White Paper

In a Container-Based World, Select Hyperconvergence to Speed Your Journey

Hewlett Packard Enterprise

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Containers and microservices are the new normal for application development, particularly for the emerging breed of cloud-native applications. But these new application development architectures need a modernized infrastructure approach in order to achieve the speed, simplicity and insights necessary to drive transformation. That's why hyperconverged infrastructure should be your platform of choice for your journey to a container-based architecture.

No one needs to be told about the explosive growth of container-based frameworks. Not that long ago, containers were the hot technology on the horizon, promising dramatic improvements in facility and speed for developing and deploying applications for forward-thinking developers.

Now containers are mainstream, widely adopted and utilized for a new breed of agile, cloud-native application development. More and more organizations are running containerized applications in production environments, with IDC projecting that within three years, 90% of all new applications will feature microservices architectures.[3]

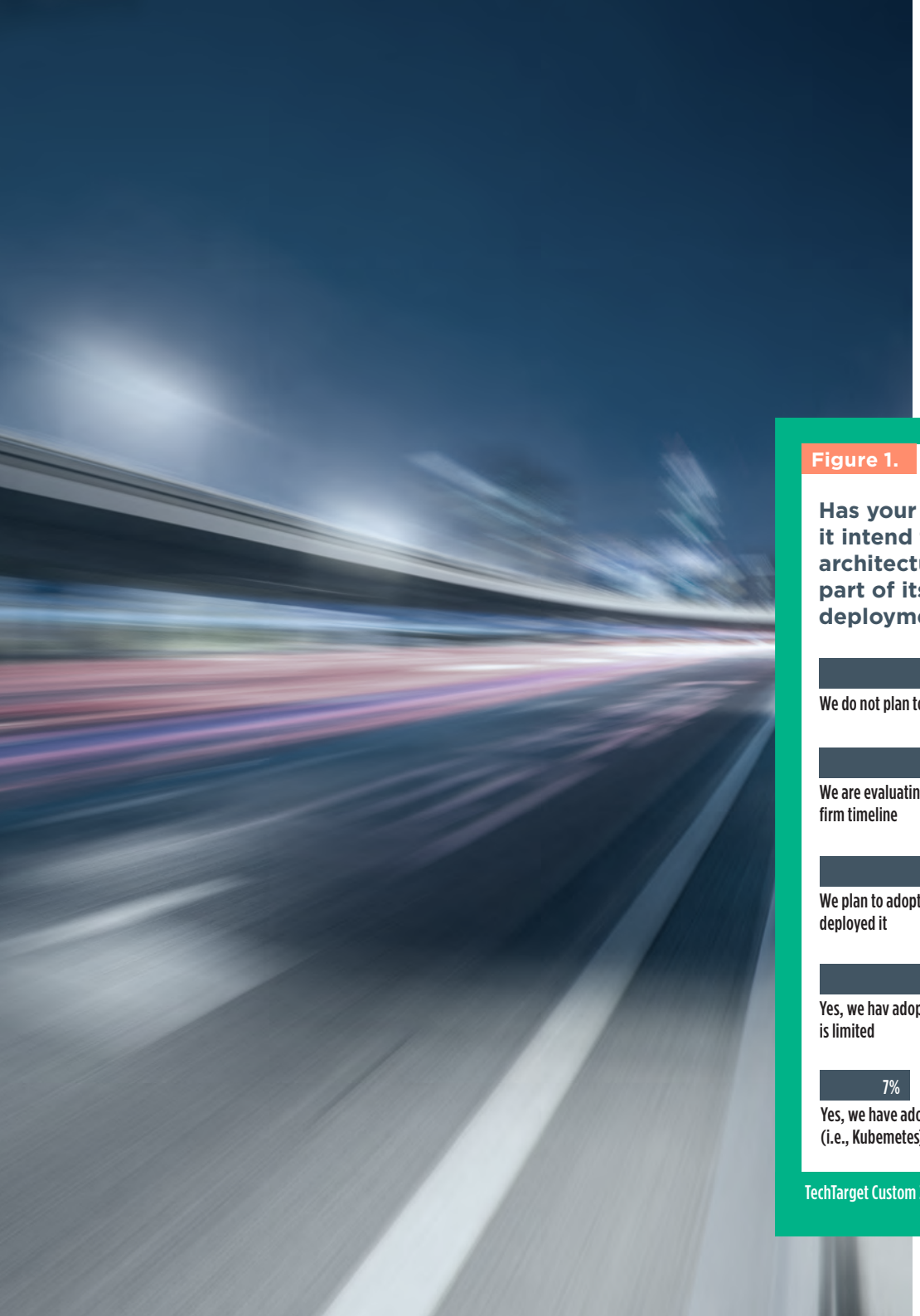
The reasons for this shift are clear: Containers promote faster development and innovative experimentation, yield more data insights for business decision-making, enhance organizational agility and dramatically reduce application development bottlenecks. But adopting a container-based development mindset and running it on legacy infrastructure is like installing a turbocharger in your family station wagon. Instead, you need a sleek, adaptive, cost-efficient and scalable infrastructure platform to get the most from your container-centric application development and deployment.

That platform is hyperconverged infrastructure (HCI). Initially embraced because of its simple management, fast deployment and easy scalability, HCI has skyrocketed in demand as organizations have sought to modernize and "right-size" their infrastructure to become more agile and responsive. That's a big reason why global HCI sales are taking off, with revenues projected to exceed $17 billion by 2023—a five-year compound annual growth rate of more than 30%, according to one researcher.[4]

Deciding whether containers are driving demand for HCI or HCI is spurring greater adoption of containers and microservices is irrelevant. What does matter is that any organization looking to deploy applications—especially cloud-native ones—faster and more economically should be embracing both containers and HCI. This paper looks at some of the factors driving organizations to move toward containers and HCI, the benefits of this approach and what to look for in a flexible, scalable, efficient and modernized HCI solution.

3 "IDC FutureScape: Multiplied Innovation Takes Off," IDC, Oct. 30, 2018

4 "Hyper-Converged Infrastructure Market—Global Forecast to 2023," MarketsandMarkets, January 2019



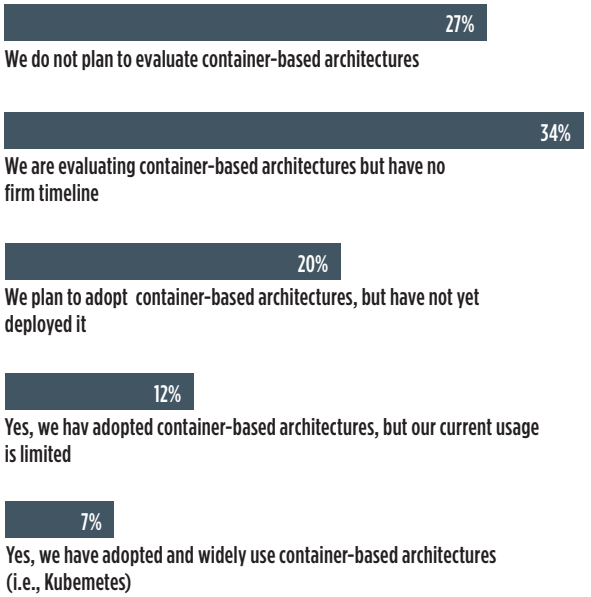
Why containers matter so much

Containers—particularly Kubernetes—are now common fare in some of the most data-centric and digital-first organizations in the world, from Airbnb and Google to Pinterest and The New York Times. Recent research conducted with sophisticated potential buyers among TechTarget's wide universe of IT professionals and tech-savvy business decision-makers shows how widespread the adoption is for container-based architectures for application development and deployment (see Figure 1).

Nearly three-quarters (73%) of respondents said they have either already adopted container-based architectures, plan to do so or are in the evaluation process.

Figure 1.

Has your organization adopted, or does it intend to adopt, container-based architectures, such as Kubernetes, as part of its application development and deployment strategy?



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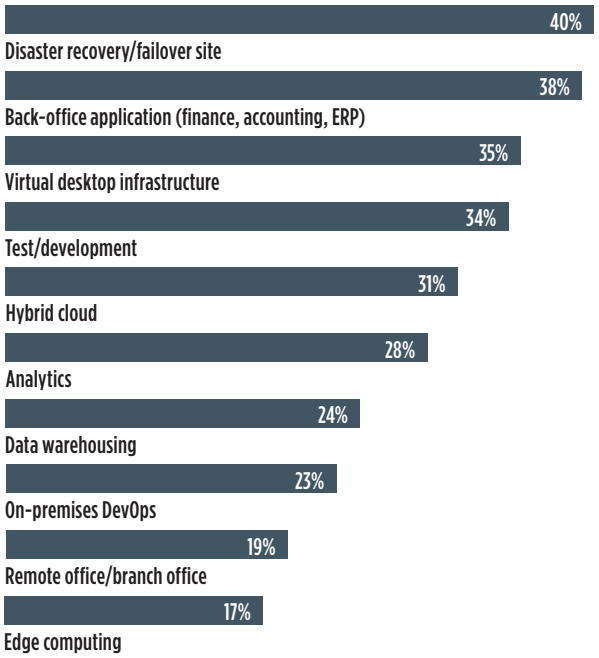
The key drivers for container adoption are now widely understood and broadly embraced. Faster application development, easier revisions and updates, less system overhead, more platform independence and broader scalability all are part of the benefit statement for containers. This makes it a great match for broader trends in IT service delivery, such as cloud development and deployment, hybrid IT models, multicloud workloads, DevOps and more.

Not surprisingly, usage of containers and microservices is surging: IDC projects that by 2022, 90% of all new applications will "feature microservices architectures that improve the ability to design, debug, update and leverage third-party code."[3]

3 Ibid. footnote 1

Figure 2.

For which of the following workloads are you either currently using or plan to use HCI? (Choose all that apply)



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Why HCI is ideal for container environments

For many of the same reasons IT organizations are swinging toward container-based application development and deployment, HCI has experienced substantial market support—with plenty of growth still anticipated in the coming years. In fact, research from Evaluator Group indicates that 79% of large enterprises are planning to expand their use of that class of solution.[4]

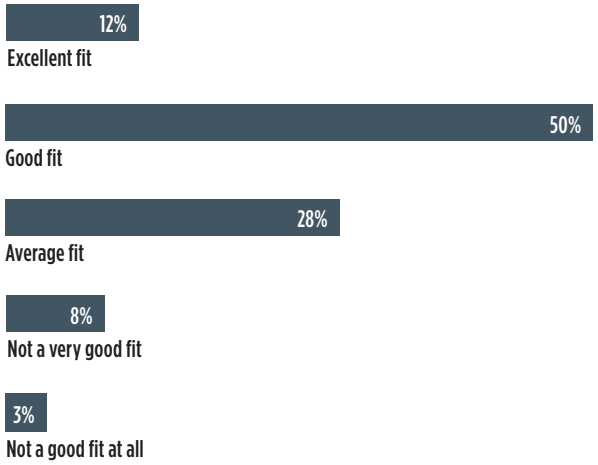
An important reason HCI support is expanding so dramatically is that the use cases deemed most appropriate for HCI have ballooned from initial workloads such as virtual desktop infrastructure and remote office/branch office (ROBO). Now, according to the TechTarget research, broader HCI deployment is being driven by additional workloads, such as back-office applications, test/development, hybrid cloud and analytics, as shown in Figure 2.

Another major reason why HCI and containerized applications go well together is HCI's fit with cloud-native application deployment. In fact, 62% of survey respondents consider on-premises HCI either a good or excellent fit to deploy and run cloud-native applications (see Figure 3).

Bottom line: HCI is a proven infrastructure foundation for container-based architectures because it offers far more flexibility, easier management, more robust scalability and a more rapid path to economic value—particularly for cloud development and deployment—than legacy infrastructure.

Figure 3.

Do you consider on-premises HCI to be a good way to deploy and run your cloud-native applications?



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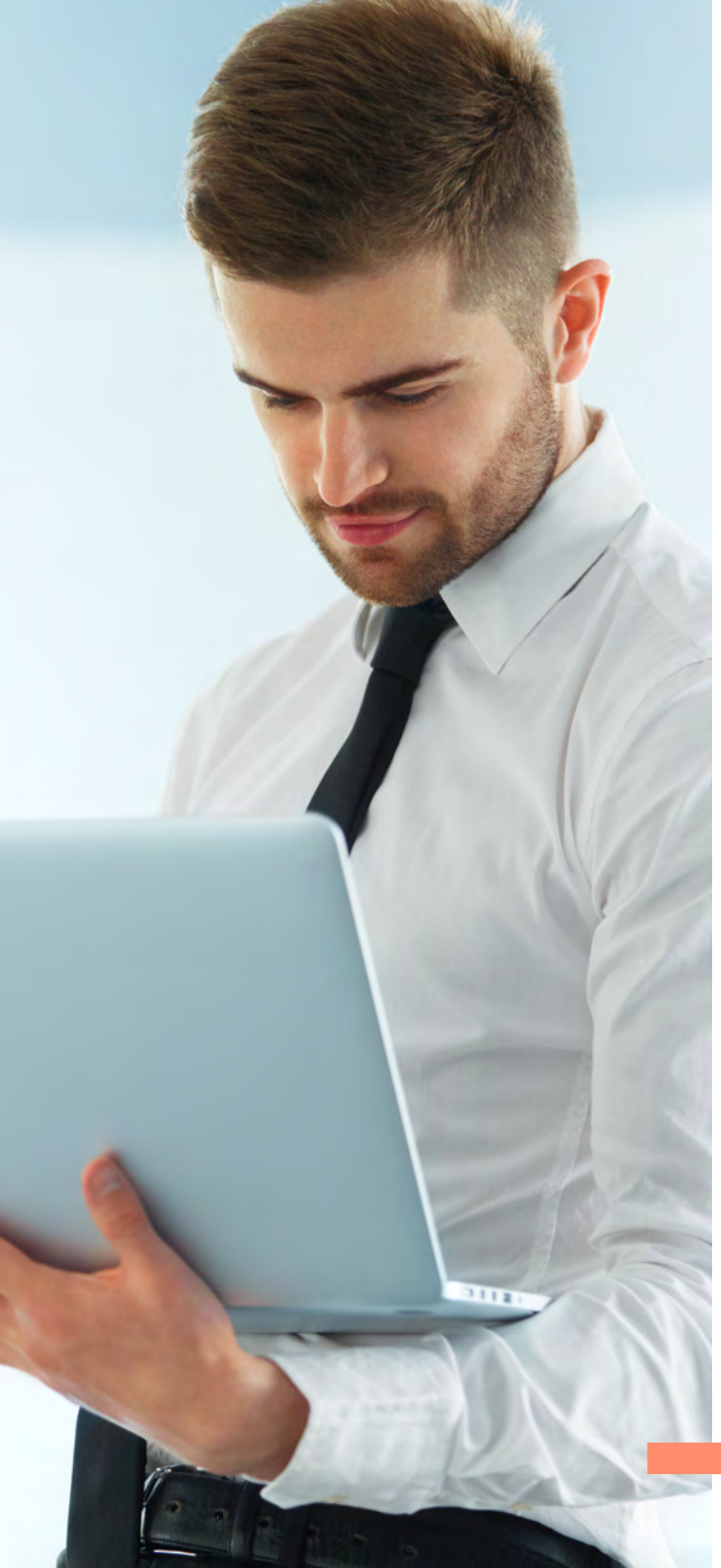
4 "Hyperconverged Infrastructure Gains Acceptance by Enterprise IT with 79% of Large Enterprises Expanding its Use," Evaluator Group, March 19, 2019

Use cases for containers and HCI

How, where and when should you deploy HCI-based container architectures? The simple answer is as often and as widely as you can if you value agility and efficiency. But in today's modernized IT framework, a few use cases really stand out for HCI-based container deployment:

- **Hybrid CI/CD (continuous integration, continuous delivery).** This is an increasingly attractive use case for private cloud, ROBO and edge applications, which are becoming more mainstream in midsize and large enterprise environments.
- **Private HCI cloud supporting cloud-first applications.** Apps and services developed in the cloud and run in production on premises are becoming the norm. Organizations now require data management for on-premises containers, using HCI on-premises storage.
- **ROBO/edge HCI deployments.** Low-cost deployment of containerized applications for distributed, edge and ROBO workloads is a must-have. These workloads require operationally efficient data management capabilities and a reliable, cost-efficient replication mechanism, making HCI a great platform for these deployments.
- **Hybrid-mode operations.** Customers need to support a mix of virtual machines and Kubernetes-orchestrated containers on the same hardware. This puts the onus on infrastructure to be "lightweight" yet able to deliver high performance at scale, as well as flexible enough to support multiple VMs and containers simultaneously.
- **Hybrid data protection.** Policy-based automation for on-premises data backup and to cloud is an absolute, and most legacy hardware and application platforms were never intended to be utilized for this manner of data protection.
- **Multi-cloud mobility.** Ability to flexibly and efficiently bring up workloads anywhere spanning clouds is a growing requirement for cloud-native deployments. To achieve this data movement across cloud for stateful applications is critical.



What to look for in an HCI solution for your container environments

Once an IT decision-maker embraces the notion that HCI and containers represent the new normal for agility, scalability, automation and economic value, the next step typically is to create a wish list of features, functionalities and capabilities for a containers-based architecture deployed atop HCI.

What should you look for in an HCI solution aligned with container architectures? Here are a few key features:

- Support for multiple hypervisors.
- Robust yet low-overhead data protection that includes always-on deduplication and compression across primary storage and backup.
- "Single pane of glass" management.
- Small physical footprint with substantial operating expense savings in real estate, power and cooling.
- Application-centric policy management policy management for optimized workload migration.
- Enterprise-class performance and resiliency in web-scale requirements.
- Automated data protection, archiving, tiering and recovery.
- Support for edge computing workloads.
- Rapid deployment of new systems and upgrades, including zero-touch provisioning.

The advantages of HPE SimpliVity HCI solutions

Because HCI is such an attractive platform for organizations looking to make delivery of applications and other IT services easier, more responsive and more cost efficient, there are a number of solution choices available to potential buyers. While there are obvious benefits to having multiple solution and supplier options, it is important for decision-makers to understand that there can be many differences among suppliers and their solutions. This makes it important for organizations to look for a technology partner well versed in HCI technology, cloud-native application development, containers and microservices.

HPE SimpliVity is tailor made for enterprises that place a high value on resilience, availability and scalability, especially for web-scale workloads, edge computing and other performance-intensive use cases. HPE SimpliVity was designed specifically with cloud-native applications, containers and microservices in mind, with a focus on easy manageability, automation, adaptive intelligence and low cost of ownership.

HPE SimpliVity solutions are utilized across a wide range of enterprise workloads, particularly for data protection use cases such as backup, archiving, recovery and restore. Whether you are building and deploying container-based applications for ROBO environments or sprawling, multinational organizations, HPE SimpliVity is an excellent, cost-efficient and highly scalable option for your organization.

All HPE SimpliVity models provide enterprise-grade data services, delivered through functionality such as inline deduplication, compression, backup, archiving and recovery for full business continuity. All HPE SimpliVity solutions are designed with robust, policy-based security in mind, enabling rock-solid security from the data center to the remote office to the edge, particularly for the rapidly emerging class of Internet of Things use cases that sometimes prove tricky for older generations of HCI solutions.

Conclusion

As containers and microservices are increasingly adopted for agile application development, DevOps and other modernized application development and delivery, it's clear that enterprise IT decision-makers need to move to a similarly agile, flexible, adaptable and scalable infrastructure platform. Hyperconverged infrastructure gives organizations the ability to right-size hardware platforms in a container/microservices/cloud-first paradigm and closely align with modern software development approaches.

HPE SimpliVity HCI solutions were designed for environments where containers would become standard operating procedure for applications, whether those applications are cloud-native, cloud-ready or even on premises.

For more information on how HPE and HPE SimpliVity solutions, as well as HPE Nimble Storage dHCI, can optimize your move to HCI, containers and microservices, please visit these sites:

www.hpe.com/simplivity
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