Hewlett Packard Enterprise

Solution brief

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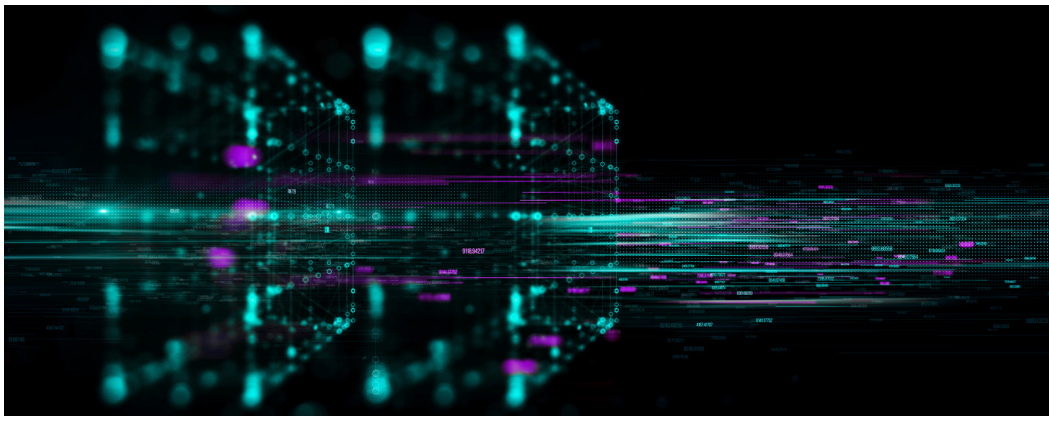
HPC AND AI IN HIGHER EDUCATION ACCELERATE DISCOVERY AND PREPARE STUDENTS FOR THE EXASCALE ERA

High performance computing (HPC) and AI enable new breakthroughs and exploration in higher education

HPE HPC and AI solutions for higher education
Enable your students, professors, and academic researchers to make faster decisions and reduce the time to discovery with dedicated, powerful computing and analytics capabilities featuring:

- Purpose-built compute for demanding, data-intensive applications
- Industry-leading technology and services for high-performance computing (HPC) and artificial intelligence (AI)
- The option to seamlessly combine advanced HPC, AI, container, and software technologies into a single framework to enable collaborative, optimal experiences

HPC as a service with HPE GreenLake
HPE GreenLake delivers superior flexibility, scalability, and control of HPC solutions with a cloud service consumption model on premises. Reduce the cost and complexity of maintaining an HPC environment with skilled resources that implement and operate the environment for you.



LIMITLESS POTENTIAL FOR DEEP LEARNING IN HIGHER ED

Academic institutions have long been at the epicenter of discovery—helping to solve some of the world's toughest and most complex problems. That fact remains unchanged, especially as recent advancements in high-performance computing (HPC) and artificial intelligence (AI) further empower academic researchers to ask the bigger, more difficult questions.

A research team led by Dr. Jerome Baudry at the University of Alabama, for example, is using the HPE Cray Sentinel supercomputer to get answers faster in the fight against COVID-19. In just a few months, they were able to identify and publish 125 naturally occurring products that interact with coronavirus proteins and serve as potential candidates for drug development.[1]

These types of game-changing discoveries fueled by HPC and AI are happening across disciplines in academia and in collaboration with private and public sector organizations.

What's perhaps more exciting is that the utility of HPC and AI is expanding beyond the lab bench. Data-intensive applications are becoming mainstream. But if colleges and universities are to capitalize on the opportunities presented by these technologies and effectively prepare our future generations for the Exascale Era, they need to have access to these deep learning tools and capabilities.

THE ANSWERS ARE NOW WITHIN REACH

Until now, accessibility to HPC and AI in higher education has largely been limited to well-funded academic research. Furthermore, recent challenges in supporting remote students have put additional strain on higher educational IT budgets and resources, limiting IT's ability to support faculty and students looking to leverage the power of AI and HPC.

For those struggling to allocate the time, money, and expertise needed to deploy these solutions, HPE has the answer.

Democratizing HPC with HPE GreenLake
With HPE GreenLake for HPC delivered as a service, high-performance computing can extend to just about all aspects of higher education—from research to student projects to course-specific work.

HPE GreenLake is an on-premises, on-demand consumption model, delivering the security and manageability of an on-premises HPC infrastructure with the flexibility of a public cloud.

[1] "One scientist's journey to accelerate drug discovery for COVID-19." http://bit.ly/2YG3NHA.

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HPE HPC AND AI COMPUTE PORTFOLIO

Purpose-built supercomputing	Accelerated HPC/AI	Mainstream HPC/AI	Edgeline
HPE Cray EX Supercomputers  HPE Cray Supercomputers  HPE Superdome Flex Server 	HPE Apollo 6500 Gen10 System  HPE Apollo 6500 Gen10 Plus System 	HPE Apollo 2000 Gen10 Plus System  HPE ProLiant DL380/385 Gen10 & Gen10 Plus System 	HPE Edgeline EL8000 
The next frontier of supercomputing systems redesigned for HPC, AI, and converged workloads	Accelerated compute platform for HPC and AI workloads	Density-optimized, scale-out compute for HPC and AI workloads	A range of platforms and capabilities engineered for the harsh edge environment.

Cray ClusterStor E1000  Parallel storage system purpose-engineered for HPC and AI

HPE AI solution bundles for training and inference:

- **AI Training Solution:** Built for machine learning/deep learning workloads delivering extreme compute for AI model training

HPE Apollo 6500 Gen10 Plus system


NVIDIA® A100 GPU


- **AI Inference Solution:** Built for AI inferencing workloads and optimized for high-performance results

HPE ProLiant DL380 Gen10 server


NVIDIA® T4 GPU


[2] "CIOs Exploit High Performance Computing to Boost Productivity and Competitiveness," Hyperion Research, August 2020. bit.ly/3tvE6ru.

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Scalable solution with self-service capabilities
With more workloads and applications driving the use of HPC environments in higher education, HPE GreenLake can help address demand with a scalable solution that offers transparency into usage with self-service capabilities for users to get the resources they need on demand.

Efficient, pay-per-use model
HPC workload demands can fluctuate, especially in higher education. With HPE GreenLake, you can avoid the need to overprovision by rightsizing your environment. You pay only for the resources you consume, and built-in buffer capacity enables you to handle both steady growth and unexpected spikes in demand.

Industry-leading technology and services
HPE GreenLake combines the power of our industry-leading high-performance computing infrastructure and an as-a-service cloud experience. From one partner, you can get the dense compute, high-speed storage, interconnects, and software needed to run and manage HPC clusters.

Managed for you
HPE GreenLake Management Services, securely delivered from our world-class IT Operation Centers (ITOCs) around the globe, help you fill skills gaps and free up your resources for more productive tasks. HPE experts handle the performance tuning, capacity planning, lifecycle management, firmware updating, and patch management.

HPC AND AI SOLUTIONS

The HPE portfolio of enterprise products embraces industry standard and emerging technologies to create purpose-built, high-density systems that bring scale, efficiency, and versatility for HPC and AI. Economically deliver the needed performance and capacity to run all your HPC workloads within your economic requirements with **HPE Apollo** systems. The rack-scale efficiency of HPE Apollo delivers just the right amount of performance and adaptability with flexible systems that are optimized for HPC and AI workloads. For more data-intensive applications, **HPE Cray EX supercomputers** integrate scalable compute, storage, networking, and cooling technologies that are purpose-built for the Exascale Era.

With HPC storage spending expected to increase at a rate 40 percent faster than HPC compute over the next three years,[2] it's time for a new era of storage. **Cray ClusterStor E1000 Storage System** is a new parallel HPC storage system that was purpose-engineered for the era of converged simulation and AI workloads. Use it with any supercomputer or HPC cluster of any vendor that supports InfiniBand (EDR/HDR), Gigabit Ethernet (100/200), or Cray Slingshot.[2]

FLEXIBLE FINANCING

We understand that educational budgets are often strained and government funding can come with strict guidelines. HPE Financial Services offers comprehensive IT financing and asset lifecycle solutions to support your immediate needs and evolving circumstances. Whether you escrow funds to ensure service long-term or need some other solution, we work with you to deliver the right HPC solution while lowering your budget risks.

MOVE FORWARD WITH HPE

With unmatched automation, expertise, and integration of HPC solutions from HPE, gain the comprehensive deep learning capabilities your institution needs at a price you can afford.

LEARN MORE AT

hpe.com/us/en/compute/hpc

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