

HOW TO SELECT A dHCI SOLUTION

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Executive Summary

According to the Enterprise Strategy Group, more than 80% of enterprises are planning to adopt a hybrid cloud model to meet the needs of their organizations.* Public cloud providers offer a simple, fast, and efficient model to consume required IT services and help optimize budgets. However, organizations still need to address the other half of the hybrid model. On-premises environments are still often the best—or only—choice to meet specific business, compliance, and operational needs. These requirements have led IT organizations to demand equivalent cloud-native IT services for on-premises data centers. Until recently, IT managers had limited options to deploy these services on premises; they had to choose from:

- 1 **Traditional three-tier architectures** required IT managers to select, assemble, and configure the discrete parts, support the capex budget, and shoulder the burden of management and maintenance for the disparate equipment and software.
- 2 **Hyperconverged infrastructure (HCI) solutions** addressed both the burden of sourcing discrete hardware and simplified management, but with an efficiency penalty that can reduce consolidation capabilities, inflate licensing cost, and limit scalability.

* ESG Master Survey Results, 2019 Technology Spending Intentions Survey, March 2019.

Executive Summary (Cont.)

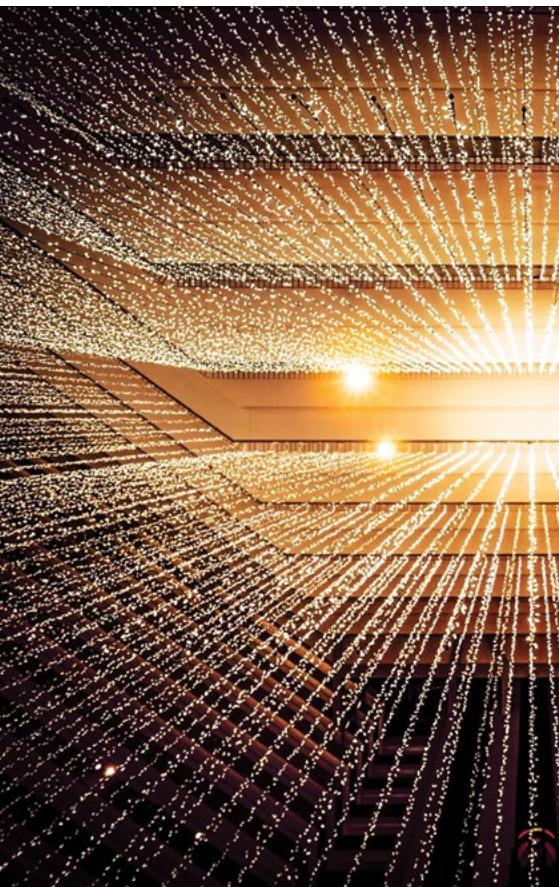
A new architecture has evolved that IDC calls disaggregated hyperconverged infrastructure (dHCI). dHCI sets the stage for IT organizations to deploy hybrid cloud services on premises. It provides fully integrated management with public cloud services, reduces management overhead, simplifies resource provisioning, provides integrated data protection, and optimizes licensing costs. As IT teams look to move to DevOps, support new Internet of Things (IoT) and edge use cases, and leverage artificial intelligence (AI) and machine learning (ML) to optimize virtually every aspect of business operations, this new approach to on-premises services is required to create a true hybrid cloud model.

This paper focuses on the challenges that organizations face today in deploying true hybrid cloud services in on-premises environments and how dHCI can help you meet business needs. Table 1 summarizes the different IT service offerings available for the hybrid cloud model.

	Public Cloud	HCI	dHCI
Pro	<ul style="list-style-type: none">• Ease of use• Developer friendly• Opex model• Grow on demand	<ul style="list-style-type: none">• Pre-configured• Validated solution• Simple to install, operate, rearrange, and support• Software defined	<ul style="list-style-type: none">• Independent, non-linear scale• Incrementally grow• Provision cloudlike resources• Multi-tenancy• Software defined• Workload flexibility• Developer friendly• Flexible buying options
Con	<ul style="list-style-type: none">• Ingress/egress charges• Compliance and regulatory concerns	<ul style="list-style-type: none">• Not scalable• Wasted or stranded resources• Commodity components	<ul style="list-style-type: none">• More complicated to order, buy, and configure• Static – cannot be dynamically partitioned or reconfigured (i.e. composed)

Table 1) IT Infrastructure Alternatives Pro/Con Chart.

The New Business Requirements Driving dHCI



As hybrid cloud adoption grows, the key question for many IT organizations is how to create an integrated approach that enables services, applications, and data to be seamlessly deployed and migrated between clouds (public, private, or hybrid) and IT environments (core and edge). Enterprises often leverage more than one public cloud for strategic, operational, regulatory, or geo-political reasons. Any time a vendor is selected, a potential for lock-in exists, and as organizations evaluate hybrid cloud solutions it is important for them to consider how each vendor will increase or decrease mobility of services, applications, and data.

Hybrid cloud is being driven by the emergence of growing technologies, including:

- End-user computing and virtual desktop infrastructure
- Kubernetes and containers
- Application modernization
- DevOps and SecDevOps
- Artificial intelligence and machine learning
- IoT
- Mobile applications

Each of these new workloads creates a certain set of requirements for IT to manage. Figure 1 shows the new workloads and their demands.

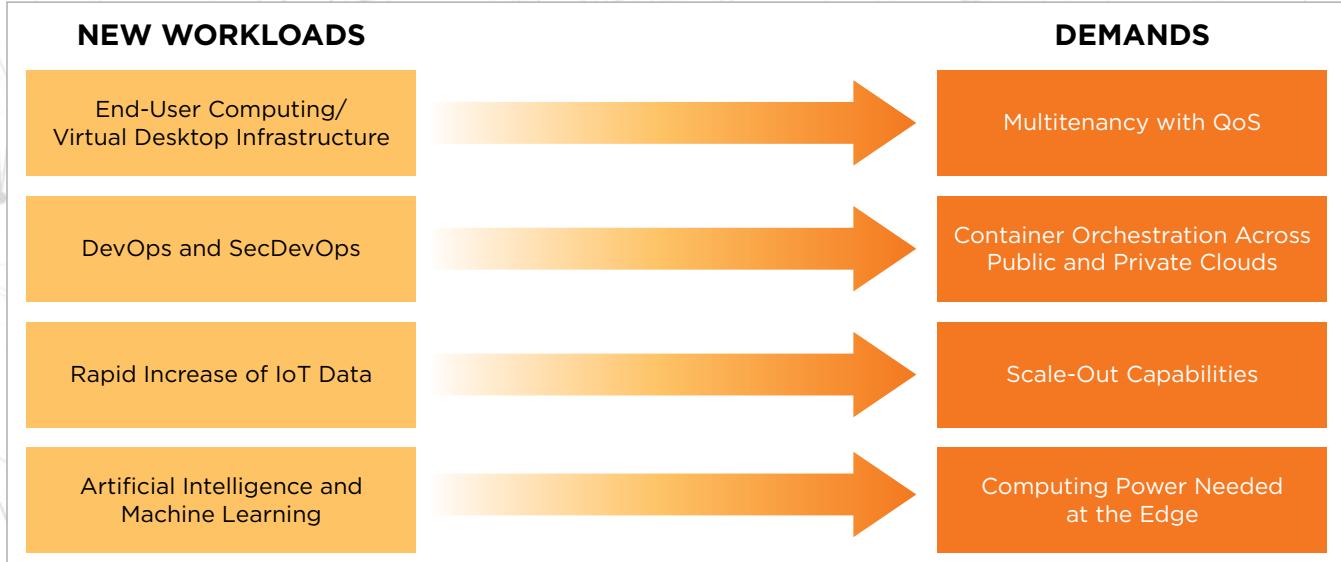


Figure 1) New IT demands.



End-User Computing

End users have varying demands of their virtual desktop infrastructures, but all require a seamless experience. Rather than confining users to what their devices can handle, dHCI allows IT to pool resources and dole them out based on who needs what. Pooled resources can also help virtual app deployments by allowing IT to perform more consistent performance testing. Many organizations have a single server dedicated to testing that runs only a few times a year. With dHCI, IT can disperse resources across the infrastructure to do more regular virtual application performance testing. dHCI can provide the cloudlike experience that end users expect, on their premises.

DevOps

Perhaps the most significant new trend is the move to DevOps, with teams leveraging containers to create modern cloud-native applications. This model demands that applications and data are persistent and able to migrate seamlessly across any cloud or IT environment. This is where the dHCI model can change the game for IT. dHCI is a cloud-native system, designed to give a common experience across public and private clouds, with persistent storage that follows the associated container.

AI and ML

Enterprises are also increasingly viewing AI and ML as essential to their continued innovation and growth, allowing them to manage customer interactions, gain operational efficiencies, drive product innovation, create competitive advantage, and more. The ability to efficiently process and leverage data in the cloud, in the core, and at the edge is crucial for success. dHCI offers the operational flexibility to leverage computing power at the edge for inferencing before transferring data to the core or the cloud. With dHCI, you purchase the compute and storage independently so that your resources can be used with maximum efficiency.

Traditional Applications

Even though AI and ML, DevOps, and other modern applications are growing rapidly, the data center must continue to provide high service and efficiency to traditional workloads. dHCI is architected to handle traditional IT workloads such as databases, but it doesn't require special skills to install and run. Because dHCI is software defined, installation can be done by a storage generalist. You can run all of the traditional applications with enterprise-grade hardware, but spend less time dealing with storage and backup matrixes. dHCI is built for the current and future workloads of IT organizations.

dHCI Delivers a Cloudlike Experience on Premises

As your business adopts a hybrid multicloud cloud approach, you'll need to create your own perfect world, with some data stored in the public clouds and other data stored on your premises. That's easier said than done. To provide cloud services on premises, there is a demand for storage that scales as applications are built, is easy to manage, and is highly automated. The requirements of modern workloads, ranging from end-user computing to hybrid cloud to DevOps, are centered on:

- **Flexible resources.** The ability to have on-demand resources available, whenever they're needed.
- **Scale out.** Increase compute or storage capacity, depending on the unique needs of varying workloads.
- **Simplicity.** Software-defined storage is at the heart of simplicity. Manage workloads with one pane of glass. Easy installation for workloads at the edge is a must.
- **Consolidation.** Your workloads are changing; consolidate them with IT services that provide quality of service (QoS) for all workloads.
- **Operating expense model.** Manage your IT spending like the public clouds. Avoid the large up-front costs associated with IT spending, and instead make smaller purchases, or use a vendor that offers a rental or subscription model.

	Flexible Resources	Scale Out	Simplicity	Consolidation (QoS)	OPEX
Three-tier	✗	✗	✗	✗	✗
HCI	✓	✗	✓	✗	✗
dHCI	✓	✓	✓	✓	✓

Figure 3) Delivering a cloudlike experience on premises.

dHCI is built to offer a cloudlike experience on premises. The flexibility, scalability, simplicity, consolidation, and purchasing methods for dHCI make it a clear winner for a cloud-integrated on-premises solution.

IDC Calls dHCI Market “Big Potential”

IDC has introduced an updated hyperconverged infrastructure (HCI) taxonomy, to expand its definition of the hyperconverged systems market segment to include disaggregated HCI (dHCI).

IDC's updated HCI taxonomy, in addition to adding disaggregated HCI, also leaves room for other future subcategories for containers and microservices. As IDC states, “this is a niche market with big potential.” NetApp agrees.

Such systems are designed from the ground up to only support distinct/separate compute and storage nodes. An example of such a system in the market today is NetApp's HCI solution. They offer non-linear scaling of the hyperconverged cluster to make it easier to scale compute and storage resources independent of each other while offering crucial functions such as quality of service. For these disaggregated HCI solutions, the storage nodes may not have a hypervisor at all, since they don't have to run VMs or applications.

- IDC*

* Worldwide Converged Systems Market Posts Strong Results in the First Quarter of 2019 with 19.3% Year-Over-Year Revenue Growth, 25 Jun 2019

NetApp's dHCI Solution

NetApp HCI is designed to deliver a public cloud consumption experience with simplicity, dynamic scale, and operational efficiency. Don't want to commit to large IT purchases? NetApp HCI is a hybrid cloud infrastructure that can be purchased granularly to help you scale; or, through the NetApp Keystone program, you can purchase on-premises cloud consumption services through an operating expense model.

NetApp HCI is built to deliver cloud-native capabilities, specifically the management of containers workloads. However, although NetApp's dHCI solution is designed to solve these new IT demands, it is also a solution that is complete with all the enterprise-class security and management tools needed for on-premises workloads. NetApp HCI is enterprise ready and architected for the future with three key principles: independent resource allocation, simplified management and configuration, and predictable performance.

Independent Resource Allocation

NetApp HCI offers the simplicity of a software-defined approach, with software that autoconfigures and detects the hardware, setting up the connections between compute, storage, and networking. The disaggregated architecture enables independent resource scaling, ensuring that all of your resources are used effectively. Start small and reduce your hardware stack to just what is needed, rather than overprovisioning capacity. With NetApp HCI you can move away from the siloed approach and eliminate some hardware.

Simplified Management and Configuration

A traditional data center design is composed of separate storage silos with individual tiers of servers and specialized networking spanning the compute and storage silos. This worked in the precloud era but is too rigid for the cloud era. NetApp HCI radically simplifies data center architectures and operations, reducing the time and expense of managing data and delivering apps. Preexisting compute resources, virtualized or not, can leverage the storage tier in NetApp HCI. This greatly simplifies migrations into a NetApp HCI environment and allows customers to leverage existing investments. No mass migrations or lift and shift required.

Predictable Performance

The NetApp HCI always-enabled, global deduplication and compression, paired with application-specific quality of service, means that customers can efficiently run mission-critical applications alongside consolidated virtual machines. The NetApp HCI QoS feature allows fine-grained control of performance for every application, eliminating noisy neighbors, meeting unique performance needs, providing higher usage of infrastructure, and satisfying performance SLAs. The end-user experience is enhanced because of the performance gains resulting from NetApp HCI QoS.

Ducati Gets Disaggregated



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Ducati signed on with NetApp as its disaggregated hyperconverged infrastructure provider. This is the company's first time implementing hybrid cloud technologies in its IT infrastructure. NetApp HCI offered the right balance of storage and compute power, under tight physical requirement constraints, to support rapid data collection and analysis to enable onsite data-driven decision making. This ability translated into more rapid iteration of bike setup by race engineers, based on local conditions. Ducati plans to implement NetApp

HCI as part of a longer-term on-premises and cloud reshuffling strategy, starting with remote subsidiary locations, that will allow the company to save on costs in the future. For Ducati, ease of deployment, simplicity of data migration, and disaggregation of storage and compute resources were key features in their hybrid cloud deployment, offering the automation and flexibility needed to provide reliable, easily deployable infrastructure to support highly specialized enterprise workloads.

[Read more about Ducati's use of dHCI.](#)



NetApp®

How to Select a dHCI Solution

After evaluating your organization's business needs, if you're interested in implementing a dHCI solution, here are seven important requirements to keep in mind.



Public Cloud Integration

In a hybrid multicloud world, any dHCI solution needs to provide public cloud integration, services, and APIs to enable applications and data mobility on premises to the public cloud and back.



AI Ops

Look for a solution that offers AI-driven management and that can optimize the performance, availability, and operations of compute, network, and storage resources.



Service Level Guarantees

Make sure that the solution offers QoS capabilities that can provision resources to ensure that applications can deliver on service level agreements and eliminate "noisy neighbor" challenges.



Optimize and Lower Application Costs

Examine application, operating systems, and virtual machine enterprise license agreements to see how dHCI can optimize your software costs. [Learn more.](#)



Purchase Flexibility

Focus on dHCI solutions that offer the option to consume dHCI as a service to manage opex, offer traditional capex purchases, and provide the options to have your team or the vendor manage your dHCI infrastructure.



Edge or Cloud Scale Capable

One of the key goals of dHCI is to provide a single infrastructure that can live on edge deployments for 5G base stations, IoT data analytics, and remote site offices, and can also scale to meet the demands of thousands of nodes, all in a single management infrastructure.

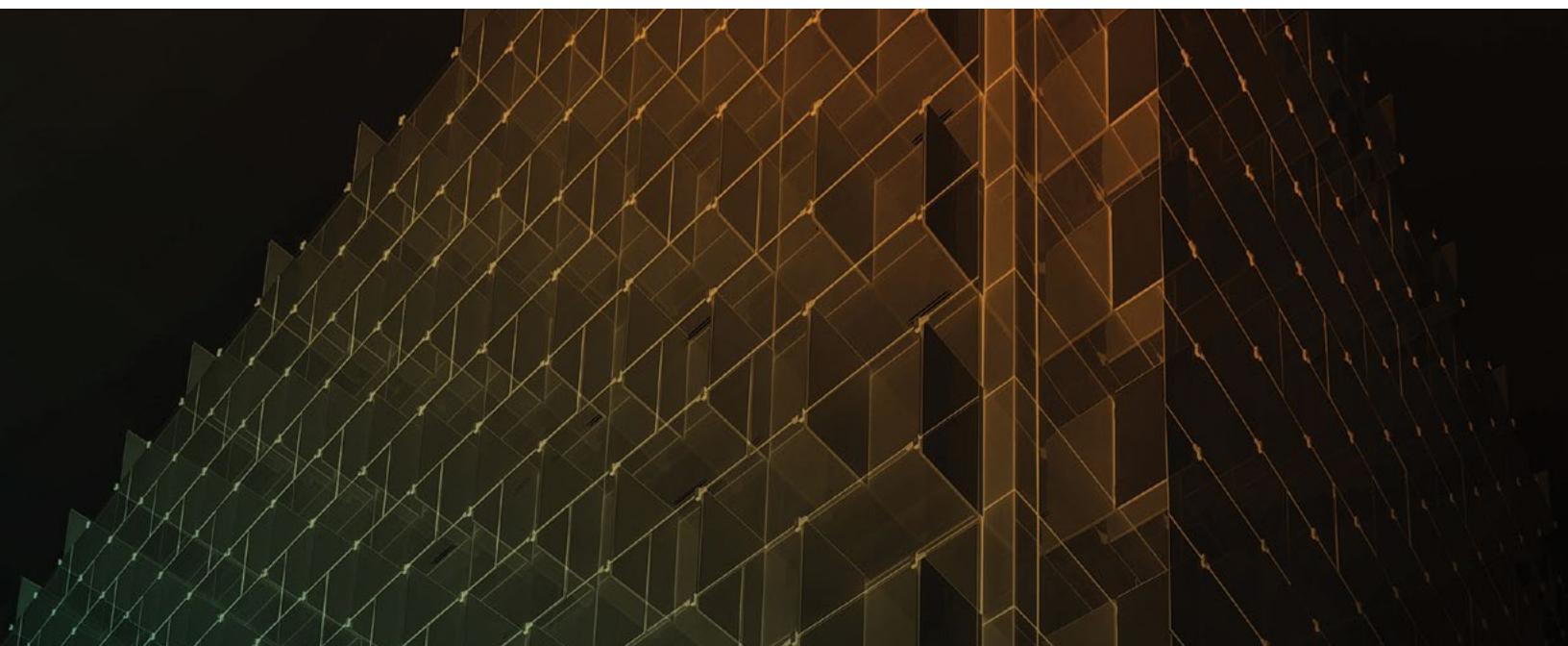


Simplicity with End-to-End Automation

Make sure that there's not a steep learning curve and that you can work with deployment and management tools you already know.

Conclusion

Every company has become a technology company. To innovate, all businesses need to look closely at how their technological strategy is driving business value. This increase in innovation has caused application development to move from cyclical to iterative, making a cloud model of IT operations imperative. Traditional hyperconverged infrastructures fail to provide the simplicity, dynamic scalability, and efficiency of a disaggregated HCI approach. IDC has recognized the emergence of a new category to meet this need: disaggregated HCI. dHCI addresses the new demands of IT by offering cloudlike consumption on the premises. NetApp HCI is the cloud-first dHCI solution that is specifically architected to provide the independent scale, simplicity, and consistent performance demanded by today's IT trends.



Learn More

[5 Ways NetApp Redefines HCI](#)

[HCI is Dead. Disaggregate and Hybrid Cloud Today.](#)

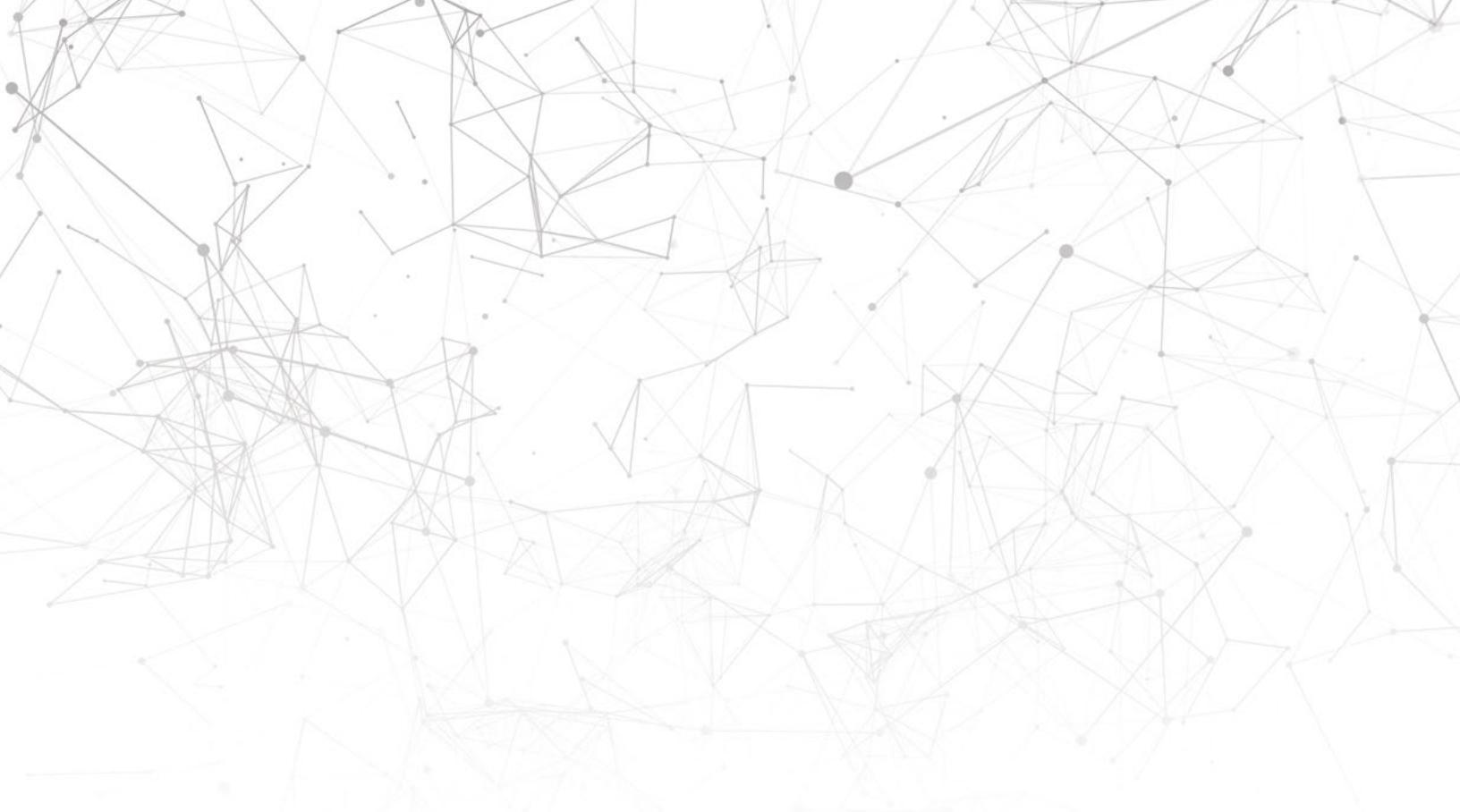
[NetApp HCI Demo](#)

[Disaggregated HCI Becomes a Thing](#)

[See what our customers are doing](#)

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