



Dell Technologies High Performance Computing Customers Drive Breakthroughs for Global Impact

June 24, 2020

ROUND ROCK, Texas, June 24, 2020 /PRNewswire/ --



News summary

- Dell Technologies, Intel and the University of Cambridge advance next-generation supercomputing with new Open Exascale Lab and HPC storage Data Accelerator
- Collaboration with UK National Health Service and Cardiff University fuels HPC and AI innovation
- New modern infrastructure at University of Pisa expands to meet HPC demands and makes the most of resources through virtualization

Full story

When organizations, including the University of Cambridge, Cardiff University and the University of Pisa, wanted to advance their data-centric research for new and emerging communities, they turned to Dell Technologies (NYSE:DELL) for high-performance computing (HPC) solutions.

"Every day, researchers worldwide push the limits of what we perceive as possible, by collaborating to create and enhance life-saving technologies," said Thierry Pellegrino, vice president, Data-Centric Workloads & Solutions, Dell Technologies. "Our goal is to deliver high performance computing solutions that give more organizations the modern infrastructure they need to use advanced data analytics and AI to develop the next discovery, the next breakthrough and the next never-before."

Investing in HPC's exascale future

The world's data growth, predicted to reach [175 zetabytes by 2025](#), up from 44 zetabytes today¹, challenges even the largest HPC systems. To adapt to significantly larger data sets and compute-intensive analytics processes, researchers are looking to exascale systems, capable of performing one quintillion (10^{18}) calculations per second, which is five times faster than the world's current most powerful supercomputer. Researchers expect this advanced performance to have profound impacts so they can discover more effective medications sooner, identify and react to pandemics faster, and warn of hazardous weather conditions before they happen.

Dell Technologies has collaborated with Intel and the University of Cambridge, which houses one of the United Kingdom's top performing supercomputers, to launch the Open Exascale Lab. Dedicated to facilitating innovation and investigating emerging exascale technologies, the lab enables the world's most advanced technology leaders and experts to collaborate on HPC's next-generation systems. Dell EMC servers, networking and storage equipped with the latest Intel technologies power this environment.

Dell Technologies, the University of Cambridge and Intel have also collaborated on one of the world's fastest [open source HPC storage solutions](#) that can speed time to discovery or insight by alleviating performance bottlenecks between compute and storage. The pre-tested and validated Dell EMC Ready Solutions for HPC - Data Accelerator (DAC) feeds data via NVMe drives to achieve the speeds required for high-performance applications and make the results available more quickly.

"For people who do analytics or machine learning and process lots of data, we are bringing together one system with high levels of compute and I/O," said Dr. Paul Calleja, director of research computing, Cambridge University. "This allows both customization and security for the tenants. With all these things together, the Data Accelerator can be used to deliver data-centric research to new and emerging communities."

The initial implementation of DAC on the university's Cumulus supercomputer debuted as the world's fastest HPC storage system on the June 2019 I/O-500 list. Nearly double the performance of the second-place entry, it provides approximately 500 terabytes of usable capacity on 24 DAC nodes.

Fueling medical discoveries

Dell Technologies is also collaborating with [the UK National Health Services \(NHS\) and Cardiff University](#) to advance HPC systems that help transform public health and personalized medicine. Specifically, the bioscience teams at NHS and Cardiff University use next-generation genome sequencing on Dell Technologies' HPC solutions to help fight infectious diseases and improve public health. For example, already having sequenced over 30,000 SARS-CoV-2 genomes, they are working with the [COVID-19 Genomics UK Consortium](#) to map the spread of COVID-19. By tracking the global spread at a genomic level, researchers gain insights into the transmission dynamics and measure the effects of preventative interventions and policies adopted by various countries.

"Genomic sequencing will help us to understand coronavirus and its spread," said Dr. Thomas Connor, bioinformatics lead for the Public Health Wales Pathogen Genomics Unit; lead at the sequencing center at Cardiff University. "By analyzing samples from people who had confirmed cases of COVID-19, scientists can monitor changes in the virus at a national scale to understand how the virus is spreading and whether different strains are emerging. Having this information available will help in the clinical care of patients – and ultimately help to save lives."

Expanding HPC's reach

As a Dell Technologies [HPC & AI Center of Excellence \(CoE\)](#) with expertise in VMware, the University of Pisa strives to make HPC and AI more accessible throughout the research community and beyond. It is one of the first organizations to use the new purpose-built [Dell EMC PowerStore](#), which blends automation, next-generation technology and a novel software architecture to help organizations address the rapidly growing need for data. Seven times faster and three times more responsive than previous Dell EMC midrange storage arrays, PowerStore simplifies IT infrastructure by supporting a wide range of both traditional and emerging workloads with its scale-up, scale-out architecture. By virtualizing IT resources with VMware, the University can use resources more cost-effectively and make it easier for IT administrators and end users to deploy, manage and change the infrastructure.

"PowerStore combines the advantages of cutting-edge storage hardware and software," says Maurizio Davini, CTO, University of Pisa. "It's that flexibility to define the resources for our users, for our applications, that makes the difference so we can quickly flex to meet changing needs."

Availability

- Dell EMC Ready Solutions for HPC Storage, Data Accelerator will be globally available June 30, 2020.

Additional resources

- [Dell Technologies HPC & AI Centers of Excellence](#)
- [Dell EMC Ready Solutions for HPC Storage, Data Accelerator](#) product page
- Connect with Dell via [Twitter](#), [Facebook](#), [YouTube](#) and [LinkedIn](#)

About Dell Technologies

[Dell Technologies](#) (NYSE:DELL) 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.

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¹ IDC White Paper, sponsored by Seagate, Data Age 2025: The Digitization of the World From Edge to Core, November 2018.

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