Make innovation real with AI and high performance computing

Dell EMC has the technology and expertise to help you transform data into discovery and innovation
Discovery and innovation have always started with great minds dreaming big. Scientists, inventors and researchers are already using powerful and sophisticated technologies to change our world in astonishing ways. As data analytics, high performance computing (HPC) and artificial intelligence (AI) continue to converge and evolve, we can dream even bigger. And Dell EMC will be there every step of the way, with the technology you need to power tomorrow’s workloads, and the expertise to bring it all together today.

**It starts and ends with data**

The data-driven age is dramatically reshaping industries and reinventing the future. As vast amounts of data pour in from increasingly diverse sources, leveraging that data is both critical and transformational. Whether you’re working to save lives, understand the universe, build better machines, neutralize financial risks or anticipate customer sentiment, data informs and drives decisions that impact the success of your organization — and shape the future of our world.

Data analytics, HPC and AI are technologies designed to unlock the value of your data. While they have long been treated as separate technologies, the three are converging as the industry comes to understand that analytics and AI are both essentially big-data problems that require the powerful, scalable compute, networking and storage provided by HPC.

For the first time in history, AI enables machines to deliver better-than-average accuracy on complex tasks. But while it may seem like groundbreaking new technology, AI and its supporting computing models — machine learning and deep learning — have been around for decades.

Training machines to return accurate results requires vast amounts of data, on an order of magnitude that simply didn’t exist until recently. The big data explosion, coupled with accelerated technology, has made it possible to create AI algorithms for a number of automation use cases, and data sets continue to grow exponentially. Of course, training with these large-scale, complex data sets is computationally intensive — and that’s where HPC comes in.

Formerly the domain of specialists using expensive, proprietary supercomputers, recent advances in compute, networking and storage technologies have made HPC — and thus data analytics and AI — available using small clusters and workstations. This changes the game for more traditional HPC in academic and government institutions and life sciences firms, but it also puts AI within reach for a wider range of use cases. For example, enterprises that have been collecting data for years can now analyze historical data using AI algorithms to gain better market insights, increase efficiency, and recognize higher ROI for data-driven investments.
Dell EMC is helping expand the boundaries of this exciting new frontier with scalable, flexible solutions designed to help you solve complex problems faster than ever. In fact, we're one of the only companies in the world with a portfolio for data analytics, AI and HPC that spans workstations, servers, networking, storage and services. In addition, Dell EMC HPC and AI experts are active innovators and collaborators in the worldwide technical community dedicated to advancing high performance computing and AI. Our goal is to enable more organizations like yours to leverage advanced data analytics and AI to do what you do best — change the world.

**Dell EMC has what you need**

**Expertise and guidance**

The technology around data analytics, HPC and AI is emerging quickly, so your team may not have had time to develop the skills required to design, deploy and manage solution stacks optimized for new workloads in-house. While AI might seem like the latest IT trend, Dell EMC has been at it for a long time. For nearly a decade, Dell EMC has been a leader in the data analytics and HPC space, with proven products, solutions and expertise. For example, Dell EMC has a team of HPC and AI 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, AI and Data Analytics**

Dell EMC Ready Solutions for HPC and AI are designed to let you “just add data.” These scalable architectures are built with best-in-class, solution stacks to simplify and accelerate your journey.

- **Dell EMC Ready Solutions for HPC** simplify design, configuration and ordering of clusters with standardized building blocks that are tested and tuned for specific vertical-market applications.
- **Dell EMC Ready Solutions for AI** help make AI simpler with integrated systems enabling you to get faster, deeper insights delivered from a partner with proven AI expertise.
- **Dell EMC Ready Solutions for Data Analytics** speed time to insight with architectures, integrated systems and services optimized for big data analytics.

**Solutions customized for your environment**

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

“We want our customers to be able to do things with hpcDIRECT that they can't do by themselves, so it's really important to have vendor partners like Dell EMC to enable us on the hardware side to be able to physically push the envelope.

“Frankly, if Dell EMC wasn't there to do that, well, we'd have to build it ourselves. We're used to doing that, but we have become comfortable with the way Dell EMC supports the type of innovation that Verne Global is all about.”

—Tate Cantrell, CTO
Verne Global
“There are a lot of advantages to working with Dell EMC. We laid out our requirements and the people at Dell EMC took those requirements and developed exactly what we needed . . . It was very nice to be able to hand this off to people who are experts in the field, who understood what our requirements were, and who could give us a product that actually met those requirements.”

—Thomas McCauley, Caterpillar autonomous mining program

## Services and financing

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

- **Dell EMC Big Data Vision Workshop** focuses on big data for business leaders. We have a unique methodology to identify and prioritize a single analytics use case with a combination of implementation feasibility and business value. This three week engagement applies research, interviews and data science expertise and techniques to the organization — culminating in a one-day workshop for your team to identify and agree on the analytics use case and path forward. This approach sets Dell EMC apart from the “bring in a bunch of technology and see what it can do” approach pushed by many vendors.

- Certified experts deliver **Dell EMC Consulting Services** to help you get the business value of data analytics. The services include a data analytics assessment, workshop, testing, proofs of concept and production implementation. These experts help determine where Apache® Hadoop® is a good fit for your organization. They also help you build your own internal team of experts through knowledge transfer at each step.

- **Dell EMC Education Services** offers courses and certifications in data science and advanced analytics. Through self-paced online labs and instructor-led workshops, the Deep Learning Institute provides training on the latest techniques for designing.

- **Dell EMC Deployment** experts have the experience, expertise and best practices to enhance your success with data analytics, HPC and AI solutions. With a proven track record of success in thousands of engagements worldwide, you can rely on Dell EMC as your partner.

- **Dell EMC 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, and escalation management with customer-defined severity levels. You can also opt for ProSupport Plus to get a Technology Service Manager, who serves as a single point of contact for your support needs.

- **Dell 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.

## Customer Solution Centers

Our global network of 21 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. These Customer Solution Centers can reduce the risks associated with new technology investments and can help improve speed and ease of implementation.
“This [the Great Lakes cluster] is an example of where we were able to come up with a unique solution with Dell EMC and its partners to make sure that we weren't over-investing, but were able to meet the needs of our different user bases. We are grateful for that.”

—Brock Palen, Director of Advanced Research Computing - Technology Services, University of Michigan

HPC and AI Centers of Excellence

Dell EMC’s worldwide HPC and AI innovation centers provide thought leadership, test new technologies, and share best practices. They maintain local industry partnerships, and have a direct line into Dell EMC, Intel®, NVIDIA®, AMD®, Mellanox®, and others to incorporate your needs into technology and solutions roadmaps. By actively forging collaboration with the wider HPC Community, Dell EMC HPC and AI Centers of Excellence provide a network of resources based on the wide-ranging know-how and experience of both technology developers and end-users.

The Austin location is the Dell EMC HPC and AI Innovation Lab. Housed in a 13,000-square-foot data center, it gives you access to thousands of Dell EMC servers, two powerful HPC clusters, sophisticated storage, and network systems. The lab's Zenith cluster — the result of a partnership between Dell EMC and Intel — is ranked on the TOP500 list of the world's fastest supercomputers.¹

Why choose Dell EMC for HPC and AI

Dell EMC is different

- Come in for an executive briefing, and collaborate on ways to reach your business goals.
- Dell EMC HPC and AI Innovation Centers are staffed with 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. If we can’t do it, we’ll tell you someone who can. We believe in being open, and we publish our performance results.
- Dell EMC is the only company in the world with a portfolio that spans from Alienware® to supercomputers, including workstations, servers, networking, storage, software and services.
- Because Dell EMC 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.

Proven results

Dell EMC holds leadership positions in some of the biggest and largest-growth categories in the IT infrastructure business, and that means you can confidently source your IT needs from Dell EMC.

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

See Dell Technologies Key Facts.

¹ TOP500 Lists
² IDC WW Quarterly Server Tracker, Vendor Revenue, March 2019.
³ IDC WW Quarterly Converged Systems Tracker, Vendor Revenue, September 2018.
⁵ IDC WW Quarterly Cloud IT Infrastructure Tracker, Vendor Revenue, January 2019.
Mastercard turns 2.2B cards into intelligence with 1.9M rules to help protect customers from fraud:

160M transactions an hour
52B transactions a year into intelligence with

Customer successes
- Mastercard® is using artificial intelligence to protect their customers from fraud.
- Caterpillar® is leveraging autonomous mining vehicles.
- Ziff.ai does image, voice and video recognition using AI-enabled algorithms.
- AeroFarms® is using image recognition and classification to adjust nutrients, light, and other factors to improve yield, taste and texture.
- At Simon Fraser University, scientists are tracking viruses by their DNA to contain and treat outbreaks faster.
- The team at MIT Lincoln Laboratory Supercomputing Center (LLSC) reduced the time for analysis by 2–10X.
- University of Pisa is using deep learning technologies from Dell EMC for DNA sequencing, encoding DNA as an image.
- OTTO Motors® is using autonomous vehicles/robots in supply chain fulfillment/inventory management.
- Epsilon® uses AI for marketing services and real-time content.

Let’s get started
Contact your Dell EMC or authorized partner sales representative, join the HPC and AI Community at dellhpc.org, learn about Intel® AI Builders or visit dellemc.com/hpc or dellemc.com/ai to learn more.

Contact us
To learn more, visit dellemc.com/hpc or contact your local representative or authorized reseller.

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