

## Brief

# Find answers faster, while reducing carbon footprint



## HP Apollo 8000 System for research computing

Innovative warm-liquid cooling technology underpins energy-efficient, high-performance computing that is fueling the future of green technology.



### Maximum density

Leading teraflops/rack

### Maximum efficiency

1,000X more energy-efficient than air cooling<sup>1</sup>

### Maximum sustainability

Less energy required for cooling, and excess heat provides facilities heating to redefine data center energy recycling<sup>1</sup>

## Faster, smarter, greener

Supercomputers enable the world's leading research scientists and mathematicians to find answers to some of the most difficult challenges and amazing mysteries of our time.

While the human imagination is limitless, the massive space and energy requirements of traditional supercomputers, combined with the fall off in semiconductor scaling, are slowing the pace of innovation.

HP is breaking through traditional supercomputing barriers by rethinking cooling to enable a high-density, energy efficient, high-performance computing (HPC) solutions. The HP Apollo 8000 System uses component level liquid cooling to deliver faster, denser, more efficient, and sustainable supercomputing for research workloads than ever before.

## Density designed for research computing, energy-efficiency designed for the planet

The HP Apollo 8000 System is 100 percent warm-water cooled, allowing you to reach new heights of performance density, with leading teraflops/rack, while saving on data center cooling.

Because liquid cooling is 1,000X more efficient than air,<sup>1</sup> it not only enables higher-performance components, but also allows you to recycle the heat transferred to the water for facilities heat—which provides further savings on energy and operational costs. So while you're changing the world with your research results, you can reduce your impact on the planet by reducing your energy use at the same time.

Other HP innovations include dry IT loop or dry server trays that eliminate the risk of drips, leaks, or spills, a power distribution system that exceeds ENERGY STAR® Platinum certification, and a cooling distribution unit that's more capable than competing solutions.

<sup>1</sup> HP case study, "National Renewable Energy Lab slashes data center power costs with HP servers," December 2013



**NREL's Peregrine System has petascale computing capability (1.2 quadrillion calculations per second peak performance), representing the world's largest computing capability dedicated solely to renewable energy and energy-efficiency research.<sup>2</sup>**

**Now you can take advantage of the new technological advancements of this HP-NREL-Intel® collaboration in the HP Apollo 8000 System.**

**“We are looking at saving \$1 million per year in operations costs for a data center that cost less to build than a typical data center.”**

—Steve Hammond, director of Computational Sciences, NREL

## The supercomputer of the future

The HP Apollo 8000 System is available with a scalable starting configuration of one HP Apollo f8000 Rack and one HP Apollo 8000 Intelligent Cooling Distribution Unit (iCDU) Rack. This converged system starts with up to 144 x 2P servers per rack with plenty of choices for accelerators and networking options. It offers:

**Maximum power density**—The ability to use higher-performance components means you can create an extremely dense configuration to get teraflops of compute power in a very compact space. HP Apollo 8000 System allows you to get leading teraflops/rack with up to 80 kW of power (4 x 30A 3ph 480AC) supporting up to 144 servers per rack.

**Maximum efficiency**—Using component level liquid cooling to bring heat extraction close to the processors, you get enhanced computational performance with liquid cooling that is 1,000X more efficient than air cooling.<sup>1</sup>

**Maximum sustainability**—The better efficiency of warm water cooling leads to less energy required for cooling, and HP has

designed the system so that heat generated can be recycled for facilities heat to further slash energy usage. In fact, the National Renewable Energy Lab (NREL) slashed their power costs by \$1 million USD a year.<sup>1</sup>

### Complete your solution

HP has a global team of award-winning HPC services experts available to help design, deploy, manage, and support your HPC environment and processes, including consulting, integration, outsourcing, and support. HP Datacenter Care is ideal for HPC environments, giving large-scale IT environments the flexibility and economies of scale to manage HP and non-HP hardware and software environments effectively.

### HP Financing for HP Apollo 6000 and 8000 System

Having access to technology on terms that align to your business needs is critical, and HP Financial Services is uniquely positioned to help accelerate your move to the data center of the future with a broad portfolio of flexible investment and transition solutions.

**Learn more at**  
[hp.com/go/apollo](http://hp.com/go/apollo)

<sup>2</sup> [energy.gov/articles/energy-secretary-moniz-dedicates-clean-energy-research-center-new-supercomputer](http://energy.gov/articles/energy-secretary-moniz-dedicates-clean-energy-research-center-new-supercomputer)

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