



AHEAD + DELL TECHNOLOGIES:

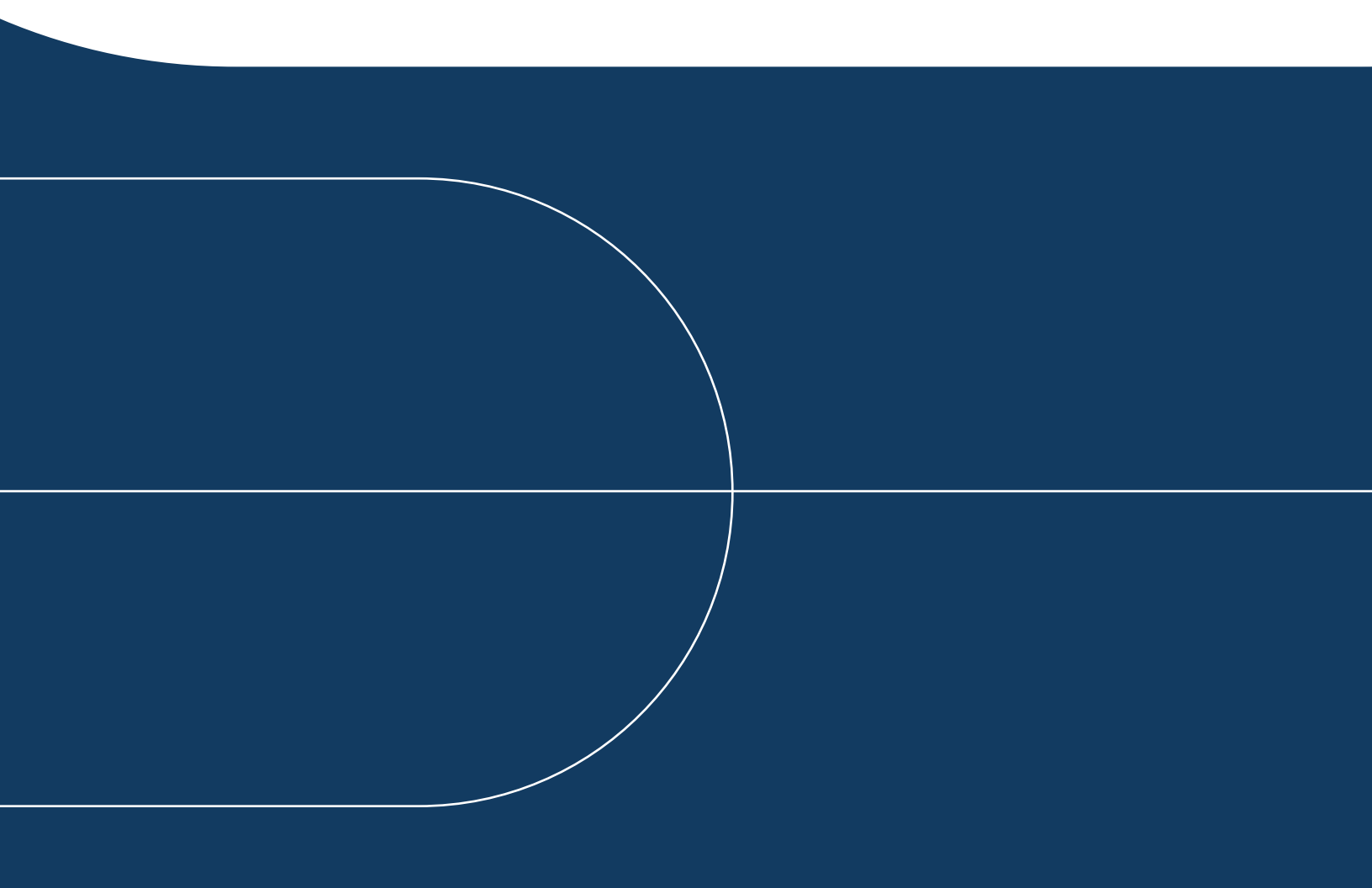
Overcoming the Challenges of AI Workloads in Data Centers with Dell PowerFlex

How Dell Technologies & AHEAD are helping organizations efficiently and securely support AI workloads in data centers

AI is driving innovation across nearly every industry, but these advanced workloads are also having a significant impact on data centers. Many data centers will need to redesign their server builds, rack designs, and cooling systems to handle the physical size, power consumption, and heat generation of AI servers.

However, many organizations are discovering that it's expensive and complicated to piece together the infrastructure necessary to support AI workloads in traditional data centers. That's why organizations need to consider a flexible software defined infrastructure approach to consolidate, simplify, and optimize their AI infrastructure.

In this whitepaper, we'll cover the challenges with deploying and managing AI workloads in data centers, why Dell PowerFlex is ideal for modern AI workloads, and how AHEAD can help deploy AI workloads to today's data centers leveraging the best-of-breed infrastructure in the Dell Technologies portfolio.



The Challenges of AI Workload in Today's Data Centers

Enterprises face considerable challenges when modernizing data centers for AI workloads, which often includes significant changes in infrastructure and networking principles.



Infrastructure Changes

Modern AI workloads demand specialized compute and storage hardware. Data centers need to adapt their infrastructure to cost-effectively scale AI infrastructure and handle the thermal management challenges of greater rack density.

- **Scalability:** It's difficult for many traditional data centers to scale both storage and compute for AI workloads optimally without compromising on cost efficiency because they're often locked into legacy architectures that lack flexibility.
- **Thermal Efficiency:** AI workloads consume more energy and produce more heat than traditional applications, leading many organizations to shift to alternative heat dissipation strategies like liquid cooling strategies.

Networking Principles

Traditional data centers have network architectures that are not optimized for the massive data requirements of AI workloads. This includes the need for high bandwidth and low latency as well as advanced data management capabilities.

- **Bandwidth & Latency:** Many traditional data centers lack the high bandwidth and low latency network connectivity required for data-intensive nature of AI workloads.
- **Data Localization:** AI workloads often require diverse datasets distributed across multiple locations, but data sovereignty regulations and latency limit the viability of transferring data.

Organizations need to consider infrastructure solutions that can easily adapt to these current challenges while also remaining ready for the future. Software-defined infrastructure can offer a flexible approach to modernize data center infrastructure because it enables dynamic scaling, the potential for better resource utilization, and simplified operations.



How Dell PowerFlex Supports Modern AI Workloads

[Dell PowerFlex](#) is dynamic and adaptable software-defined infrastructure that combines compute, block storage, and file storage. This comprehensive solution helps organizations deliver consistent, predictable outcomes at large scale for the most demanding mission-critical environments.

Unconstrained Consolidation

PowerFlex is an integrated software defined infrastructure platform that allows organizations to consolidate and simplify data center operations. This multi-purpose design enables organizations of all sizes to integrate their diverse AI workloads into a single system within a data center.

Greater Flexibility & Adaptability

PowerFlex's flexible architecture means organizations can choose to scale compute and storage separately. It's the only platform capable of supporting the top four hypervisors: Nutanix AHV, VMware, Red Hat OpenShift, and Microsoft Hyper-V, making it ideal for adapting to various deployment scenarios and configurations to meet the unique requirements of AI workloads.

High Performance & Scalability

PowerFlex can scale from single nodes to multiple racks, allowing data centers to grow alongside their AI applications. Enterprises can leverage the platform's scale-out architecture, resource optimization capabilities, and low latency offerings to meet stringent operational demands and ensure consistent performance.

Simplified Operation & Security

The integrated lifecycle management capabilities of PowerFlex simplifies hardware and software updates. This makes it easier for IT and infrastructure teams to operationalize AI workloads while also ensuring they remain secure.

AHEAD Hatch® IT Lifecycle Management

Although PowerFlex offers powerful lifecycle management features out of the box, organizations can still benefit from additional hardware inventory, asset, and contract management capabilities.

[AHEAD Hatch®](#) is our proprietary IT lifecycle management platform that transforms the way operations teams plan, execute, and manage infrastructure. Here's some of the key features of AHEAD Hatch for data center operators:

INVENTORY MANAGEMENT: Track orders in real-time from procurement and integration through to delivery. Hatch is also directly integrated with Dell production facilities, so clients can get up to the minute information on orders in production or that have shipped.

ASSET MANAGEMENT: Obtain detailed asset data, such as serial numbers, license keys, mac addresses, and more. This information is harvested during configuration and stored in Hatch so clients can track assets from the site-level down to individual components.

CONTRACT MANAGEMENT: Hatch maintains up-to-date service entitlements and expiration dates to help clients make educated decisions about renewals, cancellations, and when to sunset equipment.

REAL-TIME DATA SHARING: Hatch can also integrate with AHEAD Forge, ServiceNow, and other leading enterprise platforms to share relevant asset data in real-time. And with Hatch's open API, creating custom integrations is straightforward and easy to execute.





AHEAD + DELL:

Operationalizing AI Workloads in Data Centers

AHEAD is the leader in data, developer, and infrastructure platforms for enterprise organizations. Our consultative approach, technical expertise, and innovative solutions combine to accelerate the impact of technology in every client we serve.

AHEAD has the infrastructure expertise, Dell certifications, and deep experience to ensure clients' success when modernizing their data centers to handle AI workloads. In fact, AHEAD is a Dell Technologies Titanium Black Partner focused on consultative solutions and one of the top 3% of Dell partners globally. We've had 2000+ successful deployments, and obtained 400+ certifications and 24 competencies in storage, server, data protection, client, and CI/HCI services.

More specifically, organizations can quickly operationalize AI workloads on PowerFlex infrastructure with [AHEAD's Deployment and Managed Services](#). Our engineering team has deep expertise in PowerFlex, and can assist organizations in understanding the specific requirements for their data centers to choose the best approach for implementing PowerFlex.

How AHEAD Foundry™ Makes Deploying AI Workloads on PowerFlex Even Easier

AHEAD Foundry™ is our comprehensive services for building and integrating all hardware and networking infrastructure at scale in our facility rather than on-site. We can help you more easily procure, deploy, orchestrate, and manage large-scale IT systems.

Our AHEAD Foundry offering includes

- **PRE-DEPLOYMENT CONFIGURATION:** Pre-configured products leave AHEAD facilities in a consistent foundational state, ensuring reliability and performance, and economies of scale.
- **RACK INTEGRATION:** Integrated solutions decrease DOAs (dead on arrival), reduce missing parts, and improve time to value.
- **WAREHOUSING AND KITTING:** Kitting allows organizations to ship all items to our facility, regardless of who they are purchased from. Items are consolidated and palletized to simplify shipments.
- **GLOBAL LOGISTICS SERVICES:** Services performed by a dedicated global logistics team ensures compliance and efficiency across global shipments.
- **AHEAD HATCH IT LIFECYCLE MANAGEMENT:** Our proprietary platform consolidates and normalizes all data from various software tools to provide a single-pane view of hardware engineering and logistics. This includes direct integration into Dell production facilities for real-time inventory tracking.

The flexibility of PowerFlex means AHEAD can pre-configure, integrate, and kit racks in AHEAD Foundry before shipping them to data centers globally. This turnkey approach accelerates the rollout of new hardware infrastructure and reduces the time to value for customers.

Moreover, we've already successfully built and integrated AI infrastructure for clients within AHEAD Foundry. There are strict and unique requirements involved with AI infrastructure, but we leverage intense testing to deliver a reliable, turn-key solution that goes beyond the capabilities of most OEMs.



[AHEAD's Automation Hub](#) also has 400+ custom IP solutions to accelerate digital strategies, including accelerators for Dell PowerStore, Dell PowerMax, Dell PowerFlex, and more. This enables organizations to automate many different aspects of deploying and operating Dell PowerFlex infrastructure

Finally, our state-of-the-art lab outside of Chicago has a comprehensive Dell portfolio available for testing configurations, proof of concepts, and exploratory solution development. This can help organizations determine whether Dell PowerFlex is right for their use cases before committing to a large-scale implementation.

In short, AHEAD's full-service hardware services can help you implement PowerFlex infrastructure and modernize your data center for AI. Contact AHEAD to learn more about accelerating the adoption of AI with Dell PowerFlex.

Contributing Authors:

Mike Menke, Field Chief Technology Officer

Jonathan Kowall, Director, Specialist Solutions Engineering

AHEAD

Combining cloud-native capabilities in software and data engineering with an unparalleled track record of modernizing infrastructure, we're uniquely positioned to help accelerate the promise of digital transformation.

Visit us at ahead.com.

National Hubs

CHICAGO

444 W. Lake Street
Suite 3000
Chicago, IL 60606

NEW YORK

500 Fifth Avenue
Suite 1500
New York, NY 10110

ATLANTA

1117 Perimeter Center
W406
Atlanta, GA 30338

SAN FRANCISCO

2000 Crow Canyon Place
Suite 250
San Ramon, CA 94583