



HPC on Demand

Extend your capabilities with on-demand access to HPC resources and technical expertise

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Innovate faster, with pay-as-you-go access to scalable HPC resources

Every day, new organizations seek to use the power of high performance computing (HPC) to fuel innovation. HPC has long been used by data scientists and researchers to solve problems at massive scale. As HPC systems become more powerful and cost-effective, these pioneers can ask bigger questions and get more accurate answers. At the same time, organizations from a variety of industries are accelerating adoption of HPC for artificial intelligence and other use cases.

This inflection point in the adoption of HPC is accelerating discovery and innovation, but it's also putting pressure on budgets and on IT teams to acquire and support the complex HPC systems required to make these amazing advances. While experienced HPC teams often have the technical expertise, they may lack the funding to expand HPC clusters as needed to forward their projects. Other organizations that could benefit from HPC may lack the budget, skills or time to buy, build, optimize and manage HPC clusters.

Dell Technologies is dedicated to mainstreaming access to the HPC resources you need to discover and compete. That's why we're offering scalable, flexible HPC on demand delivered with white-glove managed services, so you can focus on using HPC — not on sourcing and managing it.

Dell Technologies has what you need

Whether you host your own HPC environment and/or leverage HPC on demand, Dell Technologies has the expertise and experience to provide you with the power of HPC at a price point and commitment level that makes sense for your project and/or your organization.

Expertise and guidance

Technology is evolving quickly, so you may not have HPC experts on staff, or your team may simply not have the time to design, deploy and manage solution stacks at the pace required. While HPC might seem like the latest IT trend, Dell Technologies has been a leader in the advanced computing space for over a decade, with proven products, solutions and expertise. Dell Technologies has a team of HPC, artificial intelligence (AI) and data analytics experts dedicated to staying on the cutting edge, testing new technologies, and tuning solutions to your applications to help you keep pace with this constantly evolving landscape.

Dell EMC Ready Solutions for HPC

For many organizations, HPC is — or is becoming — an important source of competitive advantage. An optimized HPC solution delivers the compute, throughput and capacity needed to leverage the rapid data growth and increased workload demands. Dell EMC Ready Solutions speed time to results with the confidence of engineering-tested systems while saving valuable time and resources.

Solutions customized for your environment

Dell Technologies uniquely provides an extensive portfolio of technologies to deliver the advanced computing solutions that underpin successful HPC implementations. With years of experience and an ecosystem of curated technology and service partners, Dell Technologies provides innovative solutions, workstations, servers, networking, storage and services that reduce complexity and enable you to capitalize on a universe of data.

HPC on demand use cases

HPC on demand lends itself to a number of use cases, including:

- Burst capacity
- Single projects
- Proofs of concept
- Test/dev environments
- Full production workloads

Do any of these challenges sound familiar

“We can’t respond fast enough to user demands for HPC.”

As the business benefits of HPC become apparent, more users from more lines of business ask for resources to run their own applications. However, running HPC in-house requires investments of time and budget along with advanced skills for designing and managing clusters that are optimized for specific workloads. Once deployed, spikes in demand can impact productivity. While it is possible to tap resources from a cloud provider, you will likely need architectural options that are not available from standard public cloud services, and your staff will still need the expertise to configure and tune them for your workloads.

“We don’t have the staff or budget to expand HPC quickly.”

In-house HPC clusters represent a large investment of resources spent building clusters with the correct operating system (OS), configuration settings, accelerator drivers, runtime libraries and workload managers, frameworks, user-level libraries, and applications and platforms. This leads to lag times for deployment as staff time and skills are stretched thin trying to respond to a growing user base requiring support for more and different types of applications that require fast, consistent performance at scale. These new user demands force many organizations to reevaluate how to source the HPC resources they need.

“We need resources on demand without billing surprises.”

Purchasing and maintaining HPC infrastructure is a large capital expense and adds high fixed costs to the IT budget. However, many organizations have used cloud services, only to be surprised by large data transfer fees and other hidden costs. And even in the cloud, HPC utilization needs to be mapped carefully to requirements and outcomes to avoid breaking the budget. You need to access HPC resources on demand with simple, transparent billing.

Why HPC on demand from Dell Technologies

With HPC on demand from Dell Technologies, you can focus on using HPC — not deploying, managing and scaling clusters. The ability to pay per use for HPC resources makes the strategic advantages of HPC affordable for almost any organization, including enterprise lines of business. With HPC on demand, your organization can access specialized HPC capabilities, when you need them, as you need them, to generate more value from your HPC endeavors.

Access HPC on demand

HPC on demand helps you easily accommodate spikes in job requests by bursting to HPC in the cloud. The resources available to you through HPC on demand are provided via optimized systems that have been designed by experts using Dell Technologies servers, storage, accelerators and interconnects, with the ability to customize configurations for your workloads. If you need assistance, you can access HPC technical expertise at your fingertips with a single point of contact. Our on-site experts can help you build, manage and tune the systems for your workloads — no need to hire HPC staff.

Speed time to results

HPC on demand helps you fast-track projects — and results. Save the time and resources required to build and tune HPC systems by letting a team of experts handle solution configuration, deployment and management, helping you recognize more value, sooner and with less risk. Expert HPC services extend your staff with HPC services when and where you need them. Plus, get fast, consistent performance at scale with well-integrated HPC systems that are optimized for your workloads.

Leave management to the experts

White-glove managed services for HPC remove guesswork, complexity and risks. These services are provided by R Systems®, a Dell Technologies OEM Solutions Partner.



“We’re not building a giant data center.... We were able to avoid making a large upfront investment in a fixed-sized HPC system that we would not have been able to fully utilize due to our ‘bursty’ usage patterns.”

— Thomas Henderson,
senior director for software
engineering, Spire Global

Pay as you go, simplified

With Dell Technologies HPC on demand, you pay only for the resources you use, with transparent, simplified billing that is based on CPU hours. You can also avoid the cloud data lock-in, with no ingress or egress fees for your data.

Customer success stories

Spire Global®

Faster processing

Data from space is accessible in near-real time.

Improved accuracy

Advanced maritime, aviation and weather tracking are more accurate than ever.

Enhanced flexibility

Agile startup capitalizes on pay-as-you-go HPCaaS.

Read the case study: [Downloading data directly from space.](#)

- [IndyCar®](#) relies on HPC on demand for advanced computational fluid dynamics (CFD) simulations that help make IndyCar Racing safer and more entertaining.
- [Mercury Marine®](#) bursts for HPC capabilities for computer-aided engineering/design (CAE/CAD).
- [The University of Michigan Solar Car Team](#) runs advanced aerodynamics simulations on HPC on demand to create solar-powered vehicles.

Read more [customer stories](#).

Options

HPC optimized systems

To help you take advantage of HPC on demand, solutions are available based on engineering-validated designs. Options include Dell EMC PowerEdge servers with Intel® Xeon® Scalable processors, GPUs, PowerScale storage and PowerSwitch networking along with VMware® Cloud Foundation™. Together they give you the power, portability and management simplicity you need to make HPC possible.

[Dell EMC PowerEdge servers](#) are engineered to deliver unmatched performance and versatile configurations to meet the demands of HPC workloads. Flash storage, the latest processors and accelerators, greater memory bandwidth, and flexible local storage along with advanced cooling options make Dell EMC PowerEdge servers a foundational choice for HPC.

[Dell EMC PowerScale storage](#) is designed to reduce complexity and optimize results for data-intensive HPC workloads. PowerScale gives you scalable, available HPC storage that eases adoption and management to enable today’s powerful HPC systems to deliver transformative decision-making, business growth and operational efficiencies.

[Dell EMC PowerSwitch networking](#) is based on open standards to free the data center from outdated, proprietary approaches. Our future-ready networking technology helps you improve network performance, lower networking costs and remain flexible to adopt new innovations. Take control of your network’s future and learn how the Dell Technologies strategy for open networking can dramatically transform your business.

“When the team needs to iterate over a number of different aerodynamic components of the car, the design process can easily span more than a year. But with this, [HPC on demand] we could complete a CFD simulation in not one day, but two hours.”

— Alan Li, Head Strategist,
University of Michigan
Solar Car Team

[VMware Cloud Foundation](#) lets IT staff focus on innovation instead of managing infrastructure. It offers a VMware-consistent environment, which means staff can use the same VMware tools and skills to manage HPC workloads across on-premises and cloud deployments. The solution combines powerful virtualized HPC hardware with superior management capabilities to help IT dynamically provision and manage HPC clusters, deploy simulation software applications, monitor spend, and have complete control.

Why choose Dell Technologies

We're committed to advancing AI, HPC and data analytics, and we've dedicated a great deal of resources toward that goal.

- Schedule an [executive briefing](#) and collaborate on ways to reach your business goals.
- [Dell Technologies Customer Solution Centers](#) are staffed with computer scientists, engineers and subject matter experts in a variety of disciplines.
- We are committed to [providing you with choice](#). We want you to get what you need and have a great experience working with us. If we don't have what you need, we'll tell you who does. We believe in being open, and we publish our performance results at [HPCatDell.com](#).
- Dell Technologies is the only company in the world with a portfolio that spans from workstations to supercomputers, including servers, networking, storage, software and services.
- Because Dell Technologies offers such a wide selection of solutions, we can act as your trusted advisor without trying to sell you a one-size-fits-all approach to your problem. That range of solutions has also given us the expertise to understand a broad spectrum of challenges and how to address them.

Customer Solution Centers

Our global network of dedicated [Dell Technologies Customer Solution Centers](#) are trusted environments where world-class IT experts collaborate with you to share best practices, facilitate in-depth discussions of effective business strategies and help your business become more successful and competitive. Dell Technologies Customer Solution Centers reduce the risks associated with new technology investments and can help improve speed of implementation.

AI Experience Zones

Curious about AI and what it can do for your business? Run demos, try proofs of concept and pilot software in Singapore, Seoul, Sydney, Bangalore and other Customer Solution Centers. Dell Technologies experts are available to collaborate and share best practices as you explore the latest technology and get the information and hands-on experience you need for your advanced computing workloads.

HPC & AI Innovation Lab

The Dell Technologies [HPC & AI Innovation Lab](#) in Austin, Texas, is the flagship innovation center. Housed in a 13,000-square-foot data center, it gives you access to thousands of Dell EMC servers, three powerful HPC clusters, and sophisticated storage and network systems. It's staffed by a dedicated group of computer scientists, engineers and subject matter experts who actively partner and collaborate with customers and other members of the HPC community. The team engineers HPC and AI solutions, tests new and emerging technologies, and shares expertise including performance results and best practices.

“We choose Dell because it’s the best in quality and the best in support. I am not joking. We now have around 600 servers in our data center, including different generations from Dell, and we have statistics that show us that Dell is the best in quality and support.”

— Maurizio Davini, Chief Technology Officer, University of Pisa¹



Learn more

delltechnologies.com/hpc

infohub.delltechnologies.com/t/high-performance-computing/

Join the Dell HPC community:
www.dellhpc.org

¹ Dell Technologies case study, [Capitalizing on virtualization](#), August 2020.

² IDC, [WW Quarterly x86 Server Tracker, 4Q2020](#), Unit Shipments, March 11, 2021.

³ IDC, [WW Quarterly Converged Systems Tracker, 4Q2020](#), Vendor Revenue, March 18, 2021.

⁴ IDC, [WW Quarterly Enterprise Storage Systems Tracker, 4Q2020](#), March 11, 2021.

⁵ IDC, [WW Quarterly Cloud IT Infrastructure Tracker](#), Vendor Revenue, January 2021.

HPC & AI Centers of Excellence

As data analytics, HPC and AI converge and the technology evolves, Dell Technologies worldwide [HPC & AI Centers of Excellence](#) provide thought leadership, test new technologies and share best practices. They maintain local industry partnerships and have direct access to Dell and other technology creators to incorporate your feedback and needs into their roadmaps. Through collaboration, Dell Technologies HPC & AI Centers of Excellence provide a network of resources based on the wide-ranging know-how and experience in the community.

Proven results

Dell Technologies holds leadership positions in some of the biggest and largest-growth categories in the IT infrastructure business, and that means customers can confidently source information technology needs from Dell Technologies.

- #1 in servers²
- #1 in converged and hyperconverged infrastructure (HCI)³
- #1 in storage⁴
- #1 cloud IT infrastructure⁵

See [Dell Technologies Key Facts](#).

Take the next step, today

Don't wait to reap the benefits of an open-source software solution designed to help you deploy faster, leverage fluid pools of resources, and integrate complete lifecycle management for unified data analytics, AI and HPC clusters. Contact your Dell Technologies representative to find out more, today.

Contact us

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

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