NVIDIA

REMOTE WORK SOLUTIONS FOR MANUFACTURING AND PRODUCT DEVELOPMENT

REMOTE WORK CHALLENGES WITH PRODUCT DEVELOPMENT

Professionals in the manufacturing and product design industry are facing some of their greatest business challenges while striving to bring the next generation of products to the world. Accelerated time to market is becoming crucial for maintaining competitive advantage. Design groups face increased pressure to reduce costs while delivering innovative new solutions to drive growth in the market. And design engineers require high-performance computing (HPC) so they can innovate, iterate, and solve problems at the speed of light.

Manufacturers and product developers are looking to virtualization solutions to help their distributed teams collaborate on designing and producing a wide range of products—from aerospace and aviation to automotive, medical devices, and industrial machinery. However, the size and complexity of models and assemblies required for their work, combined with workstation performance and network limitations, can limit productivity and increase the risk of delayed product launches, cost overruns, and supply chain pitfalls.

Engineers and designers also need the ability to work away from their physical workstations, accessing the applications and data they need on any device in any location. Additionally, geographically dispersed teams typically have to wait for large file transfers and model loading. A solution that can secure files and data centralized in the data center or cloud, enabling teams to work and collaborate from anywhere, would be a critical resource.

Manufacturing and product development businesses also need to deliver superior graphics performance to designers and engineers, with the same responsive experience they expect from a physical workstation. The ability to view and work with massive engineering datasets and graphics-intensive applications without lag or delay would translate to increased efficiency and productivity, ultimately helping manufacturers bring better products to market faster.

Image courtesy of Alberto Luque Marta

NVIDIA SOLUTIONS:
PERFORMANCE FROM ANYWHERE

Engineers and designers can now work untethered from their physical workstations, using thin clients—or any device of their choice—to access computer-aided design (CAD), computer-aided manufacturing (CAM), computer-aided engineering (CAE), or product lifecycle management (PLM) applications and the data they need, regardless of their location.

NVIDIA's remote work solutions such as **NVIDIA® Quadro® laptops** and **NVIDIA virtual GPU (vGPU)** technology deliver superior CAD graphics performance and acceleration for CAE simulation software when working remote and provide the same responsive experience as a physical workstation—enabling engineers to work from anywhere. With NVIDIA vGPU, engineers can use any device to access fully 3D-capable virtual workstations. Companies can onboard new contractors in minutes versus days, while ensuring the security of intellectual property. Additionally, businesses can centralize PLM solutions in the data center for greater consistency and consolidation of data and oversight for design changes.

NVIDIA vGPU software brings the power of NVIDIA GPUs to virtual desktops, apps, and workstations, accelerating virtual desktop infrastructure (VDI) performance, graphics, and compute. When data is stored securely in the data center, professionals can access virtual workspaces from anywhere, on any device, with a native PC-like experience. And manufacturing and product development companies can implement VDI with a high-quality user experience, especially for graphics-intensive applications such as streaming video and image processing.

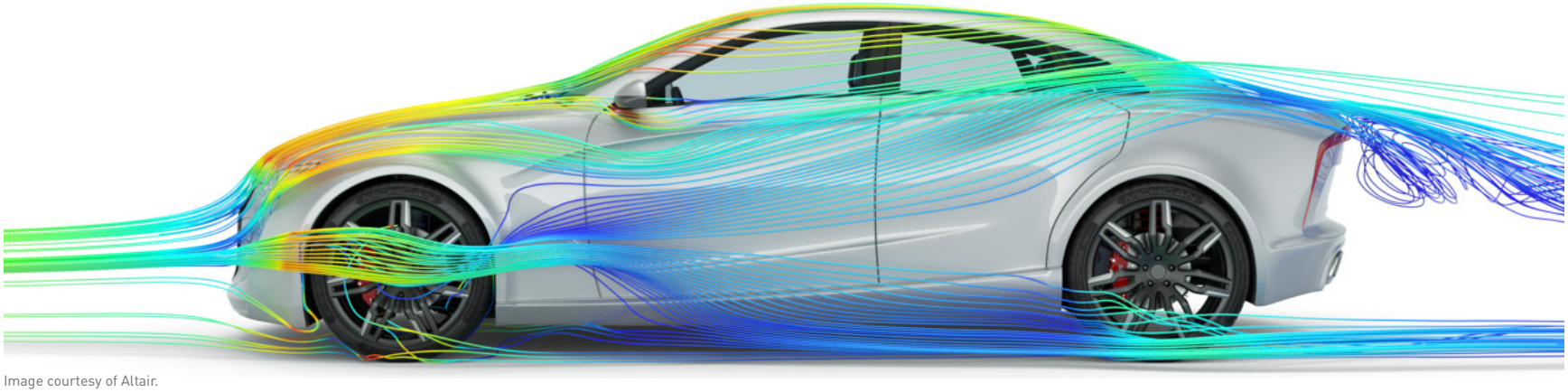

Image courtesy of Altair.

COMMON QUESTIONS, ANSWERED

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

NVIDIA Quadro laptops with NVIDIA vGPU software can connect remotely to the cloud. 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.

> I don't have VDI. How can my company get up and running in the cloud?

Enterprise professionals need the combination of a workstation and cloud computing to unleash the full potential of work-from-anywhere power and flexibility. NVIDIA Quadro Virtual Workstations (Quadro vWS) make it possible for manufacturing companies to access Quadro-powered GPU acceleration from the cloud and pay for only what they use, without worrying about setup, upgrade, or management costs. Organizations can scale appropriately to handle demand spikes in any region of the world and collaborate at unprecedented levels while maintaining a smaller headcount.

> My company has VDI. Why do I need NVIDIA vGPU technology?

Today's workforce expects a dynamic, multimedia-rich experience. Even simple productivity applications found in Microsoft Windows 10, Office 2016, web browsers, and streaming video can benefit from GPU acceleration. Additionally, NVIDIA vGPU technology efficiently powers higher-resolution monitors, such as 4K, and multi-monitor setups, which are an affordable and effective way to boost productivity.

> What is the cost benefit?

Virtual desktops and workstations are faster and easier to deploy and maintain than their physical counterparts, drastically simplifying IT management and reducing overall cost. For example, GRIMME, a leading developer and manufacturer of farming equipment, replaced CAD workstations with NVIDIA vGPU and realized a cost savings of more than 40 percent.

> What applications can be accessed in a VDI environment accelerated by GPUs?

With GPU virtualization, employees can have a high-quality experience on any device, even when accessing graphics-intensive 3D visualization software traditionally only available on physical workstations. IT can virtualize any application from the data center with an amazing user experience—including Dassault CATIA and SOLIDWORKS, Siemens NX, PTC Creo, and more—allowing workstation-class performance on any device.

For design engineering roles using CAD, CAM, and CAE applications with increasing graphics requirements, designers and engineers can work smoothly and efficiently on even the most complex projects.

Image courtesy of Zerone

REMOTE WORK WITH NVIDIA:
SOLUTIONS OVERVIEW

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

NVIDIA Quadro Laptops

With NVIDIA Quadro GPU-powered laptops and mobile workstations, professionals can accelerate workflows for all phases of product design. Users can boost productivity, speed up time to insight, and lower the cost of projects without being tethered to their desks.

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

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 Quadro Virtual Data Center Workstation (Quadro vDWS)

NVIDIA Quadro Virtual Data Center Workstation (Quadro vDWS) software delivers the most powerful virtual workstation imaginable. Engineers and designers get the same graphics and compute performance in a virtualized environment as they would from desktop workstations. And manufacturers benefit from improved productivity, collaboration, increased security of intellectual property, and work-from-anywhere access for their design and engineering teams.

REMOTE WORK WITH NVIDIA:
SOLUTIONS OVERVIEW

NVIDIA Quadro Virtual Workstations (Quadro vWS) in the Cloud

With instances of Quadro vWS available in the public cloud, 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 manufacturing companies 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.

NVIDIA RTX Server for Virtual Workstations

NVIDIA RTX Server is a highly flexible reference design for servers running high-end Quadro RTX 6000 and RTX 8000 GPUs with the option of Quadro vDWS software. It delivers the performance that designers and engineers need by allowing them to take advantage of high-performance GPUs to increase interactivity and visual quality, while centralizing GPU resources. NVIDIA RTX-accelerated virtual desktops cater to production specific requirements—leveraging Quadro vDWS software to reallocate GPUs to different users is easy, whether they're creating product designs virtually, or rendering massive datasets.

CUSTOMER USE CASES WITH VIRTUALIZED WORKLOADS

DENSO
Crafting the Core

DENSO

DENSO, a top tier automotive supplier, faced challenges with managing the physical workstations of six different environments to accommodate multiple customer projects simultaneously. The team wanted to consolidate these environments so engineers could work efficiently and desktop management was more streamlined. With NVIDIA Quadro vDWS, DENSO's IT team delivered virtual workstations that performed just like physical workstations when dealing with large datasets and graphics-intensive software. Users are so satisfied with the new virtual workstation environment that DENSO has seen a 250 percent uptick in usage for the VDI environment.

GRIMME

GRIMME

GRIMME is a global leader in the development and manufacturing of sophisticated farming equipment. To reduce costs, the company replaced CAD workstations with thin clients powered by NVIDIA vGPU technology. Realizing significant cost savings of more than 40 percent, GRIMME decided to roll out a virtualized environment powered by NVIDIA GPUs to its entire staff. Today, engineers, shop floor technicians, field service mechanics, and executive staff all have anytime-anywhere access to CAD software and data, as well as all associated engineering and production applications.

HITACHI
Inspire the Next

Hitachi Construction Machinery

Hitachi Construction Machinery (HCM), a leading manufacturer of construction and transportation machinery, has been designing construction machines for nearly 50 years. HCM was one of the industry's first to introduce NVIDIA Quadro vDWS software at Tsuchiura Works, one of the company's core factories. With the Quadro vDWS environment, HCM built VDI that uses NVIDIA vGPU technology to improve the design and development of construction equipment and reduce management costs. Introducing VDI also allowed HCM to upgrade their operating system (OS) and applications, which had previously taken a long time, with a small team in a short period of time. Based on the success of the virtualized 3D CAD environment, HCM introduced NVIDIA GRID vPC across the company to virtualize their 2D advanced CAD software. Going forward, HCM also plans to use NVIDIA GRID for collaboration with its domestic and overseas group companies.

Honda

Honda R&D Co. Ltd. is the research and development organization for a global transport action equipment manufacturer, Honda Motor Co. Ltd. Honda R&D introduced VDI based on VMware Horizon, NVIDIA Quadro vDWS, and NVIDIA GPUs to its automobile research and development center. With NVIDIA vGPU technology, Honda R&D has increased productivity and performance in research and development.

Mitsubishi Motors

Mitsubishi Motors adopted NVIDIA Quadro vDWS for its compatibility with over 200 design-related applications. To provide unique products and services, the Engineering IT Department of the Global IT Division introduced NVIDIA vGPU technology into the Automotive Development and Production Technology Departments. By virtualizing the design environment where tools such as Dassault Systèmes CATIA, a high-end 3D CAD software used on high-performance workstations, were used, the department transformed their flexible work styles and operational management.

WORK FROM ANYWHERE WITH NVIDIA

NVIDIA vGPU technology helps manufacturing companies get the performance, speed, and flexibility they need to gain a competitive edge.

NVIDIA Quadro RTX-powered laptops deliver the performance and large GPU memory that product development teams need to work from anywhere.

Learn more about NVIDIA's remote working solutions at:
nvidia.com/remote-work

NVIDIA