

VMware Horizon with NVIDIA GRID vGPU

Q. What is NVIDIA GRID vGPU?

A. GRID vGPU is a graphics acceleration technology from NVIDIA that enables a single GPU (graphics processing unit) to be shared among multiple virtual desktops. When NVIDIA GRID cards (installed in an x86 host) are used in a desktop virtualization solution running on VMware vSphere® 6.0, application graphics can be rendered with superior performance compared to non-hardware-accelerated environments. This capability is useful for graphics-intensive use cases such as designers in a manufacturing setting, architects, engineering labs, higher education, oil and gas exploration, clinicians in a healthcare setting, as well as for power users who need access to rich 2D and 3D graphical interfaces.

Q. What was the nature of the VMware NVIDIA GRID announcement at PEX 2015?

A. NVIDIA GRID vGPU technology for vSphere now enables access to any graphics-enabled application with 100 percent compatibility and excellent performance. Until now this presented a challenge to the industry at large that desired accelerated graphics performance for vSphere-based data centers, which represent the vast majority of deployed virtual infrastructure. With this announcement, VMware is widening the addressable market of graphics-accelerated desktop virtualization, and improving the value that vSphere offers to customers, while raising the performance bar with the VMware Horizon® 6 with NVIDIA GRID vGPU solution.

Q. What are the benefits of VMware Horizon with NVIDIA GRID vGPU?

- A. VMware Horizon delivers an enhanced user experience with Blast Performance, built on NVIDIA GRID vGPU technology, offering the following benefits:
- 100 percent compatibility with any graphics-enabled application. By enabling access to the NVIDIA graphics drivers that ship with every PC and workstation, a VMware virtual machine with GRID now delivers the same user experience as expected from a local machine.
 - Cloud-based, PC, and workstation-class graphics without the need to be tethered to a workstation. Deliver wider access to 3D applications across multiple devices and locations.
 - Support for real-time collaboration by centralizing large graphics datasets across end users.
 - Enhanced workspace productivity for geographically dispersed teams (including designers, clinicians, and researchers).
 - High-end graphics performance with native NVIDIA driver support ensuring that applications behave the same way they did on their previous desktop systems, all within vSphere-based desktop virtualization environments.
 - Better cost-effectiveness and scale with sharing of GPU hardware across multiple VMs and users.
 - Access to immersive, hardware-accelerated 3D graphics on any device with VMware Horizon.
 - Greater protection against data loss from workstations or laptops, with high-value graphics datasets centrally hosted and secured.
 - Certification by NVIDIA and VMware, for a growing portfolio of leading ISV applications like ESRI and Siemens.

Q. How is GRID vGPU different from other graphics-acceleration approaches?

- **GRID vGPU vs. vSGA** – While vSGA (Virtual Shared Graphics Acceleration) offers the benefit of sharing NVIDIA hardware across a larger ratio of end users, GRID vGPU offers superior graphics performance through better application compatibility using native NVIDIA drivers, as well as support for newer releases of OpenGL and DirectX. GRID vGPU profiles in vSphere allow for simple management with a single-pane-of-glass management console. This allows enterprise IT departments the ability to deliver a customized graphics profile to meet individual end-user requirements. VMware recommends GRID vGPU-based implementations of VMware Horizon where the economics and scalability of GPU-sharing are required, while delivering superior performance.
- **GRID vGPU vs. vDGA** – While vDGA (Virtual Dedicated Graphics Acceleration) delivers superior performance with native NVIDIA driver support demanded by designers using dedicated workstations, it is constrained in offering cost-effective scalability. Only one user can be mapped to an individual NVIDIA GPU with vDGA, so this approach is best applied in high-end use cases where the economics of GPU-sharing is secondary to performance. When dedicated and shared GPUs are needed, GRID vGPU can manage both needs from a single management interface, with better portability across hosts.

Q. What if I've already deployed vSGA or vDGA in my environment?

- A. Customers who have deployed vSGA or vDGA with NVIDIA GRID K1 and K2 hardware are able to migrate seamlessly to GRID vGPU with vSphere 6 Enterprise Plus. Since the NVIDIA GRID K1 and K2 cards are the same (for vSGA, vDGA, and vGPU), customers can upgrade to vSphere 6, change their virtual machine settings, and install the NVIDIA graphics driver to migrate to GRID vGPU.

Q. What are some typical use cases for GRID vGPU?

- A. Power users and designers can benefit from the performance of shared graphics acceleration, but with the additional benefit of native NVIDIA driver support, as well as increased graphics performance over vSGA or Soft 3D. GRID vGPU brings a wealth of certified and supported professional applications that are only certified with NVIDIA drivers.

Q. What are some typical use cases for vDGA?

- A. Designers can benefit from dedicated graphics acceleration using applications such as 3D design or computer-aided drawing and engineering. Clinicians can access detailed CT scans and MRIs from their mobile stations and devices. vDGA is ideally suited to those environments where the economics of GPU-sharing are not a requirement, and where the use case dictates a level of performance that is equivalent to a dedicated workstation. When dedicated and shared GPUs are needed, GRID vGPU can manage both needs from a single management interface, with better portability across hosts.

Q. Since GRID vGPU is a capability enabled by vSphere 6.0, can I use it to support my Citrix environment instead of VMware Horizon?

- A. While existing Citrix XenDesktop environments deployed on XenServer can now migrate to vSphere and reap the benefits of GRID vGPU, there are significant incremental benefits from additionally migrating XenDesktop environments to VMware Horizon. VMware offers a single platform based on an all-VMware solution that spans the device to the data center, with unified access to VDI desktops, packaged apps, RDS-hosted apps and desktops, as well as SaaS-based apps. This all-VMware stack offers end-to-end management and automation that minimizes support and management costs, reducing customer OpEx and TCO compared with fragmented multi-vendor desktop virtualization solution stacks. Learn how [VMware offers a Safe Passage for Citrix Customers](#).

**Q. What is the maximum number of monitors supported?
 How many users can be supported on a single NVIDIA card?
 How much video memory can be allocated to users?
 What screen resolution is supported?**

A. Refer to the table below for these specifications:

NVIDIA GRID GRAPHICS BOARD	VIRTUAL GPU PROFILE	APPLICATION CERTIFICATIONS	GRAPHICS MEMORY	MAX DISPLAYS PER USER	MAX RESOLUTION PER DISPLAY	MAX USERS PER GRAPHICS BOARD	USER CASE
GRID K2	K280Q	✓	4 GB	4	2560 x 1600	2	Designer
	K260Q	✓	2 GB	4	2560 x 1600	4	Designer /Power User
	K240Q	✓	1 GB	2	2560 x 1600	8	Designer /Power User
	K220Q	✓	512 MB	2	2560 x 1600	16	Designer /Power User
GRID K1	K180Q	✓	4 GB	4	2560 x 1600	4	Entry Designer
	K160Q	✓	2 GB	4	2560 x 1600	8	Power User
	K140Q	✓	1 GB	2	2560 x 1600	16	Power User
	K120Q	✓	512 MB	2	2560 x 1600	32	Power User

Q. What applications are compatible with GRID vGPU?

A. Since GRID vGPU includes the power of the NVIDIA GPU and the long-proven NVIDIA graphics driver, the vast majority of professional applications ranging from engineering, design, media, and entertainment, to oil and gas, are supported with NVIDIA graphics.

Q. Where can I find the Hardware Compatibility List for GRID vGPU?

A. NVIDIA GRID vGPU is a capability of the NVIDIA GRID card. The server compatibility list for NVIDIA GRID can be found on the [NVIDIA Web site](#).

Q. Where can I get more information?

A. For more information on the VMware Horizon with NVIDIA GRID vGPU solution, contact your VMware or partner account executive, or visit www.vmware.com/products/horizon-view.

For more information on NVIDIA GRID vGPU with VMware Horizon, visit www.nvidia.com/vmware.

For NVIDIA graphics application compatibility, visit www.nvidia.com/gridcertifications.

