



# REMOTE WORK SOLUTIONS FOR ARCHITECTURE, ENGINEERING AND CONSTRUCTION



# REMOTE WORK CHALLENGES IN AEC

Enabling efficient and cost-effective work in teams is vital to a firm's success. With architecture, engineering, and construction (AEC) project teams increasingly located remotely and across regions, maintaining high productivity becomes even more challenging. Architects, designers, and engineers need powerful graphics and compute performance to run their software applications and work on complex building information modeling (BIM) datasets from wherever they are.

Even while working from home, teams want to continue using all the tools that help them do their best work. They need smooth interaction with their 3D design and visualization software applications, real-time photorealistic renders of their models, and the ability to immersively experience their models in virtual reality.



Image courtesy of Neoscape

## NVIDIA SOLUTIONS: PERFORMANCE FROM ANYWHERE

NVIDIA offers a wide range of visual computing solutions that ensure AEC teams can maintain their productivity and innovation, no matter where they're working from. Whether it's an architect who needs to view their 3D models in virtual reality, an engineer who requires access from home to a secure BIM model, or a designer that has to quickly iterate on photorealistic visualizations of building interiors and exteriors—NVIDIA has the right solutions to meet their needs.

# COMMON QUESTIONS, ANSWERED

## > Why do I need virtual GPUs?

NVIDIA virtual GPU (vGPU) technology delivers better performance on graphics-accelerated apps and ensures all apps can be virtualized and run at full feature set. With GPU acceleration, engineers, architects, and designers can have a quality experience viewing large 3D BIM models on any device, supporting the need for mobility and working remotely from job sites. GPU virtualization helps AEC firms to cost-effectively scale general-purpose virtual desktop infrastructure (VDI) with a high-quality user experience. By adding vGPUs, AEC firms are realizing significant benefits: real-time collaboration with dispersed teams and external partners, improved productivity, and version control.

## > Can you connect an NVIDIA Quadro laptop to a workstation?

NVIDIA Quadro laptops can connect remotely to the cloud using NVIDIA vGPU software. When users need the power and performance of high-end desktop workstations, tools like HP ZCentral Remote Boost, Microsoft Remote Desktop, and more can give them remote access to a workstation—so they can connect and stay productive from any location.

## > What is the cost benefit?

NVIDIA vGPU solutions can often lower total cost of ownership (TCO) by increasing user productivity, lowering support costs, and lowering overall hardware spend. By offloading CPU cycles to the GPU, user density can be dramatically increased, requiring fewer servers to support the same number of users.

## > Which operating systems and application experiences does this support?

With GPU virtualization, employees can have a high-quality experience on any device, even when accessing graphics-intensive 3D software traditionally only available on physical workstations. IT can virtualize any application from the data center with an amazing user experience—including software products from Autodesk, ANSYS, Adobe®, Enscape, McNeel, Trimble, and more—allowing workstation-class performance on any device.

# REMOTE WORK WITH NVIDIA: SOLUTIONS OVERVIEW

NVIDIA remote work solutions are optimized for architects, designers, and engineers. From laptops and desktops to workstations, servers, and the cloud, NVIDIA GPUs provide users with enhanced mobility, flexibility, and performance for 3D graphics and visualization workflows, along with improved security and IT management capability.

## NVIDIA Quadro Laptops

With NVIDIA® Quadro® GPU-powered laptops, AEC professionals can accelerate design and visualization workflows as they take on complex building projects. Users can boost productivity, speed up time to insight using virtual reality, and work on massive BIM models without being tethered to their desks.

## NVIDIA RTX Studio Laptops

NVIDIA RTX™ Studio laptops give designers the ability to transform their home into the workplace of their dreams. With support for premiere creative applications and next-generation AI and ray-tracing technology, these laptops deliver power and performance in thin, light designs for effortless content creation—whenever and wherever.



Auto image courtesy of Epic Games and Porsche

## NVIDIA Data Science Workstations

Researchers can achieve a performance boost and transform massive amounts of data into insights with NVIDIA-powered data science workstations. Built on Quadro RTX™ GPUs with accelerated CUDA-X AI™ data science software, these technologies deliver a new breed of fully integrated desktop and mobile workstations for data science. With support for leading data processing and machine learning libraries, researchers can speed up data preparation, model training, and data visualization.

## NVIDIA Quadro Virtual Data Center Workstation (Quadro vDWS)

NVIDIA Quadro vDWS software provides GPU-accelerated virtual desktops and applications enabling AEC professionals to remotely access and work effectively with computer-aided design (CAD) and rendering software such as Autodesk AutoCAD, Revit, 3ds Max, Chaos V-Ray, Enscape, McNeel Rhino, and Trimble SketchUp.



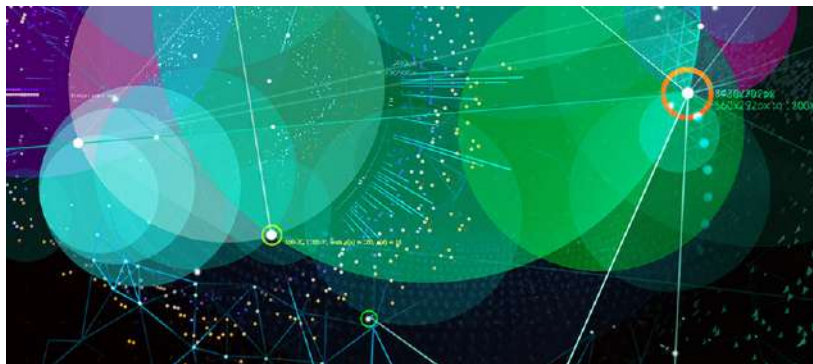
# REMOTE WORK WITH NVIDIA: SOLUTIONS OVERVIEW

## NVIDIA GRID® Virtual PC (GRID vPC) and GRID Virtual Apps (GRID vApps)

Architects and designers can leverage GRID vPC and GRID vApps for general-purpose VDI running Windows 10 and modern productivity applications, streaming video and multimedia, and using interactive learning platforms and teleconferencing.

## NVIDIA Virtual Compute Server (vComputeServer)

NVIDIA vComputeServer enables researchers and designers at AEC firms to run computationally intensive workloads—including AI, data science, and high-performance computing (HPC)—with virtualized GPUs. With vComputeServer, companies can harness the power of multiple GPUs in a single virtual machine (VM) to scale application performance, important for deep learning training workloads. They can also run containerized applications for machine learning and deep learning in a virtualized environment and extend compute resources to support multiple users



## NVIDIA Quadro Virtual Workstations (Quadro vWS) in the Cloud

With instances of Quadro vWS available in the public cloud, architects, engineers, and designers can leverage the simplicity and flexibility of AWS, Google Cloud, and Azure Cloud. Desktop-as-a-service (DaaS) solutions like Windows Virtual Desktop and Horizon Cloud ease manageability. This allows new users to be supported quickly and instances to be deprovisioned just as quickly, so AEC firms only need to pay for what they need. With support for the latest NVIDIA GPUs by global cloud service providers, users can run graphics-intensive applications such as CAD, simulation, and rendering in the cloud.



# CUSTOMER USE CASES WITH VIRTUALIZED WORKLOADS

**BROWNING  
DAY MULLINS  
DIERDORF**  
LEADERSHIP + DESIGN®

## **Browning Day Mullins Dierdorf (BDMD)**

BDMD relies on collaboration to deliver projects on time and under budget. Aging, underpowered workstations kept users chained to their desks and coping with poor performance. Initial VDI deployment using NVIDIA GRID K2 enabled improved collaboration and mobility, but it was in need of an upgrade. Upgrading to NVIDIA P4 GPUs and Quadro vDWS enabled an even better user experience and streamlined management.

**CANNONDESIGN**

## **CannonDesign**

CannonDesign has a broad spectrum of team members located in 16 offices worldwide. All tie back into one central data center from which multiple teams share projects and work on the same files. To build a GPU-enabled environment that served the needs of all employees, CannonDesign divided their end users into three tiers: knowledge workers, designers, and renderers. Using NVIDIA Quadro vDWS enabled higher user density at twice the performance. CannonDesign has about 60 percent of its users on VDI at any given time, with the maximum connected around 600–650. The combination of desktop and application virtualization built on VMware Horizon and Cisco UCS and super-charged by NVIDIA Quadro vDWS and NVIDIA GPUs is enabling the CannonDesign team to deliver fully virtual, digital workspaces that rival physical ones.



## **Chiyoda**

Chiyoda Corporation specializes in global engineering, procurement, and construction (EPC) projects mainly for the oil and gas industry. To ramp up projects quickly and reduce IT costs, the company needed to streamline IT deployment for overseas engineers. Chiyoda deployed virtual workstations powered by NVIDIA Quadro vDWS to deliver high-performance 3D modeling applications. The IT team can now provide engineers with access to applications in one to two days, so engineers can get up and running quickly.

gouldevans

### Gould Evans

Gould Evans leverages GPU-accelerated VDI to enable more than 100 designers across the U.S. to collaborate. The increased application performance of the VDI environment significantly boosted designer productivity. Additionally, GPU-accelerated VDI enables flexibility for Gould Evans designers working in multiple locations on the same projects. Gould Evans deployed Dell PowerEdge R740 servers with NVIDIA Quadro vDWS and NVIDIA GPUs. The virtual workstation environment is easier to manage than physical workstations, and additional GPU and memory resources can be provisioned in just minutes when needed.



### WBCM

WBCM is a full-service, multi-discipline AEC firm serving the mid-Atlantic region. The company's growing reputation led to more remote projects across the U.S. and an increase in hiring. Users experienced declining quality and user experience the further they were from headquarters. NVIDIA vGPU technology helped lower latency, increase performance, and improve user experiences for their remote workforce.





## WORK FROM ANYWHERE WITH NVIDIA

NVIDIA vGPU technology helps architecture and design firms get the performance, speed, and flexibility they need through virtualization.

NVIDIA Quadro RTX-powered laptops deliver the performance and large GPU memory that AEC teams need to work with complex BIM datasets and to power advanced workflows such as real-time rendering and immersive virtual reality while working away from the office.

Learn more about NVIDIA's remote working solutions at:  
[nvidia.com/remote-work](https://nvidia.com/remote-work)

