comport
TECHNOLOGY SOLUTIONS

BEYOND VIRTUALIZATION

Composable vs Hyperconverged Infrastructure

White Paper

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Beyond Virtualization - Composable vs Hyperconverged Infrastructure

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CONTENTS

Modern Infrastructure Technology **3**

Evolving to Strategic IT 4

Simplification is Key 4

Hyperconverged and Composable Infrastructure: the Basics 4

How They Compare **6**

Scalability 6

Deployment and Efficiency 7

Workload Considerations 8

Infrastructure Costs 9

For Larger Environments 10

For Smaller, Mid, Remote Office, and Purpose Built Environments 10

Automation/Centralized Management 11

Implementing a Solution **11**

Vendor Advantages and Drawbacks 11

Modernize Your Data Center with Comport 12

MODERN INFRASTRUCTURE TECHNOLOGY

For any organization today, an IT team that can provide efficient, secure infrastructure is a strategic necessity. In the face of unprecedented data growth, high IT costs, and cybersecurity threats, today's technology executives are searching for less complex IT solutions that can evolve with their business. Gone are the days when simply adding more compute and storage can solve data center woes. Businesses must have a strategic technology plan to simultaneously propel their organizations' competitiveness and manage the ceaseless onslaught of data and end user requests. For many enterprises, hyperconverged or composable infrastructures are the solution. Read on to learn how these solutions differ, and where each can provide a strategic advantage for your business.

Evolving to Strategic IT

Not that long ago, virtualization had barely hit the mainstream and technology leaders viewed cloud computing with skepticism and hesitation. Creating a strong IT Infrastructure was the average CIO's concern.

In just a short time, technology requirements have changed dramatically. The IT department's responsibilities have grown from "keeping the lights on" to facilitating strategic business advantages. With the proliferation of application silos, mobile devices, escalations in security threats and the necessity of speed to market, IT environments have grown increasingly complex.

Simplification is Key

How do you provide business value while also managing complicated technology? Legacy infrastructure can no longer cut it. With separate storage, networking and infrastructure silos for applications, this type of situation will not meet the growing demands of today's fast paced markets. Keen tech leaders are implementing innovative infrastructures, merging data center components for a more agile, cost-effective solution.

Today there are new technologies that simplify in various ways – Hyperconverged and Composable are explored in this paper. Through an accurate understanding of the differences you will be able to extract the value that is meaningful to your operation and business.

Hyperconverged & Composable Infrastructure: the Basics

What's the difference between Hyperconverged Infrastructure and Composable infrastructure? Both hyperconverged and composable infrastructures have their benefits and their drawbacks. In this whitepaper we will present the differences between the two technologies to help you make informed decisions.

Let's start by defining both terms.

Hyperconverged infrastructure (HCI) is a software-defined environment that at minimum brings together virtualized computing (a hypervisor), a virtualized SAN (software-defined storage) and virtualized networking (software-defined networking) into a pre-tested, pre-validated solution. Hyperconvergence can provide the agility of cloud infrastructure without surrendering control of the hardware, which reduces data center complexity, speeds up deployments and increases scalability. This technology focuses on the virtual machine or workload as the basic building blocks of the data center (you will see why this is important later).

Composable infrastructure is a software-defined solution that goes beyond the convergence of hardware, integrating compute and storage into a single unit that treats physical compute, storage and network devices as services. Composable eliminates the need to configure hardware for support of specific applications, allowing the infrastructure to be controlled by code—which is why it is

sometimes referred to as "infrastructure as code." Composable infrastructure has three main elements that must be present to be considered truly composable:

1. A Unified API saves time by not having to manage and rewrite multiple scripts with confusing interconnects. In a composable solution, you can execute common IT needs with only a few lines of code. Developers can choose their own automation tool set including Chef, Puppet, RedHat, Docker, and Mesosphere, driving physical infrastructure to make the changes needed quickly and efficiently.

2. Software Defined Intelligence
This intelligence within the infrastructure composes resources to match the needs of the application. The DevOps team creates templates to quickly provision resources for an application, without the need for continual manual work. Less human error creates a more efficient application support system.

3. Fluid Resource Pools for compute, storage and networking. These pools allow your infrastructure to come together to support a particular workload and disassemble when the specific applications or services are no longer needed.

The traditional IT infrastructure models of the past are being replaced by new data center solutions that provide agility, elasticity, and competitive advantage. Both composable and hyper-converged infrastructure can tear down traditional data center silos, but each one does so in its own way. But which approach should you choose for your deployment? That answer depends largely upon your goals and objectives.

HOW THEY COMPARE

Scalability

Both hyperconverged and composable solutions provide advantages over traditional infrastructures, albeit differently. Each environment provides simplicity to relieve common IT issues and create a competitive advantage.

Hyperconvergence uses a building-block approach to scalability that is often visualized as a Lego set. As the need for additional resources arise, IT professionals add more “blocks” containing both compute and storage. These blocks facilitate easier, fast expansion without the need for manual integration or considerable infrastructure investment.

considerable infrastructure investment. In a Hyperconverged infrastructure, the workloads supported for growth are virtual. Physical and SAN-attached applications require a different infrastructure and create limitations to infrastructure expansion within this type of environment.

Composable infrastructure takes scalability one step further by allowing fluid resource pools between cloud, virtual, container and bare metal environments. Because it's so easy to combine resources as needed, you no longer need to over-provision your infrastructure. The right-sized environment can easily be grown or shrunk as needed. Compared to manual reconfiguration, operations are significantly more dynamic in nature and thereby less costly.

If you are facing unpredictable growth, a composable solution could be exactly what you are looking for. Not only does composable auto-integrate any new infrastructure, it also allows you to easily bring public cloud instances into your resource pool. For example, if you get a spike in need for storage, you can spin up a public cloud instance like AWS or Azure to address this need.

Composable is ideal for enterprise environments looking to grow multiple racks and/or multiple frames scaling to petabytes of storage and 100s – 1000's of compute modules. Hyperconverged infrastructure is better suited for organizations looking to limit deployment to 32 nodes of multi-site deployment.

Deployment Efficiency

Efficient deployment is an essential difference between hyperconverged or composable infrastructures and traditional infrastructure upgrades or expansions. In both hyperconverged and composable environments, all hardware is sold as a

cohesive bundle (often paired with hypervisor and management software) and can be deployed quickly. While the deployments are not plug and play, there are traditionally automated processes included with the system to help with implementations. In addition, the hardware is certified to work together, thus eliminating compatibility challenges.

For ongoing data center efficiency and changes, composable infrastructure is a game changer, removing the need to stand up separate environments for different types of applications. While hyperconverged infrastructure is an efficiency improvement over traditional approaches, it does require more “hands-on” for various applications when compared to composable. Also, in a composable environment, the unified API allows both traditional and cloud native applications to be provisioned in minutes instead of days.

When it comes to patching, hyperconverged infrastructures win out over composable simply because some system vendors provide updates that include any required patches. With composable infrastructures, the responsibility falls to you to make sure that software patches are up to date. This is critical because the infrastructure relies heavily on software working as it should.

Workload Considerations

While the main goal of a data center infrastructure—to run workloads—has never changed, as we enter into a new, software-defined era, the dominance has shifted from infrastructure to workloads.

While hyperconverged continues to be a strong approach in virtual environments, it simply cannot provide a single platform for all workloads. To make this vision a reality, the platform must be able to support both physical and virtual workloads through software-defined

configurations to match the needs of a given application or workload.

When we look at generic workloads, hyperconverged performs really well. However, as organizations start dealing with heavier applications like big data or databases, composable infrastructure outperforms hyperconverged, by allowing you to customize your storage tiers as well as QOS workloads. In addition, in a composable infrastructure environment, companies can manage all their data on one platform with multiple physical site locations helping consolidate analysis of data and speed time to market.

One way that businesses combine the strengths of both is by developing a composable infrastructure in central IT supported by a hyperconverged environment in the branch offices.

Infrastructure Costs

When looking at an infrastructure overhaul involving these two systems, overall cost is often one of the most important considerations. It should be balanced by the business benefits, IT responsiveness and TCO that these technologies can offer.

Both composable and hyperconverged infrastructures eliminate resource waste in servers, and reduce the total number of physical servers in your data center. With this reduction comes lower costs from power, electricity, physical space and security savings, just as virtualization did years ago.

By far, the largest soft savings is the ability of technology teams to repurpose their internal staff to focus on important business initiatives, rather than routine tasks and maintenance. As CIOs take on more strategic roles, facilitating competitive advantage over their competition involves deploying staff much more productively, and is a gold mine in their eyes.

For Larger Environments

The efficiencies and speed offered by the software-defined Composable approach tend to shine in larger environments with hundreds to thousands of physical and virtual servers, and varied workloads that require flexibility. Think of applications like large databases, Microsoft Exchange and SharePoint, Citrix XenDesktop, VMware ESXi type applications. Hewlett Packard Enterprise pioneered Composable with their Synergy line and is the leader.

Synergy can be considered the next generation for large HPE BladeSystem customers, and should be evaluated to improve TCO. For technical innovators, the benefits far outweigh the costs of this pioneering solution.

For Smaller, Mid, Remote Office, and Purpose Built Environments

In the hyperconverged market, big players like HPE Simplivity, Nutanix, NetApp, EMC and others all have products in the race. Hyperconverged allows you to build your system without an expensive SAN or NAS, and works really well for environments with 10's to 100's of servers. You might find that Hyperconverged seems a little expensive when you get the quote, but you'll realize it isn't when you remember that everything is included.

Hyperconverged is well suited for data center consolidations, VDI, remote offices, as part of a solid backup and Disaster Recovery strategy, and for hybrid cloud. In the case of SimpliVity, check and see if InfoSight, an AI-based analytics tool Nimble created to deliver incredible insight to prevent issues, is available.

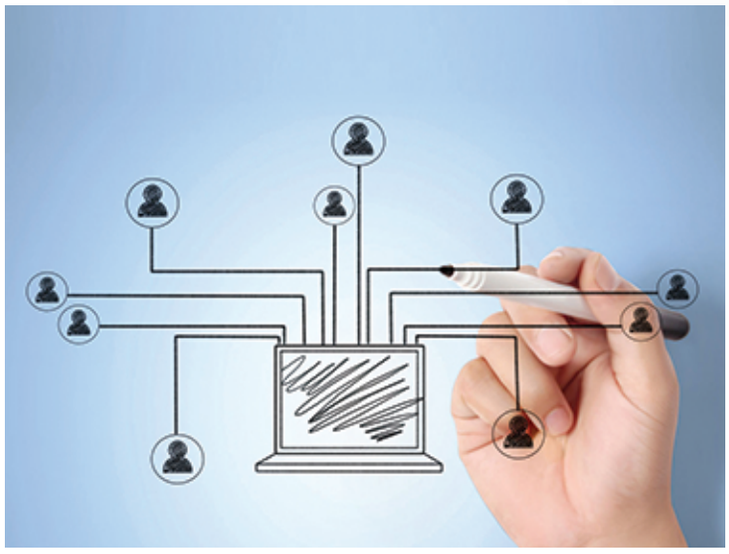
When weighing hyperconverged infrastructures, it's important to consider the underlying hypervisor. An infrastructure built on VMware's vSphere can have large licensing

costs built in. Those costs can be somewhat offset by the fact that you don't have to pay for expensive SAN or NAS. The hypervisor communicates to the software in the same method as it is joined to the SAN or NAS, so there is no reconfiguring of the storage.

Hyperconverged systems begin with a lower entry point compared to both legacy systems and other integrated offerings. We don't recommend buying the pieces and parts separately - you lose the integration, security and efficiency that comes with a hyperconverged solution.

Automation/Centralized Management

Both hyperconverged and composable infrastructures allow organizations to unite compute, storage, backup and cloud functionality into a shared resource pool. The same automation tools that have been serving the compute world for years are being extended into the networking world, eliminating manual integration and configurations. With granular and easier administration of both cloud and physical infrastructures, you can provide a consistent



experience regardless of how widespread the physical resources are.

Composable takes centralized management one step further to allow you to utilize a single, unified API driving your infrastructure with a few lines of code. The unified API allows technology teams to provision physical resources in minutes, eliminating time-consuming software scripts.

IMPLEMENTING A SOLUTION

Vendor Advantages and Drawbacks

The converged and composable infrastructure models provide a single-vendor approach to

procurement, implementation, operation and support. There's no more vendor blame game, and just one number to call when a data center problem arises.

On the flipside, you are trusting your mission-critical IT to one company. Some companies in this space are relatively new or less able to support enterprise-grade requirements. We recommend selecting a trusted vendor with experience throughout the evolution of the data center, to ensure your crucial data is safe and secure and that your investment delivers value to the organization.

Modernize Your Data Center with Comport

Aging infrastructures can't keep pace in the digital age. New ways to increase efficiency and lower costs in the data center are available. Software-Defined Solutions are the building blocks you need to successfully navigate the future of business.

If you are researching your data center options, Comport Consulting provides guidance that helps you make the right choices based on your business needs. Comport has the expert

knowledge and years of data center experience to help you navigate the opportunities and perils of infrastructure planning. A true partner, we stand beside you to help you realize the most value out of your technology investments. Contact Comport today to learn more about how we help organizations like yours modernize and surpass goals.

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