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TOP 20 Hyperconvergence Questions Answered

THE WORLD OF IT IS CHANGING

As software becomes increasingly fundamental to every aspect of our lives, IT teams find themselves increasingly central to business outcomes but are stuck trying to solve new problems with technology designed for a different era

to keep up, a new kind of infrastructure is needed

Traditional IT infrastructure is comprised of a multi-layered stack of technologies that need to be integrated carefully and are typically managed by teams of engineers who specialize in one piece of the overall puzzle. This architecture, typically centered around monolithic storage arrays, has worked well for traditional business applications, but has led to increasingly siloed organizations, long project timelines, and ballooning budgets.

The world's largest tech companies paved the way for our new software-driven world by creating products that have permeated our lives and by developing technologies that have made this possible. And by necessity these tech giants realized earlier than the business community at large that a new approach was needed to support rapidly growing and continuously changing computing needs. This is what led to the development of distributed systems technologies that have become the foundation for public clouds like Amazon Web Services (AWS), Microsoft Azure, and Google Cloud Platform (GCP), and that enable modern **hyperconverged infrastructure (HCI)**. Building your IT datacenter on HCI enables your business to benefit from this modern architecture without outsourcing your infrastructure to the cloud.

1. JUST WHAT IS HYPERCONVERGED INFRASTRUCTURE?

BONUS RESOURCE: You can read **The Definitive Guide to Hyperconverged Infrastructure** for a complete drilldown.

Technical definition
Hyperconverged infrastructure combines compute, networking, and storage into a single distributed platform deployed in clusters and powered by an intelligent software layer that can be deployed quickly, scaled seamlessly, and managed effortlessly. Separate tiers of 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 traditional infrastructure, reducing complexity and enabling 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!)

2. WHAT DOES HCI HAVE TO DO WITH MAKING MY DATACENTER MORE LIKE THE CLOUD?

We've already noted that hyperconverged infrastructure is the core of a cloud-like 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 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.

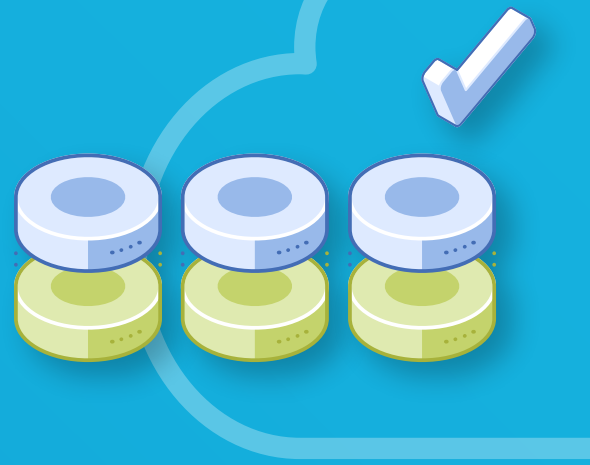
The end result is unpredictability, a scenario that cannot be tolerated in the modern datacenter. Businesses must be able to operate with the expectation that their workloads will operate continuously at predictable levels. In scale-up, as you add more burden to the shared resources, performance levels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

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!



Cost

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, the need to overbuy, and the expense of provisioning storage all can be significantly reduced with the implementation of hyperconverged infrastructure.

Complexity

Silos, racks, servers, cables, hypervisors, 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.

Cloud-Ready

IT environments are going multi-cloud, 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

Is 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 saves time 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 AND 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. And this drastically reduced footprint enables you to run the same infrastructure at the edge as in your core datacenters, resulting in additional efficiency while improving resiliency and performance.

It consolidates
Separate servers, storage networks and storage arrays can be replaced with a single hyperconverged infrastructure solution to create an agile datacenter that easily scales with your business. Hyperconvergence makes administration much easier, enabling you to manage all aspects of your infrastructure from one place, all while reducing complexity by removing compatibility problems between multiple vendors.

It's "just-in-time" infrastructure
Deployment and scaling made simple! If resources become scarce, you simply call your vendor, ask for more servers and software licenses, and deploy them with a few clicks. The infrastructure should be all but invisible to application owners. 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: a distributed infrastructure plane and a distributed management plane.

The distributed infrastructure 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 distributed management plane
The beauty of a single-pane-of-glass! The management plane lets you easily administer your global 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. HCI provides the choice of a wide range of appliance and server platforms from multiple server vendors.

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

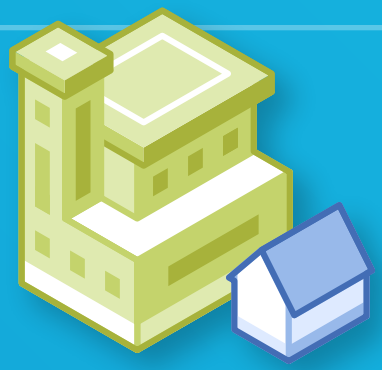
6. HOW DOES HCI MAKE IT TEAMS MORE PRODUCTIVE?

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 user accidentally deletes something or needs to roll back an application upgrade, you can easily 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 HYPERCONVERGED INFRASTRUCTURE?



In the past, HCI started with use cases 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:

- **Databases:** Oracle, SAP HANA, Microsoft SQL Server, MySQL, PostgreSQL, IBM DB2, and many others
- **Business Critical Applications:** Virtualized server applications like Oracle E-Business Suite, SAP Business Suite, Microsoft Dynamics, Epic, Meditech and more, supported on all major hypervisors
- **Big data:** Splunk, MongoDB, Elastic, Hadoop and more
- **Cloud-native:** Build and deploy cloud native applications with Kubernetes, Docker, Puppet, Chef
- **Virtual desktop infrastructure (VDI):** Citrix, VMware Horizon
- **Remote Office and Branch Office (ROBO):** Print and file servers, office services, custom applications

8. IS THERE A DIFFERENCE BETWEEN ‘CONVERGED’ AND ‘HYPERCONVERGED’ INFRASTRUCTURE?

Converged infrastructure (CI) is a different way of purchasing traditional infrastructure and is typically pre-integrated by a vendor or Systems Integrator. Despite pre-integration, CI is built on the same hardware-centric components, and it doesn’t remove organizational silos or solve the problems related to traditional infrastructure.

In contrast, Hyperconverged Infrastructure (HCI) completely re-thinks the way infrastructure can be designed, purchased, deployed, managed, and expanded. HCI is deployed on commodity hardware with all of the intelligence in software and is architected from the ground up to automate the tedious tasks that traditionally plague IT while providing extensive insight and control over the environment.

These are fundamentally different architectures that result in drastically different outcomes in terms of business agility, application availability, performance, security, and cost efficiency.

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 storage has become an important tier that must be considered in any storage architecture.

But traditional 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. Traditional 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, or anything in-between.

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 it also saves 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.

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.

BONUS RESOURCE:
Download a complimentary copy of the **2019 Gartner Magic Quadrant for Hyperconverged Infrastructure** to see their assessment of the strengths and weaknesses of key vendors in the space.

12. IF I MOVE STORAGE PROCESSING ONTO MY SERVERS, WON'T THAT USE UP RESOURCES AND SLOW MY APPLICATIONS DOWN?

The opposite is actually true – moving storage and storage processing onto servers where the applications themselves are running improves application performance. When applications can access data stored locally, they not only avoid network hops which can add latency, but they also avoid resource contention with other applications in the cluster.

Compute resources are always needed for storage processing. Rather than packing those resources into large monolithic storage controllers, HCI splits them up into small pieces that are spread across the cluster, enabling applications to share resources with storage controllers for maximum efficiency. And with modern hypervisors which are built to run the world's most resource intensive and performance hungry applications, this resource sharing is optimized to provide an overall net benefit to application performance.

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

Similar to public cloud services, hyperconverged infrastructure solutions enable IT teams to start with what they need today and scale incrementally to precisely meet application demands.

With HCI, you can non-disruptively scale out your environment with modular building blocks as your business needs grow. In contrast, with traditional infrastructure, each tier is sized based on specific needs. In particular, storage is deployed on large monolithic storage arrays that are complex to design and deploy, and often slow down as more applications are added. Once an array fills up, the only way to add more storage is to deploy another large array that has to be managed separately. This dynamic leads IT teams to try to plan for 3-5 years so they can avoid getting into this situation.

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?

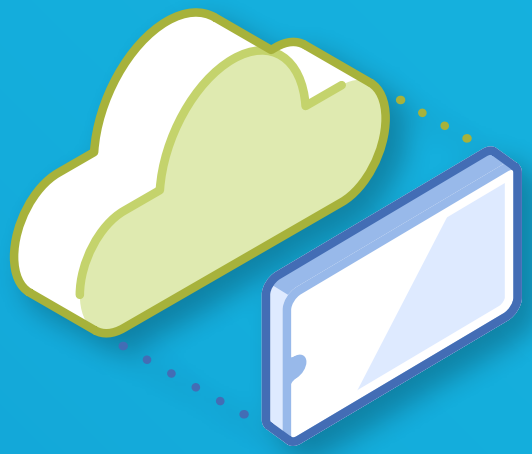
No—hyperconvergence builds a scalable storage infrastructure that is rich in features. Deduplication, compression, snapshots, replication, and any of the features you would find on a storage array are available, but they are implemented in software using distributed systems technologies instead of purpose-built hardware. Additionally, HCI provides complete end-to-end visibility of how your cluster is performing via a single management pane, and you can take advantage of the fact that storage and compute are colocated 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 HCI A GOOD FIT FOR LARGE AND SMALL ENVIRONMENTS?

HCI is optimal for environments of all sizes. 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, hyperconverged infrastructure can be adopted at a flexible pace, matching the needs of the business. Organizations going through large refresh cycles often use the opportunity to modernize their environments with HCI instead of the usual incremental improvements. Alternatively, some larger organizations choose to start their HCI journey with a specific use case, which can be integrated seamlessly into their existing management framework. Over time, as the original use case grows, as new use cases come up, and as old hardware ages out, the environment can be expanded 1 or 100 nodes at a time, often becoming the standard as business units and administrators gain confidence in the new architecture.



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

It's possible to access SAN storage from your HCI environment, 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.

18. MY WHOLE TEAM ARE EXPERTS WITH OUR EXISTING INFRASTRUCTURE, HOW DIFFICULT WILL IT BE FOR US TO MASTER HCI?

Hyperconverged infrastructure was developed to simplify operations by decreasing the number of layers that need to be separately administered and by automating processes that traditionally require deep expertise, like deployments, upgrades, and LUN design. This means your team will have fewer moving pieces to manage, enabling them to attack the backlog and take on new projects instead of putting out fires.

HCI solutions integrate seamlessly with your existing management infrastructure, easing the transition into the new architecture. HCI has permeated the market so rapidly in large part because of how easy it is to learn and adopt - this is one of the reasons why customer satisfaction is so high.

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

It's easy to get started with HCI, because there isn't a massive up-front investment required like with traditional infrastructure. Some organizations choose to rip off the band-aid and upgrade their whole infrastructure in one shot, but many start off with a set of urgent or historically problematic use cases and expand from there. With HCI, you can start at any size and scale out seamlessly as needed.

20. MOST IMPORTANT QUESTION:

HOW DO I GET IT?

EASY AS A CLICK! Try it for free here.

Got questions we didn't answer? Get answers today by contacting us! Nutanix pioneered hyperconverged infrastructure, so we're ready to answer just about any question you have.

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