

DELL XC WEB-SCALE HYPERCONVERGED SERIES

A solution for a wide range of dynamic virtualized environments

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Over the past few years, to reduce cost and to improve time-to-value, converged infrastructure systems – the integration of compute, networking and storage - have been readily adopted by large enterprise users. The success of these systems results from the deployment of purpose built integrated converged infrastructure optimized for the most common IT workloads like Private Cloud, Big Data, Virtualization, Database and Desktop Virtualization (VDI). Traditionally these converged infrastructure systems have been built using a three-tier architecture; where compute, networking and storage, while integrated together in same rack, still consisted of best-in-breed standalone devices. These systems work well in stable, predictable environments, however, many virtualized environments are now dynamic with unpredictable growth, traditional three-tier architectures often times lack the simplicity, scalability and flexibility needed to operate in such environments.

Enter HyperConvergence, where the three-tier architecture has been collapsed into a single system that is purpose-built for virtualization from the ground up with virtualization, compute and storage, along with advanced features such as deduplication, compression and data protection, are all integrated into an x86 industry-standard building block node. These devices are built upon scale-out architectures with a 100% VM centric management paradigm. The simplicity, scalability and flexibility of this architecture make it a perfect fit for many virtualized environments.

Dell XC Web-scale Converged Appliances powered by Nutanix software are delivered as a series of HyperConverged products that are extremely flexible, scalable and can fit many enterprise workloads. In this solution brief we will examine what constitutes a dynamic virtualized environment and how the Dell XC Web-scale Appliance series fits into such an environment. We can confidently state that by implementing Dell's XC flexible range of Web-scale appliances, businesses can deploy solutions across a broad spectrum of virtualized workloads where flexibility, scalability and simplicity are critical requirements. Dell is an ideal partner to deliver Nutanix software because of its global reach, streamlined operations and enterprise systems solutions expertise. The company is bringing HyperConverged platforms to the masses and by introducing the second generation of the XC Series appliances enables them to reach an even broader set of customers.

Dynamic Virtualized Environments

Dynamic virtualized environments are where the speed of adding, changing, or removing individual VMs drives a significant part of business success and/or where storage growth also is growing in an unpredictable manner. We find that there are two types of virtual environments: those with stable predictable growth patterns, and those that are dynamically changing due to rapidly evolving business requirements. With the advent of mobile, social and big data driving success, we are finding more and more businesses see the latter environment as describing many IT departments these days.

Solution Requirements for Dynamic Virtualization Environments

Time to value using modular scalability: Upgrades and expansion must happen in hours, not days, weeks and months. Modular scalability saves businesses time and money and removes risk from the purchase decision.

Performance that scales linearly: Performance sizing must not be a mystery, as you add more capacity the corresponding performance gains must come at the same time and in a predictable manner.

Flexibly tuned modular scalability: Business application workloads come in all sizes and shapes, the system must be flexible enough to optimize capacity and performance in the CPU, memory and storage dimensions. As an example, a VDI solution requires a different infrastructure optimization than a big data solution.

VM-centric data services and ease of use: In the dynamic virtualized environment, you must be able to change the quality of service needed for each environment quickly to operate efficiently. The best way to manage this is using a VM-centric approach. A VM-centric approach should bring near self-service ease of use removing the need for IT specialists to manage the system.

Seamless upgrades and technology refreshes: In a dynamic virtualized environment it is imperative that upgrades and technology refreshes are seamless with no downtime.

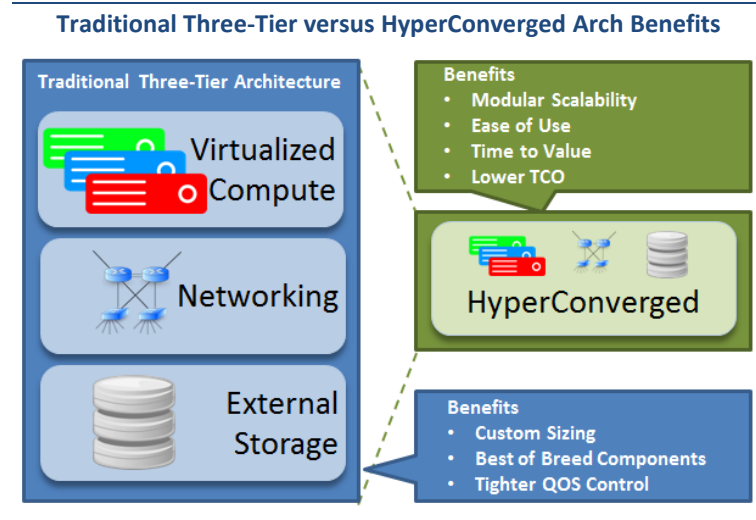
HyperConverged solutions are rapidly being adopted by enterprises of all sizes due to fact they have been purpose built to address these dynamic virtualized requirements by enabling the shared storage software and applications to run converged within the same appliance. The success of these systems has been driven by an insatiable desire to make IT simpler, faster, and more efficient. IT can no longer afford the complexity of a do-it-yourself approach. We will now explore the Dell XC Series which is uniquely designed to address the needs of a dynamic virtualized environment.

Dell XC Web-scale Products Defined

The Dell XC Series is purpose-built for virtualization and are built using Dell 13G servers with flexible configurations that can support an expanded set of workloads. It includes all virtualization, compute and storage components – along with advanced data services functionality – integrated into an x86 building block. Example enterprise data services include thin provisioning, tiering, deduplication and compression. In addition, the Web-scale infrastructure evolves beyond competing systems by being software-defined, with shared-nothing, distributed data, metadata and operations; it is self-healing with non-disruptive upgrades and includes API-based automation and analytics. The Dell XC architecture supports virtualization clusters for a wide variety of business workloads.

Key Features and Benefits of Dell XC Web-scale systems:

Ultra flexible linear scalability in performance and capacity as each node is added. In addition to linear scale-out expansion, Dell XC also provides unmatched flexibility by offering a series of models each with its own flexible CPU, memory, and storage ratios. This is important as it allows the compute-to-storage ratios of each model to be tuned in the system to meet various workload needs. Dell maximizes flexibility while maintaining simplicity through the use of simple to use templates which optimizes the highly flexible hardware configurations to the appropriate workload solutions.



Hardware is based on industry-standard, high-volume infrastructure. Dell XC models are based on Dell PowerEdge R630 and R730xd server platforms. These Dell 13th generation platforms maximizes density, cost and flexibility while leveraging Dell's global industry-standard server leadership. This is extremely important because leveraging Dell's global reach in manufacturing, services and support means businesses can deploy solutions globally backed by an industry leader.

Hardware refresh/upgrades are a built-in feature through the use of N+1 redundancy and automatic node expansion. Dell XC supports this important feature, and can also perform rolling firmware updates to further allow upgrade/migration of software in addition to the hardware – with no downtime. In dynamic virtualized environments, the infrastructure needs to grow with zero downtime and older systems need to be retired without requiring migration services.

Management tools are VM centric and cluster aware. The Dell XC Nutanix management tools were developed with a multi-node approach. The management platform is VM-aware and presents all information with a VM-centric approach. Simple dashboards summarize CPU and storage utilization of the entire cluster. Performance and capacity can also be presented at the individual VM level. In addition, Dell XC provides an enterprise-level management solution that aggregates multiple clusters together under one global management interface. As an example, an entire cluster can be upgraded with just one-click, this provides a fast rolling software upgrade with zero downtime. Through an additional one-click process even the hypervisor and hardware firmware can be upgraded.

Advanced data services built in. Dell XC contains many enterprise-grade advanced data services built right into the hyper-converged system. These include space efficient deduplication, replication and snapshots. You can combine these services to create a very robust disaster recovery and data protection system. Dell XC also has many automatic load balancing features that are critical to an effective scale-out architecture including moving active data to collocate with the associated VM which drastically reduces the latency of the system and improves overall performance.

Ideal Solutions for Dell XC with Dynamic Virtualization

One could argue that any virtualized environment could be dynamic in nature, or conversely we could argue that even the most stable environments could benefit from the above product requirements. While those are true statements, what we find though is that HyperConverged products tend to thrive in environments where change is more the norm. The following solutions tend to fall into this category and are ideal for the Dell XC series.

Desktop Virtualization: Virtual desktop environments tend to have the following characteristics: users come and go often which means a dynamic lifecycle with frequent adding and deleting of desktop VMs. In addition, a business usually starts with a pilot program then grows the solution over time, or the company just adds employees. Both of these require dynamic virtualization and the ability to scale quickly and with consistent performance.

Test and Development: Test and development has become the poster child for self-service portals. Most developers today cannot afford the time to wait hours or days just to have a VM provisioned to them by IT. In addition, often times test and development is usually separate infrastructure in itself. These are all attributes tailored for HyperConverged products which provide extreme ease of use and rapid deployment at affordable prices.

Virtual Private Cloud: Businesses want to gain the simplicity of operations found in public clouds but with on premise control and predictability. Businesses also want to setup a private cloud as a gateway to a public cloud creating a hybrid cloud, which enables them to manage cost and agility by leveraging both internal and external resources in a similar manner.

Transaction Intensive Workloads: OLTP intensive solutions like those based on SQL and Oracle databases can now benefit from a more flexible HyperConverged products. Dell has optimized this by enabling an extremely flexible CPU, memory, SSD and HDD mix that can maximize IOPS per compute and allows for the XC series to cover a wide range of OLTP intensive workloads.

Capacity Intensive Workloads: Big Data by definition equals very dynamic expanding storage environments. Even core business productivity applications like Exchange and SharePoint are consuming storage at an alarming rate. Dell has made high capacity scale-out storage expansion seamless and cost effective by building XC appliances that supports a very high capacity per node.

Taneja Group Opinion

Converged infrastructure has become a mainstream approach to simplifying the data center deployment of virtualization. HyperConverged products have taken a further major step in simplification by collapsing the three-tier architecture into one module and integrating the software VM-centricity needed throughout the lifecycle of infrastructure management. These products use modular scale-out architectures, which makes them an ideal solution for any business facing a dynamic or unpredictable application environment. When speed, agility and simplicity matter the most HyperConverged products shine the brightest.

The Dell XC series of HyperConverged appliances is extremely well positioned for any business with data center infrastructure needs that are moving toward a more dynamic use case. Dell has engineered the XC series to cover a wide range of enterprise workloads by enabling an extremely flexible CPU, memory, and storage ratios leveraging the ultra-flexible generation 13 PowerEdge servers. Whether you are trying to save time and resources using a modular approach to dynamic growth or need the simplicity of self-service; the Dell XC series has the flexibility to meet those challenges. With Dell's global reach, streamlined operations and systems solution expertise, we believe the Dell XC series will bring HyperConverged platforms to the masses and also extend the platform, making it appropriate technology for a broad set of virtualized use cases.

For more information please visit www.tanejagroup.com.

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