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WHITE PAPER

Dell Technologies and Microsoft Transform On-premises Infrastructure

Providing Private Cloud Choice Without Complexity With the Dell AX System for Azure Local With Dell PowerFlex

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September 2025

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Introduction

On-premises infrastructure modernization remains as important as ever. In fact, in modern application environments, on-premises infrastructure is now playing an increasingly strategic role as an essential part of a hybrid cloud ecosystem. Research by Enterprise Strategy Group showed that 84% of organizations agreed that data center modernization is a top IT priority for them, and 84% also said that consistency of experience across data center and cloud environments delivers significant operational benefits.[1]

Drivers behind the increasingly strategic role of data centers, and the motivation to modernize them, include:

- An increased interest in gaining greater control over costs, infrastructure, and data.
- Increased data locality and sovereignty requirements.
- The rise of AI initiatives and the use of private data.
- Budget pressures resulting from increases in the cost of hypervisor licensing.

As businesses modernize their on-premises infrastructures, they should aim to achieve more flexibility and greater control over infrastructure design, but they must also continue to strive to reduce complexity. In other words, any new infrastructure investment must provide increased capabilities while reducing the burden on IT personnel.

A combined solution from Dell Technologies and Microsoft—the Dell AX System for Azure Local with PowerFlex—represents an excellent example of such a solution.

The Future of Data Center Infrastructure

Contemporary business runs on hybrid cloud infrastructure, and on-premises data center infrastructure plays a vital role in such environments. Consider that when allocating applications and data across hybrid cloud environments, multiple factors can fuel an increased emphasis on retaining and deploying some of those workloads on premises.

According to Enterprise Strategy Group research, only 29% of organizations surveyed identified their organization as being cloud-first (i.e., their organization prioritizes public cloud application deployments). That percentage is down from 35% in 2024.[2] And even among the cloud-first organizations, on-premises deployments remain a regular occurrence.

On that note, 98% of the organizations that identified themselves as being cloud-first have made exceptions to their cloud-first rule by deploying certain new applications on premises. The top reasons for those data center deployments include data governance or sovereignty considerations (cited by 44% of respondents), security (44%), and total cost of ownership (36%).[3] Additionally, 76% of organizations said that they view on-premises application deployments more favorably today than they did five years ago.[4]

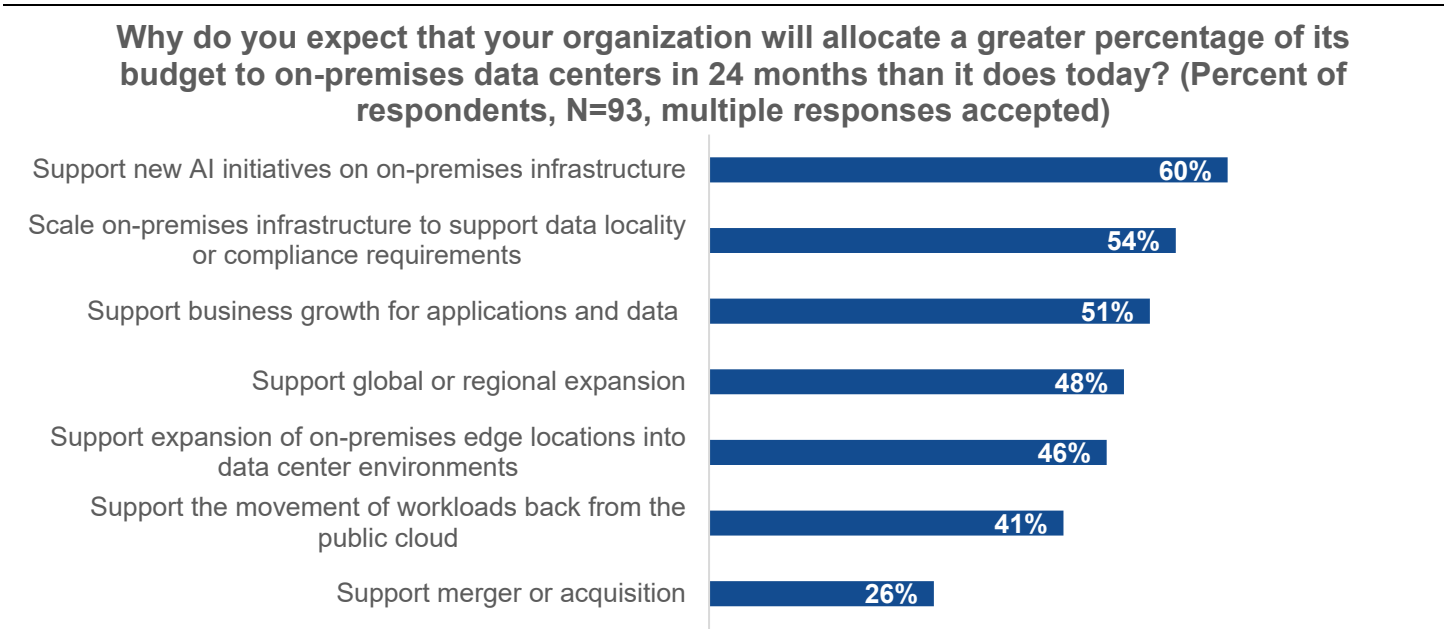
Notably, another factor helping to fuel the increased strategic importance of on-premises infrastructure is AI. Research revealed that 84% of IT decision-makers agreed that the growth of AI (including generative AI) has them reevaluating their application deployment strategy.[5] A similarly large majority of respondents, 82%, agreed that

[1] Source: Enterprise Strategy Group Research Report, *Private AI, Virtualization, and Cloud: Transforming the Future of Infrastructure Modernization*, July 2025. All Enterprise Strategy Group research references and charts in this white paper have been taken from this report unless otherwise noted.
[2] Source: Enterprise Strategy Group Research Report, *2025 Technology Spending Intentions Survey*, December 2024.
[3] Source: Enterprise Strategy Group Research Report, *Cloud Application Deployment and Migration Decision-making*, August 2024.
[4] Ibid.
[5] Ibid.

security threats such as ransomware are compelling them to reevaluate their application deployment strategy,[6] and 76% agreed that the rising cost of public cloud infrastructure has caused them to reevaluate their hybrid cloud strategy.

As shown in Figure 1, AI, data locality, and compliance are the top factors behind the increases in on-premises IT budgets.

Figure 1. Factors Driving Increased On-premises Investment



Source: Enterprise Strategy Group, now part of Omdia

Going forward, however, traditional infrastructure solutions will not be able to provide what businesses require and are ultimately unsustainable. It's time for a more modern alternative.

Limitations of Traditional Three-tier and HCI Architectures—Why IT Needs a Modern Alternative

A three-tier architecture (composed of server, networking, and external storage) offers control and some level of flexibility. IT architects can mix and match components, independently scale compute or storage elements, and tune the environment to meet the needs of specific workloads.

But that type of architecture also adds complexity in areas such as validation, deployment, configuration, and maintenance—thereby increasing the effort required by administrators, as each element is often managed separately using different skill sets. Upgrades can also be time consuming and can add risk to operations because each component has its own lifecycle, set of APIs, and interoperability testing requirements. All of it increases the burden on IT administrators and slows time to value for new initiatives.

Hyperconverged infrastructure (HCI) addresses many of the complexity concerns presented by the more traditional infrastructure options, but it, too, can limit flexibility. HCI does simplify deployment and management. It is designed to be managed by a virtualization team using management processes that are integrated with both the operating system and hypervisor environment. HCI solutions also often feature built-in automation and simplified full-stack upgrades.

[6] Ibid.

Despite the simplicity improvements, traditional HCI solutions limit granular scalability and hinder organizations' ability to scale compute and storage independently. Some HCI implementations have led to underutilized capacity and have limited organizations' flexibility in regard to component choice due to the tight integration.

Tight integration can lock organizations into a single platform or component and ultimately can place them at greater risk if price changes occur. For example, 72% of surveyed organizations reported that they experienced a cost increase in their hypervisor environment due to changes in a provider's licensing model in the 18 months leading up to the research survey, with 31% of those organizations saying that the overall cost increase was more than 50%. That shift has led to 56% of organizations planning to replace their primary hypervisor or at least reduce hypervisor spending.

This all leads to the need for a new approach to on-premises infrastructure. When evaluating on-premises infrastructure modernization options, organizations should look for solutions that can:

- Reduce the complexity burden on administrators, both on premises and across hybrid cloud environments, to accelerate time to value.
- Enable cyber-resilience and enterprise-level availability to reduce business risk.
- Accelerate the deployment and scaling of the right infrastructure for the right application.
- Control costs to maximize the return on existing budgets.
- Improve flexibility, choice, and control in technology integration and usage.

Dell Technologies' Approach to Disaggregated Architecture

Dell has a distinctive approach to delivering a disaggregated architecture for on-premises infrastructure that centers on delivering three-tier-level flexibility combined with HCI-level simplicity. Specifically, Dell's approach enables pooling of compute, storage, and networking resources while providing independent scaling of individual components. Using this approach, organizations can reduce over-provisioning and cut costs.

The Dell disaggregated architecture supports diverse workloads. It also increases efficiency, simplifies management, and ensures uninterrupted availability, putting organizations in a stronger position for future growth. It is delivered with enterprise-level performance, availability, and security while simplifying the deployment and support experience.

In pursuing its disaggregated storage strategy, Dell Technologies is partnering with private cloud providers, including IT leaders such as Microsoft. It's all part of Dell's effort to help organizations modernize and simplify their on-premises infrastructures, improve control, and add design flexibility while simplifying hybrid cloud operations and data movement.

The Dell AX System for Azure Local With PowerFlex

The Dell AX System for Azure Local with PowerFlex is an integrated solution that provides Microsoft Azure Local technology supporting both virtual machines and container-based application environments. It is delivered on Dell's purpose-built hyperconverged infrastructure and leverages PowerFlex software-defined storage.

Azure Local extends the familiar Microsoft Azure public cloud provisioning and management experience to on-premises (data center and edge) infrastructures through the Azure portal, supporting virtual machines and containers with a consistent experience.

That consistency of experience enables common management of applications and data across on-premises and public cloud environments, simplifying hybrid cloud operations and reducing the burden on administrators. While

the infrastructure is hyperconverged to simplify deployment and operation, the integration of Dell PowerFlex software-defined storage provides an enterprise-grade storage environment that can scale independently from compute.

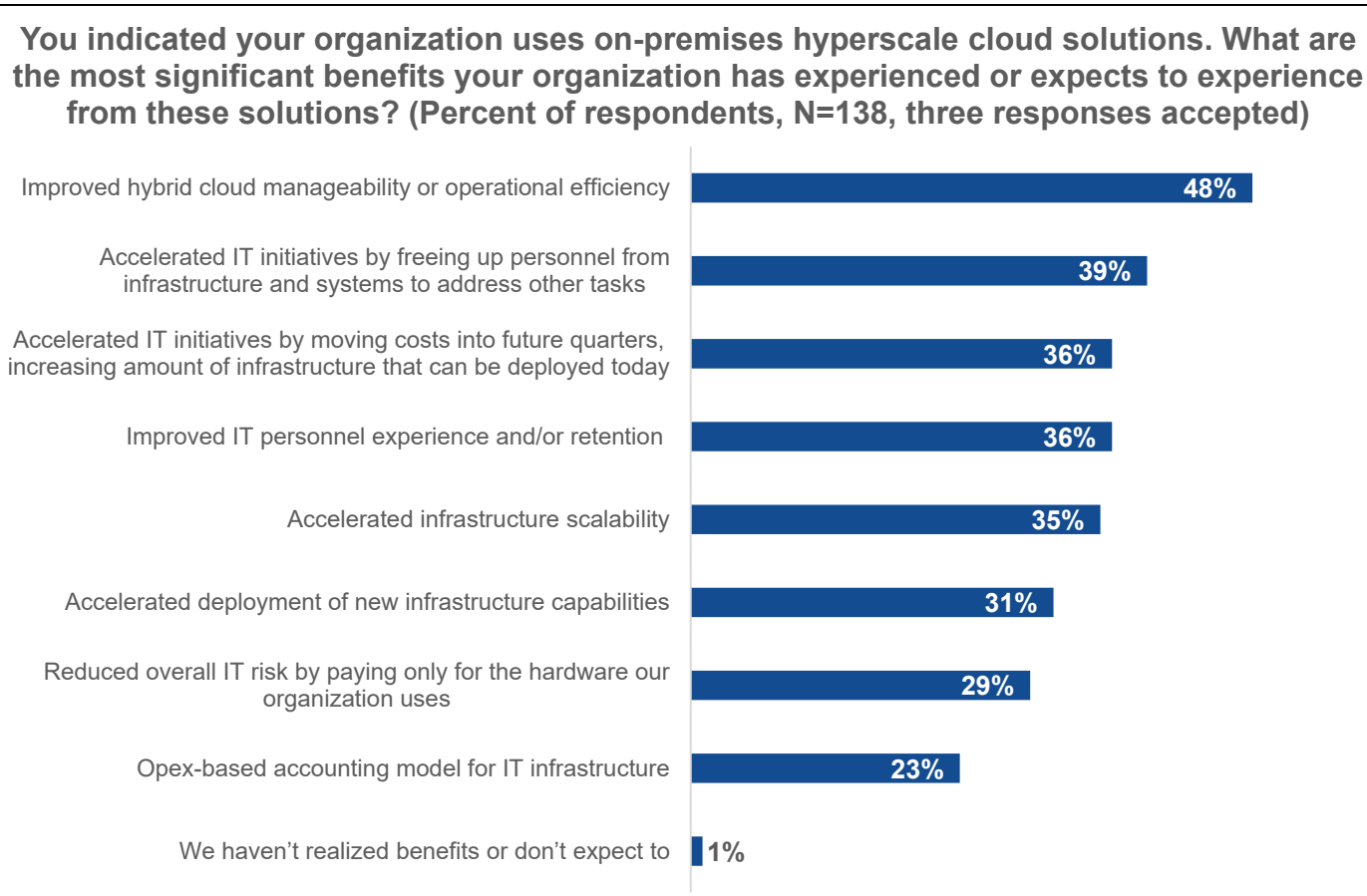
Dell AX System appliances are also available in a variety of configurations that enable organizations to tailor their Azure Local infrastructure for their specific workloads. Integration with Dell PowerFlex provides predictable, near-linear performance at scale while providing granular deployment flexibility to tune performance to fit the needs of the application environment. The resulting solution has been validated by Dell Technologies and Microsoft to give their customers confidence that upgrades and patches can be applied seamlessly without downtime.

Benefits of the Dell AX System for Azure Local With PowerFlex

Private cloud solutions built upon a disaggregated infrastructure architecture, such as the Dell AX System for Azure Local with PowerFlex, are delivering transformational benefits to user environments.

Enterprise Strategy Group has conducted research on the benefits organizations have realized from running hyperscale cloud-consistent software (such as that from Microsoft Azure) on premises (see Figure 2). The most commonly cited benefit is improved hybrid cloud operations, likely due to a consistent experience on and off premises, followed by accelerated IT operations by reducing complexity to the extent that IT resources can be freed up to focus on additional tasks and freeing up additional budget by moving the cost of growth out into future quarters.

Figure 2. Private Cloud Improves Hybrid Cloud Efficiency and Accelerates Operations



Source: Enterprise Strategy Group, now part of Omdia

The benefits shown in Figure 2 apply directly to the Dell AX System for Azure Local with PowerFlex. This solution offers a consistent hybrid cloud experience with Microsoft Azure. Its integrated, pre-validated infrastructure with hyperconverged-level deployment simplicity reduces the burden on internal IT administrators and improves the administrative experience overall. The ability to accelerate scalability and reduce business risk with granular scalability options is also highly beneficial. And notably, a single PowerFlex can support multiple Azure Local instances, as well as other infrastructure platforms.

Dell Technologies has worked with Microsoft to integrate Dell's high-performance, enterprise-level software-defined storage with Azure Local to augment the benefits of the combined solutions and ultimately offer:

- **Strong performance.** Dell optimized the design for high-performance, low-latency application environments, including enterprise applications, transactional databases, and other demanding workloads. Dell PowerFlex is also designed to deliver consistent performance under heavy resource demands at scale. That architectural decision means PowerFlex can support organizations running data-intensive applications, such as AI, real-time analytics, media streaming, and data ingestion. Testing conducted by Dell Technologies has demonstrated near-linear scalability in I/Os per second (IOPS) from four to twelve systems beyond 1.5 million IOPS.
- **High data availability.** Dell claims six 9s (99.9999%) availability for PowerFlex storage, which is essential for uninterrupted mission-critical operations (e.g., e-commerce platforms, healthcare systems, and other essential services). In addition, PowerFlex offers rapid rebuild and rebalancing capabilities to further enhance resiliency, providing peace of mind in the face of unforeseen disruptions.
- **Extreme scalability.** PowerFlex's modular architecture enables non-disruptive scaling of resources. A PowerFlex cluster can scale to 512 nodes and 16 PB of raw capacity, enabling enterprises to handle predictable growth with room for unpredictable demands while maximizing resource utilization to minimize costs.
- **Workload consolidation.** PowerFlex was also designed to consolidate a diverse set of workloads—from transactional databases to complex analytics—onto a single unified platform. Consolidation further simplifies IT operations by reducing the number of disparate infrastructure silos and lowering operational overhead.
- **Simplified hybrid cloud data mobility.** PowerFlex streamlines data movement across cloud environments, unlocking the power of Microsoft Azure's wide-ranging services.
- **Licensing benefits versus other options.** Dell offers OEM License for Azure Local, delivering a perpetual licensing option for the life of the hardware. This benefits organizations by protecting them from recurring licensing renewals and unexpected and rising Azure services costs. In addition, users with a Microsoft Enterprise agreement are eligible for additional potential savings along with simplified license management.

Example Use Cases for the Dell AX System for Azure Local With PowerFlex

Several use case examples exist that illustrate how businesses can leverage the Dell AX System for Azure Local with PowerFlex. One such case centers on supporting AI and analytics initiatives, where the solution enables rapid data processing and model training for industries such as manufacturing, research, and logistics. AI has been fueling a great deal of on-premises investment: 92% of organizations surveyed by Enterprise Strategy Group said they are actively pursuing or exploring on-premises private AI initiatives.

When Enterprise Strategy Group asked organizations to identify the top three factors driving data growth in their organization over the next 24 months, 61% of organizations cited AI and machine learning (including generative AI

(GenAI)) initiatives creating more data, and 59% cited AI and machine learning (including GenAI) initiatives requiring data to be retained longer.[7]

Those widespread investments in AI are adding to the already-growing demand for low-latency, high-performance, highly scalable data storage. The good news is that:

- Microsoft is investing heavily in bringing Azure AI services to Azure Local.
- For organizations in the **financial services** industry, PowerFlex can help process their high-volume transactions in real time while running fraud detection algorithms on the same infrastructure.
- For **healthcare** organizations, PowerFlex can offer the scale and performance necessary to support rapidly growing electronic medical record systems as well as advanced data analytics.
- And for **e-commerce** organizations, PowerFlex can handle high transaction volumes and manage personalized shopping experiences with consistent I/O performance and a scalable infrastructure.

Conclusion

On-premises infrastructure has become increasingly strategic, but continuing to run a data center by relying on traditional infrastructure options is an unsustainable approach. Instead, organizations need to modernize their data centers to meet their needs today and going forward, including investigating or even embracing technologies such as the Dell AX System for Azure Local with PowerFlex.

It is a solution that will give organizations more flexibility and choice in technology deployment, ultimately enabling them to "tune" the data center to better support the demands of specific workloads. It also simplifies ongoing on-premises infrastructure and hybrid cloud operational management to reduce the administrative burden on IT personnel.

It's a high-performance, scalable, enterprise infrastructure solution capable of consolidating workloads while supporting the AI era's data-growth demands. Overall, Dell AX System for Azure Local with PowerFlex is an ideal solution for any organization seeking to optimize and right-size Azure Local instances and workloads and to streamline operations across the hybrid cloud.

[7] Source: Enterprise Strategy Group Research Report, *The Critical Role of Storage in Building an Enterprise AI Infrastructure*, September 2025.

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