DELL Technologies

Work Your Way

Work and learn seamlessly from anywhere with a range of GPU-accelerated virtual desktop infrastructure solutions from Dell Technologies.

Get Started >

NVIDIA

Empower remote workers with a ready-for-anything digital workplace that **increases efficiency and productivity without compromising on security**.

Dell Technologies offers multiple NVIDIA® GPU-accelerated virtual desktop infrastructure (VDI) solutions to help you streamline how you deliver, protect and manage applications and infrastructure from edge to core to cloud.

Having a ready-for-anything digital workplace is critical.

Where people learn and work has changed dramatically and will continue to be more fluid.

40% of employees will continue working from home.[1]

50% of employees are expected to be working from home three years from now.[1]

No matter where they work, remote users expect uninterrupted, seamless technology experiences.

70% of employees expect to be productive from anywhere.[2]

54% of users expect to use the same device for both business and personal tasks.[3]

It's time to rethink the way knowledge workers, engineers and designers work best and implement solutions that help them stay productive and enable them to collaborate from anywhere.

Accelerated VDI delivers the workforce transformation you need right now, and in the future, by enabling users to work from anywhere with a high-quality experience and without compromising security.

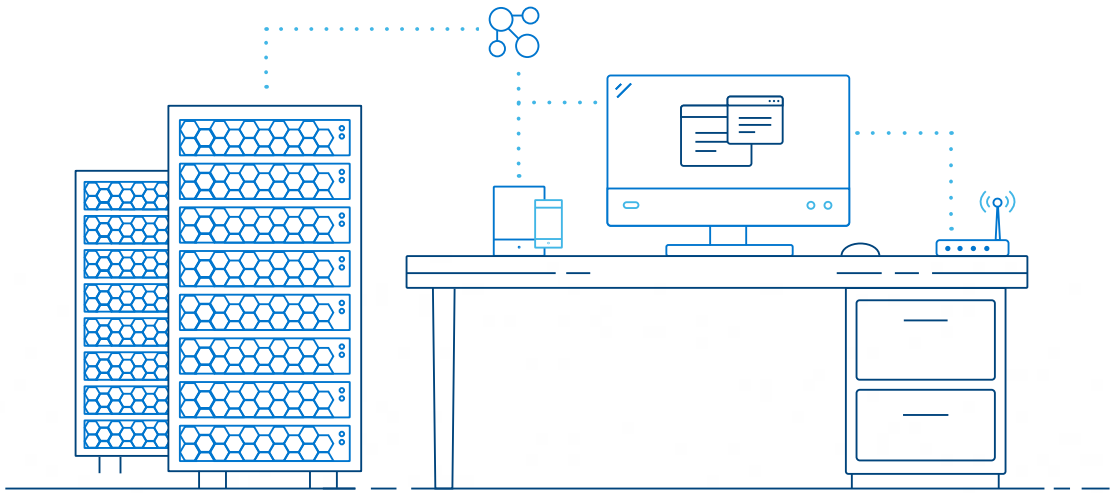
[1] Pre and Post CV19: Dell User Group Pulse Survey, March 2020.

[2] ESG Remote Work Report, 2020.

[3] Enterprise Strategy Group (ESG), 2019 Digital Work Survey, based on Dell analysis, November 2019.

Many solutions, one provider

A digital workplace powered by Dell Technologies enables your users to work or learn from virtually anywhere with the performance, productivity and security that is vital to your organization.



Dell Technologies is the only provider to offer VDI solutions from the data center to the endpoint, including GPU-accelerated servers, storage, networking, workstations, thin clients, PCs, laptops, monitors and peripherals, along with specialized experts focusing on VDI.

Dell Technologies brings together the most intelligent and secure solutions with the industry's most advanced management capabilities to revolutionize how you deploy, manage, secure and support your users no matter where they work, learn or collaborate.

Dell Technologies APEX offers a simple approach that gives you a wide range of consumption models, payment solutions and services so you can optimize for a variety of factors while realizing more predictable outcomes.

Optimize on-demand workplaces with GPU-accelerated VDI.

Enterprises and higher education institutes are turning to GPU-accelerated VDI because it provides the graphics performance that enables professionals to collaborate and access the most intensive 3D graphics applications. It also enables a smooth user experience for knowledge workers using office productivity applications and multiple high resolution monitors and streaming video, including video collaboration tools.

Dell Technologies works closely with NVIDIA to develop solutions for today's accelerator-optimized workloads, providing significant advantages:

Deliver high-performance user experiences: Deliver extreme graphics in a reliable environment, reducing downtime and enabling anytime, anywhere digital workspaces.

Streamline IT resources and improve productivity: IT can centrally manage images and applications and dynamically allocate resources to respond faster to user and business demands. Additionally, IT can flexibly allocate GPU-accelerated resources to provision virtual PCs, virtual workstations, or to accelerate compute workloads such as artificial intelligence (AI) or data science.

Enhance security: VDI enhances security by centrally storing intellectual property (IP), data and apps in the data center. Dell EMC PowerEdge servers are designed with a cyber-resilient architecture, integrating security deeply into every phase in the lifecycle, from design to retirement.

What is NVIDIA vGPU?

Delivering powerful performance for graphics- and data-intensive applications, virtual GPUs (vGPUs) play a leading role in providing a high-quality VDI for traditional business applications, as well as for accelerating AI and high performance computing (HPC).

According to Lakeside Software, almost every application uses GPUs today. In fact, GPU usage by office productivity applications has more than doubled since 2015. The number of productivity applications that use GPU resources is now close to 100%.[4]

NVIDIA vGPU software creates vGPUs that enable every virtual machine (VM) to share a physical GPU installed on the server or allocate multiple GPUs to a single VM to power the most demanding workloads.

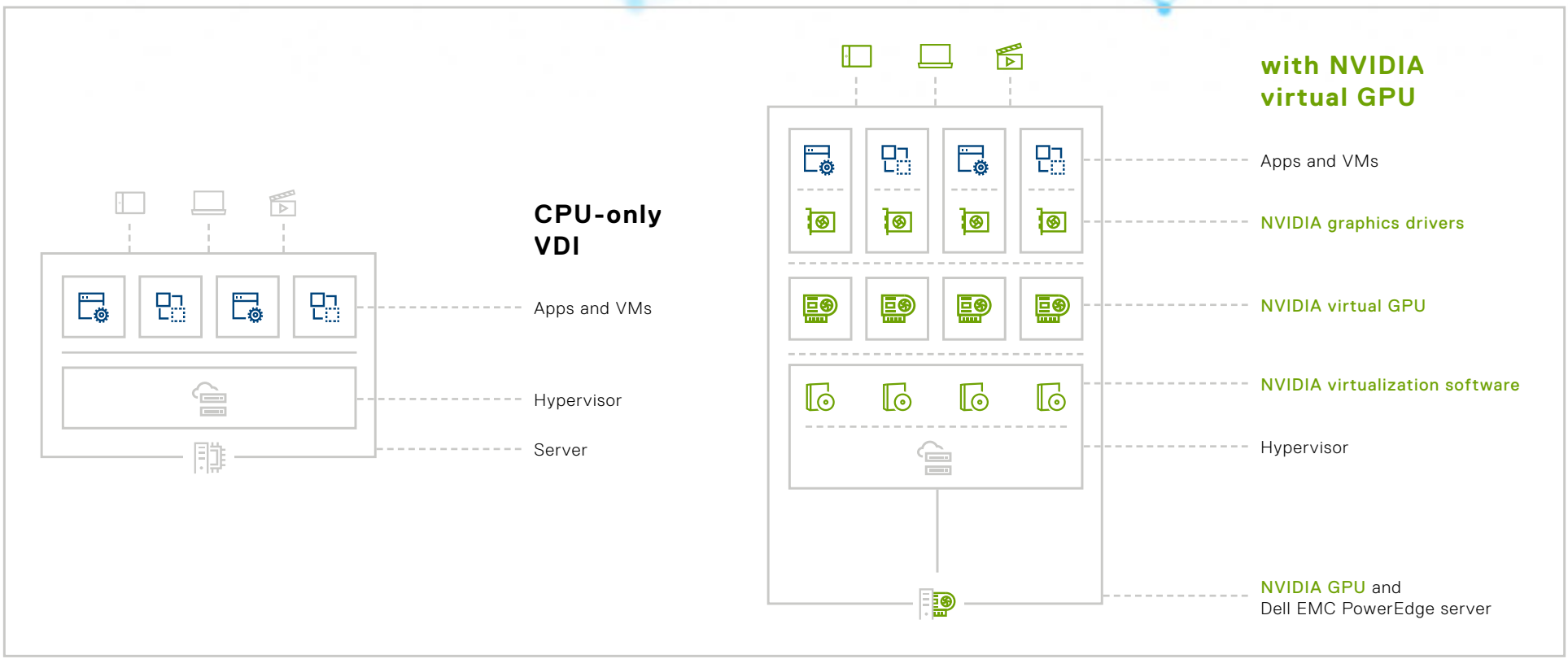
The Dell EMC PowerEdge server portfolio and NVIDIA vGPU technology provide ultimate performance for VDI workloads.

Dell Technologies test results from running common business applications for knowledge workers at high resolution of 3840x2160 (4K) with NVIDIA Virtual PC (vPC) show GPU-accelerated VDI vs CPU-only VDI provide up to 25% improved frame rate for better fluidity. It can also support up to 60% more users on the server when running graphics-intensive applications.[5]

Support up to 60% more users[5]

[4] Lakeside Software white paper, How GPUs Accelerate Work-From-Home Productivity, accessed July 13, 2021.

[5] Dell Technologies white paper, Quantifying the Impact of Virtual GPUs, August 2019.



3D designs, photorealistic simulations and stunning visual effects

NVIDIA RTX ushers in a new generation of applications that simulate the physical world at unprecedented speeds. Enhanced with the latest developments in AI, ray tracing and simulation, RTX technology enables incredible 3D designs, photorealistic simulations and stunning visual effects — faster than ever.[6]

Because work typically done by the CPU is offloaded to the GPU, the user has a much better experience, and even the most demanding engineering and creative applications can be supported in a virtualized environment.

[6] Dell Technologies InfoHub, NVIDIA virtual GPU.

GPU-accelerated VDI use cases

Higher education and research

Universities have been increasingly challenged to support researchers, students and professors working outside of classrooms and labs. NVIDIA GPU-accelerated VDI provides a flexible solution for:

- Running business applications that enhance virtual learning.
- Enabling remote access to applications and data for research collaboration.
- Providing access to HPC and resources via, for example, Open OnDemand.

- Aalto University enabled students and researchers to use specialist applications during the COVID-19 lockdown thanks to a GPU-accelerated VDI solution from Dell Technologies and NVIDIA.
- University of Pisa's VDI environment includes PowerEdge servers with NVIDIA GPUs and NVIDIA vGPU software.
- Ebb3 helps organizations capitalize on managed digital workspace and VDI solutions with NVIDIA GPUs.
- Parkway Schools ushers in "anytime, anywhere education" on Dell Technologies hyperconverged infrastructure, accelerated by NVIDIA vGPU technology.
- University of Colorado School of Dental Medicine improves user access to software applications and system performance with VDI on Dell EMC PowerEdge servers accelerated by NVIDIA vGPUs.

Manufacturing and architecture

Product designers and engineers rely on powerful HPC systems that leverage NVIDIA GPUs to run computer-aided design (CAD), computer-aided engineering (CAE) and building information modeling (BIM) workloads such as structural analysis, computational fluid dynamics and other virtual testing, faster and with fewer errors.

VDI access to simulation and 3D modeling solutions enable:

- More flexibility and iterations on designs.
- Faster testing of design modifications.
- Less time spent waiting for large models to upload/download from the data center to local device.

McLaren® Racing relies on Dell Technologies to power all 4,000 employees — including the aerodynamics engineering team — to work from anywhere as they pursue their next victory.

Gould Evans improves performance and enables flexibility for hundreds of architectural designers with a Dell Technologies and NVIDIA VDI solution.

Touro College relies on a Dell Technologies VDI solution with NVIDIA RTX Virtual Workstation (vWS) software and NVIDIA GPUs to empower students to run 3D CAD/CAM modeling applications for more than 670 concurrent users.

Financial services (FSI)

Power traders and financial analysts are driven by intense competition to make smarter, faster decisions that reduce risks and increase rewards.

Unique considerations when implementing an FSI VDI solution include:

- Compute- and graphics-intensive and network-heavy applications often run across several monitors.
- GPU-powered performance must scale as needed.
- Sensitive financial information is subject to stringent security and compliance requirements.

Baillie Gifford enables employees to work and collaborate more efficiently with workspace transformation.

Business Systems International delivers workforce transformation by enabling users to work from the office, home or any other remote location without compromising security or the end-user experience.

Craft your VDI solution.

NVIDIA GPUs for VDI

Deliver the horsepower needed to run bigger simulations faster than ever before.[7]

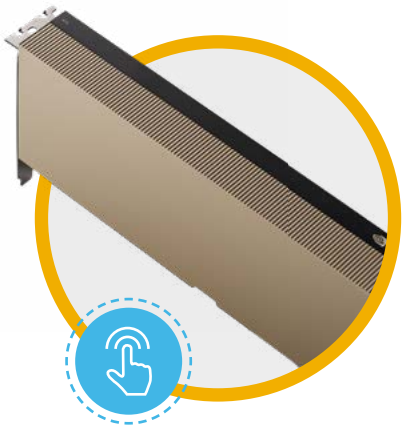
Deliver high performance and user density for virtual desktops and applications.

The industry's highest user-density solution for GPU-accelerated VDI with support for up to 64 virtual desktops per GPU.[8]

Support for up to 64 virtual desktops per GPU.

For VDI, Dell Technologies recommends the following NVIDIA GPUs.

Learn more about accelerators for Dell EMC PowerEdge servers.



Entry level
NEW NVIDIA A16 GPUs

Mid-range to high-end
NVIDIA A40 GPUs

[7] NVIDIA, Data Center GPUs for Servers, accessed June 2021.
[8] NVIDIA, NVIDIA A16 GPU, accessed October 2021.

Craft your VDI solution.

Dell EMC PowerEdge servers

Engineered to deliver unmatched performance and versatile configurations to meet the demands of VDI, with:

- The latest processors and accelerators.
- Fast flash storage with a boot optimized storage solution (BOSS) option.
- Greater memory bandwidth.
- Flexible local storage, including new NVMe™ drives.

Deliver unmatched performance and versatile configurations.

Based on the CPU-to-GPU ratio, storage capacity and memory, Dell Technologies recommends the following Dell EMC PowerEdge servers for VDI.

Learn more about PowerEdge servers.

Learn more about VxRail.

Good
Dell EMC PowerEdge R750

Better
Dell EMC PowerEdge R750xa

Best
Dell EMC VxRail Hyperconverged Infrastructure

Learn More

delltechnologies.com/vdi

Published in the USA 10/21 eBook work-your-way-VDI-EBK-102

DELL Technologies

NVIDIA

Appendix

NVIDIA virtual GPU technology for VDI

Entry level

NEW NVIDIA A16 GPUs
Takes remote work to the next level. Combined with NVIDIA vPC or NVIDIA RTX™ vWS software, the NVIDIA A16 enables virtual desktops and workstations with the power and performance to tackle any project from anywhere. Purpose-built for high-density, graphics-rich VDI, the NVIDIA A16 provides double the user density versus the previous generation, while ensuring the best possible user experience. The NVIDIA A16 is a full height, full length (FHFL), 250-watt, dual-slot, PCIe Gen 4 graphics solution leveraging the state-of-the-art NVIDIA Ampere architecture.

Mid-range to high-end

NVIDIA A40 GPUs
An evolutionary leap in performance and multi-workload capabilities from the data center. Combines best-in-class professional graphics with powerful compute and AI acceleration to meet today's design, creative and scientific challenges. Driving the next generation of server-based workloads at the core and edge, NVIDIA A40 brings state-of-the-art features for ray-traced rendering, simulation, virtual production and some of the industry's most powerful virtual workstations to professionals anytime, anywhere. The NVIDIA A40 is a full height, full-length (FHFL), 300-watt, dual-slot, 10.5-inch PCIe Gen 4 graphics solution based on the state-of-the-art NVIDIA Ampere architecture.

Appendix

Dell EMC PowerEdge servers

Good

Dell EMC PowerEdge R750
Powered by the Intel® Xeon® Scalable processors is built for application performance and acceleration for a wide range of workloads including VDI, analytics, HPC and AI/ML environments that require performance, extensive storage and GPU support. This dual-socket/2U rack server supports 8 channels of memory per CPU and up to 32 DDR4 DIMMs @ 3,200MT/s speeds. In addition, to address substantial throughput improvements, the PowerEdge R750 supports PCIe Gen 4, up to 24 NVMe, and up to:

- 2x NVIDIA A16 GPUs
- 2x NVIDIA A40 GPUs

Better

Dell EMC PowerEdge R750xa
Designed to address emerging and highly-intensive GPU workloads, boosting acceleration performance across the widest range of needs. Powered by Intel Xeon Scalable processors, it is a dual-socket/2U rack server that supports 8 channels/CPU, up to 32 DDR4 DIMMs @ 3,200MT/s DIMM speed. In addition, to address substantial throughput improvements, the PowerEdge R750xa supports PCIe Gen 4 and up to 8 SAS/SATA SSD or NVMe drives. With one platform that supports all of the PCIe GPUs in the PowerEdge portfolio, this makes the PowerEdge R750xa the ideal server for emerging workloads including AI-ML/DL training and inferencing, HPC and virtualization. It supports up to four single-width 150-watt or four double-width 300-watt GPUs in the front and two single-width 75-watt GPUs at the rear, including up to:

- 6x NVIDIA A16 GPUs
- 6x NVIDIA A40 GPUs

Best

Dell EMC VxRail Hyperconverged Infrastructure
Designed exclusively by Dell Technologies and VMware, Dell EMC VxRail is the easiest and fastest way to implement a high-performance VDI solution. VxRail is ideal for a range of VDI environments, including those that start small and grow or require GPU acceleration. Flexible configuration options include all-flash nodes that feature enterprise data efficiency services and nodes that deliver purpose-built GPU hardware for graphics-intensive virtual desktops. Powered by Dell EMC PowerEdge servers, VxRail HCI systems simplify deployment of your software-defined data center, enhance the VDI user experience and reduce the cost of managing hardware. VxRail supports up to:

- 3x NVIDIA A16 GPUs
- 3x NVIDIA A40 GPUs