

TOP 20 Questions Answered

Hyperconvergence



IN THE 1980s, IT WAS THE WILD, WILD WEST

Because of this revolutionary new technology, the 80's were really also the dawn of IT as we know it today, and the term "datacenter" was born.

As personal computers were popularized and proliferated in homes and organizations, not much thought was put into operating needs or resources.

Then, during the web explosion of the 90's, infrastructure with server-SAN and storage networks entered the scene, featuring independent modules that could be updated or changed without affecting other layers. This infrastructure revolutionized IT departments and has been used ever since.

But now, in the era of cloud, 3-tier can no longer keep up with IT needs. It's complex, unwieldy, doesn't provide a firm foundation for DevOps, and can't scale with the magnitude it used to. Plain and simple, it's yesterday's (or three decades ago's) news.

Today, hyperconverged infrastructure (HCI) which consolidates compute, storage, networking, and virtualization in one solution, is the infrastructure of choice for companies that want to stay competitive and ensure their datacenters are cloud-ready. Yet, the change feels difficult for some companies—and others just aren't aware of what HCI is, what it does, and its benefits.

If you're in the same boat as other IT teams grappling to understand HCI and its potential impact on your datacenter, **here are the top questions** we've been asked about **hyperconverged infrastructure** over the years.



1. JUST WHAT IS HYPERCONVERGED INFRASTRUCTURE?

Technical definition

Hyperconverged infrastructure streamlines the deployment, management and scaling of data-center resources by combining x86-based server and storage resources with intelligent software in a turnkey software-defined solution. Separate servers, storage networks and storage arrays can be replaced with a single hyperconverged solution to create an agile datacenter that easily scales with your business.

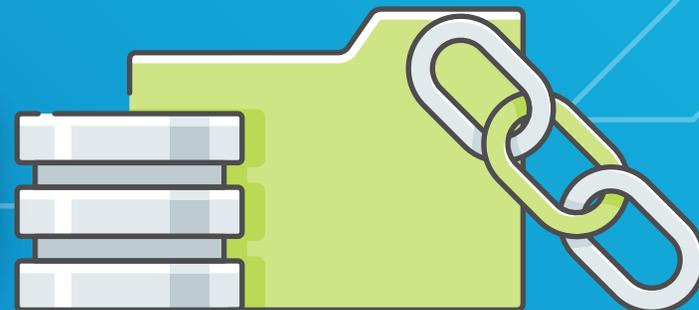
Less-technical definition

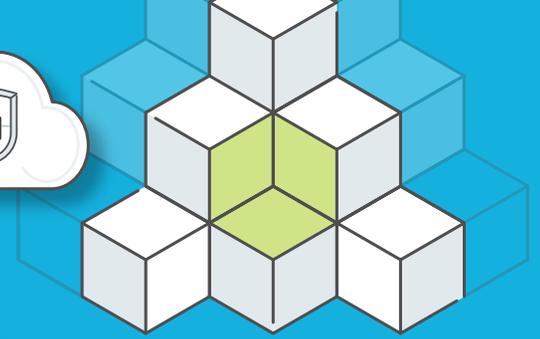
It breaks down the legacy storage silos of 3-tier infrastructure, reducing complexity, and allowing for superior performance and resilience.

The most simple definition

Remember when you wished for your nights, weekends, and holidays back when you blew out your birthday candles this past year? HCI is your wish granted. (The sysadmin in [this video](#) went as far as to say it gave him his life back!)

BONUS RESOURCE: You can read [The Definitive Guide to Hyperconverged Infrastructure](#) for a complete drilldown.





We've already noted that hyperconverged infrastructure is the core of a cloud-ready datacenter. **BUT WHY?**



The Enterprise Cloud for Dummies eBook (which you can download [here](#)) does a good job explaining scaling limitations of traditional infrastructure, that in turn impede hybrid cloud goals:

The vision of private and hybrid clouds is not new—and companies have tried doing this before. However, the underlying infrastructure is still based on scale-up storage accessed over a storage network that is deployed and scaled in big chunks. What's needed is a re-platforming of the enterprise datacenter. **You cannot build cloud capabilities on traditional three-tier infrastructure with scale-up storage.**

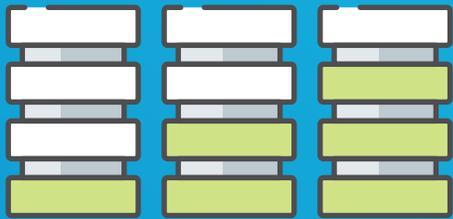
Scale-up storage has hard limits. At a certain point, the shared components — controllers and the network fabric — get overwhelmed. It's inevitable. The question is not if this will happen, but when. As a result, many scale-up storage systems are bundled with spec sheets that tell customers that they can grow only so far before they have to add more shared components. Adding these components also adds complexity to the system.

The end result is unpredictability, a scenario that cannot be tolerated in the modern datacenter. Businesses must be able to operate with the expectation that their workloads will operate continuously at predictable levels. In scale-up, as you add more burden to the shared resources, performance levels can be affected.

Even many of today's array-based scale-out storage methodologies begin to crumble under their own weight as they grow. The bigger these constructs grow, the more data has to traverse a storage networking fabric. Eventually, as data gets farther and farther from the CPU and RAM, performance problems ensue.

2. WHAT DOES HCI HAVE TO DO WITH CLOUDIFYING MY DATACENTER?

A reliable datacenter infrastructure combines the ability to leverage scale-out storage while maintaining data locality.



3. GIVE ME ONE GOOD REASON TO LET GO OF MY CURRENT INFRASTRUCTURE?

WE'VE GOT A FEW!

Costs

HCI is an investment, but it's nothing compared to what it would take to continue to manage ever-increasing costs of upgrading traditional SAN environments. Multiple vendors and software licenses, paying for specialists, increasing power and cooling costs, and expense of provisioning storage all can be significantly reduced with the implementation of hyperconverged infrastructure

Complexity

Silos, racks, servers, cables, separate management interfaces, multiple vendors, shelfware...the list goes on and on when it comes to the ways datacenters and datacenter management have become increasingly complex. HCI is the way to "tidy up" your datacenter—simplifying operations by consolidating key elements, reducing footprint, and managing your entire infrastructure from one pane of glass

Cloudability

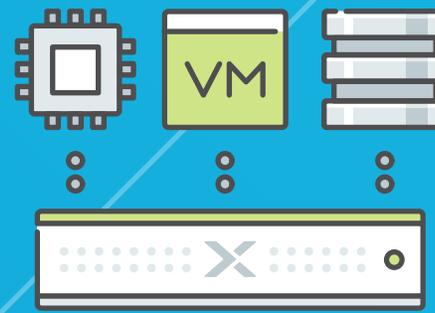
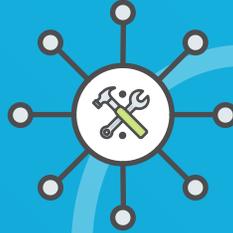
IT environments are going multicloud, and legacy infrastructure isn't built to make companies successful in a hybrid cloud world. (See above question on what HCI has to do with cloud!)

Changing the infamous 80/20 rule

80% of your budget focused on keeping the lights on while a mere 20% is dedicated to innovation? That changes with HCI, which enables automation, self-service, pay-as-you-grow scaling, and more opportunity to focus on high-value business activities.

BONUS ASSET: Datacenter Modernization Done Right. See how these companies in a variety of industries are modernizing with HCI and reaping all the rewards.





4. HOW EXACTLY DOES HCI SIMPLIFY OR IMPROVE MY IT OPERATIONS?

Every day, it seems, we hear of new use cases where HCI has helped businesses with their own unique operational challenges. Let's look at some ways that seem to be true across the board:

It saves you room

HCI reduces your datacenter footprint (by 75% in **this company's** case!) by reducing typical infrastructure stacks down to scalable building blocks with compute, storage, and networking built in. Not only do you save space and reduce datacenter footprint costs, but you also reduce complexity by removing compatibility problems between multiple vendors associated with the stack.

It consolidates

Separate servers, storage networks and storage arrays can be replaced with a single hyper-converged infrastructure solution to create an agile datacenter that easily scales with your business. Hyperconvergence makes administration much easier, letting you manage all aspects of your infrastructure from one place.

It's "just-in-time" infrastructure

Scaling made simple! If resources become scarce, you simply call your vendor, ask for another node, and deploy it. The infrastructure should be all but invisible to the users. They shouldn't have to worry about underlying infrastructure; they should only be focused on their workloads.

5. WHAT ARE THE COMPONENTS OF HYPERCONVERGED INFRASTRUCTURE?

There are really just a couple main components of HCI: two planes.

The distributed plane

This runs across a cluster of nodes delivering storage, virtualization, and networking services for guest applications—whether they're VMs or container-based apps.

The management plane

The beauty of a single-pane-of-glass! The management plane lets you easily administer HCI resources from one place and one view. It eliminates the need for separate management solutions for servers, storage networks, storage, and virtualization.

HCI solutions are 100% software-defined—zero dependency on proprietary hardware.

PRO TIP:

Make sure your HCI solution can work with any hardware vendor and has qualified the hardware/firmware for easy upgrades.



6. HOW DOES HCI MAKE IT TEAMS MORE PRODUCTIVE?

Our customers seem to universally agree and have echoed over and over again that HCI “just works,” meaning they don’t have to spend their days babysitting infrastructure and their nights and weekends scheduling maintenance, or doing upgrades or implementations. It’s self-healing, “always on, always up” infrastructure with the five nines of availability. Upgrades are one-click, and can be done anytime and literally almost anywhere—we’ve even had customers initiate an upgrade from an airplane without batting an eye. Resiliency is key here too; make sure you can take snapshots so that even if a disk gets corrupted you can recover VMs and data.

By shifting focus off of infrastructure, teams can focus on value-add activities for the business—be it spending time on developing DevOps practices, designing automated solutions, or pursuing hot initiatives like IoT.

The **2018 State of the Enterprise Datacenter Report** showed a correlation between hours worked in companies running hyperconverged infrastructure as opposed to those that don’t: 78% of respondents running HCI worked up to 40 hours per week, and just 24% of those with HCI answered that they work over 40 hours per week. For companies without hyperconverged infrastructure that number is 36%—almost 50% greater than adopters.

7. WHAT DATABASES, APPLICATIONS, AND WORKLOADS DO COMPANIES RUN ON HYPER-CONVERGED INFRASTRUCTURE?



In the past, HCI started with workloads like VDI and ROBO (remote or branch office). That dynamic has rapidly changed as more and more users of HCI solutions have made their systems available with more and more production and datacenter workloads, even as they prepare their resources for the future.

SOME PRIME EXAMPLES OF WHAT APPS RUN ON HCI:

- › **Business-critical applications:** Oracle databases and E-Business Suite, SAP Business Suite (and SAP HANA), Microsoft SQL Server, Microsoft Dynamics, IBM DB2, and many others
- › **Messaging and collaboration applications:** Microsoft Exchange and SharePoint, as well as unified communication solutions such as Cisco UC, Avaya Aura, and Microsoft Skype for Business
- › **Server virtualization and private cloud:** Multi-hypervisor support for VMware ESXi, Microsoft Hyper-V, and Nutanix AHV virtualization
- › **Big data and cloud-native apps:** Splunk, MongoDB, elastic, and more
- › **Virtual desktop infrastructure (VDI)** and application virtualization
- › **Remote Office and Branch Office (ROBO)** deployments
- › **Dev/Test Apps** Puppet, Docker, Chef



8. IS THERE A DIFFERENCE BETWEEN 'CONVERGED' AND 'HYPER-CONVERGED' INFRASTRUCTURE?

Many think this is a “tomato, to-mah-to” situation, but there is one key difference between these two: **hardware** and **software**. CI depends on hardware and building blocks where HCI is software-defined, and therefore more flexible and scalable. (**This post** does a good job showing the differences). Think of CI like fruit salad; all the pieces of fruit can be together, or separated from each other. (So with CI, servers can be separated out, storage can be separated out, you get the picture). With HCI, the pieces are integrated and can't be broken apart, more like, say, a smoothie.



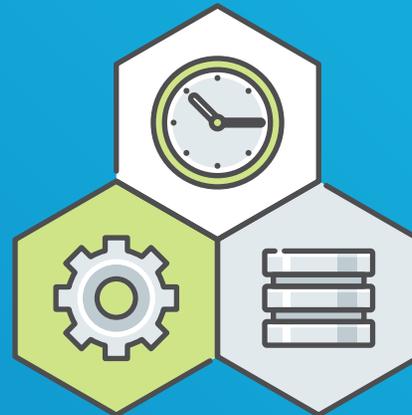
9. I'M LOOKING FOR STORAGE. HOW CAN HCI HELP MY SITUATION?

IT'S ABOUT CONSOLIDATING STORAGE!

Data is growing at 50% or more per year, and that data is stored on block, file, and object storage. New requirements for visibility and control are increasing demands on storage administrators. And cloud has become an important tier of storage that must be considered in any storage architecture.

But legacy storage infrastructure can't keep up with the demands caused by these new realities. It's siloed, which creates complexity, limits flexibility, and reduces utilization. Legacy infrastructure lacks sufficient visibility into the data to support the new compliance and control requirements. It was originally designed in a time before cloud—making adoption of cloud-like capabilities really difficult.

HCI breaks down silos and pools all resources into a single resource that's easy to manage and control. The more “invisible” infrastructure can be the better, and HCI extends that invisibility into the storage domain. With HCI, you can include a variety of nodes in a cluster that make sense for your needs at that point—storage-heavy nodes when you need storage, CPU-heavy nodes when compute is needed, and so forth.





10. WHAT'S MARKET ACCEPTANCE LIKE FOR HCI?

Enterprises are increasingly adopting HCI—according to the same 2018 State of the Enterprise Datacenter Report mentioned previously, 67% of respondents say they either have adopted HCI or are open to adopting it. And Gartner predicts that by 2020, 20% of business-critical applications currently deployed on 3-tier will transition to hyperconverged infrastructure.

11. WHAT PROBLEMS ARE SOLVED BY HCI?

With hyperconverged infrastructure you don't have to purchase and manage storage and servers separately. It combines compute, storage, networking, and virtualization resources which saves money that would have been spent on hardware, power, and hiring specialists to manage, and time that would have been spent on deployment and operational issues. Furthermore, with HCI infrastructure, management becomes vastly easier thanks to a single management interface, eliminating the need for separate management solutions for servers, storage networks, storage and virtualization.



BONUS RESOURCE:

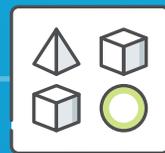
Download a complimentary copy of the **2018 Gartner Magic Quadrant for Hyperconverged Infrastructure** to see their assessment of the strengths and weaknesses of key vendors in the space.



13. HOW EXACTLY DOES HCI SCALE EASIER THAN TRADITIONAL INFRASTRUCTURE?

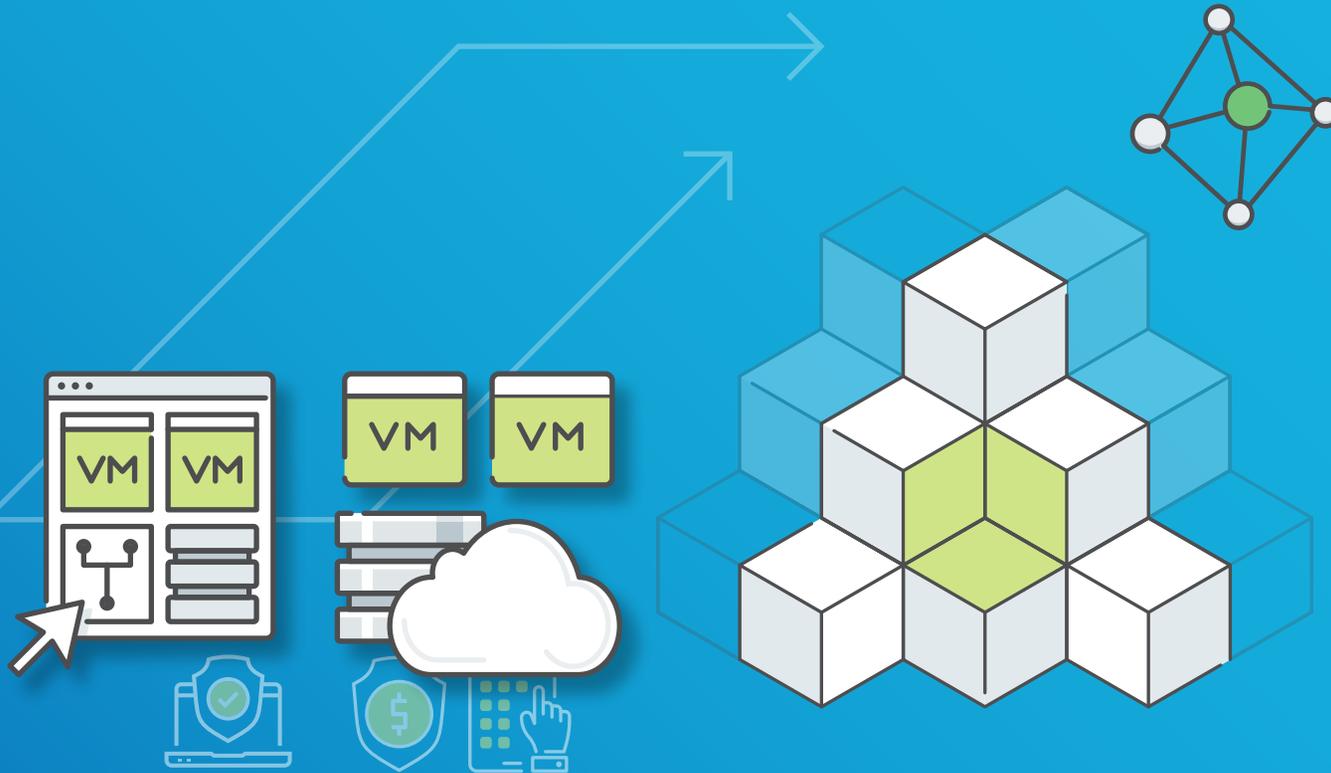
Similar to public cloud services, hyperconverged infrastructure solutions enable IT teams to start small and scale incrementally to precisely meet application demands.

With HCI, you can non-disruptively scale out your environment as your business needs grow. However, with traditional infrastructure, each tier is sized based on specific needs. Expanding it requires a redesign, which is why they're typically done in 3-5 year cycles.



12. HOW DO HYPERCONVERGED SYSTEMS DIFFER FROM MIDRANGE, MAINFRAME, AND SERVER FARMS?

Hyperconverged systems make use of modern distributed systems and virtualization technology. Clusters of hypervisors pool and share storage, removing the need for arrays while simultaneously improving flexibility, scale, and performance.



14. SHOULD I BE LOOKING AT TCO OR ROI WHEN CONSIDERING ADOPTING HYPERCONVERGED INFRASTRUCTURE?

A TCO analysis is best for situations where you are considering migrating from an existing virtualized infrastructure either to an HCI solution, or to a new (or refreshed) 3-tier architecture vs. HCI solution. Use an ROI analysis when comparing remaining with a status quo environment (whether physical or virtual) vs. making the investment to migrate to HCI. In terms of cost, an HCI configuration is not always the least expensive option when comparing against 3-tier infrastructure. But when incorporating projected upgrade costs over a 5-year period along with variables such as rack space, power, cooling, administrative costs, fiber channel cabling, etc., HCI will generally blow away the competition.

15. DOES 'HYPER-CONVERGENCE' JUST MEAN HARDWARE RESOURCE CONSOLIDATION?

No—hyperconvergence builds a scalable storage infrastructure that is rich in features. Deduplication, compression, any of the features you would find on a storage array are available. Additionally, you have complete end to end visibility of how your cluster is performing via a single management plane (and in the case of Nutanix, you can take advantage of the fact that storage and compute are collocated to further improve application performance).



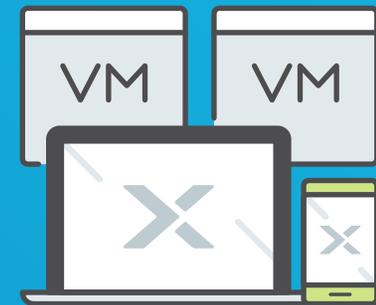
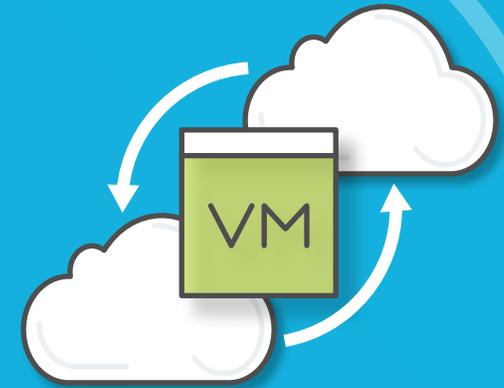
HELPFUL TOOL: Use [this calculator](#) to get a personalized view of the financial impact of adopting HCI in your organization.

16. IS IT A GOOD FIT FOR LARGE AND SMALL ENVIRONMENTS?

For smaller companies, hyperconverged infrastructure eliminates the silos of separate management and troubleshooting for servers, storage, networking, and virtualization.

No separate support costs, support teams, or licensing costs.

For larger environments, you eliminate the risk of going “all-in” with a new solution by starting small and scaling out a node at a time and adding more workloads—all the while making sure the solution makes sense as you go. Each node contains all the resources required to scale, so it’s simple yet perfectly linear since nodes are built to match your needs.



17. CAN I JUST MANAGE MY CURRENT SAN THROUGH HCI?

It’s possible, but it wouldn’t help you simplify your operations! Hyperconverged infrastructure makes your SAN obsolete; you remove an entire layer of complexity when you move to HCI. Rather than managing storage arrays, potentially from multiple vendors requiring multiple skill sets, your storage becomes a component of your virtual infrastructure with hyperconvergence.

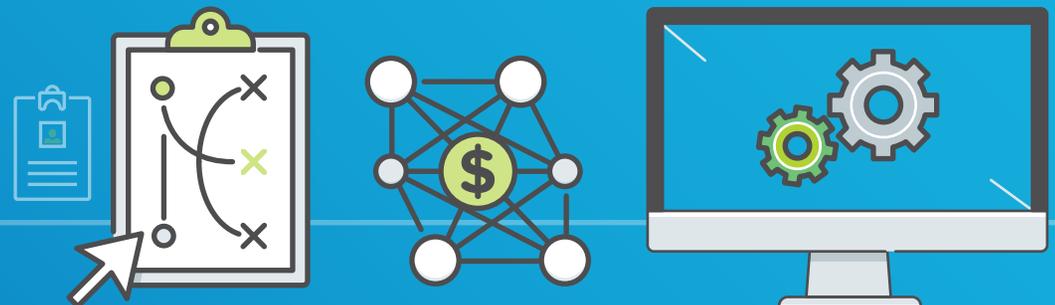
18. ARE WE JUST REINVENTING MAINFRAMES?

Nope! Mainframes are monolithic machines capable of running multiple operating systems. They are not clustered or distributed technology.



19. THIS SEEMS COMPLETELY DIFFERENT FROM OUR CURRENT ENVIRONMENT— BETTER, BUT HOW CAN WE AFFORD TO REPLACE IT WITH ALL THIS NEW STUFF?

Like much technology, a phased approach is often recommended. You can start small with as few as 3 nodes to run a single workload. Once IT teams see the efficiency of that workload, they grow their cluster and add additional workloads.



20. MOST IMPORTANT QUESTION:

HOW
DO I
GET IT?

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