



THE DIGITAL WORKSPACE: SIX CAPABILITIES FOR SUCCESS

Technical advantages of Dell EMC Digital Workspace solutions

ABSTRACT

This white paper explains how Dell EMC Digital Workspace solutions overcome the obstacles to client and application virtualization. Advantages include support for mixed workloads in a single cluster, one-call support, scaling with consistent performance and cost per seat, simplified storage management, centralized endpoint management, and security.

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EXECUTIVE SUMMARY

The digital workspace is the latest evolution of end-user computing. Workforce efficiency increases when employees can securely access their desktops and applications from any device, anytime and anywhere. For IT teams, less time spent on deskside support means more time for strategic IT initiatives.

Until recently, the complexity of the digital workspace placed it out of reach for all but the largest organizations. IT had to stitch together a solution from different vendors' data center platforms, virtualization software, thin and zero clients, and security solutions. Working with multiple vendors complicated procurement, deployment, management, and support.

Dell EMC has radically simplified the digital workspace with an end-to-end solution—from the data center to the endpoint. You get everything you need, all in one place: VxRail™ for VDI on Dell EMC PowerEdge™ servers; optional NVIDIA GRID graphics processing unit (GPU); Wyse thin and zero clients; Dell Financial Services; Dell Managed VDI Services; and 24/7 single-call support. A one-vendor solution simplifies IT by giving you one hand to shake, one number to call for support. According to IDC, Dell Technologies is ranked #1 in storage,¹ server volume,² virtualization,³ and endpoints.⁴

This white paper explains how the Dell EMC solution overcomes the challenges of delivering a digital workspace:

- **Support for mixed workloads:** Mix and match nodes with different CPU, GPU, and storage configurations in the same cluster.⁵ Configure different nodes for heavy or light graphics demands, heavy or light processing requirements, and with all-flash or hybrid storage.
- **One-call support:** Make one call to Dell EMC to resolve any issue, whether it pertains to the data center platform, endpoints, or software.
- **Scaling with consistent performance and cost per seat:** VxRail for VDI scales linearly. Mix nodes with different configurations in the same cluster. Performance remains consistent from the first virtual desktop to the last.
- **Simplified storage management:** The Virtual SAN (vSAN) code is built right into the VMware® vSphere® kernel. You don't have to manage a separate virtual storage appliance for every host.
- **Centralized endpoint management:** Manage thousands of thin and zero clients from a centralized management console with Wyse Device Manager.
- **Security:** Encrypt data at rest and proactively block malware using advanced analytics.

AN END-TO-END SOLUTION FOR THE DIGITAL WORKSPACE

Our complete desktop and application virtualization solution includes everything you need for the digital workspace, from the data center to the endpoints (Table 1).

¹ IDC WW Quarterly Enterprise Storage Systems Tracker, June 2016 – Vendor Revenue – CY 2015

² <http://www.gartner.com/newsroom/id/3441917>

³ <https://virtualizationreview.com/articles/2016/11/07/vmware-named-leader-in-virtual-client-computing-by-idc.aspx>

⁴ <https://www.idc.com/getdoc.jsp?containerId=prUS41139816>

⁵ First four nodes must be configured the same; additional nodes can be configured differently.

Table 1. Digital Workspace Components

DIGITAL WORKSPACE REQUIREMENT	DELL EMC SOLUTION COMPONENT
Hyper-converged infrastructure	VxRail for VDI on PowerEdge server
Graphics Processing Unit (GPU)	NVIDIA GRID on Tesla M60 GPU Accelerator
Infrastructure management	VxRail Manager
Virtualization software	End-to-end VMware stack: vCenter™ Server, vSphere®, Horizon™, Storage vMotion®, vRealize Operations, vRealize Log Insight
Endpoints	Wyse thin and zero clients Wyse Latitude mobile thin clients
Endpoint management	Wyse Device Manager
Data protection	EMC RecoverPoint licenses for each VxRail environment
Security	vSphere Data Protection Dell Desktop Data Protection Encryption (DDPE) Dell Threat Defense Dell EMC Data Domain System (optional)
Services	Dell Managed VDI Services
Financing	Dell Financial Services

SUPPORT FOR MIXED WORKLOADS

Challenge: Different applications require different CPU, GPU, and storage resources for optimum performance. But in most hyper-converged infrastructure (HCI), all nodes must be identically configured. So if engineering applications require a powerful GPU, for example, your choice is to pay for enhanced graphics for all users or exclude engineering applications from the digital workspace.

Dell Advantage: Mix and match nodes with different configurations in the same VxRail cluster (Table 2). For example, you can configure some nodes with powerful NVIDIA GRID GPUs for CAD/CAM and R&D applications, other nodes for power users, and still others for productivity software, video, and web applications. Configure some nodes with powerful Intel processors for compute-intensive applications, and others with basic Intel processors. Your channel partner, specialized sales team, or account manager can advise you on the optimum configuration to meet your specific needs.

Table 2. Select Different Server and Storage Options for Each Node

VXRAIL COMPUTE OPTIONS	VXRAIL STORAGE OPTIONS
Choice of 14 Intel Broadwell processors 24 DIMM slots 10 Gigabit Ethernet or Gigabit Ethernet for VSAN and vMotion traffic ⁶ Optional NVIDIA GRID on Tesla M60 GPU Accelerator	Cache SSD 1-5 SSDs (all-flash) or 3-5 HDDs (hybrid) ⁷

⁶ Choice of 10GbE or 1GbE applies to entire cluster.

⁷ Choice of all-flash or hybrid storage applies to entire cluster.

SINGLE-VENDOR SOLUTION, ONE-CALL SUPPORT

Challenge: Most client virtualization environments contain HCI, networking, virtualization software, and endpoints from different vendors. When problems arise, identifying the responsible vendor takes time. Meanwhile, work stalls.

Dell Advantage: You get everything you need, all in one place. Make one call to Dell EMC for help with any hardware or software issue, from the data center to endpoint. Dell EMC VxRail for VDI can dial home for remote monitoring, diagnosis, and repair.

SCALING WITH CONSISTENT PERFORMANCE AND COST PER SEAT

Challenge: With most client virtualization solutions, cost per seat increases as you scale. What's more, performance tends to deteriorate between the first and last virtual desktop session. Environments are often over- or under-provisioned, compromising performance or increasing costs.

Dell Advantage: Start at the right size for today's needs—with as few as three like nodes for hybrid storage or four like nodes for all-flash. Then add nodes to meet specific workload requirements. A single VxRail cluster can scale up to 64 nodes.

Cost per seat remains constant because VxRail for VDI scales linearly. Work continues without interruption as you add VxRail nodes or clusters. Just insert the new node or connect the new appliance to the cluster. The configuration wizard automatically discovers the new node or appliance. VMware Horizon automatically balances desktops across the existing and new appliances.

VxRail for VDI configurations are very detailed. Dell Cloud Client-Computing engineers conduct extensive certification and validation to optimize performance. The VxRail for VDI reference architecture includes the expected number of users and performance levels based on workloads and user types, reducing the risk of over- or under-provisioning.

SIMPLIFIED STORAGE MANAGEMENT

Challenge: Most HCI appliances require a virtual storage appliance (VSA) on each host. The VSA runs as a guest virtual machine atop the hypervisor. This design complicates storage management in several ways. First, having to manage a VSA for every host takes more and more time as the deployment scales. Second, the VSA slows application performance because it competes with other virtual machines for CPU resources. Tuning the VSA to minimize I/O contention is difficult. Finally, most digital workspace hosting platforms require IT to set storage policies user by user.

Dell Advantage: In VxRail solutions, the VMware Virtual SAN (vSAN) code is built into the vSphere kernel. The user experience improves because vSAN uses less than 10% of CPU resources, leaving more resources available for applications. What's more, vSAN provides the shortest I/O path, making desktops and applications more responsive. vSAN dynamically rebalances storage resources as workload conditions change—for example, at quarter end for finance users or the holiday season for contact center agents.

Setting storage policies is also simpler. Specify data protection, performance/QoS, and data reduction in the kernel, using vSphere Storage Policy-Based Management (SPBM). Storage policies apply throughout the stack—compute, storage, and network—allowing IT to set storage policies by user, team, or business unit. IT does not need to spend time reserving memory or carving up disk pools.

CENTRALIZED ENDPOINT MANAGEMENT

Challenge: Endpoint management can overwhelm desktop administrators and helpdesks. Desktop administrators need to configure, monitor, and manage thousands of thin and zero clients.

Dell Advantage: Manage thousands of Wyse thin and zero clients in different locations with Wyse Device Manager. From one interface, you can quickly restart or shut down thin clients, and securely distribute software images, patches, updates, and add-ons. Wyse Device Manager generates detailed reports for tracking the health and performance of hardware and software assets.

SECURITY

Challenge: Securing virtual desktops or applications requires patching desktop images and applications, encrypting data at rest, and avoiding breaches from malware. The weakest link is often user behavior, such as opening infected emails or links, copying files to removable media, and mixing personal and business applications and data.

Dell Advantage: The digital workspace is inherently more secure than physical desktops because files and data never leave the data center. All communications between the client and infrastructure are encrypted. The complete Dell EMC digital workspace solution strengthens security in the following ways:

- **Reduces the attack surface:** As HCI, VxRail presents a smaller attack surface than converged infrastructure.
- **Enforces your encryption policies:** Dell Desktop Data Protection | Encryption (DDPE) protects data at rest on the VxRail Appliance. It does not interfere with existing patch management and authentication policies.
- **Inhibits malware:** Dell Threat Defense examines activity from the endpoint to the infrastructure, defending against zero-day attacks, phishing, ransomware, and other threats. Artificial intelligence and machine learning work to prevent advanced persistent threats and malware rather than reacting after the fact. Dell Threat Defense stops 99% of malware from executing, compared to just 50% for traditional anti-virus solutions.
- **Resists endpoint infections:** Wyse zero clients have a zero attack surface. Wyse ThinOS thin clients are virus resistant because ThinOS has a closed API. To protect Wyse Windows Embedded thin clients, install Dell Data Protection | Threat Defense. Unlike signature-based anti-virus software, which slows performance, Threat Defense uses only 1-3% of CPU resources.

CONCLUSION

The Dell EMC solution overcomes the barriers to the digital workspace by reducing complexity. You get #1 in everything, all in one place: HCI, a choice of GPUs, thin and zero clients, financing, services, and single-call support.

IT can say yes to requests for new applications because a single VxRail cluster supports nodes with different configurations. Performance and cost per seat remain constant as you add more users and use cases. Storage management becomes simpler because the vSAN code is built into the vSphere kernel, and storage policies follow virtual machines as they move from host to host. Endpoint management is simpler because we provide tools to centrally manage Wyse thin and zero clients. Security improves because of a smaller attack surface, encryption of data at rest, intelligent threat defense, and infection-resistant endpoints. With Dell EMC, you have one hand to shake and one number to call for support.

For more information, visit www.dell.com/ccc/vmware.