design, and knowledge workers** using Windows 10 and virtualized design and creative apps such as Adobe Creative Cloud

> With virtualization, manufacturers can now better meet the needs of users who can't afford to wait for hours-long data downloads before they can begin the real design and engineering work.

By adding virtual GPU solutions to their VDI environments, manufacturers can:

- **Enhance productivity with real-time performance.** Manufacturers can deliver superior graphics performance to designers and engineers on virtual desktops from the data center. They now have the same responsive experience they'd expect from a physical workstation. Users can also view and work with large 3D models and graphics-intensive applications without lag or delay. This translates to increased efficiency and productivity, ultimately helping manufacturers bring products to market faster.

- **Collaborate anywhere on any device.** Engineers and designers can now be freed from their physical workstations and use thin clients—or the device of their choice—to access the applications and data they need, regardless of their location. Also, geographically dispersed teams no longer need to wait for large file transfers and model loading. With files and data centralized in the data center or cloud, teams can securely access the information they need to work together from anywhere.

- **Protect intellectual property (IP).** Manufacturers no longer need to issue company laptops to contractors or remote workers and assume the risks associated with supporting the hardware model and installed applications. By centralizing data and moving mission-critical files into the data center, manufacturers can protect their IP while speeding the design process. Employees gain mobility and autonomy through secure and instant access to the applications they need to deliver products to market as quickly as possible.

- **Consolidate product lifecycle management (PLM) data.** As design and engineering resources become more dispersed, maintaining consistent and uniform data in PLM databases becomes increasingly difficult. Centralizing PLM solutions in the data center allows for greater consistency and consolidation of data, as well as control over design changes. Moreover, virtualized desktops enable faster access and response times to PLM databases, letting PLM administrators shave seconds off numerous database transactions, which results in time savings that equate to real business dollars.

Media and Entertainment (M&E)

The recent global pandemic has accelerated the advent of disruptive distribution models in M&E. Facing increased consumer demands for high-quality visual effects, as well as shrinking production schedules and budgets, M&E companies must evolve and untether their employees from the desktop. To address the need for greater mobility and collaboration among creative professionals—and to provide opportunities for more iterations in less time—M&E companies are starting to adopt VDI.

GPU-accelerated virtualization enables a wide variety of VDI use cases for media and entertainment, including:

- **Animators, production artists, and visual effects (VFX) producers** rendering and modifying graphics-intensive scenes

- **Video editors** remotely viewing and editing film footage, including real-time, on-air production, highlight reels, and rotoscoping

- **Marketing, creative, design, and illustrators** using Windows 10 and graphics-rich productivity apps, as well as virtualized design and creative apps such as Adobe Creative Cloud

- **Analysts, data scientists, and developers** running AI-enabled and high-performance compute (HPC) workloads

> Facing increased consumer demands for high-quality visual effects, as well as shrinking production schedules and budgets, M&E companies must evolve and untether their employees from the desktop.

Virtual GPU software makes it possible for M&E organizations to gain unprecedented performance and manageability in a virtual desktop environment with benefits that include:

- **Enhanced productivity and creativity.** Multi-vGPU support—the ability to assign multiple NVIDIA GPUs to a single VM—makes it possible for artists to work on the most graphics-intensive 3D and rendering workloads. Creative teams can work with confidence, knowing their files are protected and that projects can keep moving forward 24/7. Additionally, they're free to work where and whenever inspiration strikes—on just about any device, including Wacom tablets, without latency or pressure-sensitivity issues.

- **Increased manageability and scalability.** The rapid scaling of resources simplifies IT management, helps

accelerate production schedules, and keeps costs low. Because VMs can be up and running in minutes, M&E companies can respond to changing project requirements with greater agility.

- **Greater cost efficiencies.** Reducing the need for physical workstations can lessen power consumption, streamline the data center, and allow IT administrators to quickly set up users, troubleshoot issues, and facilitate upgrades—with no disruption or data loss. This can be particularly useful in mergers and acquisitions and when working across geographically dispersed productions. As traditional applications are phased out, M&E companies are increasingly switching from Mac applications to virtualized, Windows- and Linux-based applications.

- **Improved security and compliance.** M&E companies must protect their valuable 3D and film production assets. They can't afford data loss due to computer crashes or failures, or to have projects leaked online before an official release. By keeping files centralized in the data center or cloud—while enabling editing and rendering on endpoint devices—data can't walk away or get lost. And deploying VDI for air gapped systems separates Internet access from artist workstations for additional data protection.

Oil and Gas (O&G)

With new O&G projects costing tens of billions of dollars, decisions about where to drill and how to maximize reservoir performance must be based on expensive and sensitive data generated by the most sophisticated modeling and simulation technologies. Understanding the importance of protecting these valuable datasets, O&G firms have increasingly focused on better management and security, typically relying on remote systems to keep data backed up in local data centers. This creates long project load- and save-times and tethers geoscientists to traditional workstations or one-to-one data center workstations. Moreover, simulating and analyzing petabytes of data can be slow when real-time access is critical to success.

Virtual GPU solutions help O&G firms overcome the challenges of processing, analyzing, and securing

large datasets on VDI workstations for scientists, engineers, and staff using a variety of applications and data including:

- **Geologists, geophysicists, and reservoir engineers** remotely viewing and editing massive datasets and complex 2D/3D images

- **Drilling engineers and CAD/CAE** users remotely viewing and editing 2D/3D mechanical images

- **Accounting, marketing, human resources, and other staff** running virtualized Windows 10 or Linux desktops and common office productivity applications

> Virtual GPU solutions help O&G firms overcome the challenges of processing, analyzing, and securing large datasets.

By adding virtual GPU solutions to their VDI environments, end-user devices perform as well as traditional workstations—and IT management is streamlined. O&G firms are discovering the benefits of virtual GPUs that include:

- **Remote access to secured data.** NVIDIA vGPU technology allows for migration of the traditional workstation into the data center. This reduces project load and save times and also safeguards valuable and sensitive data. Geoscientists can now access files from home, at the well site, or while traveling. And geographically dispersed teams can collaborate on files without any performance degradation, confident that data is protected and that they're working on a single master file.

- **Accelerated time to discovery.** With multi-GPU support, a single VM can harness the power of up to four GPUs to boost scalability for applications requiring heavy computation resources for data visualization. By speeding up and reducing model processing cycle times, images become clearer and sharper, faster. Calculations of seismic trace attributes and visual analysis of complex basins can now be done in real time, which leads to more effective lease bidding, higher service revenues, and more efficient hydrocarbon discovery and recovery.

- **Maximized compute resources.** IT can utilize the same pool of virtual workstation resources for multiple workloads, ensuring seismic interpretation, reservoir modeling, and engineering tasks can all be completed around the clock with no idle resources. When additional resources are needed to power compute-intensive processes like batch calculations, users can have instant access to additional compute and graphics resources in the cloud.

- **Increased scalability and manageability.** IT administrators can set up virtual desktops for users in geographically dispersed locations in minutes. Rapid scaling of IT resources accelerates production schedules, ensuring productivity is enhanced from day one and ongoing costs are avoided when projects are complete. Troubleshooting and upgrades can be handled remotely.

Architecture, Engineering, and Construction (AEC)

The nature of AEC work makes collaboration and mobility essential, but the PC hardware required to run high-end design and AEC applications makes mobility complex and difficult. Engineers in satellite offices and project trailers often have to wait up to an hour for models to load and open on their local workstations—negatively impacting productivity and reducing billable hours.

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Complicating matters is the issue of version control. Coordinating across locations and servers to make sure everyone has the latest version of a design is a slow and arduous process that increases the potential for confusion and error. AEC firms struggle to transfer project files from local workstations to the data center to ensure

version control and improve disaster recovery capabilities. Therefore, AEC firms must look for solutions that improve collaboration and mobility, while also providing robust support for version control, to enhance quality and productivity.

GPU-accelerated virtualization supports a wide variety of VDI use cases for AEC, including:

- **Architects, engineers, and designers** working on professional 3D graphics, including real-time ray tracing with NVIDIA RTX technology and AI-enabled design applications

- **Marketing, creative, design, and illustrators** using Windows 10 and graphics-rich productivity apps, as well as virtualized design and creative apps such as Adobe Creative Cloud

- **Accounting, finance, and human resources** running virtualized Windows 10 or Linux desktops and common office productivity applications

> With GPU-accelerated VDI, AEC firms no longer need to worry about errors and rework caused by multiple copies of data residing on local workstations.

AEC firms are turning to GPU-accelerated VDI solutions to enable:

- **Collaboration anywhere on any device.** Shifting design models and moving data off physical workstations into the data center not only secures mission-critical designs, but also speeds the design process. Designers and engineers have the freedom to use the device of their choice to access fully capable 3D virtual workstations with no compromise in performance or user experience. Employees gain mobility and real-time collaboration capabilities through instant access to the applications and data they need from anywhere—at the office, on the road, on the construction site, or even at home.

- **Increased productivity with real-time performance.** AEC firms can deliver superior graphics performance to architects and engineers on virtual desktops from the data center. Users get the same responsive experience in a virtualized environment as they do from a physical workstation, viewing and working with large 2D and 3D models without lag or delay.

- **Enhanced version control.** As design and engineering resources become more dispersed, controlling versions of data and files becomes increasingly difficult. With GPU-accelerated VDI, AEC firms no longer need to worry about errors and rework caused by multiple copies of data residing on local workstations. Centralizing designs in the data center allows for greater consistency and control over design changes, resulting in improved quality and enhanced security.

Accelerated Performance with HPE and NVIDIA

Virtual desktop solutions from HPE and NVIDIA help organizations overcome the challenges of mobility, collaboration, and security in remote working environments. With the accelerated performance of NVIDIA vGPUs, customers enjoy a consistently superior user experience. Remote professionals and creative workers can work from anywhere on any device and get the performance, security, and manageability they need to succeed in a virtual environment.

Learn more about HPE VDI solutions with NVIDIA by visiting www.hpe.com/solutions/desktopvirtualization.