



NVIDIA Introduces World's First Virtualized GPU, Accelerating Graphics for Cloud Computing

NVIDIA VGX Cloud Platform Puts GPUs in Enterprise Data Centers, Freeing Users to Run Microsoft Windows, Any Applications From Their Connected Device

SAN JOSE, CA -- **GPU Technology Conference** -- NVIDIA today unveiled the NVIDIA® VGX™ platform, which enables IT departments to deliver a virtualized desktop with the graphics and GPU computing performance of a PC or workstation to employees using any connected device.

With the [NVIDIA VGX platform](#) in the data center, employees can now access a true cloud PC from any device -- thin client, laptop, tablet or smartphone -- regardless of its operating system, and enjoy a responsive experience for the full spectrum of applications previously only available on an office PC.

NVIDIA VGX enables knowledge workers for the first time to access a GPU-accelerated desktop similar to a traditional local PC. The platform's manageability options and ultra-low latency remote display capabilities extend this convenience to those using 3D design and simulation tools, which had previously been too intensive for a virtualized desktop.

Integrating the VGX platform into the corporate network also enables enterprise IT departments to address the complex challenges of "BYOD" -- employees bringing their own computing device to work. It delivers a remote desktop to these devices, providing users the same access they have on their desktop terminal. At the same time, it helps reduce overall IT spend, improve data security and minimize data center complexity.

"NVIDIA VGX represents a new era in desktop virtualization," said Jeff Brown, general manager of the Professional Solutions Group at NVIDIA. "It delivers an experience nearly indistinguishable from a full desktop while substantially lowering the cost of a virtualized PC."

The NVIDIA VGX platform is part of a series of announcements NVIDIA is making today at the GPU Technology Conference (GTC), all of which can be accessed in the [GTC online press room](#).

The VGX platform addresses key challenges faced by global enterprises, which are under constant pressure both to control operating costs and to use IT as a competitive edge that allows their workforces to achieve greater productivity and deliver new products faster. Delivering virtualized desktops can also minimize the security risks inherent in sharing critical data and intellectual property with an increasingly internationalized workforce.

NVIDIA VGX is based on three key technology breakthroughs:

- **NVIDIA VGX Boards.** These are designed for hosting large numbers of users in an energy-efficient way. The first NVIDIA VGX board is configured with four GPUs and 16 GB of memory, and fits into the industry-standard PCI Express interface in servers.
- **NVIDIA VGX GPU Hypervisor.** This software layer integrates into commercial hypervisors, such as the Citrix XenServer, enabling virtualization of the GPU.
- **NVIDIA User Selectable Machines (USMs).** This manageability option allows enterprises to configure the graphics capabilities delivered to individual users in the network, based on their demands. Capabilities range from true PC experiences available with the NVIDIA standard USM to enhanced professional 3D design and engineering experiences with [NVIDIA Quadro®](#) or [NVIDIA NVS™](#) GPUs.

The NVIDIA VGX platform enables up to 100 users to be served from a single server powered by one VGX board, dramatically improving user density on a single server compared with traditional virtual desktop infrastructure (VDI) solutions. It sharply reduces such issues as latency, sluggish interaction and limited application support, all of which are associated with traditional VDI solutions.

With the NVIDIA VGX platform, IT departments can serve every user in the organization -- from knowledge workers to designers ---with true PC-like interactive desktops and applications.

NVIDIA VGX Boards

NVIDIA VGX boards are the world's first GPU boards designed for data centers. The initial NVIDIA VGX board features four GPUs, each with 192 NVIDIA CUDA® architecture cores and 4 GB of frame buffer. Designed to be passively cooled, the board fits within existing server-based platforms.

The boards benefit from a range of advancements, including hardware virtualization, which enables many users who are running hosted virtual desktops to share a single GPU and enjoy a rich, interactive graphics experience; support for low-

latency remote display, which greatly reduces the lag currently experienced by users; and, redesigned shader technology to deliver higher power efficiency.

NVIDIA VGX GPU Hypervisor

The NVIDIA VGX GPU Hypervisor is a software layer that integrates into a commercial hypervisor, enabling access to virtualized GPU resources. This allows multiple users to share common hardware and ensure virtual machines running on a single server have protected access to critical resources. As a result, a single server can now economically support a higher density of users, while providing native graphics and GPU computing performance.

This new technology is being integrated by leading virtualization companies, such as Citrix, to add full hardware graphics acceleration to their full range of VDI products.

NVIDIA User Selectable Machines

NVIDIA USMs allow the NVIDIA VGX platform to deliver the advanced experience of professional GPUs to those requiring them across an enterprise. This enables IT departments to easily support multiple types of users from a single server.

USMs allow better utilization of hardware resources, with the flexibility to configure and deploy new users' desktops based on changing enterprise needs. This is particularly valuable for companies providing infrastructure as a service, as they can repurpose GPU-accelerated servers to meet changing demand throughout the day, week or season.

Leading Businesses Endorse NVIDIA VGX

"Jaguar Land Rover is a global company with an international workforce. The 'holy grail' for us is to deliver virtualized desktop to engineers overseas so we can harness the best engineering talent on the planet without risking the security of our new car designs. The NVIDIA VGX platform is the most promising step we've seen in addressing the user experience for our virtualized workforce. With NVIDIA VGX, engineers for the first time can run all of the office productivity and technical applications they need in a virtualized environment. This will dramatically improve the productivity of our global workforce."

-- Gordon McMullan, interim CTO, Jaguar Land Rover

"[Larson Design Group](#) is a growing company that teams with our clients to provide responsive, innovative solutions for facility, transportation, land development and environmental needs. We therefore look to deploy technologies that will help sustain our growing geographic reach, ease administration and allow our engineers to reach their creative maximum and be more connected to client needs. With NVIDIA VGX, our engineers can now take any mobile device to the client's site, work interactively with them on a fully virtualized desktop and still maintain the industry's highest productivity levels."

-- Keith S. Kuzio, CEO, Larson Design Group

Leading Virtualization Companies Endorse NVIDIA VGX

"Desktop virtualization is rapidly becoming mainstream for enterprises. By leveraging the NVIDIA VGX platform, combined with XenDesktop and HDX technologies, we are enabling enterprise customers to virtually deliver graphics-intensive apps beyond power users and designers. Now, they can also serve users who require only occasional access to graphics-intensive apps, which previously would have been cost-prohibitive. The combined virtual desktop solution for serving these users can be reduced by up to 80 percent, while enabling users to securely access GPU-accelerated apps from any device."

-- Sumit Dhawan, vice president and general manager of Receivers and Gateways, Citrix

Leading OEMs Endorse NVIDIA VGX

"NVIDIA virtualized GPU technology aligns with Cisco's vision of cloud and delivery of desktop and rich-media applications. GPU virtualization is the one major technology challenge that has been holding back deeper adoption of VDI in the enterprise. We believe NVIDIA's breakthrough will deliver the unique user experience and ease of management customers have been demanding."

-- David Yen, senior vice president and general manager of Data Center Business Group, Cisco

"Virtual desktop environments can enable mobile workforces to perform tasks more efficiently. With HP VirtualSystem utilizing HP Blade Servers and the NVIDIA VGX platform, clients can easily deploy a simplified virtualized environment that quickly delivers the information or applications users need."

-- Chuck Smith, vice president of Worldwide Industry Standard Servers, HP

Availability and Pricing

The NVIDIA VGX platform, including new NVIDIA VGX boards, the NVIDIA GPU Hypervisor and NVIDIA USMs, is planned to be available for deployment across the enterprise through NVIDIA's hardware OEM and VDI partners later this year. Additional information is available at www.nvidia.com/object/vdi-desktop-virtualization.html.

About GTC

The [GPU Technology Conference](#) (GTC) advances global awareness of GPU computing and visualization, and their importance to the future of science and innovation. View the latest news from NVIDIA and its partners in the [GTC press room](#).

About NVIDIA

[NVIDIA](#) (NASDAQ: NVDA) awakened the world to computer graphics when it invented the [GPU](#) in 1999. Today, its [processors](#) power a broad range of products from [smartphones](#) to [supercomputers](#). NVIDIA's [mobile processors](#) are used in

[cell phones](#), [tablets](#) and [auto infotainment systems](#). [PC gamers](#) rely on GPUs to enjoy spectacularly immersive worlds. Professionals use them to create [3D graphics](#) and visual effects in movies and to design everything from golf clubs to jumbo jets. And researchers utilize GPUs to advance the frontiers of science with [high performance computing](#). The company has more than 4,500 patents issued, allowed or filed, including ones covering ideas essential to modern computing. For more information, see www.nvidia.com.

Certain statements in this press release including, but not limited to statements as to: the availability, benefits and impact of the NVIDIA VGX platform, NVIDIA VGX boards, the NVIDIA GPU Hypervisor and NVIDIA User Selectable Machines; and the effects of the company's patents on modern computing are forward-looking statements that are subject to risks and uncertainties that could cause results to be materially different than expectations. Important factors that could cause actual results to differ materially include: global economic conditions; our reliance on third parties to manufacture, assemble, package and test our products; the impact of technological development and competition; development of new products and technologies or enhancements to our existing product and technologies; market acceptance of our products or our partners products; design, manufacturing or software defects; changes in consumer preferences or demands; changes in industry standards and interfaces; unexpected loss of performance of our products or technologies when integrated into systems; as well as other factors detailed from time to time in the reports NVIDIA files with the Securities and Exchange Commission, or SEC, including its Form 10-K for the fiscal period ended January 29, 2012. Copies of reports filed with the SEC are posted on the company's website and are available from NVIDIA without charge. These forward-looking statements are not guarantees of future performance and speak only as of the date hereof, and, except as required by law, NVIDIA disclaims any obligation to update these forward-looking statements to reflect future events or circumstances.

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