NVIDIA RTX VIRTUAL WORKSTATION
THE WORLD'S MOST POWERFUL VIRTUAL WORKSTATION

The Challenges of the Digital, Borderless Enterprise

Creative and technical professionals count on an immersive visual computing platform to imagine, design, and build everything from office buildings to airplanes to feature films. They rely on an interactive design process, render intricate, photorealistic images, and perform real-time simulations to gain valuable insights into complex problems. Traditionally, these advanced workflows have been limited to high-powered workstations that are tethered to brick-and-mortar facilities and shared among professional users, such as designers, architects, engineers, clinicians, and researchers. But today's organizations find themselves operating in multiple geographies, with distributed teams needing to collaborate and share highly confidential data in real time. This has resulted in several key challenges:

> The risk of mission-critical data or intellectual property left unsecured on a workstation's local storage media

> Interrupted workflows associated with network latency and lengthy cycle times for remote file access and editing

> Constrained productivity resulting from limited access to data and designs from offsite or offshore locations

> Limited ability to support an agile, project-based workforce of creative and technical professionals with the applications, data, and computer resources they need

VIRTUALIZED WORKSTATION-CLASS PERFORMANCE

With NVIDIA® RTX™ Virtual Workstation (vWS)* powering your virtual desktop environment, you enable the industry-leading capabilities of GPU-acceleration on every device in your organization.

> Enable secure, work-from-anywhere work styles.

> Deliver a full RTX experience from the data center or cloud.

> Run complex, real-time simulations.

> Speed rendering time of photorealistic images.

> Leverage AI-enhanced applications for more fluid, visual interactivity throughout the design process.

> Gain peace of mind with certified application compatibility.

> Enable business agility and stand up a new, powerful virtual workstation in as little as ten minutes.

Transforming the Workstation

Virtual workstations address these challenges and free users from the confines of physical location, delivering resources from the data center and providing secure access on any device, anywhere.

NVIDIA vWS extends the trusted benefits of the RTX visual computing platform to deliver a true GPU-accelerated data center. This lets IT virtualize any application from the data center with a workstation-class user experience. They can enable new virtualized workflows, such as virtual reality (VR) with NVIDIA CloudXR™ and next-generation collaboration with NVIDIA Omniverse™.

Now, your business can eliminate constrained workflows that inhibit agility, and users can securely collaborate in real-time without borders or limits. You can efficiently centralize all your apps and data for a dramatically lower IT operating expense. And IT can focus on managing strategic projects instead of managing PCs and workstations—all while enabling more secure, work-from-anywhere work styles with reduced threat of data loss or leakage.

> "To give our artists more compute power, we can easily increase NVIDIA vGPU profile sizes and reduce the number of users we put on each server. We don't need to replace any equipment."
>
> Daire Byrne
> Global Head of Systems
> **DNEG**

> "NVIDIA vWS made it so that 98–99 percent of our users could use the virtual environment just like a physical machine sitting in front of them. Users are actually reporting back that it performs exactly the same as a physical machine."
>
> Wesley Struble
> CAD System Administrator, North American Information Technology Services
> **DENSO International America**

Virtualize Any Application

ARCHITECTURE

Empower architects, engineers, and designers to collaborate in real time on designs with virtual workstations powered by NVIDIA vWS.

Common Applications: Adobe® Creative Cloud®, Allplan, ANSYS, Autodesk 3ds Max, Autodesk AutoCAD, Autodesk Revit, Bentley AECOsim, Bentley MicroStation

EDUCATION

Liberate the lab and provide access to graphics-intensive 3D software traditionally only found in on-campus physical labs—on any device, from anywhere.

Common Applications: Autodesk 3ds Max, Autodesk AutoCAD, Autodesk Maya, Autodesk Revit, Dassault Systèmes SOLIDWORKS, Esri ArcGIS

FINANCIAL SERVICES

Run network-heavy applications on up to four 5K monitors, with security, redundancy, and continuity.

Common Applications: Bloomberg, Reuters, Eikon, and other electronic trading platforms

GOVERNMENT

Deliver high-quality, simulated training cost-effectively via 3D graphics–rich virtual workstations.

Common Applications: Autodesk AutoCAD, Adobe Creative Cloud, ANSYS, Dassault Systèmes SOLIDWORKS, Esri ArcGIS Pro, Siemens PLM NX
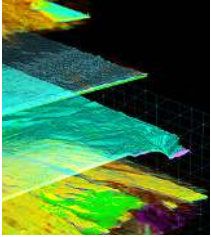
HEALTHCARE
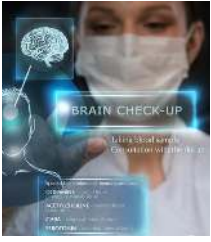
Deliver remote access for 3D volumetric viewing and editing of images to radiologists, physicians, and medical imaging specialists.

Common Applications: PACS (Picture Archiving and Communication System), Eclipse Medical Imaging

MANUFACTURING

Compress design cycles and accelerate time-to-market, while protecting sensitive data, by enabling virtual access to photorealistic 3D models.

Common Applications: ANSYS Fluent, ANSYS Mechanical, Autodesk AutoCAD, Autodesk Inventor, Autodesk 3ds Max, Dassault Systèmes SOLIDWORKS, Dassault Systèmes CATIA, PTC Creo, Siemens PLM NX

ENERGY

Enable geoscientists to remotely access large seismic datasets residing securely in the data center to make multi-million-dollar drilling decisions.

Common Applications: Autodesk Autodesk AutoCAD, ANSYS Fluent, Dassault Systèmes CATIA, Dassault Systèmes SOLIDWORKS, Esri ArcGIS, Landmark, Schlumberger Petrel

MEDIA AND ENTERTAINMENT

Remotely edit video, on up to two 8K monitors, and bring on new contractors in minutes while keeping video files securely in the data center.

Common Applications: Adobe Creative Cloud, Autodesk 3ds Max, Autodesk Maya

NVIDIA vWS Features

Configuration and Deployment	
Desktop Virtualization	✓
Remote Desktop Session Host (RDSH) App Hosting	✓[1]
RDSH Desktop Hosting	✓[1]
Windows OS Support	✓
Linux OS Support	✓
GPU Pass-Through Support[2]	✓
Bare Metal Support[3]	✓
NVIDIA Graphics Driver	✓[1]
NVIDIA RTX Enterprise Driver	✓
Management and Monitoring	✓
Guaranteed Quality-of-Service Scheduling[4]	✓
Multi-GPU Support[5]	✓

Display	
Maximum Hardware Rendered Display[6]	Up to four 5K or up to two 8K
Maximum Resolution[7]	7680x4320

Data Center Management	
Host-, Guest-, and Application-Level Monitoring[8]	✓
Live Migration[9]	✓

Support	
NVIDIA Direct Enterprise-Level Technical Support	✓
Maintenance Releases, Defect Resolutions, and Security Patches for up to Three Years[10]	✓

Advanced Professional Features	
ISV Certifications	✓
CUDA/OpenCL	✓[11]

Graphics Features and APIs	
NVIDIA NVENC	✓
OpenGL Extensions, Including WebGL	✓
RTX Performance Features and Optimization	✓
DirectX	✓
Vulkan Support	✓

Profiles[12]	
Max Frame Buffer Supported	48 GB
Available Profiles	1Q, 2Q, 3Q, 4Q, 6Q, 8Q, 12Q, 16Q, 24Q, 32Q[13] , 48Q[14]

NVIDIA Virtual GPU Hardware

Recommended GPUs for Different Use Cases	
High-end professional graphics users; includes use for double-precision compute workloads (e.g., running 3D models and design workflows, intensive computer-aided engineering [CAE] simulations)	V100[15]
Mid-level to high-end professional graphics users; includes use for single-precision compute workloads (e.g., rendering and creating complex designs)	A40[16], A10[17], RTX 8000, RTX 6000
Entry to mid-level professional graphics users, including deep learning inference workloads	A10[17], T4
Best for blade form factor	P6

[1] With packaged NVIDIA Virtual Applications (vApps) license.
[2] Only supported on 1:1 profiles.
[3] Only NVIDIA M6 Hardware supported as primary display device.
[4] Scheduling options include fixed share, equal share, and best effort/time slicing.
[5] Support starts with the NVIDIA virtual GPU software October 2018 release (version 7.0).
[6] 5K and 8K monitor support starts with NVIDIA virtual GPU software December 2019 release (version 10.0).
[7] 7680x4320 resolution support starts with NVIDIA virtual GPU software December 2019 release (version 10.0).
[8] Application-level monitoring is only available starting with the NVIDIA virtual GPU August 2017 release (version 5.0).
[9] Support starts with the NVIDIA virtual GPU software March 2018 release (version 6.0).
[10] Available with an active Support, Updates, and Maintenance (SUMs) contract.
[11] Supported on 8 GB 1:1 profile on Maxwell and all profiles on Pascal.
[12] Profiles supported have dependency on GPU selected. For more information, read the **Virtual GPU Software User Guide**.
[13] 32Q profile available with V100.
[14] 48Q profile supported with RTX 8000 available starting with NVIDIA virtual GPU software April 2019 release (version 8.0) and A40 starting with NVIDIA vGPU software January 2021 (version 12.0).
[15] A100 support available starting with NVIDIA virtual GPU software January 2021 release (version 12.0).
[16] Support for NVIDIA A40 starting with NVIDIA vGPU software January 2021 (version 12.0).
[17] Support for NVIDIA A10 starting with NVIDIA vGPU software Spring 2021 (version 12.2).

For more information visit **www.nvidia.com/virtual-workstation**