Dell Technologies Introduces New Solutions to Advance High Performance Computing and AI Innovation

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Expanded portfolio of HPC solutions simplify and accelerate time to insights

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News Summary:

- New and improved Dell EMC storage solutions address storage demands of high performance computing storage
- AI deployments simplified with new Dell EMC Ready Solutions for AI and reference architectures
- New 400GbE open networking switch introduced to support for compute and storage intensive cloud networks
- GPU and accelerator options added across the Dell EMC PowerEdge server portfolio to speed application performance

Full Story:
At Supercomputing 2019, Dell Technologies (NYSE: DELL) is introducing several new solutions, reference architectures and portfolio advancements all designed to simplify and accelerate customers' high performance computing (HPC) and artificial intelligence (AI) efforts.

Continued adoption of AI to solve real-world problems has spurred growth across the HPC industry. According to a recent report from Hyperion Research, the global HPC industry is expected to grow by 7.1% to more than $39.2 billion by 2023[1] and HPC-server based AI is expected to rise by more than 29% from 2018 to 2023, reaching $2.7 billion in 2023.[2]

"There's a lot of value in the data that organizations collect, and HPC and AI are helping organizations get the most out of this data," said Thierry Pellegrino, vice president of HPC at Dell Technologies. "We're committed to building solutions that simplify the use and deployment of these technologies for organizations of all sizes and at all stages of deployment."

Dell Technologies advances storage solutions for HPC

Dell Technologies is expanding its portfolio of Dell EMC Ready Solutions for HPC Storage with new, turnkey solutions for ThinkParQ's BeeGFS and ArcaStream's PixStor file systems. Offering a combination of technology partners' software with Dell EMC hardware, networking and support, based on engineered and tested designs, Dell EMC Ready Solutions for HPC Storage simplify and speed deployment and solutions management.

Dell EMC Ready Solutions for HPC BeeGFS Storage, with ThinkParQ's software-defined parallel file system, speeds-up input/output (I/O)-intensive workloads with the ability to scale from small clusters to enterprise-class systems on premises or in the cloud.

Additionally, Dell EMC Ready Solutions for HPC PixStor Storage offers a high-performance parallel file system, enabling data management at scale with the ability to perform archive and analytics in place. The solution also includes a validated, scalable design with object, tape and cloud tiering capabilities using PixStor Ngenea along with PowerEdge servers, PowerSwitch and Mellanox® networking, PowerVault storage, supported by Dell Technologies deployment and support services.

With these ready solutions, customers have seen improvements in both performance and scale. For example:

- Using the Dell EMC Ready Solutions for HPC BeeGFS Storage for its two petabytes of all NVMe storage, The Commonwealth Scientific and Industrial Research Organisation (CSIRO), Australia's national science agency, stands as one of the largest NVMe storage systems in the world, currently ranked 8th on the IO-500 list, a benchmark that showcases the world's fastest storage systems for HPC.[3]
- At Imperial College London, the Dell EMC Ready Solutions for HPC PixStor Storage can simultaneously serve its existing 2,500 node high-performance computing system and delivers over 20GB/s of throughput with no loss in interactive usage performance.[4]

Dell Technologies also is introducing expanded capacity for Dell EMC PowerVault ME4, offering 16TB HDDs that allow customers to scale to 4PB in 15U rack space – a 25% improvement in density, allowing for more HPC storage capacity in a smaller space. PowerVault brings scale, bandwidth and built-in data protection to HPC configurations with management simplicity.

Dell Technologies simplifies path to AI with new Dell EMC Ready Solutions and reference architectures

Dell EMC is expanding its Ready Solutions for AI portfolio with an all-new validated design for the Domino Data Science Platform. Developed in collaboration with Domino Data Lab, the Dell EMC validated design enables data scientists to develop and deliver models faster while providing IT with a centralized, extensible platform spanning the entire data science lifecycle –accelerating ideation and deployment.

To further simplify AI deployments, Dell Technologies also is introducing five new reference architectures for optimizing Dell EMC technologies with

leading AI partners, such as those from DataRobot, Grid Dynamics, H20.ai, Iguazio and Kubeflow on Red Hat OpenShift. With these architectures, organizations can speed up deployment of AI solutions to modernize, automate and transform their data center using industry-leading Dell EMC converged infrastructure, servers, storage and data protection technologies.

These architectures are optimized for Intel Xeon Scalable processors and enable organizations to speed up the deployment of AI solutions for training and inference to modernize, automate and transform their data centers using Dell EMC converged infrastructure, servers, storage and data protection technologies.

New 400GbE networking switch for compute and storage intensive workloads

Joining the Dell EMC PowerSwitch Z-Series portfolio, Dell is unveiling the Dell EMC PowerSwitch Z9332F-ON, a 400GbE open networking switch designed for high performance workloads. As an open networking pioneer, Dell Technologies delivers on the promise of software-defined networking, making network operations more flexible, programmable and easier to manage.

The Dell EMC PowerSwitch Z9332F-ON is purpose-built for cloud service provider data center networks with intensive compute and storage traffic, such as HPC, AI and streaming video. The new switch also delivers four times the throughput, double the price performance and near double the power efficiency of existing 100GbE platforms.[5]

Dell Technologies introduces new NVIDIA GPU and Intel FPGA options across its server portfolio

Dell Technologies is also unveiling NVIDIA® T4 Tensor Core GPUs as a new accelerator option for the Dell EMC DSS 8440 server. With up to 16 accelerators, this offers high capacity, high performance machine learning inference with exceptional energy efficiency (70 watts per GPU). This is designed for multi-tenancy environments that need to share machine learning resources among users or departments.

Dell Technologies also is introducing new GPU and FPGA support for its PowerEdge servers, including:

- NVIDIA Tesla V100S GPU with up to 25% more bandwidth to communicate directly with Mellanox InfiniBand interconnect and PowerEdge Express Flash NVMe Performance PCIe SSDs for faster data transfers.
- NVIDIA RTX GPUs, designed to boost performance at a fraction of the cost, space and power requirements of a traditional render farm to produce high-quality content faster than ever before.
- Intel FPGA Programmable Acceleration Card D5005 in Dell EMC PowerEdge R740xd and R940xa servers to boost inferencing, streaming analytics, video transcoding, and financial and genomic applications.

To learn more about the Dell Technologies HPC portfolio, technology partners and customers, stop by its SC19 booth #913 at the Colorado Convention Center.

Availability

- The Dell EMC PowerVault ME4 with 16TB HDDs will be available in early 2020.
- Ready Solutions for AI - Design for Domino Data Science Platform will be globally available in December 2019.
- AI Reference Architectures for Data Robot, Grid Dynamics, H20.ai and Iguazio have planned availability this quarter.
- NVIDIA V100S GPUs will be available on Dell EMC PowerEdge servers in early 2020.
- The Intel FPGA programmable acceleration card (PAC) D5005 will be available in early 2020.
- All other announced offerings and updates are globally available now.

Supporting quotes

Harvey Newman, professor of Physics, Caltech
"We've been using Dell PowerSwitch Z Series products in both our network R&D and our HPC facility as part of the global Large Hadron Collider grid for years. We value the cost, performance, and reliability of the switches in high performance computing environments. Its Software Defined Network (SDN) support has enabled us to develop new distributed system paradigms and intelligent networks to better serve the high energy physics and other data intensive science disciplines. The new Z9332F-ON is a highly capable 400GbE open networking switch that can deliver the fat pipes necessary to allow us to extend our SDN and system developments to a new scale, in order to meet the needs of our next data taking run at the LHC in 2021-3, and beyond."

Nick Elprin, co-founder and CEO, Domino Data Labs
"It's been deeply validating to see Dell Technologies extend a validated Domino data science platform design to clients who are on a journey to become model-driven. We really value the first-hand perspective and experience Dell Technologies has embedded into this solution and look forward to helping global enterprises deliver central, reproducible, and measurable data science results with the Dell EMC Ready Solutions for AI."

Additional resources

- Connect with Dell Technologies by following @DellTech
- Visit Dell Technologies at Supercomputing 2019 at booth #913

About Dell Technologies
Dell Technologies (NYSE:DELL) is a unique family of businesses that 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 spanning from edge to core to cloud.

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[1] Hyperion Research, Worldwide HPC-based Artificial Intelligence (AI) Market Forecast Update, 2018–2023, July 2019
[2] Hyperion Research, Worldwide HPC Broader Market Forecast Update, 2018–2023, June 2019
[3] IO-500 List, June 2019
[4] ArcaStream PixStor User Case Study, Imperial College London: Protecting & Managing Data in World-Leading Research, 2019
[5] Based on internal Dell EMC analysis, October 1, 2019. Actual results will vary.

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