



# Using HCI to Achieve VDI Deployment with Exceptional User Experience



## The Challenge

Latency on the VDI system produces slow performance for virtual desktop users, which can reduce productivity and ROI. Often this latency is due to bottlenecks on the traditional infrastructure used to host the VDI system.



## The Solution

Hyper-converged Infrastructure (HCI) provides a more robust hosting architecture for VDI deployment, with better support for high-density, IO-intensive workloads.



## Key Benefits

Modular HCI architecture eliminates infrastructure bottlenecks that impede VDI system performance

Faster processing and response times for VDI applications

Reduced latency on the VDI platform

Superior end-user performance of virtual desktops

Increased productivity and ROI

Virtual Desktop Infrastructure (VDI) is changing the way that companies choose to deploy highly distributed workloads. VDI allows organizations to consolidate and centralize critical applications in a virtualized data center, which employees can access from anywhere in the world on any type of device. When done correctly, VDI can help organizations increase productivity through flexible provisioning and management of virtual desktops.

But many companies find it hard to achieve the increased productivity that VDI promises. Often, end users discover that their experience with virtual desktops is not as good as the company thought it would be. During high IO periods such as boot or login events, end users can experience latency and slow performance on the VDI system. This can bring user productivity to a sudden halt, and severely reduce VDI's return on investment.

## Performance Limits of Traditional Infrastructure

Often, slow user experience is due to the performance limits of the traditional infrastructure used to host VDI. A traditional three-tier architecture consists of separate silos of enterprise-class servers, storage units, and networking bandwidth. These silos have the effect of creating bottlenecks on the VDI platform that can impede end-user performance.

In traditional infrastructure, virtual machines share a common pool of storage units. During periods of high IO activity, the storage pool can't handle the sudden influx of random IO requests from all the virtual machines on the system. This results in latency, which causes a slowdown in processing and response times.

Slow user experience also puts VDI adoption at risk. New users may be reluctant to switch from physical to virtual desktops if they have heard from other users in the company that the VDI system has performance issues. If companies want to reap the benefits of VDI, then virtual desktops must work just as well or better than physical desktops.

## Advantages of HCI Deployments for VDI

Hyper-converged Infrastructure (HCI) provides a stronger, more robust architecture for hosting VDI, resulting in better end-user experience and increased productivity. The advantages of using an HCI architecture for VDI hosting include:

### Distributed Architecture with Flexible Scalability

HCI collapses the silos of compute, storage, networking, and virtualization into modular, software-based building blocks, which helps to eliminate the bottlenecks of traditional three-tier infrastructure.

However, companies should also look for an HCI solution that allows for flexible deployment and scalability. For example, if the company needs additional storage for VDI, they should be able to scale up their HCI infrastructure using all-storage nodes. Flexible scaling allows the company to address specific bottlenecks on their HCI architecture, helping them to further reduce VDI latency and improve the overall user experience.

### NVMe Flash-Optimized Architecture

An HCI infrastructure that utilizes an NVMe flash-optimized storage pool provides faster processing and response times and lower latency for read/write requests from virtual desktops. NVMe protocol provides an interface between the VDI system and flash storage devices on the HCI architecture, which improves data transfer and efficiency of communication.

It's important that companies should look for an HCI architecture that is optimized for NVMe flash – not just one that includes the NVMe flash protocol. The software-based HCI architecture should be specifically built around NVMe flash, to provide faster processing and improved end-user performance for virtual applications.

### Policy-based Management Tools

Companies should look for an HCI solution that provides intelligent, policy-based tools for managing infrastructure performance. These tools allow administrators to prioritize VDI workloads by setting policies for resource use on the HCI architecture.

For example, using policy-based management tools, administrators can provision a volume of storage (i.e. 1 TB) on a cluster of nodes on the HCI infrastructure, and assign certain VDI workgroups to that storage volume. The administrators can then prioritize the workgroups, by designating them as “High Priority,” “Medium Priority,” or “Low Priority.”

The HCI system will automatically assign larger amounts of storage to VDI workgroups designated as “High Priority.” This ensures that “High Priority” workloads will receive the extra storage capacity they need during IO-intensive periods, while “Medium” and “Low Priority” workloads will receive limited storage capacity. Provisioning higher storage amounts for high-priority workgroups ensures consistent performance for those virtual desktops and helps to increase productivity for those end users.

### Automatic Redistribution of Workloads

In some HCI architecture, the concept of “data locality” can impede end-user performance on the VDI system. For example, if a virtual desktop resides on Node #1 in a cluster of five nodes, its resources are limited to what resides on that single node, and it cannot share resources from any of the surrounding nodes. This limits the virtual desktop's access to storage and processing resources and can contribute to slower performance.

Companies should look for an HCI solution that automatically redistributes workloads across all nodes in a cluster each time a new node is added. This aggregates all resources on all the nodes, including disks, cache, and networking bandwidth, into a common resource pool that can be used by all virtual desktops on the hosting HCI architecture, regardless of what node they reside on. Automatic workload redistribution enables faster IO response times for virtual machine requests, and thus a better user experience.

### Integration with Key Technologies

Companies should look for an HCI architecture that integrates with VDI technologies from key vendors. This should include common VDI ecosystems such as VMWare Horizon View and Citrix Virtual Desktop, and solutions from leading VDI partners such as NVIDIA, Liquidware, Imprivata, Teradici, Login VSI, and Amulet Hotkey.

## A Robust Infrastructure for VDI Hosting

Good user experience is essential for VDI. To ensure superior performance of virtual desktops a VDI platform must be hosted on a robust infrastructure that can support high-density, IO-intensive workloads.

HCI infrastructure provides the best hosting architecture for VDI. A high-quality HCI solution will provide a distributed, software-based infrastructure that helps to reduce VDI system latency, ensuring faster virtual desktop performance and higher productivity for end-users.

## About Pivot3

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