



Dell Technologies Validated Designs for VDI

Enhance productivity with secure virtual desktop solutions that are quick and easy to implement.

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70%

of employees expect to be productive from anywhere.²

50%

of employees are expected to be working from home long term.¹

VDI is prime time.

While virtual desktop infrastructure (VDI) has long been used to provide the flexibility for remote work, the need to enable work-from-anywhere productivity has intensified in recent months. And even as more workers and researchers are reentering traditional workspaces, users are now choosing where to spend their time most productively, moving fluidly between the lab or office and their preferred remote locations. Surveys indicate that about 40% of the workforce will continue to work remotely — that's 2X more than before the massive shift to remote work.¹ And over the next three years, remote work will continue to expand, with up to 50% of employees working away from the university or office.¹

One thing hasn't changed: remote users expect uninterrupted, seamless technology experiences no matter where they log on. A recent survey found that 70% of all workers expect to be productive from anywhere.²

However, organizations looking to adopt or expand VDI have typically faced a number of hurdles, including long planning and procurement cycles, significant upfront infrastructure investments, and difficulty delivering a consistent user experience across locations and devices. These hurdles have hindered VDI adoption, despite its many security and productivity advantages.

Dell Technologies offers validated and optimized VDI solutions that provide data and application security while allowing IT to get started quickly and deliver optimized end-user performance. Dell Technologies Validated Designs for VDI provide a wide range of choices to meet a variety of needs and come with optional Dell Technologies endpoints and familiar management tools that allow you to get up and running faster and streamline your day-to-day operations.

Dell Technologies has what you need.

Expertise and guidance

The work-from-anywhere movement is evolving quickly, so your team may not have the resources to design, deploy and manage solutions optimized for VDI. While VDI is rapidly becoming mission-critical technology, Dell Technologies has been a leader in VDI for more than a decade, with proven products, solutions and expertise. Dell Technologies has a team of VDI experts who are ready to help you keep pace with this constantly evolving landscape.

Dell Technologies Validated Designs for VDI

The advantage in today's marketplace goes to the enterprise with an empowered remote workforce. For many organizations, VDI is — or is becoming — an important means for driving workforce transformation by giving users high-quality experiences while streamlining IT resources and management, all without compromising security. Dell Technologies Validated Designs for VDI simplify design, configuration and ordering of solutions that are optimized for VDI.

Solutions customized for your environment

Dell Technologies is uniquely positioned to provide complete edge to core to cloud VDI solutions from one vendor. With years of experience and an ecosystem of curated technology and service partners, Dell Technologies provides innovative solutions, workstations, servers, networking, storage and services that reduce complexity and enable your employees to work from virtually anywhere.

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

² Enterprise Strategy Group, Remote Work Report, 2020.

Typical research workloads

- Genomics
- Molecular dynamics
- Astronomy
- Climate and weather modeling
- Geosciences

Typical CAE workloads

- Structural analysis
- Computational fluid dynamics (CFD)
- Noise, vibration and harshness (NVH)

Typical FSI workloads

- Risk assessment
- Trading
- Pricing
- Fraud protection

VDI use cases

How does your organization plan to leverage VDI? Dell Technologies has proven expertise in building, deploying and supporting VDI solutions across a number of verticals. The following are just a few examples.

Higher education and research

To make discoveries faster, academic and research institutions must move quickly from raw data to actionable insights, collecting and processing massive amounts of data to simulate complex systems. High performance computing (HPC) and artificial intelligence (AI), often accelerated with GPUs, are powerful tools for scientists, students and researchers, speeding workloads and improving time to results. When working offsite, these users need to be able to access their high-powered resources with onsite responsiveness and resolution to continue their groundbreaking work.

Computer-aided engineering (CAE) and simulations

Product designers and engineers rely on powerful systems that leverage GPUs to run CAE workloads such as structural analysis, computational fluid dynamics, and other virtual testing faster and with fewer errors. This type of modeling and simulation enables early evaluation, fast testing of design modifications, and more iterations on designs. VDI access to simulation and 3D modeling solutions enables greater design freedom and flexibility. Powerful HPC systems can be used to support remote visualization for multiple users on a single, virtualized server running a variety of CAE applications. However, security and fast system performance is critical to maintain productivity.

Financial services

Financial services institutions (FSIs) are driven by intense competition to make smarter, faster decisions that reduce risks and increase rewards. However, FSIs face unique challenges when implementing VDI. Power traders and financial analysts rely on compute- and graphics-intensive and network-heavy applications that often run across several monitors. Providing GPU-powered performance that can scale as needed for these power users is critical. In addition, FSIs are subject to stringent security and compliance requirements designed to protect sensitive financial information.

Dell Technologies delivers.

For these use cases and more, VDI solutions from Dell Technologies can deliver real workforce transformation, enabling users to be productive on their own terms, without compromising on performance, productivity or security.

Dell Technologies: Helping you work and learn seamlessly from anywhere

With VDI solutions from Dell Technologies, you can streamline design and implementation of solutions optimized for performance, cost-effectiveness and security.

Challenge: “We need to provide excellent performance to enable productivity.”

Users have high expectations for performance and availability no matter where they're working or learning. IT must adapt by making sure resources match increasing demands for fast delivery, predictable scale and high performance.

Empower your workforce.

Workforce productivity increases when employees can securely access their desktops and applications from their chosen device at the times and places they choose to work. Dell Technologies Validated Designs for VDI transform the workforce by enabling remote work, bring your own device (BYOD), and mobility to enhance user collaboration and productivity.

Challenge: “We need to reduce costs.”

Budgets are always tight, but recent events have made budgets even tighter. IT is challenged to increase the speed and quality of service while reducing costs, including maintaining staffing levels. VDI solutions need to be simple to acquire, deploy and operate while demonstrating long-term cost-effectiveness.

Reduce costs.

Dell Technologies Validated Designs for VDI help IT answer the budget challenge in two ways. First, these validated designs streamline infrastructure procurement and speed up deployment, so IT teams can achieve working solutions quicker than with build-your-own environments. Second, most client VDI environments contain hardware, networking, software and endpoints from different vendors, making support complex. With Dell Technologies Validated Designs for VDI, you can make one call to Dell Technologies for help with hardware or software issues, from data center to endpoint. Plus, IT can centrally manage the virtual desktop from the data center and save time and money by troubleshooting personal computers remotely instead of physically visiting each one.

Challenge: “We need to protect applications and data.”

Organizations require the ability to control data, recover from disasters, apply policies, comply with regulations and monitor risk. Remote work means that more devices and sensitive data are out of direct IT control, increasing the risk for data theft and virus, malware and ransomware attacks.

Secure your environment.

VDI is inherently more secure than physical desktops because files and data don't leave the data center and all communications between the client and infrastructure are encrypted. In addition, Dell Technologies offers security from the data center all the way to the endpoint, to protect you against cyber threats.

“IT no longer has to touch all the computers...to perform software updates, which required eight people working 10 hours a day on both weekend days.”

— Ernesto Jamison,
Infrastructure Engineer,
University of Colorado
School of Dental Medicine³

³ Dell Technologies case study, [Digitally delivering outstanding dental training](#), December 2020.

“With work from anywhere, in collaboration with Dell Technologies, we’re much more agile, we’re much more iterative, and we pivot quickly and deliver benefits in a much more seamless way now.”

— Chris Hicks,
Chief Information Officer,
McLaren Group⁴

Customer success stories

McLaren® Racing

4,000

Employees empowered to work from anywhere

0 boundaries

With work-from-anywhere freedom

Real-time

Information for collaboration on day one

Watch the video case study: [Driven to innovate on the track and beyond](#)

City of Amarillo

60% reduction

In emergency response times

\$800,000

In hardware savings

7-to-1

Storage platform consolidation

Read the case study: [IT modernization sets up a data-driven future](#)

University of Colorado School of Dental Medicine

80X reduction

In software update times

900 users

Easily supported by IT

1 team member

Instead of eight for software updates

Read the case study: [Digitally delivering outstanding dental training](#)

- [Ebb3](#) redefines digital workspaces with Dell Technologies, using HPC to deliver secure virtual desktops and high-performance applications to any location and any device.
- [Aalto University](#) enabled students and researchers to use specialist applications during the COVID-19 lockdown thanks to a VDI solution from Dell Technologies.
- [Noble Foods](#) reduces their storage footprint, compute costs and environmental cost with a VDI solution based on Dell EMC VxRail.
- [Texas A&M University-San Antonio](#) taps Dell Technologies to enable VDI and e-sports, helping them attract and retain more talented students.
- [Red Kite Learning Trust](#) cuts teacher login time down to 20 seconds and restores their faith in classroom technology with VDI solutions powered by Dell Technologies.
- [University of Pisa](#) gives researchers remote access to HPC clusters, enabling them to use machine learning to accelerate time to insight.
- [Arizona State University](#) accelerates their momentum in HPC and AI and will also expand research, education and scholarly opportunities for faculty and students.

Read more [customer stories](#).

⁴ Dell Technologies case study, [Driven to innovate on the track and beyond](#), accessed June 2021.

GPU-accelerated VDI

GPU-accelerated VDI refers to using a GPU together with a CPU to accelerate processing-intensive workloads that workers need to access remotely. Enterprises and institutes of higher education are turning to GPU-accelerated VDI because it provides the performance that enables professionals to collaborate on large models and access the most intensive 3D graphics applications. Dell Technologies works closely with NVIDIA to develop solutions for today's accelerator-optimized workloads.



Technical specifications

Dell Technologies offers a broad set of choices for VDI that combine compute, storage, virtualization and management. From hyperconverged, converged and traditional three-tier infrastructures, we've validated and provided guidance on the most popular platforms for VDI. These comprehensive, flexible and efficient VDI solutions are designed and optimized for your needs and are easy to plan, deploy and run.

Validated Designs for VDI are comprehensive reference architectures produced after thousands of hours of testing in Dell Technologies labs. These documents provide validated, predictable solutions, leading to faster and easier deployments. Not only do they demonstrate the different types of infrastructure options, but they also contain recommended endpoints to ensure an excellent user experience.

Validated Designs for VDI on VxRail

Simplify infrastructure and ease scalability with a high-performance VDI solution

Designed exclusively by Dell Technologies and VMware, Dell EMC VxRail is the easiest and fastest way to implement a high-performance VDI solution. As a hyperconverged infrastructure (HCI) system, VxRail removes the complexity of new VDI deployments and is the ideal platform for VDI workloads given its ability to start small and scale as well as support a wide range of GPU acceleration options.

- **Simplify** — Save admin time with easier deployment, configuration and management.
- **Scale easily** — Scale both compute and storage quickly so you can start small and grow as needs change.
- **Improve performance** — All-flash storage and GPU options handle peak performance requirements.

VDI on VxRail configuration options

Dell EMC HCI	Hypervisor	Connection brokers	GPUs	Dell EMC networking switches
VxRail HCI with VxRail Manager	VMware® vSphere®	Choice of: <ul style="list-style-type: none"> • VMware Horizon® and Horizon Apps • Citrix Virtual Apps and Desktops™ • Microsoft® Remote Desktop Services (RDS) 	Choice of NVIDIA® A16 or A40 GPUs deployed as virtual GPUs (vGPUs)	Choice of PowerSwitch S Series 10GbE and PowerSwitch S Series 25/40/50/100 GbE



Validated Designs for VDI on vSAN Ready Nodes

High-performance, scalable and cost-effective VDI

Built on Dell EMC PowerEdge servers, Dell EMC vSAN Ready Nodes are pre-configured, tested and certified to run VMware vSAN™. They enable easy VDI deployment with factory installed configurations that allow a solution to scale quickly to meet growing needs.

Dell EMC vSAN Ready Nodes deliver high-performance, flash-optimized, hyperconverged storage for any application — at a fraction of the cost of traditional, purpose-built storage and other less efficient HCI solutions.⁵

- **High performance** — Provide workstation-level performance and beyond for critical users wherever they are.
- **Scalable** — Each component of the solution architecture scales out independently with room for future vertical expansion to protect your investment.
- **Cost-effective** — Streamline IT operations and cost management through a simplified approach to provisioning and updating user environments.

VDI on vSAN Ready Nodes configuration options					
HCI	Software-defined storage (SDS)	Hypervisor	Connection brokers	GPUs	Dell EMC networking switches
VMware vSAN ReadyNodes™ built on Dell EMC PowerEdge servers	VMware vSAN	Choice of: <ul style="list-style-type: none"> • Citrix XenServer • VMware vSphere 	Choice of: <ul style="list-style-type: none"> • VMware Horizon and Horizon Apps • Citrix Virtual Apps and Desktops • Microsoft RDS 	Optional and supported NVIDIA A16 and A40 GPUs deployed as vGPUs	Choice of PowerSwitch S Series 10GbE and PowerSwitch S Series 25GbE



Validated Designs for VDI on VxBlock System 1000

Simple, scalable and agile VDI

Dell Technologies Validated Designs for VDI based on Dell EMC VxBlock System 1000 converged infrastructure are complete solutions for enterprise VDI workloads at scale. They can be configured according to your needs, with industry-leading storage and data protection, comprehensive management software, and a simplified path to a cloud operating model.

- **Simplicity** — Simplifies component integration, upgrades and daily operations.
- **Scalability** — Designed with future needs in mind with support for next-generation technologies to provide enhanced performance and scalability.
- **Agility** — Mix, share and adapt pools of storage, data protection and compute resources for any workload to optimize performance and utilization.

VDI on VxBlock System 1000 configuration options				
Converged infrastructure	Hypervisor	Connection brokers	GPUs	Networking
Dell EMC VxBlock System 1000	VMware vSphere	Choice of: <ul style="list-style-type: none"> • VMware Horizon and Horizon Apps • Citrix Virtual Apps and Desktops • Microsoft RDS 	Optional and supported NVIDIA A16 and A40 GPUs deployed as vGPUs	Cisco® Nexus®, UCS® and MD switches, interconnects and fabric extenders

⁵ Based on Dell Technologies internal competitive testing of PowerEdge and OMIVV versus Cisco UCS manual OS deployment.



Validated Designs for VDI on PowerEdge servers

Scalable, available and validated solutions for VDI

Dell Technologies Validated Designs for VDI on Dell EMC PowerEdge servers are built on the traditional three-tier infrastructure of server, SAN and networking. They are certified for Citrix, Microsoft and VMware and provide a scalable, validated and highly available supported infrastructure for VDI. Dell Technologies Validated Designs for VDI on Dell EMC PowerEdge Servers are designed to cater to any business or technical requirement.

- **Scalable** — Optimized for the latest advancements, with scalability to address future needs.
- **Validated** — Engineering validated configurations can be tuned for ease of management, density and performance.
- **Highly available** — Native high availability and integrated security and data protection features help you meet availability and recovery objectives.

VDI on PowerEdge servers configuration options

Dell EMC compute	SDS	Hypervisor	Connection brokers	GPUs	Dell EMC networking switches
Choice of PowerEdge servers	VMware vSAN	Choice of: <ul style="list-style-type: none"> • Citrix XenServer • Microsoft Hyper-V® • VMware vSphere 	Choice of: <ul style="list-style-type: none"> • VMware Horizon and Horizon Apps • Citrix Virtual Apps and Desktops • Microsoft RDS 	Optional and supported NVIDIA A16 and A40 GPUs deployed as vGPUs	Choice of PowerSwitch S Series 10GbE and PowerSwitch S Series 25GbE

Validated Designs for VDI with PowerStore storage

Support 3,600 VMware Horizon VDI users

Dell EMC PowerStore is a unified storage product that combines block and file services into a scalable VDI platform with new levels of operational simplicity and performance. PowerStore is built with VMware in mind and natively integrates into VMware management frameworks, making it easy for VMware and Horizon administrators to manage desktops and storage while improving their efficiency.



- **Scalability** — A flexible, container-based architecture enables linear scale-out and scale-up to increase both storage capacity and performance for VMware Horizon desktops.
- **Simplicity** — Integration with VMware management improves administrator efficiency. Integrated dashboards enable at-a-glance insight into health and performance.
- **Performance** — Run virtualized applications co-resident with data, reducing latency. Improve performance with always-inline data reduction and automatic management of the underlying storage.

VDI with PowerStore storage configuration options

Dell EMC compute	Storage	Hypervisor	Connection broker	GPUs	Dell EMC networking switches
Choice of PowerEdge servers	Dell EMC PowerStore 9000T	VMware vSphere	VMware Horizon and Horizon Apps	Optional and supported NVIDIA A16 and A40 GPUs deployed as vGPUs	PowerSwitch S5148

Dell Technologies Solutions for VDI with NVIDIA vPC and vWS

Expand the digital workspace and empower knowledge workers and power users

Now, more than ever, having a ready-for-everything digital workplace is critical. This creates a challenge for IT, because remote knowledge workers and power users still expect uninterrupted, seamless technology experiences from wherever they log in. Dell Technologies Solutions for VDI with NVIDIA® Virtual PC (vPC) and RTX Virtual Workstation (vWS) can deliver real workforce transformation for a variety of use cases, enabling knowledge workers and power users to be productive on their own terms, without compromising on performance, productivity or security.

- **Performance** — GPU-accelerated server technology can breakthrough performance bottlenecks and deliver a virtual desktop experience that's as good as a physical device or workstation.
- **Agility** — Deliver secure, work-from-anywhere VDI capabilities for teams working from various, dispersed locations.
- **Efficiency** — Efficiently centralize all apps and data for a dramatically lower IT operating expense.

VDI with NVIDIA vPC configuration options

Dell EMC compute	Server GPU	Software
PowerEdge R750 server or VxRail V570 HCI	NVIDIA A16 GPUs	NVIDIA vPC

VDI with NVIDIA vWS configuration options

Dell EMC compute	Server GPU	Software
PowerEdge R750 server	NVIDIA A16 GPUs (mixed use) NVIDIA A40 GPUs (power users)	NVIDIA RTX vWS

Solution highlights

[Dell EMC VxRail](#) is a configured and tested VMware HCI system that streamlines and extends the VMware environment while dramatically simplifying IT operations.

[Dell EMC vSAN Ready Nodes](#) combine a wide range of PowerEdge servers with VMware vSAN software into a ready-to-order package.

[Dell EMC VxBlock System 1000](#) integrates powerful Dell EMC storage and data protection into a turnkey converged system supporting all your high-value, mission-critical workloads — from the core data center to the cloud.




[Dell EMC PowerEdge servers](#) are engineered to deliver unmatched performance and versatile configurations, including flash storage, the latest processors, Boot Optimized Storage Solution (BOSS) option, greater memory bandwidth and flexible local storage — new NVMe™ drives — to meet the demands of VDI.

[Dell EMC Networking solutions](#) are future-ready and based on open standards to help you improve network performance, lower networking costs and remain flexible to adopt new innovations.

[Dell EMC Storage solutions](#) from high-performance all-flash arrays to hybrid flash and scale-out network-attached storage (NAS) help you efficiently store, protect and manage information so you can do more, move faster and perform better.

Complete your solution with Wyse thin clients.

Purpose-built for VDI environments to provide optimum security and performance, Wyse thin clients integrate easily into any virtualized or web-based infrastructure and deliver a high-quality computing experience.

		
3000 series	5000 series	All-in-one thin clients
For task workers and knowledge workers running a broad variety of business applications	For knowledge workers and power users requiring access to a wide variety of applications, including 3D graphics and HD multimedia	Secure all-in-one delivers an excellent virtual desktop experience with extreme ease of use and management

Wyse thin and zero clients maximize security and optimize management and efficiency by centralizing data, applications and resources. Designed to deliver flexible access to virtual desktops and virtualized applications, Wyse thin clients provide instant functionality and performance to meet the demands of processing-intensive applications.

Delivering premier desktop security, manageability and reliability, Wyse thin and zero clients are certified to work with Citrix, Microsoft and VMware and allow increased productivity with a broad range of highly secure endpoints designed for both stationary and mobile users, from task workers to the most demanding power users.

Learn more about [Wyse thin clients](#).

Services and financing

Dell Technologies is with you every step of the way, linking people, processes and technology to accelerate innovation and enable optimal business outcomes.

- [VDI Services](#) provide a complete solution for your virtual desktop migration. From assessment, system design and application delivery to desktop deployment, integration, security and systems management, our expertise helps you achieve success the first time.
- [Deployment Services](#) help you streamline complexity and bring new IT investments online as quickly as possible. Leverage our 30-plus years of experience for efficient and reliable solution deployment to accelerate adoption and ROI while freeing IT staff for more strategic work.
- [Support Services](#) driven by AI and deep learning will change the way you think about support with smart, groundbreaking technology backed by experts to help you maximize productivity, uptime and convenience. Experience more than fast problem resolution — our AI engine proactively detects and prevents issues before they impact performance.
- [Payment Solutions](#) from Dell Financial Services help you maximize your IT budget and get the technology you need today. Our portfolio includes traditional leasing and financing options, as well as advanced flexible consumption products.
- [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.
- [Managed Services](#) can help reduce the cost, complexity and risk of managing IT so you can focus your resources on digital innovation and transformation while our experts help optimize your IT operations and investment.
- [Residency Services](#) provide the expertise needed to drive effective IT transformation and keep IT infrastructure running at its peak. Resident experts work tirelessly to address challenges and requirements, with the ability to adjust as priorities shift.

Resources

- [Validated Design guides](#)
- [InfoHub](#)
- delltechnologies.com/vdi

Why Dell Technologies for VDI

We're committed to helping you succeed with VDI, and we've dedicated a great deal of resources toward that goal.

- Schedule an [executive briefing](#) and collaborate on ways to reach your business goals.
- [Dell Technologies Customer Solution Centers](#) are staffed with computer scientists, engineers and PhDs who are subject matter experts in a variety of disciplines.
- We are committed to [providing you with choice](#). We want you to get what you need and have a great experience working with us. If we don't have what you need, we'll tell you who does.
- Dell Technologies is the only provider who offers VDI solutions that reach from the data center to the endpoint, with specialized teams of experts focusing on desktop virtualization solutions.
- Because Dell Technologies offers such a wide selection of solutions, we can act as your trusted advisor without trying to sell you a one-size-fits-all approach to your problem. That range of solutions has also given us the expertise to understand a broad spectrum of challenges and how to address them.

Customer Solution Centers

Our global network of dedicated [Dell Technologies Customer Solution Centers](#) are trusted environments where world-class IT experts collaborate with you to share best practices, facilitate in-depth discussions of effective business strategies and help your business become more successful and competitive. Dell Technologies Customer Solution Centers reduce the risks associated with new technology investments and can help improve speed of implementation.

Contact us

To learn more, visit delltechnologies.com/readyforvdi or [contact](#) your local representative or authorized reseller.

Proven results

Dell Technologies holds leadership positions in some of the biggest and largest-growth categories in the IT infrastructure business, and that means you can confidently source information technology needs from Dell Technologies.

- #1 in servers⁶
- #1 in converged and hyperconverged infrastructure (HCI)⁷
- #1 in storage⁸
- #1 cloud IT infrastructure⁹

See [Dell Technologies Key Facts](#).

Take the next step, today.

Don't wait to enable workplace transformation with optimized solutions designed from the ground up to enhance productivity with secure VDI solutions that are quick and easy to implement. Contact your Dell Technologies representative to find out more today.



⁶ IDC, [WW Quarterly x86 Server Tracker, 2Q2021](#), Vendor Revenue & Shipments, September 9, 2021.

⁷ IDC, [WW Quarterly Converged Systems Tracker, 4Q2020](#), Vendor Revenue, March 18, 2021.

⁸ IDC, [WW Quarterly Enterprise Storage Systems Tracker, 2Q2021](#), September 9, 2021.

⁹ IDC, [WW Quarterly Enterprise Infrastructure Tracker: Buyer and Cloud Deployment, 1Q2021](#), Vendor Revenue, July 1, 2021.