Want to Innovate, Outpace Rivals, and Thrive?

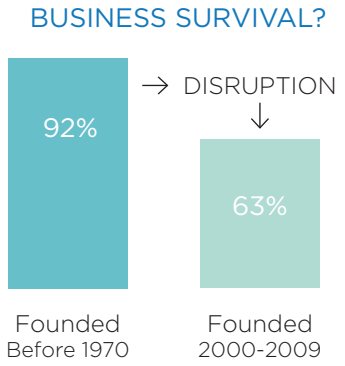
Here's How Next-Generation Hyperconverged Infrastructure Delivers

Idea in Brief

Hyperconverged infrastructure offers a bridge to tomorrow's data center that can accelerate your company's ability to compete with speed, agility, and insight into the future. However, first-generation hyperconvergence fell far short of its promise. This paper describes the shift from first-generation to next-generation hyperconvergence and discusses how the latter fulfills early visions for the technology and justifies the hype. These insights will help you assess your company's readiness to cross the bridge of next-generation hyperconvergence — and the benefits you can expect.

Competing for the Future with Speed, Agility, and Insight

Organizational leaders hear about market disruption every day. Beyond the buzz of billion-dollar startups leapfrogging established players, the average life of a company is actually decreasing. Companies formed before 1970 had a 92% chance of surviving the next 5 years – but companies formed between 2000 and 2009 have only a 63% chance. On the upside, newer firms are more nimble. The bad news? Their days are numbered unless they continually innovate. As business guru Peter Drucker quipped, "innovate or die."[2]



> "Business leaders must selectively forget the past, manage the present and, most importantly, create a future.[3] Competing for the future requires three fundamental capabilities: speed, agility, and insight."

To meet the demand for constant innovation, strategists contend that business leaders must selectively forget the past, manage the present, and, most importantly, create a future.[3] Competing for the future requires three fundamental capabilities: speed, agility, and insight.

With regard to speed, the pace of business is accelerating. Once upon a time, strategic initiatives occurred on an annual or quarterly cycle. Today, strategic decisions, time to market, and resource deployment must run on much faster cycles.[4] To keep pace, organizations must become far more agile to reduce business risk and adjust to changing market realities.[5] For example, technology leaders who employ agile methods have streamlined systems and architecture to improve quality and speed to market, while reducing costs and overhead.[6]

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[1] "The Scary Truth about Corporate Survival." Harvard Business Review, vol. 94, no. 12, December 2016, pp. 24-25.
[2] http://www.druckerinstitute.com/2010/08/innovate-or-die/.
[3] "The Three-Box Solution: A Strategy for Leading Innovation." Govindarajan, V., 2016.
[4] "We Need People to Lean into the Future." Harvard Business Review, March-April 2017, pp. 94-100.
[5] "Toward a More Agile Future." Harvard Business Review, May 2016, p. 10. "Embracing Agile." Rigby et al. Harvard Business Review, 2016 pp. 41-50.
[6] "Why Today's CIO Must Foster IT Agility." Robin Johnson (Dell CIO), CIO Magazine, November 2011.

Beyond speed and agility, competing for the future requires new insights into markets. The days of making decisions based solely on experience and intuition are gone. Rather, organizational leaders must make data-driven decisions – far easier said than done.

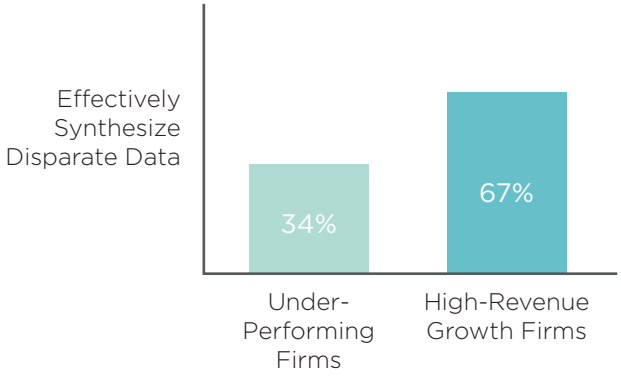
For one thing, amassing troves of data doesn't mean much. Instead, businesses must transform stocks of data into an "insight engine" to inform strategic decisions. Doing so requires synthesizing data across the enterprise to create a "single version of the truth." Despite the difficulty, there can be a major payoff. For example, the ability to synthesize data has been shown to identify successful versus less successful companies. 67% of executives in high revenue growth firms say that their company is skilled at linking disparate data. Only 34% of underperforming firms make the same claim.[7]

BIG IDEA
The evolution from first-generation to next-generation hyperconverged infrastructure offers a bridge to tomorrow's data center.

URGENCY
Speed, agility, and insight within a strong data strategy are critical for competing in the era of disruption.

TAKING ACTION
Review key insights and audit questions to assess your readiness and potential ROI from implementing a next-generation hyperconverged infrastructure.

PERFORMANCE IMPLICATIONS OF A BUSINESS INSIGHT ENGINE



01 00 The Role of Data and Infrastructure Strategy

Building a business that excels at speed, agility, and insight relies on a strong data strategy. IT strategies have historically focused on managing internal enterprise systems. Today, business leaders in all roles are seeking new and scalable applications that serve internal and external stakeholders with access at anytime and from anywhere to compete more effectively.[8] Consequently, the data strategy and IT infrastructure are a shared priority. For example, chief marketing officers (CMOs) are increasingly collaborating with CIOs, and in many companies CMOs control more technology spending than IT departments.[9]

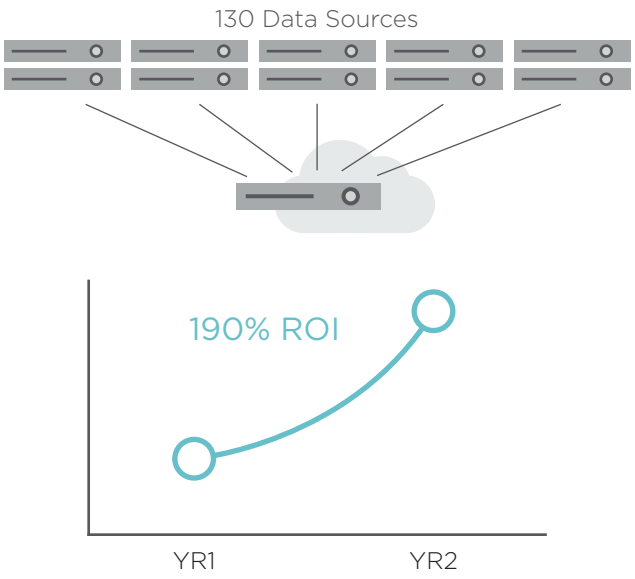
Organizations are realizing that they must manage torrents of data and rapidly deploy new applications to reach their business objectives. However, most companies are way behind the curve. For example, research shows that organizations use less than half of the company's structured data for decision making, and less than 1% of unstructured data is even analyzed. In fact, analysts spend 80% of their time simply discovering and preparing data that often resides in silos.[10]

[7] "Building an Insights Engine." Van Den Driest et al. Harvard Business Review, 2016, pp. 64-74.
[8] "Pipelines, Platforms, and the New Rules of Strategy." Marshall et al. Harvard Business Review, 2016, pp. 54-62.
[9] "The Power Partnership: CMO & CIO." K.A. Whitler, D.E. Boyd, & N. Morgan, N. Harvard Business Review, vol. 94, no. 4, 2017, p. 55.
[10] "What's Your Data Strategy?" Dallemule et al. Harvard Business Review, May-June 2017, pp. 113-121.

Not surprisingly, bottlenecks of people and initiatives needing IT resources stack up. The backlog creates stress for IT organizations as well as motivation for shadow IT as business units elect to go outside the firm to procure SaaS offerings and public cloud services.

Although shadow IT decisions may alleviate short-term problems, they also create long-term dilemmas such as integration challenges, excessive costs when IT resources are poorly forecasted, and the proliferation of data silos with blind spots that undermine insight.[11]

EXAMPLE: IT INFRASTRUCTURE ROI



For these reasons, businesses that want to compete for the future are rethinking their data and infrastructure strategies to support business growth. The "plumbing" aspects of infrastructure management are not as exciting as the predictive models and colorful dashboards produced in the conference room, but business leaders are recognizing how vital they are for meeting business objectives. In fact, many companies find that they can fund their entire data management programs from the savings produced by consolidating data sources. For example, one large financial services company consolidated 130 authoritative data sources with trillions of records. This consolidation allowed the company to rationalize key data systems, eliminate supporting infrastructure, and cut operating expenses. The automation alone yielded a 190% return on investment with a 2-year payback time.[13]

Rapid Rise of Hyperconverged Infrastructure

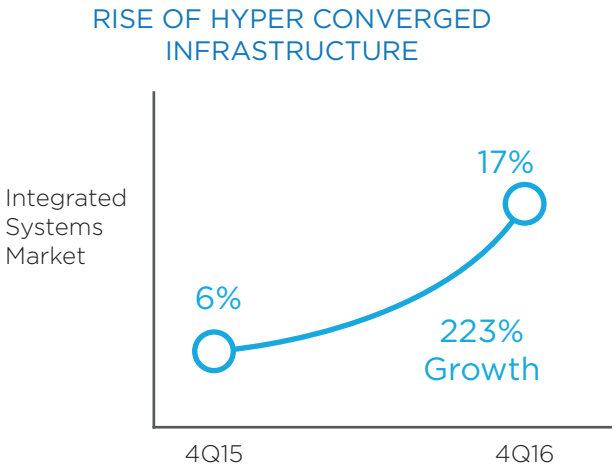
Until a few years ago, technological limitations of traditional data warehouses made it hard to build the necessary architecture to support a robust data strategy with capacity for scaling applications. However, these limitations started to dissolve with the emergence of hyperconverged infrastructure (HCI) solutions that shifted the landscape from hardware-defined systems to a software-defined environment.[14] In essence, the promise of hyperconvergence is to combine enterprise capabilities for performance, efficiency, and control with cloudlike scalability, agility, and economics.

From a business perspective, these infrastructure capabilities create visions of a next-generation data center that operates like an efficient factory. That means scaling multiple high-performing apps on a simple and easy-to-use infrastructure, as well as creating an innovative lab that provides access to data lakes for analytics and strategic decision making.

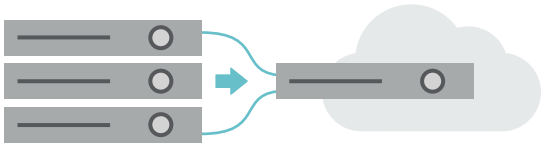
[11] "Shadow IT – A View from Behind the Curtain." Silic et al. Computers & Security, September 2014, pp. 274-283.
[12] "What's Your Data Strategy?" Dallemule et al. Harvard Business Review, May-June 2017, pp. 113-121.
[13] "What's Your Data Strategy?" Dallemule et al. Business Review, May-June 2017, pp. 113-121.
[14] "Study of Converged and Hyperconverged Infrastructure as Future of Data Center." Azeeem et al. International Journal of Advanced Research in Computer Science, 2017.

Research indicates that many organizations are adopting HCI solutions to improve service, agility, cost optimization, infrastructure utilization, and speed of deployment.[15] HCI is one of the hottest trends in data infrastructure, with 223% growth in 4Q16 and accounting for an estimated 60% of server, storage, and network deployments by 2020.[16]

However, despite the excitement, first-generation HCI solutions are associated with a variety of challenges that have produced growing skepticism. In particular, early returns have demonstrated that many HCI solutions are not ready for multiple enterprise-grade applications.[17] Furthermore, market feedback indicates weaknesses with scalability, performance consistency, efficiency issues, and negative impact on applications, especially ones with mixed workloads.[18] Of these issues, the concerns about performance and reliability are cited as key reasons that organizations have chosen to not yet adopt hyperconverged solutions. Furthermore, organizations are surprised by high up-front costs, unanticipated licensing expenses, and deployment complexity that often results in 400+ inputs and a host of new interfaces for IT staff to learn.[19]



Thus, despite early promises of hyperconvergence, first-generation offerings are challenged by unpredictable performance, complex and lengthy deployment, forklift upgrades that result in over- or underprovisioning of IT resources, and the persistence of application silos across IT infrastructure.



> “Many first-generation HCI solutions are not ready for multiple enterprise-grade applications.”

From First-Generation to Next-Generation Hyperconverged Infrastructure

The good news is that hyperconverged solutions continue to evolve, and next-generation offerings are solving many of these concerns.[20] As part of this shift, industry experts recommend that organizations focus on hyperconverged solutions that truly deliver on factors such as simplicity, flexibility, economics, prescriptive performance, and optimum selectivity.[21] As shown in Table 1, next-generation offerings address a number of these factors that constrained first-generation offerings.

[15] ESG Research Report. “The Cloud Computing Spectrum, from Private to Hybrid.” March 2016. “Market Share Analysis: Data Center Hardware Integrated Systems, Worldwide, 2016.” Gartner, May 2017.
[16] “Market Share Analysis: Data Center Hardware Integrated Systems, Worldwide 2016,” Gartner. “NetApp Finally Joins the Red-Hot Hyperconverged Market with Its HCI Solution Engineered on SolidFire, Data Fabric, and ONTAP.” IDC, January 2017.
[17] “NetApp Finally Joins the Red-Hot Hyperconverged Market with its HCI Solution Engineered on SolidFire, Data Fabric, and ONTAP.” IDC, January 2017.
[18] “With HCI, NetApp is aiming to push hyperconverged infrastructure to enterprise-scale.” Baltazar et al. 451 Research. “NetApp Finally Joins the Red-Hot Hyperconverged Market with its HCI Solution Engineered on SolidFire, Data Fabric, and ONTAP.” IDC, January 2017.
[19] ESG Research Report. “The Cloud Computing Spectrum, from Private to Hybrid. “March 2016. “With HCI, NetApp is aiming to push hyperconverged infrastructure to enterprise-scale.” Baltazar et al. 451 Research.
[20] “Going Beyond Hyperconvergence Toward Bimodal Agile Infrastructures.” Weiss et al. Gartner, October 2016.
[21] “Five Keys to Creating and Effective Hyperconvergence Strategy.” George J. Weiss. Gartner, February 2017.

Table 1) First-generation to next-generation hyperconvergence.

	First Generation	Next Generation
Performance	Unpredictable performance, especially with mixed workloads or multiple applications	Guaranteed performance with QoS allocation for running multiple mixed workloads on one system
Scalability	Linear scaling with fixed-resource ratios that result in forklift upgrades, under- or overprovisioning, and additional business risk or unnecessary costs	Flexible and independent scaling of resources in clusters as the need arises that can reduce licensing costs by 10% to 30%
Deployment	Bottlenecks, time, and complexity in implementation require 300+ steps and greater risk of user error with manual operations	Automated infrastructure with a small fraction of the number of steps required in first-generation offerings
Data infrastructure and movement	Persistence of data silos and barriers with their inherent complexities and risks	Seamless data movement to any cloud environment based on integration and data fabric
Appropriate use cases	Best suited for smaller deployments with single applications	Capable of enterprise-scale deployments for multiple workloads and applications

Assessing ROI for Next-Generation Hyperconverged Infrastructure

Enhancing organizational speed, agility, and insight by using a hyperconverged infrastructure is a process. The following audit questions can be used to assess current strengths and weaknesses of the existing infrastructure strategy and to produce an action plan.

Speed

- ☐ How quickly are you able to react to competitive challenges and release features?
- ☐ Can you independently scale storage and compute resources to rapidly react to changing business needs, reducing overprovisioning and TCO?
- ☐ Can your team deploy new resources without vendor assistance?
- ☐ Does your current solution offer automated infrastructure?

Functionality

- ☐ Does your current solution provide for guaranteed performance, such as min/max/burst QoS, dynamic QoS allocation, and capacity-independent performance?

Flexibility

- ☐ Can you run and support both traditional and next-generation applications on the same infrastructure?
- ☐ Can you integrate with existing storage investments for enhanced data portability, visibility, and protection?

Productivity and Results

- ☐ Could your teams be driving more business outcomes if they were not managing multiple silos of applications?

Going Forward...

The complexity of building "tomorrow's data center" while trying to compete in today's fast-paced markets defies simple remedies. That said, a groundswell of evidence now points toward hyperconverged infrastructure as an accelerator of organizational speed, agility, and insight. Although first-generation hyperconverged offerings fell short of the hype, next-generation offerings can truly deliver guaranteed performance, flexibility and scale, automated infrastructure, and seamless integration. Business and technology leaders tasked with creating and deploying a strong data strategy are moving quickly to assess how a next-generation hyperconverged infrastructure can help their organization compete for the future. Refer to the Interoperability Matrix Tool (IMT) on the NetApp Support site to validate that the exact product and feature versions described in this document are supported for your specific environment. The NetApp IMT defines the product components and versions that can be used to construct configurations that are supported by NetApp. Specific results depend on each customer's installation in accordance with published specifications.