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**THE BENEFITS OF
HYPERCONVERGED
INFRASTRUCTURE (HCI)
FOR FEDERAL AGENCIES**



As data storage and management becomes more costly and complex, many organizations, including Federal agencies, are moving toward hyperconverged infrastructures vs. converged infrastructures. Hyperconverged infrastructures can provide answers to the “big data” problem, increasing data accessibility while also reducing costs.

But, of course, a hyperconverged infrastructure still comes with some potential challenges and drawbacks. As the trend grows, these Federal organizations will need to know the ins and outs of hyperconverged infrastructure if they want to remain competitive — but they’ll also need to make intelligent decisions regarding adoption, maintenance and management.



WHAT IS HYPERCONVERGED INFRASTRUCTURE?

HCI is a term that's used to describe the convergence of multiple IT components — including storage, networking, and computing — into a single system. This system is then managed as a single entity. In some respects, hyperconverged infrastructure is more a process and philosophy than it is a technology.

The benefits of HCI are many, but chief among them are increased efficiency and scalability. HCI means that administrators only need to manage and secure a single system. It means that data can be organized and analyzed into a consistent whole. Largely, it increases the chances that an agency's or contractor's data will be used in a meaningful way.

For Federal organizations not yet ready to make the jump to a cloud solution, hyperconverged infrastructure can ease the transition. Consider hyperconverged solutions as storage, computing and data, all in one contained environment.



THE PROMISE OF HCI

By converging all data into a single system, HCI makes it possible to manage and understand data with greater levels of clarity and simplicity.

One of the benefits of HCI is that it's often cloud-based. This means that organizations can take advantage of the economies of scale offered by public clouds, private or even hybrid cloud deployments. It also means that data can be easily replicated across multiple Availability Zones (AZs) or regions, providing increased resiliency and availability.

HCI also offers the ability to seamlessly integrate on-premises systems with cloud-based systems. This is important for companies that are looking to move some or all their workloads to the cloud, but still need to maintain control over certain data sets or applications.

But that doesn't mean that HCI is always the solution. For Federal agencies that want to scale a storage-only solution, a hyperconverged cloud may not be the answer.



SIMPLIFIED DEPLOYMENTS

The process of deploying an application or service can be automated through the use of pre-configured templates. Administrators don't need to manually provision and configure each individual component, freeing up time to focus on other tasks. This also leads to increased consistency and predictability in deployments. By using templates, companies can ensure that each deployment is identical. This eliminates the need for manual intervention and reduces the chances of human error.

SIMPLIFIED MANAGEMENT

By converging all components into a single system, administrators only need to manage and update a single platform. This can lead to significant reductions in operational costs. Many HCI solutions further offer built-in management tools. These tools can provide visibility into the state of the system and can be used to troubleshoot problems more effectively.

EASIER UPGRADES

Upgrading an HCI solution is typically much easier than upgrading a traditional system. This is because there are often fewer components that need to be updated. In many cases, the process can be automated through the use of software updates. These updates can be deployed with little or no downtime, further reducing the impact on business.

Essentially, the advantages of an HCI solution in terms of upgrades, updates and patches, are virtually identical to any other as-a-service solution. HCI can be seen as an infrastructure-as-a-service solution that relies upon the idea of converged architecture.



OPERATIONAL EFFICIENCY

As the old saying goes, time is money. And that means downtime is money lost – not only due to direct business disruptions, but also because it can damage your reputation and lose customers. This is all the more important for Federal agencies, where downtime can not just waste taxpayer money but can even have national security implications.

HCI infrastructure has up to 90% less unplanned downtime than other methods, and makes IT teams up to 60% more efficient due to improved performance and less time needed to handle the same workloads.

IMPROVED PERFORMANCE

HCI systems can offer improved performance when compared to traditional solutions. This is because the data is often spread across multiple nodes in the system rather than relying on a single one. By using a distributed storage solution, HCI systems can offer increased reliability and availability. Tiered data can de-prioritize data that isn't often requested while prioritizing data that is required in real-time.

AGILITY

The agility of an HCI solution can be a significant advantage for companies that need to rapidly deploy new applications or services. By using pre-configured templates, administrators can quickly deploy new workloads without having to manually provision and configure each individual component. This increased agility can lead to faster time-to-market for new products and streamline DevOps operations.

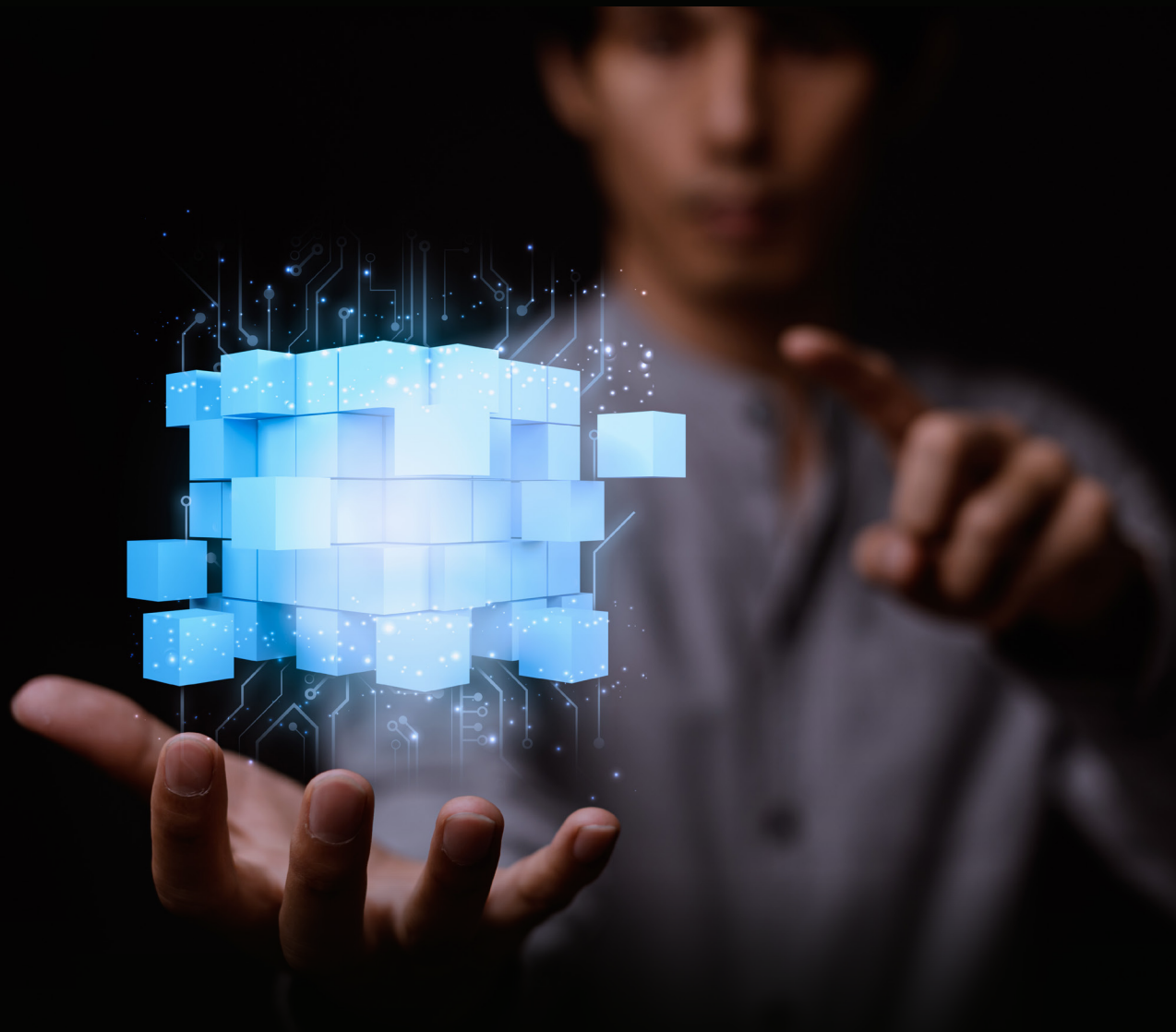


SOFTWARE-DEFINED DATA CENTERS

HCI solutions are often built on top of software-defined data centers. This means that the entire system can be managed and operated through software.

This can provide a number of advantages, such as increased flexibility and scalability. It also makes it possible to quickly provision new resources and deploy new workloads. As many Federal organizations are already moving toward software-defined private clouds and as-a-service solutions, this fits into their future-proofed models.

HCI can vastly improve an agency's or contractor's data management and security controls. But that does require that the Federal organization commit to moving to HCI.



THE LEADING TECHNOLOGIES OF HCI

There are many different technologies that fall under the umbrella of HCI. Two of the most popular, according to Gartner® Peer Insights, are Dell Technologies' VxRail and PowerFlex. The Dell portfolio has been the #1 choice for HCI in the IDC Worldwide Quarterly converged Systems Tracker for 19 consecutive quarters.

Dell describes VxRail as the "only fully integrated, pre-configured and pre-tested VMware hyperconverged appliance on the market." VxRail's enterprise data services include HCI-native data-at-rest encryption (DARE) replication, and support for SecurID and CAC two-factor authentication —eliminating the cost of self-encrypting drives.



CHALLENGES WHEN WORKING WITH HCI

While HCI provides many benefits, there are also challenges that need to be considered when working with this type of system. One of the main challenges is that HCI can be complex to implement and manage. This is since it's a new technology, and because it requires IT staff to have a deep understanding of both storage and networking.

In addition, because of how HCI is constructed, it is possible that storage needs can't be made to align ideally. A need for extra storage without extra computing power, for instance, would be less efficient, as HCI would not offer an easy way to add storage on its own exceeding what can be done with HCI building blocks. Another challenge is that HCI can be expensive. Many organizations looking to adopt HCI are under the assumption that it is a less expensive alternative, but it isn't. This is especially true when working with cloud-based solutions, as the costs of storage and bandwidth can quickly add up.

Finally, it's important to consider the fact that HCI is a relatively new technology. This means that there are still some kinks that need to be ironed out. For example, many HCI solutions don't offer the same level of performance as traditional storage systems.



ALTERNATIVES TO HYPERCONVERGED INFRASTRUCTURE

While HCI is a great solution for many agencies, it's not the right fit for everyone. There are a few alternatives that should be considered, such as converged infrastructure (CI) and traditional storage arrays.

CI is like HCI in that it combines storage, computing and networking into a single system. However, CI systems are typically more expensive and complex to manage.

Traditional storage arrays are a good option for companies that don't need the added complexity of HCI or CI. Storage arrays can be easily scaled up or down as needed, and they offer high levels of performance and reliability.

Many Federal organizations start with storage arrays or converged infrastructure and find that they need to advance to a hyperconverged infrastructure due to their growing needs. A major advantage of HCI is that HCI is incredibly scalable and futureproofed. As an organization's data grows, so does the support of HCI.



THE FUTURE OF HCI

As the world becomes more digitized, the need for storage solutions that can handle large amounts of data will only continue to grow. HCI is well-positioned to meet this demand, as it offers many benefits over traditional storage solutions. While there are challenges that need to be considered when working with HCI, the benefits largely outweigh the drawbacks.

Many organizations are likely to find themselves moving toward HCI in the future. Organizations that begin to play their infrastructure journey now rather than later will have an edge. HCI isn't just about storing data; it's about storing data in a way that makes it easier to manage and easier to glean useful insights from. Any technology that empowers a Federal organization to utilize its data more effectively will also increase the competitiveness of that agency or contractor.



THE BOTTOM LINE

HCI offers promising technology and processes with the potential to solve many of the problems associated with big data. However, it's important to be aware of the challenges that come with working with HCI. When used correctly, HCI can be a powerful tool for Federal agencies, or in fact any business, of all sizes—when used incorrectly, it can lead to complications, confusion and even the loss of data.

Technology solution providers like Red River can help Federal agencies transition to HCI systems — thereby protecting their data, ensuring their compliance and otherwise fostering a unified system of high-performance analytics capabilities.



ACCELERATE YOUR AGENCY'S DIGITAL TRANSFORMATION

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Be ready for whatever comes next with help from Red River and Dell Technologies. Digital transformation is imperative for all organizations. And while many are moving in that direction, a recent study shows that 89% of organizations feel like they're lagging. This is also true at the federal level. Government agencies, like yours, are relied upon to lead. You must operate at the cutting edge of technology if you want to drive innovation and encourage citizen confidence.

To this end, the partnership of the Dell Technologies federal team and Red River is 100% committed to your mission. Whether you're providing critical citizen services, innovating for the next generation, or securing the nation, we bring the right technology, a secure supply chain, targeted expertise, and far-reaching vision to help guide your journey. Whether you're optimizing your existing infrastructure or exploring emerging technologies — 5G, AI, data management, on-demand or as a service — in the cloud or at the edge, we have the technology expertise, end-to-end solutions, world-class services and relentless spirit to help prepare your agency for today's top-of-mind issues and tomorrow's unknowns.

HCI continues to be a catalyst for data center modernization and transformed IT operations. Dell VxRail delivers a fully-automated, ruggedized hyperconverged infrastructure – ideal for demanding Federal and military use cases. Whether you are managing Virtual Desktop Infrastructure (VDI), or mission-critical applications in the field, your team can take advantage of HCI benefits and ease of use with VxRail.



ABOUT RED RIVER

Red River brings together the ideal combination of talent, partners and products to disrupt the status quo in technology and drive success for business and government in ways previously unattainable. Red River serves organizations well beyond traditional technology integration, bringing more than 25 years of experience and mission-critical expertise in data center, security, networking, analytics, collaboration, mobility and cloud solutions. To learn more, visit redriver.com.