



QxVDI

VMware Edition-HC

White Paper



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EXECUTIVE SUMMARY

Today's IT leaders are faced with a decision: run the status quo or transform the IT infrastructure. Under the pressure of aligning IT with corporate business objectives while managing to constrained budgets and limited resources, IT executives must develop transformation strategies to succeed.

IDC research suggests that ongoing deployment and use of disaggregated IT resources increase capital and management costs and perpetuate the individual silos of infrastructure that can stymie agility, scale and automation. However, converged and hyper-converged systems that integrate compute, storage and network services offer a fundamental shift in how IT leaders procure, deploy, manage and extend IT resources to meet tomorrow's operational and business demands.



SITUATION OVERVIEW

Hyper-converged solutions, which address both business and IT resource challenges, provide the performance, provisioning and scale-out attributes to meet escalating business demands, while the automation, ease-of-use and orchestration characteristics ensure resource optimization and efficiency. With an eye toward IT transformation, IT leaders are leveraging hyper-converged systems as one approach in their arsenal to satisfy increasingly stringent business imperatives while achieving resource and budgetary objectives. This white paper explains the hyper-converged solution –QxVDI VMware Edition-HC based on VMware software. The document offers an overview of QxVDI VMware Edition-HC and the unique set of features it delivers compared with other hyper-converged systems available on the market today.

The IT infrastructure market is on a path of rapid evolution and consolidation. Customer priorities, driven by the need to keep pace with business agility, have shifted from a focus on silos of compute, networking or storage infrastructure to a broader set of requirements around cloud computing, application modernization and workload management. One area of such innovation has been in the convergence and integration of compute and storage services so that they run adjacent to each other on the same physical hardware. Increasingly, the ability for compute, storage and network software to be decoupled from the underlying infrastructure and run on industry-standard x86 servers has ushered in the era of software-defined infrastructure. And as more workloads continue to be run on virtual infrastructure, the running of compute and storage functions on a common set of physical resources is a natural outcome in the evolution of a software-defined infrastructure.

Today, hyper-converged infrastructure systems natively aggregate core compute, storage, and networking functions into a single software solution or appliance. The new hyper-converged system comprises a distributed software stack that runs on a single node or multiple nodes which constitute a cluster. Each node in the cluster runs the same hyper-converged software stack, which includes a distributed file system or object store and a hypervisor stack that bootstraps the hardware and provides abstraction of physical resources such as CPU, memory and disk as well as cluster management functionality. The nodes in the hyper-converged cluster communicate over a built-in network (via an Ethernet or InfiniBand switch) or over a plugged in customer-provided back-end network.





Hyper-converged Adoption Drivers and Benefits

Many midsize organizations are deploying hyper-converged systems as the core infrastructure intended to support their highly virtualized general-purpose applications. Larger organizations, on the other hand, have made this technology as a standard deploying to the central datacenter while remote/ branch offices could benefit from capex savings with a multiplying effect. The self-contained nature of hyper-converged systems also makes them attractive at the departments where limited budgets and skills are important drivers of infrastructure investments. Hyper-converged systems have also proven to be very attractive solutions for virtual desktop infrastructure (VDI) where the maintainability and cost issues associated with storage area networks (SANs) can be eliminated.





QxVDI VMware Edition-HC Introduction

With the trend in virtual infrastructure sales moving toward easy-to-deploy integrated solutions based on industry-standard hardware, QCT has taken a further step in that direction with QxVDI VMware Edition-HC, an offering that provides benefits for both channel partners and end users. Its hyper-converged system is powered by both VMware and QCT. It runs on industry-standard Intel x86 hardware with QCT value-added software and services that differentiate it from competitors.

Hardware

QxVDI VMware Edition-HC runs on Intel Xeon processor-based x86 servers. It is available in 2U- four node appliance configurations: an OA (Office Application) workload node that includes 192GB RAM and a server workload node that includes 256GB RAM, SSD and HDD components are included in both models. At initial release, customers will be able to scale up to four (4) nodes in one cluster.

Each QxVDI VMware Edition-HC appliance has four independent nodes with dedicated computer, network and storage resources and dual redundant power supplies. The hardware specification per node is as below:

- (2) Intel E5-2620 v3 six-core CPUs
- 192GB /256GB of memory
- (1) SATADOM
- (5) SAS 10K RPM 1.2TB HDD for the VMware Virtual SAN™ datastore
- (1) 800GB enterprise-grade SSD for read/write cache
- (1) Virtual SAN-certified pass-through disk controller
- (2) 10GbE NIC ports (configured for either 10GBase-T or SFP+ connections)

Software

QxVDI VMware Edition-HC, a hyper-converged offering that combines VMware software and QCT compute, networking and storage resources into a simple, easy-to-deploy appliance.

It includes:

- QCT Auto-Deployment Manager 1.0





- VMware vSphere® 6 Enterprise Plus, including ESXi for compute
- VMware Virtual SAN 6 for storage
- VMware vCenterServer™ 6 Standard
- VMware Horizon 6

QCT Auto-Deployment Manager

QCT Auto-Deployment Manager enables initial deployment and configuration of QxVDI VMware Edition-HC within hours. Its features are as below:

- Auto Configuration Virtual Infrastructure Network.
- Auto Deploy VMware vCenter
- Auto Deploy VDI Environment
- Support Scale-out management

QCT Auto-Deployment Manager Benefits

Once data for initial configuration are set, QCT Auto-Deployment will automate most of the process to make QxVDI VMware Edition-HC ready to use. With an automated deployment process, the knowledge of how to install your software is captured in the system. Performing and validating a manual deployment process is often a time-consuming. With QxVDI VMware Edition-HC, you can easily complete whole process within an hour.

QxVDI VMware Edition-HC Benefits

QxVDI VMware Edition-HC is an enabler of IT transformation. The product provides a highly available, unified storage offering which performance scales linearly. It's suitable for private/ hybrid cloud based environments. Designed for multitenant setting it is capable of efficiently hosting multiple computing workloads and includes the Quality-of-Service capabilities in vSphere to ensure that even in densely consolidated environments, applications get the expected performance in a controlled way.

The two key value propositions to hyper-converged offerings in general are ease of deployment and cost effectiveness. QxVDI VMware Edition-HC succeeds on both fronts. It will accelerate building of the virtual environment while making



provisioning and maintenance fast and reliable. The scale-out architecture ensures simple, granular and cost efficient expansion. The scale-out management ensures that as the new resources are added, the workload is transparently rebalanced. Compute, storage and networking resources are managed as shared pools across all nodes, supporting the agile allocation and reclamation of resources that are needed in today's computing environments.

QxVDI VMware Edition-HC comes with multiple hardware specifications for various combinations of compute and storage resources. It also offers different options for VMware software installation. The QCT Auto-Deployment integrates virtual machine and storage management, eliminating complicated deployment procedures to meet customer needs.

QxVDI VMware Edition-HC Performance Testing

Introduction

View Planner Background



Figure 1: View Planner architecture

VMware View Planner is a VDI workload generator that automates and measures a typical office user's activity. The automated applications are Microsoft Office, PDF browse, watching a video, etc. and the operations on these applications are opening a file, browsing the web, modifying files, saving, closing, etc. Each View Planner run consists of these operations run in an iterative fashion; each iteration is a randomly ordered sequence of these operations. The results of a run consist of operational latencies collected for these operations over all iterations.



Hardware Specification Table:

Server Model	QuantaPlex T41S-2U (2U/4 Nodes)
CPU	Intel® Xeon® Processor E5-2660 * 8
RAM	SAMSUNG 16GB * 64
HDD	HGST SAS 1.2TB * 16
SSD	Intel S3710 800GB * 4
Mezz Card	Quanta 3008 * 4
NIC	10G SFP+ *8

Software Specification Table

Hypervisor	VMware ESXi 6.0.0-2494585
Manager	VMware vCenter Server Appliance-6.0.0-2562643
VDI	VMware Horizon 6 with View
View Planner	VMware View Planner 3.5

Test Configuration Profile

Profile Name	VP-1time-250
Number of VMs	250
Desktop Name Pre_x	VP-
Ramp up time	560
Test Type	Local



After the simulated workload test (see Table 1), QxVDI VMware Edition-HC delivered outstanding results for 250 concurrent users, especially in VM CPU Use, VM Memory Use and I/O Latency. The other detail report (see Figure 2- Figure 6)

Average	VMware Benchmark	Testing Result
Concurrent User	250	250*
VMs CPU Use	< 80%	47%
VMs Memory Use	< 80%	40%
IO Latency R/W	< 10ms	1ms/2ms
Hosts Memory Allocate (HA)	< 80%	78%
Hosts CPU Allocate (HA)	< 80%	80%
IOPS Random 4K Read/Write	10400/10200 **	92000/14700***

Table1: Result of Performance

*User Profile :2VCPU /2G RAM

** Expected values based on VMware View Planner simulation.

*** Results measured using IOMeter.



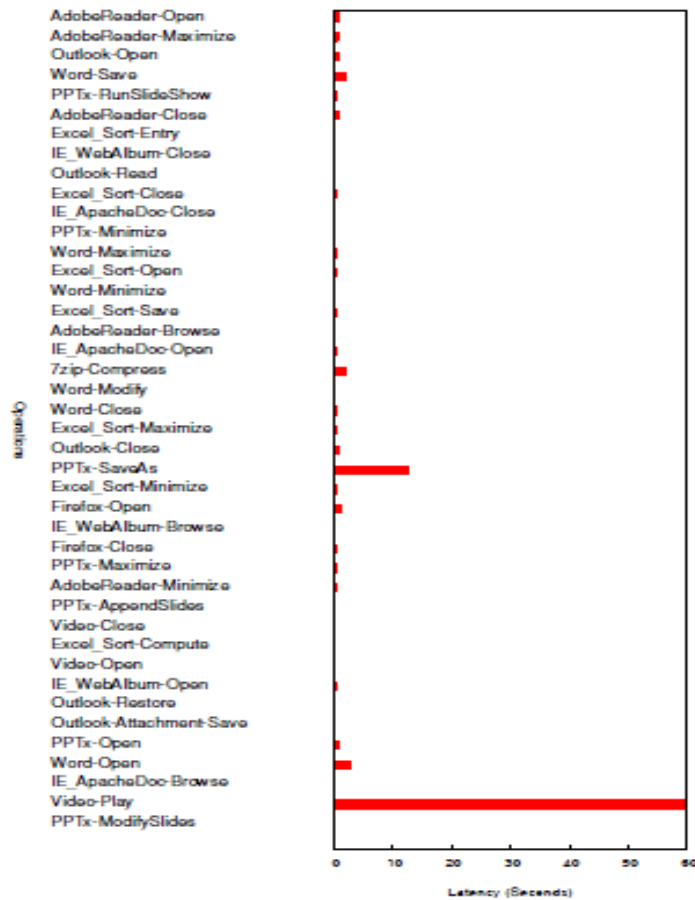


Figure 2: Application Response Time

QxVDI VMware Edition-HC demonstrated particular effectiveness in the application of OA tools (such as MS- Word, Excel, IE, Adobe Reader, and unzipping). The average response time being less than two seconds; thus, no latency was observed.



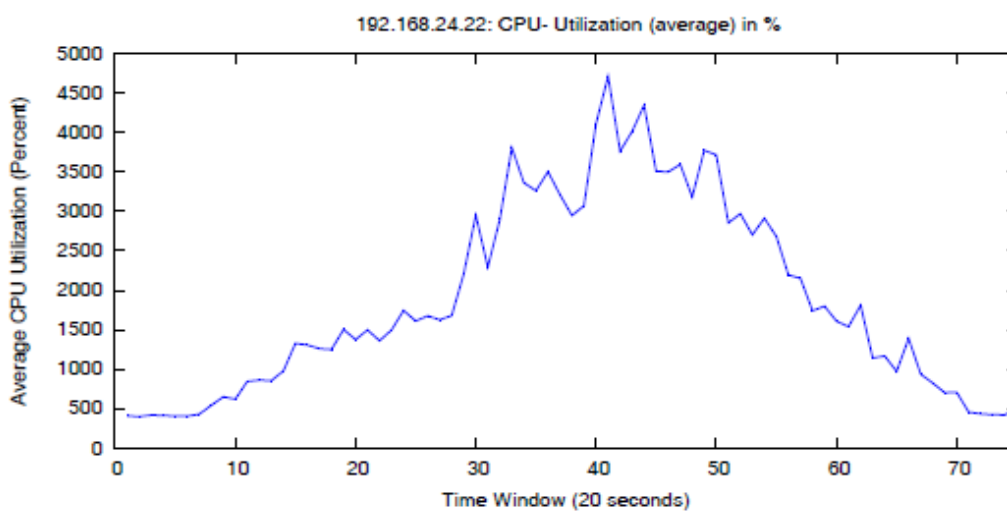


Figure 3: CPU Utilization

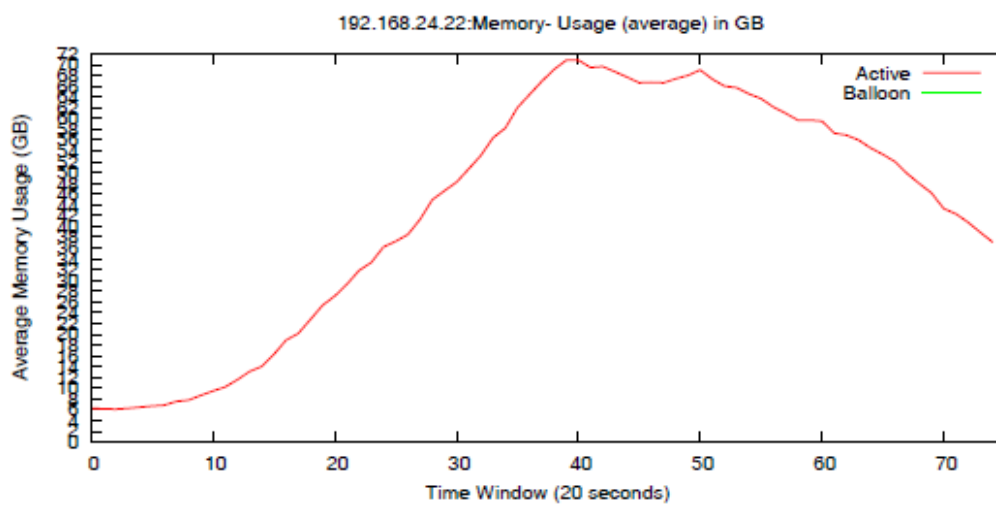


Figure 4: Memory Usage



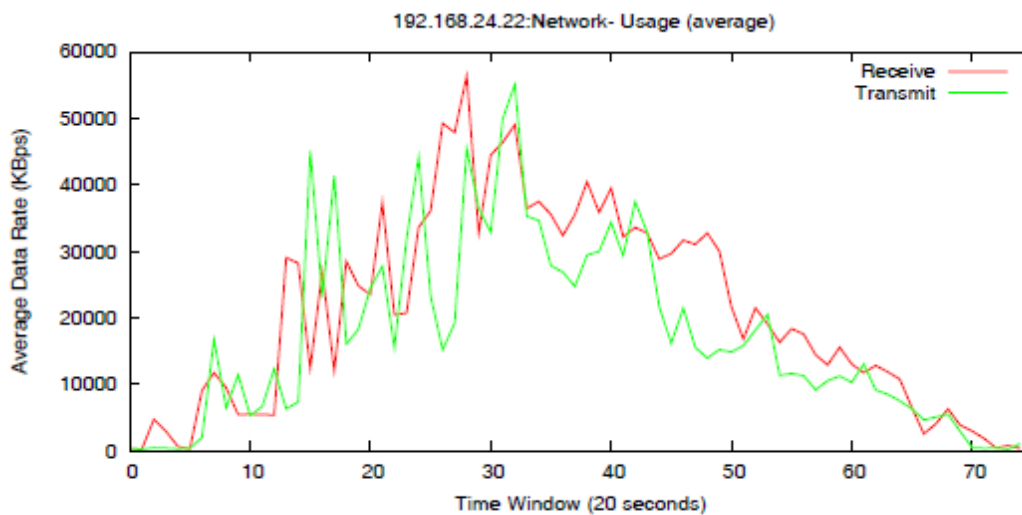


Figure 5: Network Usage

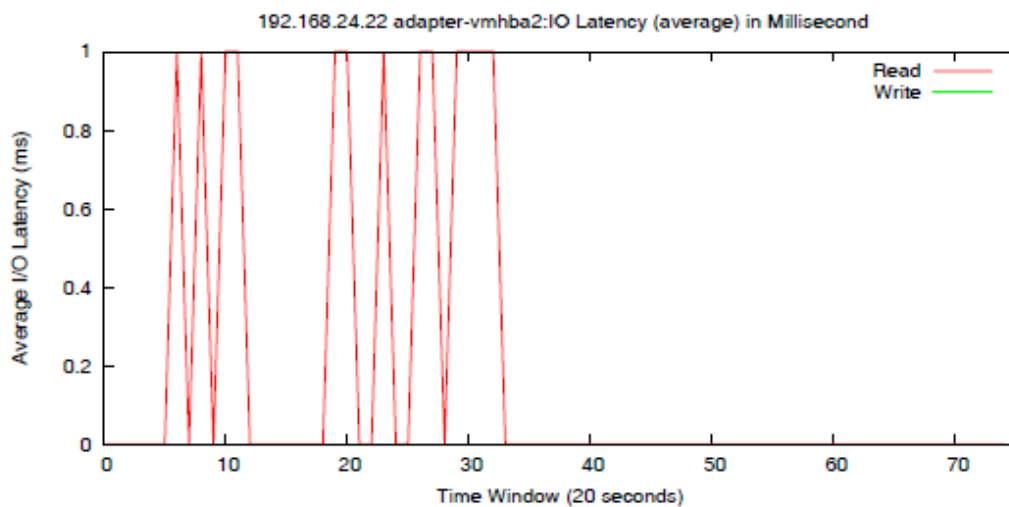


Figure 6:I/O Latency





About QCT

QCT (Quanta Cloud Technology) is a global data center solution provider that extends the power of hyperscale data center design in standard and open SKUs to all data center customers.

Product lines include servers, storage, network switches, integrated rack systems, and cloud solutions that all deliver hyperscale efficiency, scalability, reliability, manageability, serviceability, and optimized performance for each workload.

QCT offers a full spectrum of datacenter products and services from engineering, integration, and optimization to global supply chain support, all under one roof.

QCT is a subsidiary of Quanta Computer Inc., a Fortune Global 500 technology engineering and manufacturing company.

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