

World-Class Compute for World-Class Research

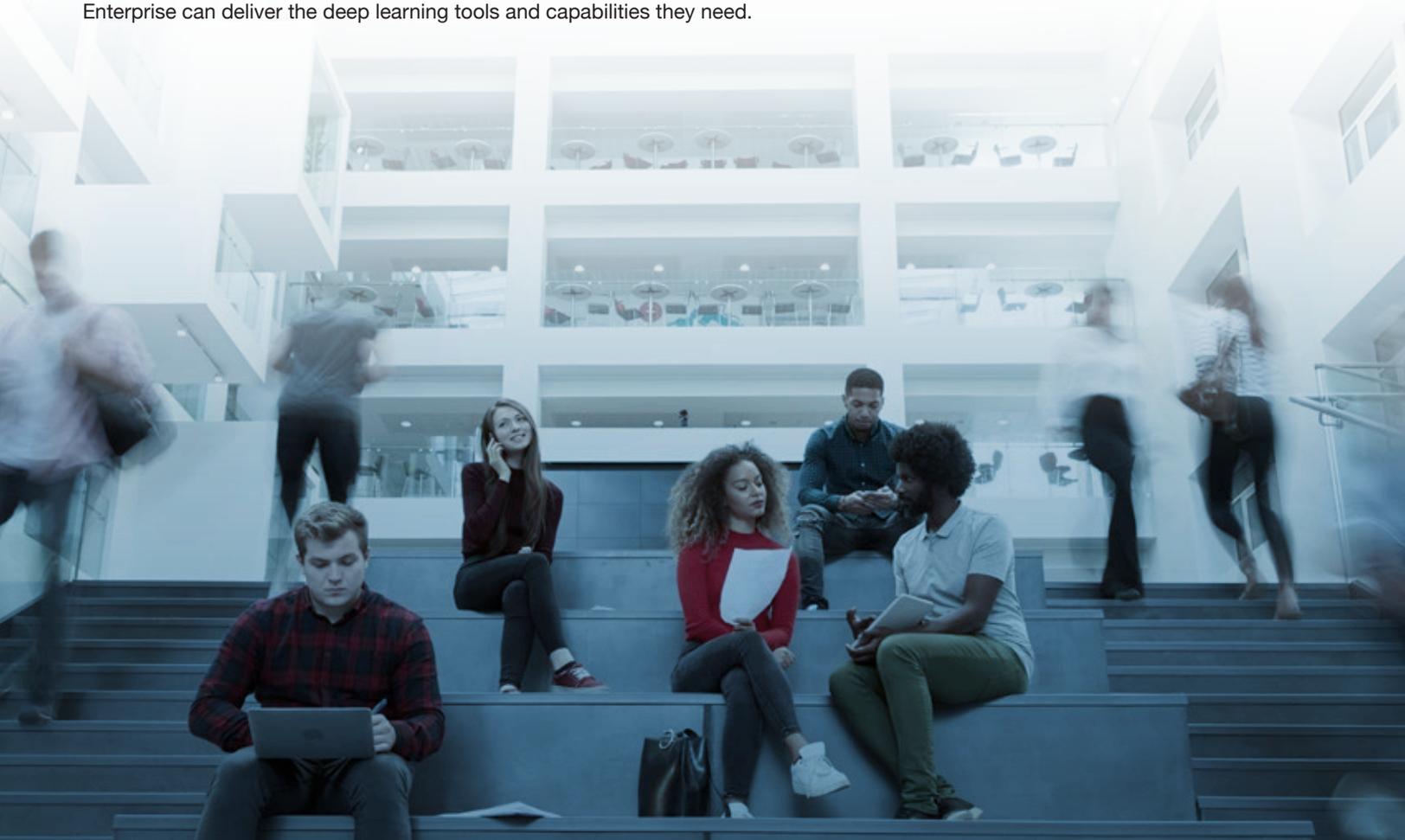
HPE Apollo 6500 Systems Bring the Power of Supercomputing to Higher Education

Higher education institutions stand firmly behind the modernization and breakthroughs that drive parts of the world's economic growth and social change. Their contributions will continue to be both significant and necessary, especially as many colleges and universities look to advance their research through the use of high performance computing (HPC) and artificial intelligence (AI), which can help academic researchers and scholars answer bigger and more difficult questions.

Game-changing – and, in many cases, life-saving – discoveries powered by HPC and AI are occurring across disciplines, from science and engineering, to social sciences and humanities, with a number of noteworthy successes:

- A research team from the University of Alabama used supercomputing in the global fight against COVID-19. In a few short months, the researchers were able to identify and publish 125 naturally occurring products that interact with coronavirus proteins and serve as possible candidates for drug development.¹
- Georgia Tech's HPC system backs the school's data-driven research in astrophysics, computational biology, health sciences, and a number of other projects. It will also be used for research that maximizes the energy efficiency and performance of the HPC systems themselves.²
- Using diffusion and functional MRI tools, a research team at NYU Abu Dhabi is exploring brain connectivity to better understand how humans use working memory, language production, and object recognition to complete short-term tasks. This research results in the need to process massive amounts of data – 100 GB per brain. By adopting HPC, the team was able to reduce the processing time from days or weeks to only a few hours.³

For the colleges and universities ready to make their own contributions through the adoption of HPC and AI, whether it's to solve some of the world's problems or prepare the next generation for data-centric computing, PIER Group and Hewlett Packard Enterprise can deliver the deep learning tools and capabilities they need.



HPE Apollo 6500 Brings the Power of Supercomputing to Campus Data Centers

The need for HPC and AI within higher education places heavy demands on compute performance. To ensure optimal success as the world draws nearer to the exascale era, college and university data centers must implement the most effective methods of harnessing the explosive data volumes that academic research generates. Adopting an advanced, high-performing compute foundation that can autonomously learn, predict, and adapt using these massive data sets can drive faster innovation and bring a distinct advantage to college campuses.

HPE offers solutions that are purpose-built to bring the processing power of supercomputers to college and university data centers of all sizes. HPE Apollo 6500 Gen10 System is the perfect fit for meeting the needs of higher education, with the exceptional performance and reliability required by faculty researchers and scholars to advance their progress on discoveries.

Here's how HPE delivers on this promise:

- HPE Apollo 6500 uses the latest 2nd Generation Intel® Xeon® Scalable processors, including the new Intel® Xeon® Scalable Gold 6200R processors.
- The server is designed for thermal excellence in campus data centers, with a broad range of inlet air temperatures for easy deployment.
- Higher ed can get more done in less time, with eight GPUs per server for faster and more economical deep learning system training.
- HPE Apollo 6500 connects GPUs at up to 300 GB/s with NVLink to deliver one of the world's most powerful computing servers. This can assist academic researchers by significantly cutting the time to train AI models, advancing from weeks or days to just a few hours or minutes.
- HPE Apollo 6500 delivers enterprise-level reliability, availability, and serviceability (RAS) with HPE iLO 5, a modular design that provides easy access, and 2+2 power supplies.
- HPE ensures security from the start with HPE iLO 5 and best-in-class firmware security from its Silicon Root of Trust.

Tech Specs: Key Features of the HPE Apollo 6500 Gen10 System⁴

Perfect as an HPC and deep learning platform, the HPE Apollo 6500 Gen10 System brings unprecedented performance to higher education. In addition to the features listed below, HPE Apollo provides leading-edge graphical processing units (GPUs), fast GPU interconnect, high-bandwidth fabric, and a configurable GPU topology to match user workloads.

Performance

- Supports up to eight GPUs
- Delivers up to 125 Tflops of single-precision compute performance
- Provides a high-speed and low-latency network, NVMe drives, and high-speed 2933 MT/s HPE DDR4 SmartMemory

Flexibility

- Offers a choice of NVLink for increased bandwidth and a PCIe option for traditional GPU support
- Supports multiple accelerator topologies
- Provides a number of storage options with up to 16 front-accessible storage devices and SAS/SATA solid-state drives with up to four NVMe drives

Resiliency

- Produces resilient power with 2+2 power redundancy

Security

- Delivers easy and efficient system management with built-in security
- Provides time and cost savings with HPE iLO 5, which comes preconfigured and provides enterprise-grade security

Simplicity

- Offers simplified service and upgrades with an easy-access modular design and rear-cabled fabrics
- Delivers an all-in-one design with integrated power supplies, making deployments simple in a standard 1075 mm rack

The Six Benefits of HPC as a Service for Higher Education

Although HPC can be a game-changer for the accuracy and timeliness of the research conducted at colleges and universities, challenges may exist when it comes to system deployment and management. That's because some IT organizations lack previous experience supporting HPC systems or available resources on staff to design, implement, or maintain them.

With HPC as a service through the HPE GreenLake edge-to-cloud platform, higher education has a better way to consume this advanced computing power that eliminates any of the common challenges of traditional, on-premises HPC. Using HPE GreenLake, college and university data centers can select an on-premises HPC solution like the HPE Apollo 6500 Gen10 System, but with the added value of flexibility, scalability, and agility, as well as utility-like, pay-per-use pricing and preinstalled buffer capacity that is ready to provision when needed.

Here's how HPE GreenLake can help higher education institutions meet their HPC goals simply, more economically, and with lower risk:⁵

- 1 Turnkey solution.** Right-sized HPC infrastructure is designed, installed, and configured by HPE experts. In fact, the infrastructure itself is fully managed and operated by HPE.
- 2 Better transparency.** Colleges and universities can monitor their HPC usage, costs, and performance while HPE manages capacity based on the actual metered usage to ensure it's ready ahead of demand.
- 3 Financial flexibility.** The flexible payment model of HPE GreenLake helps with aligning costs to outcomes with metered usage and reduces any upfront capital outlay. It also lowers total cost of ownership by eliminating overprovisioning.
- 4 Simpler operations.** Colleges and universities can use HPE GreenLake Central – a self-service, point-and-click portal – to easily provision HPC resources. This centralized platform can free up campus data center teams by reducing the time spent on managing and maintaining HPC systems.
- 5 On-demand capacity buffer.** Buffer capacity is ready on-site to quickly meet unexpected demand. Colleges and universities can protect availability with downtime-free maintenance that uses the capacity buffer.
- 6 Ready-to-use systems and services.** HPE provides a broad portfolio of industry-leading solutions for higher ed data centers to choose from that are prevalidated, preconfigured, and customized for HPC use cases. Customers can access professional and workload-specific services that are needed to achieve their HPC goals related to performance and resilience.



Why Colleges and Universities Choose HPE Apollo 6500 Gen10 System^{6,7}

- Accelerated performance for the most complex HPC and AI applications
- Easy deployment and manageability for IT teams
- Flexibility to meet data center requirements
- Customized design for reduced costs, improved reliability, and unmatched serviceability
- Energy-efficient computing with air cooling and liquid cooling system options
- Comprehensive server security and management

HPE Cooling Technology Options

HPE offers cooling technologies to help colleges and universities keep their energy costs low and their HPC speed and efficiency levels high.

HPE Adaptive Rack Cooling System (ARCS)

HPE ARCS makes way for increased computing power without adding heat to campus data centers. Using a closed-loop, room-agnostic design, HPE ARCS can cool fully populated racks, even with top bin processors, and ensures horizontal airflow. By increasing power density without the need for extensive cooling upgrades, HPE ARCS can lengthen the lives of data centers in a cost-effective manner.

HPE ARCS offers the following features and benefits:

- Simultaneous cooling of up to four racks and 150 kW of IT capacity when used in conjunction with the HPE ARCS 42U or 48U racks
- Advanced condensate management
- Underfloor and overhead plumbing capabilities

HPE Direct Liquid Cooling (DLC) System

With plug-and-play cooling to reduce PUE, the HPE DLC system enables HPE Apollo Gen10 Systems to support processors over 240W so the highest-performing CPUs and GPUs can be deployed. HPC resources cooled by the HPE DLC system experience fewer component failures, resulting in increased availability, higher infrastructure performance, and better reliability.

Here are additional benefits of the HPE DLC system:⁸

- Consumes up to 81% less fan power at the server
- Fully integrated, installed, and supported by HPE
- Doesn't demand a centralized pumping unit, so price scales linearly

PIER Group: Helping Higher Education Create a Technology Leadership Position

PIER Group has been entrenched in the research and education (R&E) market for over 25 years, so they speak the language of higher education.

A Hewlett Packard Enterprise Gold Solution Provider, PIER Group formed as the result of the group's passion for the R&E industry. A team of professionals with vast experience serving the R&E community, PIER Group is passionate about research and education, working hard every day to continue delivering the best possible technology for the best possible value to R&E customers across the country.

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¹ Hewlett Packard Enterprise, "HPC and AI in Higher Education Accelerate Discovery and Prepare Students for The Exascale Era," March 2021.

² DataBank, "A New Model for High Performance Computing in Higher Education," Sept. 2019.

³ Hewlett Packard Enterprise, "Deep Learning With AI-Enabled HPC Powers World-Changing Research at NYU Abu Dhabi," accessed Feb. 2022.

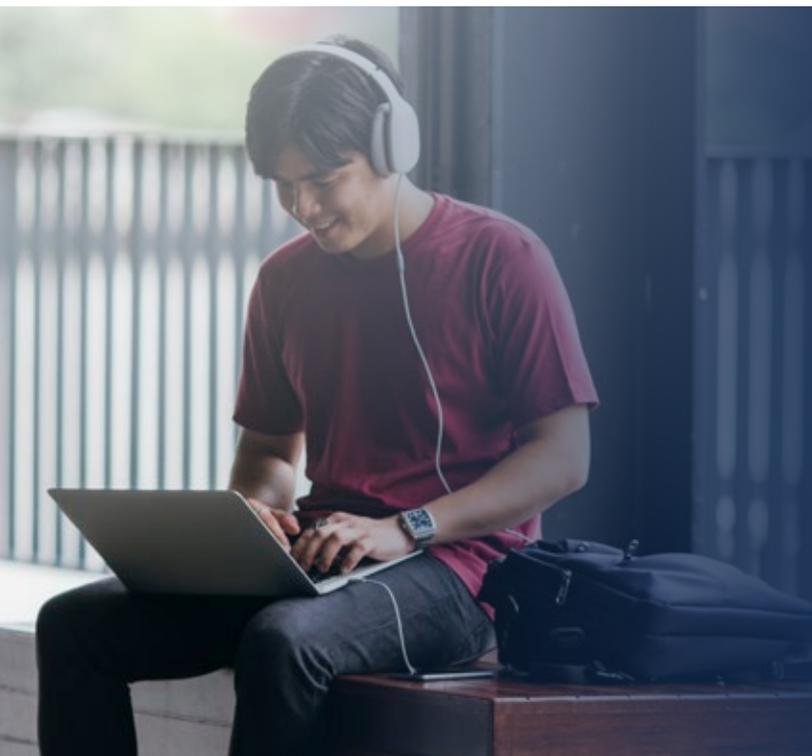
⁴ Hewlett Packard Enterprise, "HPE Apollo 6500 Gen10 System," accessed Feb. 2022.

⁵ Hewlett Packard Enterprise, "HPC as a Service to Accelerate Transformational Growth," accessed Feb. 2022.

⁶ HPCwire, "Meeting AI/ML Compute Needs with the HPE Apollo 6500 Gen10 Plus," Aug. 2021.

⁷ Hewlett Packard Enterprise, "Launching a New Age of Intelligence With Accelerated Computing Innovation," accessed Feb. 2022.

⁸ Hewlett Packard Enterprise, "HPE Apollo With HPE Apollo Direct Liquid Cooling System," accessed Feb. 2022.



HPE Gold Solution Provider for:

- Hybrid IT Specialist
- Networking Specialist

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