



Storage for HPC and AI

Make breakthroughs faster with artificial intelligence
powered by high performance storage

BETTER PERFORMANCE

Unlock the value of data with high performance storage built for HPC.

The flood of information generated by sensors, satellites, simulations, high-throughput devices and medical imaging is pushing data repositories to sizes that were once inconceivable.

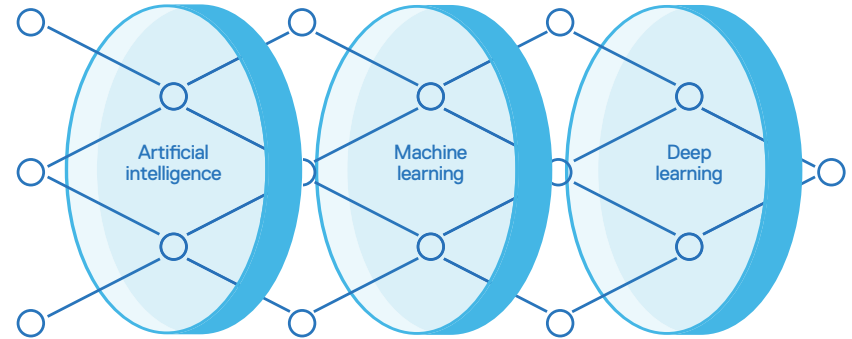
Analytics, high performance computing (HPC) and artificial intelligence (AI) are technologies designed to unlock the value of all that data, driving the demand for powerful HPC systems and the storage to support them.

Reliable, efficient and easy-to-adopt HPC storage is the key to enabling today's powerful HPC systems to deliver transformative decision making, business growth and operational efficiencies in the data-driven age.

THE INTELLIGENCE BEHIND INSIGHT

AI is a complex set of technologies underpinned by machine learning (ML) and deep learning (DL) algorithms, typically run on powerful HPC systems and storage. Together, they enable organizations to gain deeper insights from data.

The capabilities of AI, ML and DL can unleash predictive and prescriptive analytics on a massive scale. Like lenses, AI, ML and DL can be used in combination or alone — depending on the use case — to focus in on answers to game-changing questions.



AI is an umbrella term that describes a machine's ability to act autonomously and/or interact in a human-like way.

ML refers to the ability of a machine to perform a programmed function with the data given to it, getting progressively better at the task over time as it analyzes more data and receives feedback from users or engineers.

DL uses artificial neural networks (ANNs), inspired by the human brain, to process huge volumes of data. ANNs allow the machine to determine on its own if a prediction is accurate so that it can train itself without human intervention.

Businesses, organizations, academic institutions and governments can use AI, ML and DL to gain deeper, more accurate and more cost-effective insights across a variety of use cases.

How organizations are using HPC storage

Advanced computing is changing how researchers approach grand challenges. The following is just a small sample of how researchers are leveraging AI and HPC to realize their visions of a better world.



1

Life sciences

Revealing insights that improve health

- Genomics and proteomics
- Bioinformatics
- Cryo-electron microscopy
- Neuroscience
- Medical imaging
- Personalized medicine
- Drug discovery
- Clinical trials
- Population health/epidemiology

2

Research

Speeding answers to critical questions

- Geosciences
- Climate and weather modeling
- Molecular dynamics
- Quantum physics
- Astronomy
- Instrumentation
- Genomics
- Computational chemistry
- Molecular dynamics

3

Manufacturing

Enabling faster, better design

- Finite element analysis
- Structural analysis
- Explicit solver
- Implicit solver
- Computational fluid dynamics
- Noise, vibration and harshness
- Structural integrity analysis
- Virtual desktop infrastructure

PROVEN EXPERTISE

AI and HPC systems from an industry leader

While AI and HPC might seem like the latest IT trends, Dell Technologies has been a leader in HPC for over a decade.

As an industry leader in AI and HPC, Dell Technologies offers proven products, solutions and expertise that reduce complexity and help you capitalize on the promise of real-time insights. Working closely with our partner ecosystem and industry providers, we deliver solutions that can include infrastructure, applications and services.

Dell Technologies

Dell Technologies helps organizations and individuals build their digital future and transform how they work, live and play. The company provides customers with the industry's broadest and most innovative technology and services portfolio for the data era. Together, we help you explore the possibilities of AI and HPC, introduce it into your organization[®] use it to transform the business.

Dell Technologies is committed to a culture of integrating ethics and compliance into daily decision-making. We believe in acting ethically in everything we do. It's good business and important to our customers, suppliers and strategic partners. As a result, critical programs have been developed to address key risks across the enterprise, creating trust with our customers.

DELIVERING VALUE

The AI value chain

Wherever you are on your journey, Dell Technologies delivers AI and HPC systems and storage that fulfill your needs.

With an extensive portfolio, years of experience and an ecosystem of curated technology and service partners, Dell Technologies is ready to help you to capitalize on the promise of AI and HPC.

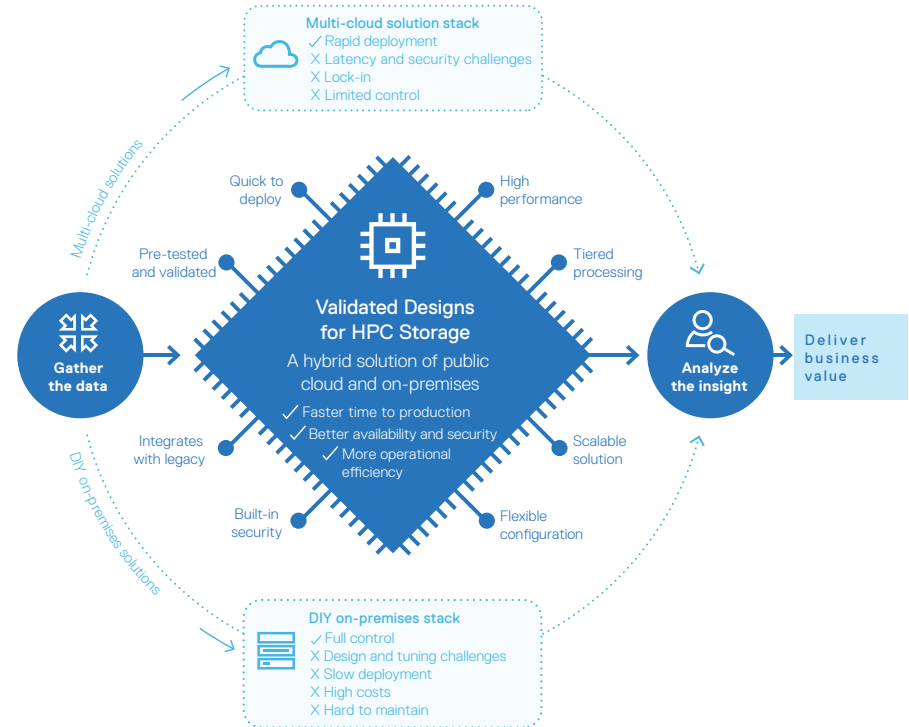
- **Extensive portfolio.** Dell Technologies uniquely provides a portfolio of technologies — spanning workstations, servers, networking, storage, software and services — to create successful AI and HPC implementations. What's more, Dell provides accelerated performance, efficiency and expertise to help you adapt as technology evolves.
- **Years of experience.** AI and HPC are evolving quickly and not many organizations have the skills to design, deploy and manage advanced computing systems. The **Dell Technologies HPC & AI Innovation Lab** team stays on the cutting edge of AI, testing new technologies and tuning algorithms and applications to help you keep pace with this constantly evolving landscape.
- Our team of industry and technology experts can help you achieve faster time to results by shortening both design cycle and configuration time. These experts will work with you to create a configuration with the right features at the right price. You can even take a test drive with a proof of concept, in one of the worldwide **Customer Solution Centers**.
- **Curated partnerships.** Dell works closely with partners, such as Intel®, AMD®, NVIDIA®, and Bright Computing® to optimize hardware to leverage processing, accelerator and GPU advancements® to access their expertise around software algorithms and their implementation on Dell EMC infrastructure.

SIMPLIFYING THE COMPLEX

Validated Designs for HPC Storage

Designing and deploying an HPC system for AI and other workloads with the performance and scalability required can be complex.

Dell Technologies has invested to create a portfolio of Validated Designs to speed time to results with the confidence of engineering validation, enabling business without boundaries. They provide proven solutions that have been optimized, tuned and tested for a variety of key use cases. They include the servers, storage, networking, software and services that have been proven in our labs and in customer deployments. Plus, the modular building blocks provide a customizable yet validated approach for deploying new clusters or upgrading existing systems.



THE BENEFITS

Validated Designs for HPC Storage

Dell Technologies Validated Designs simplify your IT transformation and radically shorten time to discovery.

SIMPLICITY

- Tested and validated stacks take the guesswork and risk out of deploying new IT solutions.
- Simplify monitoring and management without the need for specialized training or expertise to operate, making storage simpler to maintain.
- Worry-free HPC deployment and management frees the team to focus on core business and strategic initiatives instead of managing HPC clusters.
- Available consulting, education, deployment, support and remote management services optimize solution productivity and efficiency.

RELIABILITY

- Validated configurations reduce interoperability issues and improve service quality.
- Redundant storage configurations are highly available, with no single point of failure.
- Available support services can cover both hardware and software, to help prevent and address potential issues with a single source of solution support.
- The Dell Technologies HPC & AI Innovation Lab team integrates, tests and optimizes storage solutions for your applications and workloads, with a focus on efficiency, performance and reliability.

EFFICIENCY

- Tested and tuned solutions lower the cost of planning and deploying HPC storage.
- Dell EMC CloudIQ lets you manage your data center hardware from anywhere, at any time.
- Choose the option that's best for your workloads:
 - **NFS storage** is widely available with Linux® distributions. It's easy to configure, deploy and maintain — reducing complexity while lowering operational costs.
 - **PixStor™ storage** consolidates storage and lowers the cost of data retention through cognitive and policy-driven automation.
 - **BeeGFS® storage** performs well right out of the box.

THE DELL TECHNOLOGIES DIFFERENCE

Services and financing

Dell partners with you every step of the way, linking people, processes and technology to accelerate innovation and enable optimal business outcomes.

- [APEX](#) enables you to consume best of breed Dell Technologies innovation as-a-Service, unlocking the flexibility you need to adapt and thrive.
- [Consulting services](#) are delivered by certified experts to help you get the business value of advanced computing. The services include an assessment, workshop, testing, proofs of concept and production implementation. These experts help determine where advanced computing is a good fit for your organization. They also help you build your own internal team of experts through knowledge transfer at each step.
- [Education Services](#) offers courses and certifications in data science and advanced analytics through self paced online labs and instructor led workshops.
- [Deployment](#) experts have the experience, expertise and best practices to enhance your success with analytics, HPC and AI solutions.

With a proven track record of success in thousands of engagements worldwide, you can rely on Dell Technologies as your partner.

- [Support](#) experts can provide comprehensive hardware and collaborative software support 24x7 for optimal system performance and minimized downtime. ProSupport includes next-business-day on-site service with four- and eight-hour parts-and-labor response options® escalation management with customer-defined severity levels. You can also opt for ProSupport Plus to get a Service Manager who serves as a single point of contact for your support needs.
- [Financial Services](#) offers a wealth of leasing and financing options to help you find opportunities when your organization faces decisions regarding capital expenditures, operating expenditures and cash flow.

GET IN TOUCH

Contact us

To learn more, visit delltechnologies.com/hpc or [contact](#) your local representative or authorized reseller.

Email: hpc.assist@dell.com

ai.assist@dell.com

Online resources

delltechnologies.com/ai

delltechnologies.com/hpc

hpcatdell.com

dellhpc.org

Copyright © 2021 Dell Inc. or its subsidiaries. All Rights Reserved. Dell, EMC® other trademarks are trademarks of Dell Inc. or its subsidiaries. Other trademarks may be the property of their respective owners. Published in the USA 11/21 Brochure HPC-storage-BR-102.

Intel® is a registered trademark or trademark of Intel Corporation in the U.S. and other countries. AMD® is a registered trademark of Advanced Micro Devices, Inc. NVIDIA® is a registered trademark of NVIDIA Corporation. Mellanox® is a registered trademark of Mellanox Technologies, Ltd. Bright Computing® is a trademark of Bright Computing, Inc. Linux® is the registered trademark of Linus Torvalds in the U.S. and other countries. PixStor™ is a trademark of Arcapix Holdings. BeeGFS® is a registered trademark of Fraunhofer-Gesellschaft zur Förderung der angewandten Forschung e.V.

Dell Technologies believes the information in this document is accurate as of its publication date. The information is subject to change without notice.