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

The Challenges of the Digital, Borderless Enterprise

For creators across industries, bringing concepts to life in the digital medium is a key step to designing the next iteration of everything from office buildings, to airplanes, and the feature films of tomorrow. Immersive visualization tools enable an interactive design process, so professionals can render, photorealistic images for final digital artistry, and run simulations faster to get the best designs before the concept enters the real world. Traditionally, these advanced workflows have been limited to high-powered workstations that are tethered to brick-and-mortar facilities with fixed compute infrastructures. But after hasty transitions to remote work and the advent of hybrid working cultures, today's organizations find themselves operating in multiple geographies. And distributed teams need to collaborate and share highly confidential data in real time. Without the proper infrastructure to support the visualization tools creators rely on, companies face the following challenges:

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

> Inefficient workflows that are interrupted by 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.

> Lost productivity time to resolving IT issues.

VIRTUALIZED WORKSTATION-CLASS PERFORMANCE

With NVIDIA RTX Virtual Workstation (vWS)* powering your virtual desktop environment, you enable industry-leading GPU-acceleration on every device in your organization. Unlock the power of RTX in your data center or cloud to:

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

> Tie the interactive design process, complex real-time simulations and speed rendering of photorealistic images together in a cohesive workflow

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

> Gain peace of mind with certified compatibility with over 700 industry-leading visualization and analytic applications.

> Enable business agility by standing up new, powerful virtual workstations in as little as ten minutes.

> Create an efficient infrastructure by sharing the GPU, flexibly scaling GPU resources according to individual user needs, and increasing utilization because idle workstation resources can be allocated to another user, or to run compute workloads such as simulation, rendering, or even AI.

Transforming the Workstation

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

Most virtual workstation solutions have fallen short of providing the application performance needed to ensure smooth workflows for creative and technical professionals.

With NVIDIA vWS, the trusted benefits of the RTX visual computing platform deliver a true GPU accelerated data center to power virtual workstations that meet the needs of a dispersed creative workforce. It's designed to meet the needs of creative and technical applications, connecting designers, engineers, modelers, and architectects with their visualization tools in the interface of their desktop with a smooth user experience.

This freedom addresses the challenges of remote working across workforce professional types by delivering the capacity and speed from your data center with secure access on any device.

With RTX vWS in an accelerated data center, IT can look to expand tool sets, and set up new workflows like virtual reality (VR) and augmented reality (AR) 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, remote work styles with reduced threat of data loss or leakage.

With our latest generation Ampere-architecture GPUs—the world's fastest virtual workstations have become even faster. NVIDIA RTX vWS with Ampere-architecture-based GPUs deliver up to 2.4x better graphics performance, and 1.1x better performance per dollar spent than our previous generation.

Up to 2.4X Faster Graphics Performance[1]
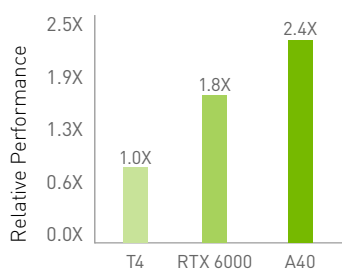
Up to 1.1X Better Graphics Performance per Dollar[1]
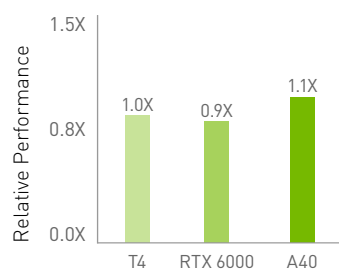
1 Comparison of NVIDIA A40 virtual workstation to NVIDIA T4, RTX 6000 and RTX 8000 virtual workstations, 1 user per board, running on a server configured with 64GB RAM per user. SPECviewperf results tested on a server with 2x Xeon Gold 6154 3.0GHz (3.7GHz Turbo), VMware vSphere 7.0 U2, host/guest driver 470.63. NVIDIA RTX vWS 13 | SPECviewperf 2020, 4K Geomean

THE POWER OF RTX IN YOUR DATA CENTER

RTX is a powerful visual computing platform that enables simulation of the real-world at unprecedented speeds.

RTX vWS harnesses the power of RTX technology in a virtualized data center enhancing computing capacity, bringing more speed to professional visualization. RTX enables the following features in visualization applications:

> **Ray-tracing:** Realizes the dream of real-time cinematic-quality rendering. The ability to render photorealistic objects and environments in real time with accurate shadows, reflections, and refractions make it possible for professionals to create amazing content faster.

> **Artificial Intelligence:** Brings the power of AI to visual computing, enabling developers to create AI-augmented applications that bring workflow acceleration to end users.

> **Rasterization:** Features advances in programmable shading such as variable-rate shading, texture-space shading, and multi-view rendering. These enable richer visuals with more fluid interactivity.

> **Simulation:** Enables accurate modeling of the behavior of real-world objects in everything from games to virtual environments and special effects.

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
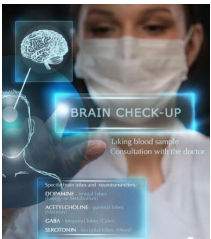
FINANCIAL SERVICES

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
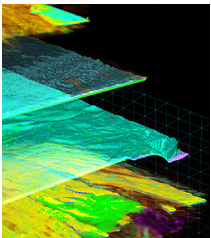
HEALTHCARE

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

> "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**

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[1]	✓
Bare Metal Support	✓
NVIDIA Graphics Driver	✓[1]
NVIDIA RTX Enterprise Driver	✓
Management and Monitoring	✓
Guaranteed Quality-of-Service Scheduling	✓
Multi-GPU Support[2]	✓

Display	
Maximum Hardware Rendered Display[3]	Up to four 5K or up to two 8K
Maximum Resolution[4]	7680x4320

Data Center Management	
Host-, Guest-, and Application-Level Monitoring[5]	✓
Live Migration[6]	✓

Support	
NVIDIA Direct Enterprise-Level Technical Support	✓
Maintenance Releases, Defect Resolutions, and Security Patches for up to Three Years[7]	✓

Advanced Professional Features	
ISV Certifications	✓
CUDA/OpenCL	✓[8]

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 , 48Q

NVIDIA Virtual GPU Hardware

Recommended GPUs for Different Use Cases	
High-end professional graphics users	A40[10]
Mid-range professional graphics users	A40[10]
Entry professional graphics users	A16

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[1] Only supported on 1:1 profiles.
[2] Support starts with the NVIDIA virtual GPU software October 2018 release (version 7.0).
[3] 5K and 8K monitor support starts with NVIDIA virtual GPU software December 2019 release (version 10.0).
[4] 7680x4320 resolution support starts with NVIDIA virtual GPU software December 2019 release (version 10.0).
[5] Application-level monitoring is only available starting with the NVIDIA virtual GPU August 2017 release (version 5.0).
[6] Support starts with the NVIDIA virtual GPU software March 2018 release (version 6.0).
[7] Available with an active Support, Updates, and Maintenance (SUMs) contract.
[8] Supported on 8 GB 1:1 profile on Maxwell and all profiles on Pascal.
[9] Profiles supported have dependency on GPU selected. For more information, read the **Virtual GPU Software User Guide**.
[10] Support for NVIDIA A40 starting with NVIDIA vGPU software January 2021 (version 12.0).