



Hyper-Converged Infrastructure: Providing New Opportunities for Improved Availability

IT teams in companies of all sizes face constant pressure to meet the Availability requirements of today's Always-On™ business environments. By using a hyper-converged infrastructure with an integrated Availability solution, IT departments can not only simplify and accelerate deployments, they can also reduce downtime and improve the availability of critical applications. Here's how.

Sponsored by
Veeam Software



Introduction

Making the transition to hyper-convergence

Reducing the Availability Gap

Choosing the right solution to close the Availability Gap

Benefits of Cisco and Veeam

Taking the next step

IT organizations are under extreme pressure to reduce the Availability Gap, which is the difference between end-user demand for applications and what IT can deliver . . . 84% of IT business decision makers experience this gap between demand and delivery.

IT departments are consumed by the daily demand for critical business functions. However, much of today's data-center infrastructure is procured from multiple vendors and requires significant investment in planning, procurement, testing, troubleshooting and management. This approach is not only time-consuming and expensive, it is also completely out of sync with today's demands for simplicity and agility. As a result, IT teams are spending long hours to ensure optimal Availability along with the business continuity essential for achieving desired service level agreements (SLAs). These teams, however, often fall short.

Unplanned mission-critical downtime increased from an average of 1.4 hours to 1.9 hours during the past year, according to the *2016 Veeam Availability Report*.¹ This represents significant expenditures and critical time losses, with repercussions that extend beyond the dollar value. The effect of long-term brand damage and the loss of customer confidence can be substantial. Simply adding new infrastructure under the same model won't solve the problem — it only adds more complexity and increases sprawl, which makes management even more problematic. In addition, companies often have disaster recovery in place, but they frequently neglect testing it.

Hyper-converged infrastructures represent an increasingly popular approach to upgrading and modernizing data-center infrastructures. In contrast to conventional legacy systems, hyper-converged infrastructures can make a difference by improving resiliency and providing consistency across the data-center. Recent research from IDC backs up the trend toward hyper-converged infrastructure adoption. The worldwide hyper-converged systems market increased by 8.5% between the fourth quarters of 2014 and 2015, reaching \$3.1 billion during the fourth quarter of 2015.²

A huge advantage of hyper-convergence is in its ability to natively integrate with virtualization on any x86-based appliance, and to offer scale-out on demand, based on a modular architecture. There are a number of reasons why organizations of all sizes are turning to hyper-convergence to address data-center transformation challenges. These include:

- Simplifying provisioning and ease of management
- Centralizing management and minimizing IT overhead
- Reducing the need for IT expertise
- Strengthening on-premises scalability and capacity

As organizations continue to embrace virtualization and hyper-converged infrastructures, they can also lay the foundation for higher availability in two primary ways:

1. By leveraging the native functionality of the hyper-converged model through capabilities such as self-healing, clustering and automatic failover. While this is intended to keep the platform running, it doesn't completely meet the demands required for today's 24.7.365, Always-On business.
2. By enhancing and strengthening the hyper-converged solution with an integrated set of Availability solutions that offer dramatic improvements in areas such as data protection, disaster recovery and replication. This allows organizations to take the next step in modernizing their Availability solutions.

What's needed is an integrated set of solutions designed specifically to address modern Availability challenges. Veeam Availability Suite™ leverages the virtualization capabilities of the hyper-converged infrastructure, as well as its primary storage, to significantly boost application Availability.

This white paper examines the high value of hyper-converged infrastructure for organizations. The plug-in aspect is evaluated, which offers businesses of any size the ability to instantly virtualize compute, network and storage elements, as well as centrally manage all of these while also reducing the IT burden. In addition, the benefits of using integrated hyper-converged solutions is looked at from industry leaders Veeam® and Cisco to provide a cost-efficient way for organizations to significantly increase Availability.

Making the transition to hyper-convergence

In today's rapid-paced digital economy, companies and their IT teams must consistently respond to internal demands and external changes with speed and agility. The expectation from internal users, customers and partners is a high level of application responsiveness and Always-On data access.

Cloud services have, to some degree, helped IT achieve this access. However, certain data and applications will always need to remain on premises for practical purposes and/or to meet industry or regulatory requirements. The hyper-converged infrastructure represents the next stage in bringing physical and virtual networks together. In the past, reliance on special-purpose hardware and firmware required a piecemeal approach to delivering the necessary levels of compute, networking and storage capacity.

Today, companies are achieving cloud-like efficiency and scalability on-demand with hyper-convergence, and they're also gaining new levels of centralized management and control. This is in stark contrast to the traditional data-center. In general, legacy architectures can present barriers to eliminating downtime and reaching new levels of optimum application performance. These barriers include:

- Information and infrastructure silos that impede productivity and impact data integrity
- Bandwidth limitations due to ever-increasing workload demand
- Lack of agility responding to external changes in the environment
- Increased data-center complexity and sprawl

The move toward hyper-convergence represents a simplified plug-in infrastructure designed to aggregate, virtualize and converge server I/O networks. According to a recent Gartner *Magic Quadrant for Integrated Systems* report, hyper-converged infrastructures will represent over 35% of total integrated-system market revenue by 2019.³

By providing centralized management, hyper-converged infrastructures enable IT to scale as needed to meet application demand for 24/7 Availability, while also lowering total cost of ownership (TCO) and improving IT productivity. The business benefits include greater workforce productivity, accelerated time to market for new business services, faster development time and improved customer support.

Reducing the Availability Gap

IT organizations are under extreme pressure to reduce the Availability Gap, which is the difference between end-user demand for applications and what IT can deliver. According to the *2016 Veeam Availability Report*, 84% of IT business decision makers experience this gap between demand

and delivery. Availability relates directly to resource access and describes whether that resource is operable and capable of performing its designated function *and* fulfilling end-user and IT needs. Today, the overall application failure rate across the enterprise has increased by 35%.

Moreover, downtime for mission-critical applications has grown from below 1.5 hours to an increase of nearly two hours. In addition to security concerns and higher data-center costs, IT organizations are in an untenable situation - they're being squeezed by the need to invest in data-center modernization, while at the *same* time the need to ensure optimum Availability and minimized downtime.

Regardless of the size of your organization, unplanned downtime and disruptions can have serious repercussions. Server or storage area network (SAN) failures and data-center outages can cripple the processes your workforce relies on, extending even further to remote and branch offices. The impact on customer confidence and brand integrity can also be devastating.

The *2016 Veeam Availability Report* points out that nearly two-thirds of IT organizations are investing in modernization purely to lower operational costs and keep up with external demands. As companies become increasingly reliant on data and applications, the challenge for IT is to provide cloud-like Availability *and* keep costs low.

High-speed recovery and data-loss avoidance are critical capabilities that IT can improve dramatically with the combination of Cisco HyperFlex and Veeam Availability Suite.

Choosing the right solution to close the Availability Gap

A hyper-converged infrastructure will typically be deployed as a pre-integrated, pre-certified plug-in appliance to provide centralized management of virtual compute, storage and networking and to ensure Availability for application demand and near-constant data access. Because this includes functionality such as self-healing, clustering and failover, it will deliver immediate improvements in Availability.

However, for most organizations even those Availability improvements will not be enough to meet the needs of today's Always-On businesses. What's needed is an integrated solution set designed specifically to address modern Availability challenges. Veeam Availability Suite™, for example, leverages the virtualization capabilities of the hyper-converged infrastructure, as well as its primary storage, to significantly boost application Availability.

One of the leading high-availability solutions available to organizations today is the combination of Cisco HyperFlex hyper-converged infrastructure solution and Veeam Availability Suite. Cisco HyperFlex offers central management both VMware snapshots for data protection and clones for rapid virtual machine provisioning.

The HyperFlex platform comprises the Cisco Unified Computing System (UCS), which provides the compute, memory and storage hardware along with the Cisco HX Data platform for providing data services, storage optimization and orchestration. By deploying Veeam Availability Suite on HyperFlex, IT can ensure comprehensive recovery plus site-to-site replication.

Converged and hyper-converged infrastructures improve Availability, but to truly close the Availability Gap, businesses should modernize their data protection by deploying an Availability solution that keeps all applications and data up and running.

The consumption model for Cisco HyperFlex offers three base cluster options:

1. **HX220c** - This minimally configured three-node cluster can be maximally configured to an eight-node cluster. It offers a range of 12-96 central processing unit (CPU) cores, up to 2,048 GB of RAM and 128 terabytes (TB) of raw capacity.
2. **HX240c** - This capacity-heavy configuration can be purchased with up to eight nodes, and provides up to 96 CPU cores, 3 TB of RAM and 248 TB of raw capacity.
3. **HX240c/UCS B200** - As a compute-heavy configuration, this hybrid supports B200 blade servers and provides up to 416 CPU cores with 8.2 TB of RAM and 144 TB of raw capacity.

Benefits of Cisco and Veeam

While data protection and disaster recovery are fundamental for improving Availability, companies often neglect the backup tests that could otherwise ensure integrity. Moreover, only 26% of survey respondents indicated they test more than 5% of their data, according to the *Veeam Availability Report*. Increasingly, IT is tasked with deploying and supporting mission-critical applications beyond the data-center, and they're often relying on the integrity of questionable backup data.

Increasingly, remote and branch offices require the same rich application services as the central office. Traditionally, the elements critical to ensuring maximum Availability, including backup, recovery, replication, monitoring and reporting, have been difficult to implement and maintain within legacy architectures. By contrast, the new paradigm of virtualization and the hyper-converged infrastructure enables IT to add nodes to quickly scale out and deploy with less effort and management overhead.

High-speed recovery and data-loss avoidance are critical capabilities that IT can improve dramatically with the combination of Cisco HyperFlex and Veeam Availability Suite. In an era of increased application dependence and the desire for high Availability, conventional legacy data protection and recovery often prove inadequate. By contrast, hyper-convergence simplifies backup management and recovery by clearly defining backup policies for multiple sites, simplifying workflows and enabling greater control for protecting applications.

For example, with a few clicks, IT can schedule backups through a centralized dashboard and achieve excellent recovery time objectives when recovering VMs from local or remote snapshots. The Veeam solution complements Cisco HyperFlex to ensure Availability by enabling automated recovery, site-to-site replication and the ability to test and verify off-site replica data.

As an integral part of HyperFlex, the Cisco HX Data Platform ties together all of the storage installed in a cluster in the physical hosts into a single pool of storage. The platform then serves that storage to the hypervisor and VMs on the cluster. In addition to simplifying the automated recovery process, the Cisco HX Data Platform also enables IT to leverage software-defined storage and compute power across nodes within one cluster from a single pane of glass.

Taking the next step

Business end users demand a responsive and seamless experience for 24/7 application access and data usage. However, service levels are often regularly under par due to a number of IT limitations. As a result, companies can face missed opportunities and productivity shortfalls that adversely impact brand integrity. To counter the threat of unplanned downtime and critical data loss, IT requires centralized management of compute, storage and networking that scales on demand and provides comprehensive disaster recovery and replication.

Converged and hyper-converged infrastructures improve Availability, but to truly close the Availability Gap when deploying these architectures, businesses should modernize their data protection by deploying an Availability solution that keeps all applications and data up and running.

The Cisco and Veeam partnership enables IT teams to gain greater efficiency and infrastructure agility. Together they provide unified data protection, fast and flexible recovery and replication so end users have 24/7 data and application access to reach new levels of business productivity. For further information on how to improve Availability through hyper-converged infrastructure, visit: go to <https://www.veeam.com/veeam-cisco-ucs.html>.

Sources

"2016 Veeam Availability Report: How to close a widening Availability Gap," Veeam, June 2016.

"Worldwide Converged Systems Revenue Increases 8.5% Year Over Year in the Fourth Quarter of 2015...," IDC, March 2016

"Gartner Says Hyperconverged Integrated Systems Will Be Mainstream in Five Years," Gartner, May 5, 2016.