WHAT'S SO GREAT ABOUT WEB-SCALE HYPER-CONVERGED SOLUTIONS?

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EXECUTIVE SUMMARY

Growing demand for leaner, greener infrastructures has proved a fertile ground for web-scale hyper-converged solutions. Using intelligent software to efficiently manage virtual machines (VMs), storage, and networking, a hyper-converged solution allows you to quickly and easily expand performance and capacity to meet your dynamic workload while avoiding costly over-provisioning and automating overall processes.

With a web-scale hyper-converged solution, you can streamline data center architecture under one operating system, making it easier to manage your virtualized and physical infrastructure, update firmware, and increase capacity and performance one node at a time without disrupting service.

This white paper highlights the features and benefits of a compelling hyper-converged solution, one that consolidates compute and storage into a single chassis with Dell EMC XC Series Hyper-Converged Appliances powered by Nutanix software. It will provide greater insight into the value that a hyper-converged solution can bring to your organization and demonstrate how Jeskell's expertise can help you quickly and cost-effectively plan and deploy such a solution to meet your business needs.

INTRODUCTION

Hyper-converged solutions allow companies to improve resource utilization and the performance of their IT investments while reducing expansion costs. Intelligent software is tasked with analyzing and reallocating storage and compute capacity across the network, as well as predicting future resource requirements to support dynamic workloads. By aggregating resources across all nodes, hyper-converged solutions allow companies to operate with thin provisioning, increase storage capacity, and adapt quickly and easily to ever-changing workload demands.

This flexibility means that hyper-converged integrated solutions have become the fastest growing segment of the integrated systems market. According to a report by Gartner, a leading research and advisory company, this segment will reach nearly $5 billion by 2019 and represent 24 percent of the market.[1]

Much of this trajectory is due to the marked contrast between hyper-converged solutions and traditional three-tiered architectures, which consume significant data center floor space and energy resources. With traditional solutions, growing infrastructure typically involves purchasing additional hardware for each tier of storage, servers, and networking — a costly proposition. The rise of converged and hyper-converged solutions provides some relief from this spiraling pattern. In this new architectural model, storage, servers, networking and virtualization software are integrated into a single chassis. While this approach still requires additional hardware to grow the infrastructure, it's more efficient than the traditional solution.

Dell EMC and Nutanix took convergence to the next level with a transformative software-driven solution for buying, deploying and managing infrastructure more efficiently and cost-effectively. (Figure 1) Web-scale XC Series Hyper-Converged Appliances powered by Nutanix operating software create a software-defined data center that removes much of the complexity of hardware-based architecture. The solution largely eliminates networking switches and brings compute and storage together in one overarching virtualized environment. This distributed approach also eliminates bottlenecks and single points of failure that would otherwise become choke points for the system The Dell EMC hyper-converged solution integrates Nutanix operating software and Dell PowerEdge

1 http://www.gartner.com/newsroom/id/3308017

servers with built-in storage and networking. This powerful combination creates scalable, simple and easy-to-deploy web-scale appliances. The solution supports a wide range of applications and databases, including Microsoft Exchange, Microsoft SQL Server, Oracle DB, Splunk, file servers, desktop and server virtualization, test and development projects, private clouds, and much more.

The Dell EMC and Nutanix solution provides compelling reasons for enterprises to accelerate adoption of a complete hardware and software stack from Dell EMC and Jeskell. From this white paper, you'll learn more about how the Dell EMC XC Series Hyper-Converged Appliance powered by Nutanix can help you maintain an agile IT infrastructure that's easier and more cost effective to grow and maintain. In fact, customers estimate Nutanix reduced their capex and opex reductions by 40 to 60 percent.

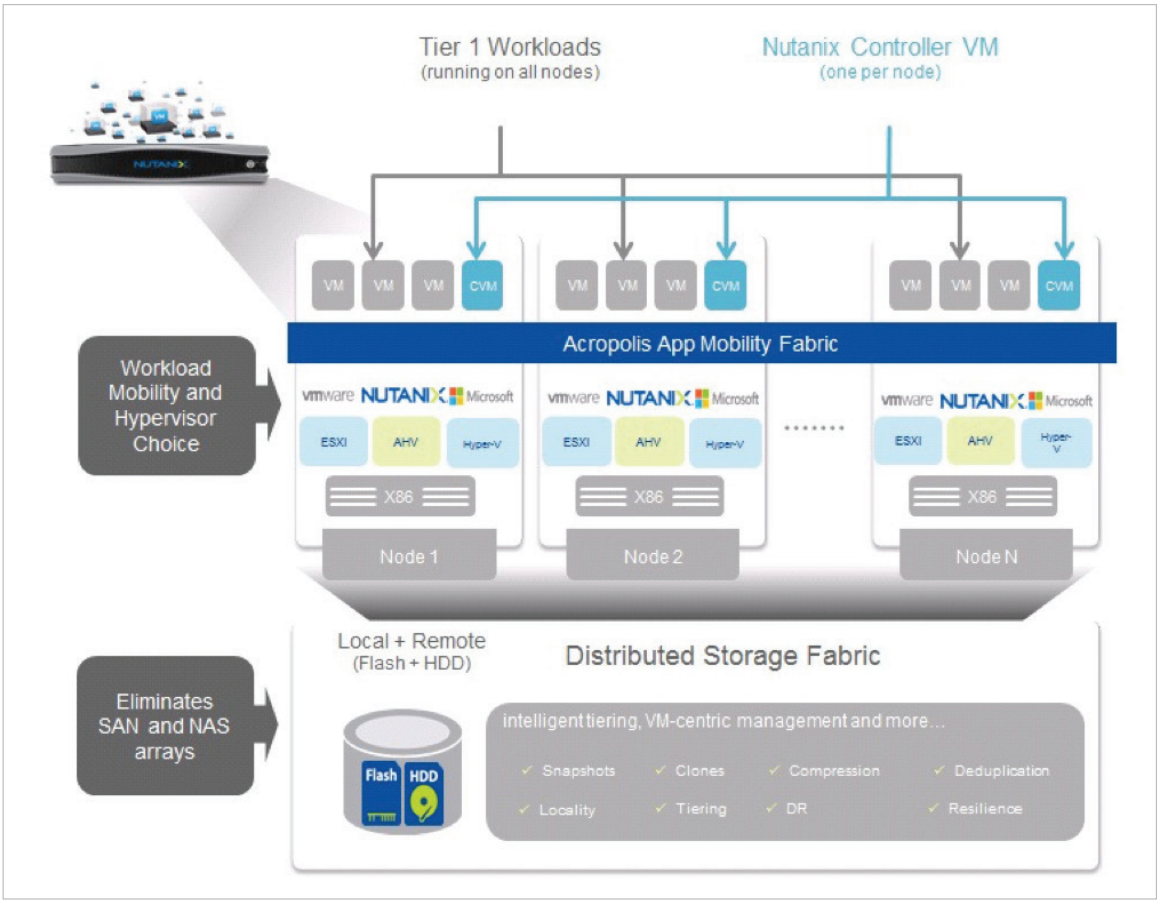

Figure 1 – Nutanix Web-Scale Architecture

MANAGE YOUR INFRASTRUCTURE AND SCALE WITH EASE

Nutanix simplifies data center infrastructure by integrating server, storage, networking, and virtualization resources into a turn-key hyper-converged solution that can run any application on any scale. Combining CPU, memory, storage, hypervisor and network interface functions with Nutanix operating system software into a single chassis delivers rapid value by allowing you to quickly implement scale-out performance and expand capacity at the same time.

The solution consists of Dell PowerEdge servers that incorporate processing engines, hard drives for storage, and networking switches. The Nutanix software recognizes the processing engines and hard drives that are built into the Dell servers and treats them as unified server and storage clusters.

The web-scale appliance lets you run your environment on commodity servers and intelligently reallocates resources across the network with a single click. For example, with Nutanix, you no longer need a separate storage controller to connect your storage and networking switch. Because storage intelligence and management controls reside in the operating system software, you can increase the IOPs of your storage by simply deploying the latest Nutanix updates. Nutanix will automatically roll out the update to all of the appropriate components.

Nutanix also includes PRISM management software that delivers in-depth reporting, management, and predictive analysis across Dell XC Series Hyper-Converged Appliances. This allows you to better plan incremental expansion without over-provisioning. It also reveals where you can better balance resources to increase capacity and performance.

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GET MORE FROM YOUR INFRASTRUCTURE INVESTMENT

With Nutanix, you can quickly scale-out performance and capacity with enterprise-class storage management capabilities, including automated tiering, thin provisioning, snapshots and replication, compression and deduplication. You can automatically balance resources to support new workloads, freeing you to shift your focus from supporting operations to strategic decision-making that can grow your business. This hyper-converged solution affords you other benefits as well:

- **Infinite scalability minus the complexity** — Nutanix infinity scaling gives you a simpler alternative to separately expanding each tier's storage, servers and networking. All you need is a network cable and Nutanix PRISM management software to automatically add and configure the

node. You can add appliances one node or host at a time without limitation. This approach allows you to scale incrementally, pay as you grow, and avoid over-provisioning.

- **Agility in minutes, not weeks** — Nutanix can deploy a new node in about an hour. Simply connect the network cable to your physical switch, identify the IP address, and Nutanix will automatically configure the node for the cluster and make the resource available without any downtime. Nutanix also eliminates manually upgrading firmware for hard drives, servers, network switches, and hypervisors. Nutanix PRISM can automatically stage and roll out the latest software updates across your entire Nutanix infrastructure within minutes and without IT involvement. An IDC study reports that Nutanix is 85 percent is faster to deploy.

- **Lower costs** — Nutanix has a much smaller form factor compared to separate systems for server, storage and networking. Because Nutanix requires less data center space and power, you can significantly decrease your IT infrastructure costs by up to 31 percent — including maintenance, facilities, power, software licensing, and hardware. In addition, Nutanix intelligently moves data from one storage tier to another based on usage and access needs, allowing you to extract maximum cost-efficiency from your various storage tiers, such as flash and SAS, by automatically moving rarely accessed data to lower-cost storage.

- **Streamlined administration** — With Nutanix PRISM, you get one-click infrastructure management, remediation and operational insights. The single, consolidated management interface allows you to view, administer and troubleshoot your entire environment of storage, clusters, VMs, servers and networking equipment. You'll be able to see cluster health, aggregated usage data, and historical data of multiple Nutanix clusters without having to log into each cluster individually. (Figure 2) It's so simple to use that you can consolidate administration to a single person or team and free resources to focus on other projects.

PRISM also includes troubleshooting and remediation tools to automatically detect, analyze and expedite problem resolution. These capabilities include proactive alert analysis, service impact analysis, intelligent root cause analysis and a remediation advisor with a library of strategies for rectifying problems.

With PRISM's predictive analytics, you can generate a single report that provides insight across your hyper-converged infrastructure. You'll see as capacity behavior trends and where you can improve utilization. You can perform what-if analyses and customize the dashboard to provide other information. The intelligent analytics can predict growth, storage, power usage, and other requirements over the next 30 days and longer-range time periods to help you balance workloads and plan future expansion.

Nutanix also incorporates a vendor-agnostic Acropolis hypervisor file server, making it easy to convert virtual workloads from one hypervisor to another, such as VMware, Citrix or Microsoft

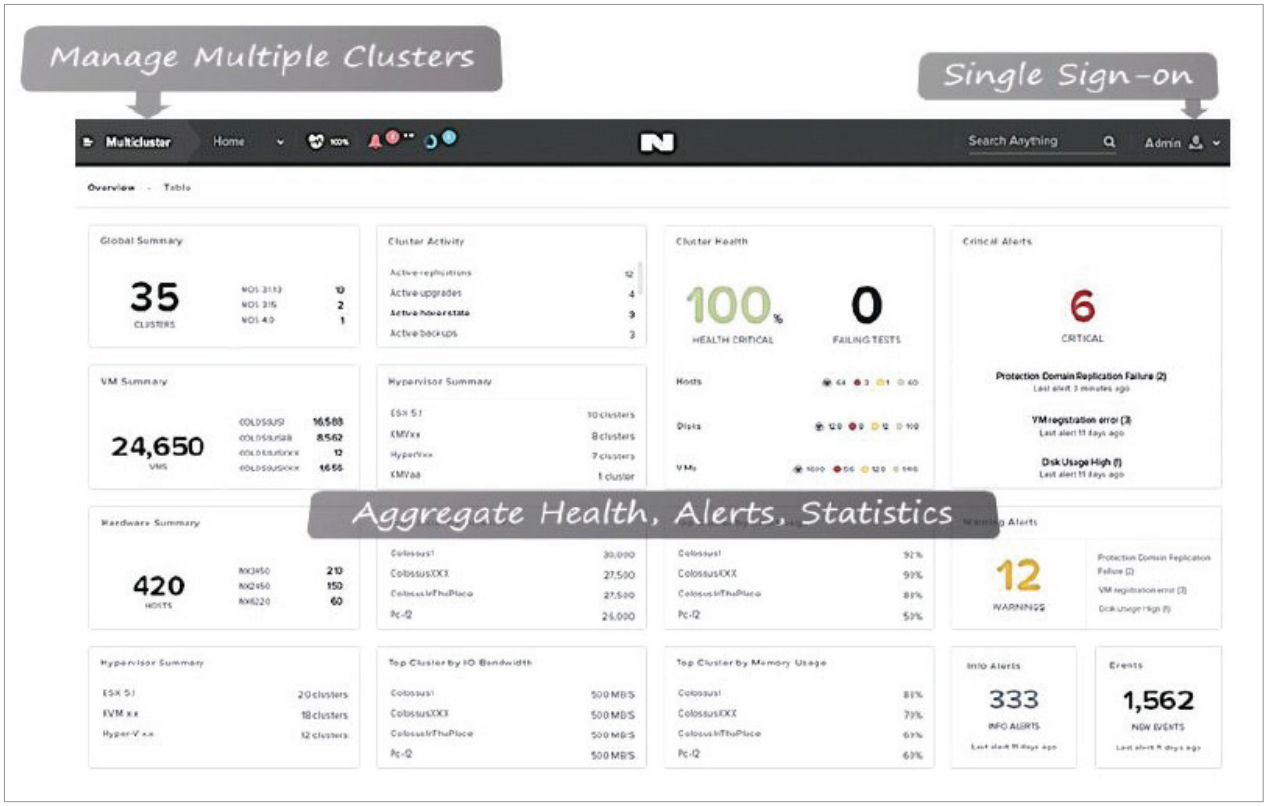

Figure 2 - PRISM Management

Hyper-V, without downtime. You also can add a PRISM plug-in to manage cloud workloads and move workloads between on-premise storage and public clouds, such as Microsoft Azure and Amazon Web Services.

By contrast with geo-dispersion, data distributed across multiple sites in a software-defined storage environment is all active, production data. Whether you have two, three, or more sites, they are managed as one storage system. That means if one site goes down, operations continue uninterrupted from any other site. In addition, by spreading data across multiple regional areas, your data is protected even if a natural disaster impacting an entire region of the country occurs.

HIGH AVAILABILITY BACKED BY DATA PROTECTION

Nutanix offers a full range of native backup and disaster recovery capabilities. (Figure 3) Rather than replicating servers and storage to a standby system or site, Nutanix replicates each VM across multiple hosts. Unlike traditional models where a failure would require a VM to reboot when the standby host came online, in a Nutanix cluster all hosts stay active so if a single host or physical server goes down or you lose a node in the cluster, the VM would remain running. Proactive failover combined with simultaneous updating of VMs across multiple hosts ensure high availability to support your company's development and production operations.

CYBERSECURITY AND HARDENING STANDARDS

Nutanix embeds security into every step of its software development to deliver comprehensive protection throughout the product's lifecycle. This includes threat modeling to assess and mitigate customer risk from code changes, integrating mitigation of zero-day threats, and issuing security patches automatically to block exploitation of exposed vulnerabilities. Other safeguards include encrypting data at rest with self-encrypting drives validated for FIPS 140-2 Level 2 conformance, and two-factor authentication for users through client certificates, user names, and passwords. The software also is able to restrict access to a Nutanix cluster by disabling shell logins automatically.

In addition, Nutanix comes with built-in STIG (Security Technical Implementation Guide) compliance that meets rigorous Department of Defense (DoD) standards for securing and hardening any software or appliance attached to government networks. The machine-readable STIG format accelerates customer validation of the security baseline with a single-click report. This reduces a typical nine to 12 month DoD certification and accreditation process (DIACAP/ DIARMF) to minutes.

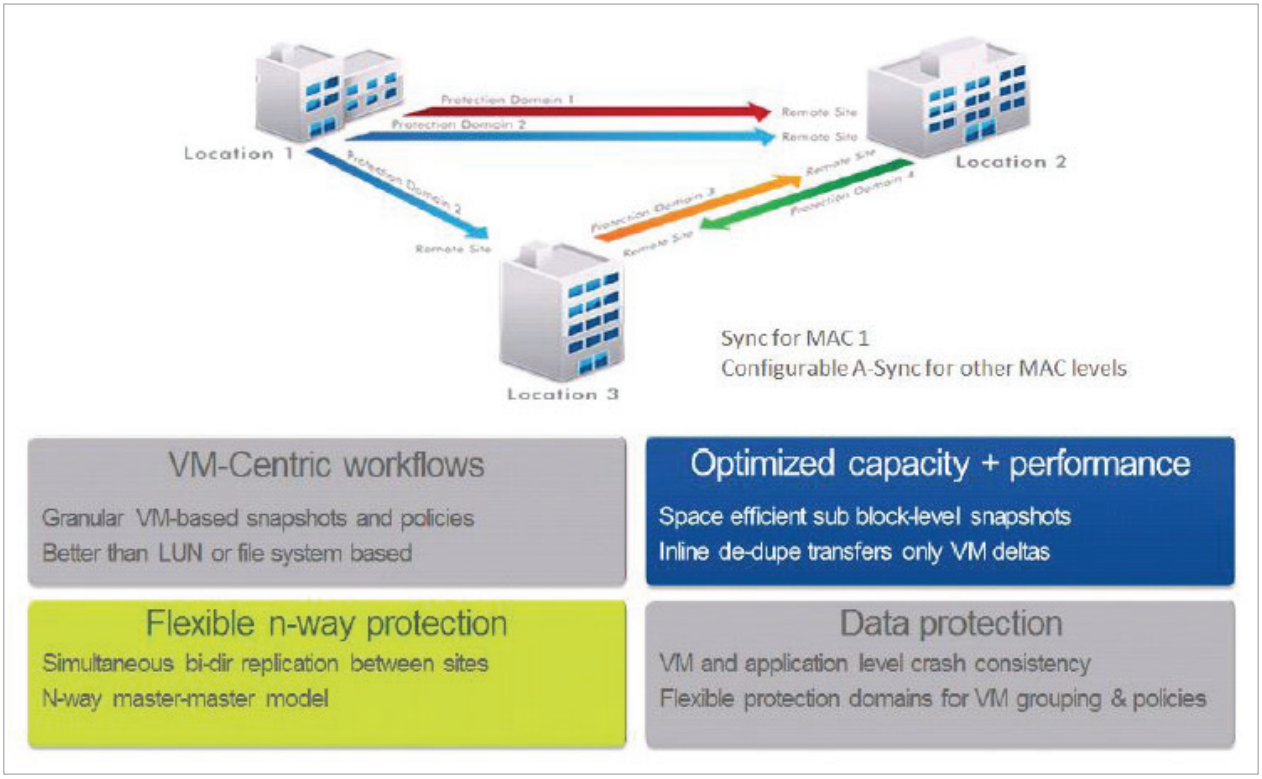

Figure 3 - Nature Disaster Recovery

CONCLUSION

When you're ready to make the move to a web-scale hyper-converged solution, Jeskell is ready to help. With decades of experience in high-performance storage and virtualization, deep engineering skills, and close relationships with Dell and Nutanix, Jeskell is well qualified to guide you on your hyper-converged appliance journey.

Our team of experts will collaborate with your staff to assess your architecture and recommend a seamless approach for adopting the Dell EMC and Nutanix solution, from planning through deployment, training, and technical support. Ultimately, we will deliver a fully integrated and tested solution built on Dell and Nutanix technologies, sized and configured for your business needs. And going forward, you can wcount on Jeskell to continue as your trusted advisor and partner.

With Jeskell and a Dell and Nutanix solution, you can manage your infrastructure more cost-efficiently, and quickly achieve web-scale performance for your virtualized workloads. It's a modular and balanced architecture that lets you deploy new workloads automatically without deep storage management expertise. It's an ideal way to reduce infrastructure cost, balance workloads, fine-tune provisioning and reduce data center complexity. In short, the automation this solution provides is so simple and seamless that you can consolidate administration and free up resources to focus on other projects and business innovation.

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