

# VMware Horizon with NVIDIA GRID vGPU

Delivering Secure, Immersive Graphics from the Cloud

## AT A GLANCE

VMware Horizon® with NVIDIA™ GRID™ vGPU delivers secure, immersive 3D graphics from the cloud, that's easily accessed across devices and locations, more affordably than ever before. Leveraging a single platform based on the industry's leading hypervisor – VMware vSphere®, VMware Horizon ensures that power users and designers can enjoy a graphics experience that's equivalent to dedicated hardware, delivered securely and cost-effectively, certified by NVIDIA and VMware for the leading applications businesses depend on.

## BENEFITS

- Real-time collaboration on large graphics datasets, from the cloud
- Greater security for mission-critical data shared across locations and devices
- Workstation-class graphics, without the workstation
- VMware end-to-end platform for reduced OpEx
- Lower cost of acquisition with VMware vSphere Enterprise Plus Edition bundled with Horizon 6
- Growing portfolio of certifications with the industry's leading 3D application ISV's

## Enhancing Desktop Virtualization to Support 3D Graphics

Organizations are increasingly seeking greater business agility, supporting geographically dispersed teams, and the need for secure, real-time collaboration. Teams within manufacturing, architecture, education, and healthcare environments need the ability to interact with large graphics-intensive datasets that must be securely manipulated in 3D, in real-time.

Desktop virtualization presents an opportunity to un-tether the traditional graphics workstation from the confines of hardware and location. Graphics Processing Units (GPUs) offer greater performance and user experience with 3D graphics within virtual environments, while relieving CPU of the graphics processing burden. However, a tradeoff has traditionally existed between deploying technologies that cost-effectively share GPU resources across many virtual desktops, offering limited performance uplift, versus those that allocate a single GPU to a single virtual desktop, incurring a significant per-user cost.

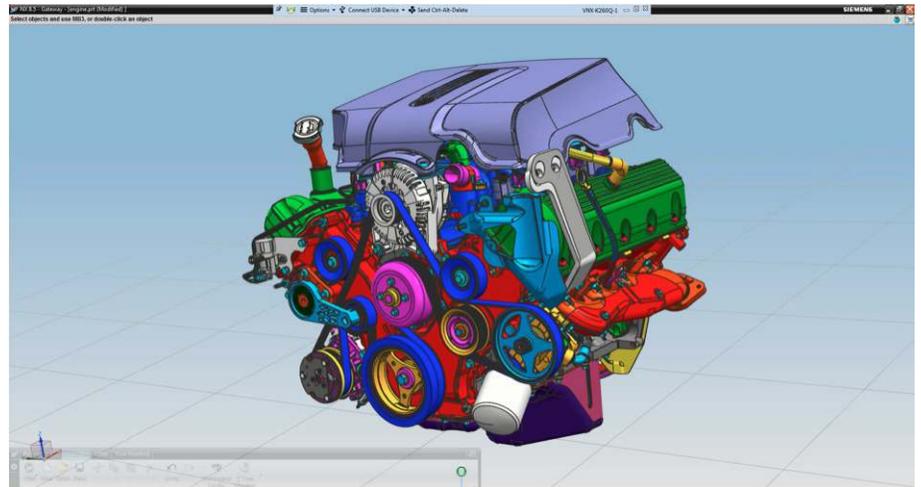


Figure 1. Siemens NX with VMware Horizon and NVIDIA GRID vGPU

## VMware Horizon with NVIDIA GRID vGPU

With the introduction of NVIDIA GRID vGPU capability for VMware Horizon, the trade-off between cost vs. performance is eliminated. Organizations can now deliver immersive 3D graphics from the cloud, to enable secure, global collaboration on large datasets, with performance and a user experience that's equivalent to physical PC or workstation, with the cost-effectiveness of GPU sharing across multiple users. (See Fig.2)

VMWARE HORIZON WITH NVIDIA GRID vGPU

Overview

- Immersive Graphics from the Cloud
- Single Platform, Lower Costs
- ISV Compatibility

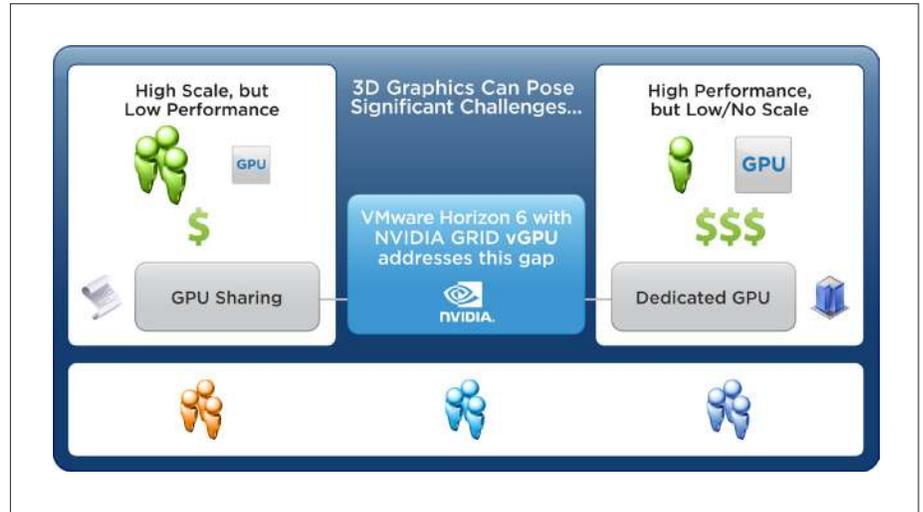


Figure 2. Addressing the Performance/Scale Gap with VMware Horizon and NVIDIA GRID vGPU

How it Works

NVIDIA GRID vGPU enables true GPU hardware acceleration and sharing across multiple virtual desktops—without compromising the graphics experience. Application features and compatibility are exactly the same as they would be at the desk. With GRID vGPU technology, the graphics commands of each virtual machine are passed directly to the GPU, without translation by the hypervisor. This allows the GPU hardware to be time-sliced to deliver the ultimate in shared virtualized graphics performance. (See Fig.3)

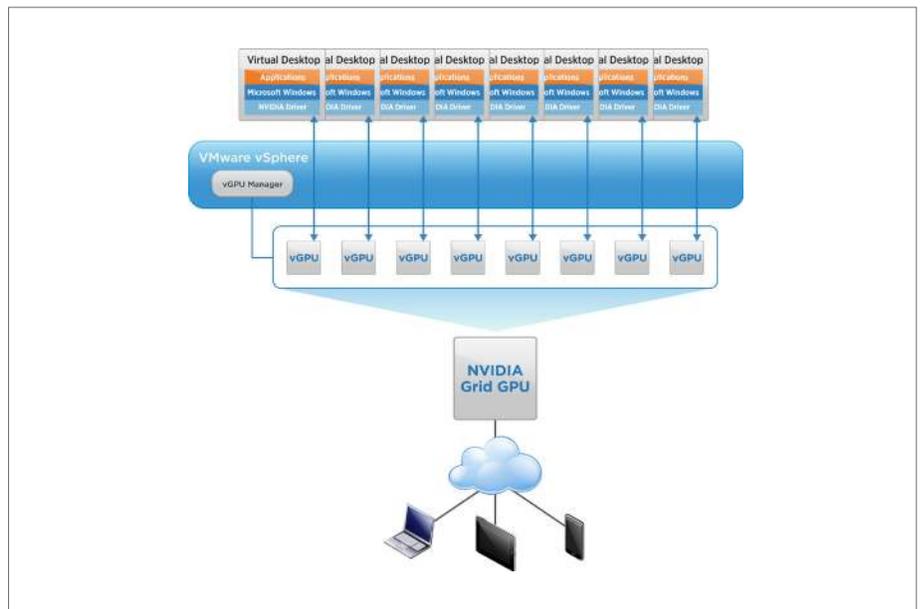


Figure 3. GPU Sharing with NVIDIA GRID vGPU

NVIDIA GRID K1 and K2 graphics boards, installed in the VMware ESXi™ host, can be configured using vGPU Profiles, to allocate the required amounts of dedicated graphics memory and display settings required for a given desktop. NVIDIA's GRID vGPU Manager enables up to eight users to share each physical GPU, assigning the graphics resources of the available GPUs to virtual machines in a balanced approach. Each NVIDIA GRID K1 card has up to four GPUs, allowing 32 users to share a single card. (See Table 1<sup>1</sup>)

NVIDIA GRID Graphics Board	Virtual GPU Profile	Application Certifications	Graphics Memory	Max Displays Per User	Max Resolution Per Display	Max Users Per Graphics Board	Use Case
GRID K2	*K280Q	•	4 GB	4	2560x1600	2	Designer
	K260Q	•	2 GB	4	2560x1600	4	Designer/Power User
	K240Q	•	1 GB	2	2560x1600	8	Designer/Power User
	K220Q	•	512 MB	2	2560x1600	16	Designer/Power User
GRID K1	*K180Q	•	4 GB	4	2560x1600	4	Entry Designer
	*K160Q	•	2 GB	4	2560x1600	8	Power User
	K140Q	•	1 GB	2	2560x1600	16	Power User
	K120Q	•	512 MB	2	2560x1600	32	Power User

Table 1. NVIDIA K1 and K2

## Features and Benefits

### Immersive Graphics Delivered from the Cloud

VMware Horizon with NVIDIA GRID vGPU effectively untethers power users and designers from the constraints of physical hardware, enabling geographically dispersed teams to collaborate in real-time. Immersive 3D graphics datasets can now be rendered within virtual desktops, delivered to the device of their choice, including Chromebooks, tablets, and mobile devices.

### Greater Security for Mission-Critical Data

With today's increasingly dispersed, mobile workforce, the threat of data loss has never been greater. Organizations can confidently enable global collaboration across their workforce knowing that mission-critical datasets are securely centralized, and that valuable 2D and 3D models are never stored on local, client-side storage prone to damage or loss.

### Single Platform, Lower Costs

Built on the industry's leading hypervisor – VMware vSphere, organizations can confidently deliver scalable, high-performance graphics with a single platform that leverages VMware end-to-end, from device to datacenter, offering a single solution for VDI, ThinApp® packaged apps, RDS hosted apps and desktops, as well as SaaS apps. Manageability is simplified and streamlined, integrating VMware Horizon, VMware Virtual SAN™, and App Volumes™ into a single solution, along with seamless pool management for load balancing across a vCenter™ cluster with VMware Horizon. This unified platform helps deliver reduced OpEx with lower support and operational costs.

1. [www.nvidia.com/object/virtual-gpus.html](http://www.nvidia.com/object/virtual-gpus.html)

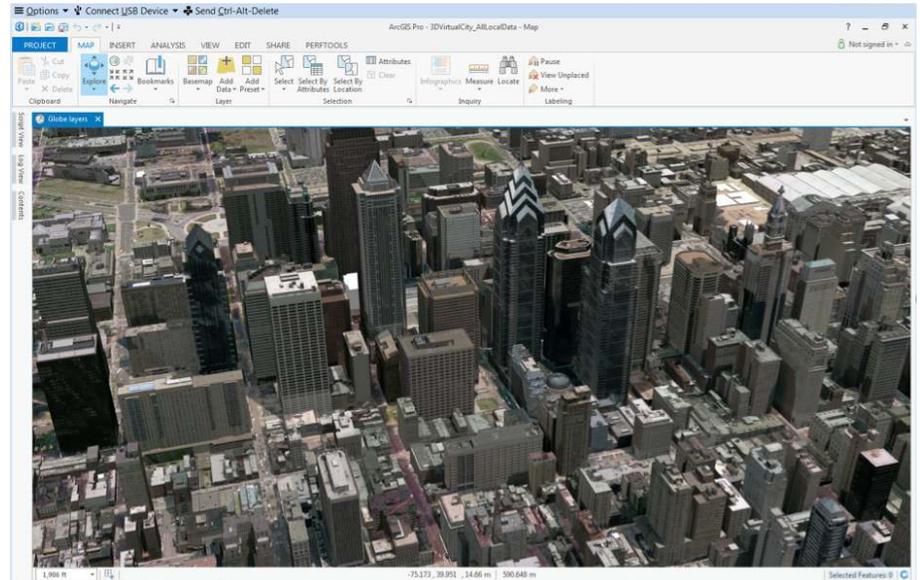


Figure 4. ESRI ArcGIS Pro with VMware Horizon and NVIDIA GRID vGPU

### Peace of Mind with ISV Certifications

NVIDIA GRID GPUs are ISV tested and supported. This process validates that users get the same graphics performance and experience in a virtualized environment, as they would expect from their PC or workstation. Organizations can confidently deploy with a smooth, rapid ramp-up of applications for designers and power users, for greater productivity and business agility. For the latest application certifications, visit [www.nvidia.com/gridcertifications](http://www.nvidia.com/gridcertifications).

### Find Out More

#### VMware Horizon Resources:

Blog: <http://blogs.vmware.com/euc/>

Twitter: [@VMwareHorizon](https://twitter.com/VMwareHorizon)

Facebook: [VMware Horizon](https://www.facebook.com/VMwareHorizon)

Community Forums: <https://communities.vmware.com/community/vmtn>

#### NVIDIA GRID Resources:

Website: <http://www.nvidia.com/object/vmware.html>

Newsletter: [tinyurl.com/gridinfo](http://tinyurl.com/gridinfo)

YouTube Channel: <http://tinyurl.com/gridvideos>

Twitter: [@NVIDIAGRID](https://twitter.com/NVIDIAGRID)

Community Forums: [gridforums.nvidia.com](http://gridforums.nvidia.com)

