

# HPE APOLLO 6000 GEN10 SYSTEM

Extreme compute performance in a high-density package



**Fast, resilient and secure compute, storage and fabric technologies, with rack-level efficiencies delivering exceptional price/performance**

Whether you're designing an airplane, discovering an oil reservoir, creating a feature-length animated film, detecting fraud, or mapping the human genome—high-performance computing (HPC) enables you to bring more innovative, higher-quality products and services to the market faster than ever before. In many cases, HPE solution for HPC workloads makes it possible for you to solve problems that simply could not be solved otherwise.

Even so, enterprises are challenged to solve these highly complex computational problems quickly and with lower IT overhead—while minimizing unexpected costs and simplifying rack-level HPC deployments.

To address the growing demand for HPC and the relentless pursuit of efficiency, HPE has taken the lead on a new approach—thinking beyond the server and designing a rack-level solution that gives you the right compute at the right economics. The HPE Apollo 6000 Gen10 System offers you excellent compute performance with rack-level air-cooled density, and flexibility to tailor the system to precisely meet the most demanding HPC workload requirements.

For comprehensive HPE solution you may choose the HPC software suite and HPE Pointnext Services to build and support IT at scale to drive your business success.

**“The new supercomputer (based on the HPE Apollo 6000 Gen10 System) will promote the application and development of complex modeling and simulation approaches, opening up completely new avenues for our research at BASF.”**

– Dr. Martin Brudermueller, Vice Chairman of the Board of Executive Directors and Chief Technology Officer, BASF<sup>1</sup>

<sup>1</sup> “BASF Selects HPE to Build Supercomputer for Global Chemical Research,” Marketwired, March 2017.

## VERSATILE PERFORMANCE, EFFICIENCY, AND TIME TO VALUE

For IT managers who need to tackle the most complex problems quickly, the HPE Apollo 6000 Gen10 System's new integrated design allows deploying hundreds of servers quickly and use the clusters immediately. Leading edge technologies of the system are optimized to deliver performance and conserve energy. Integrated design simplifies deployment and comprehensive management tools lower IT overhead.

### Enjoy leading-edge technology and performance

- Achieve 323 TFLOPS per rack<sup>2</sup> with Intel® Xeon® Processor Scalable family delivering up to a 2X performance increase<sup>3</sup> over earlier generation processors
- Get the latest compute, storage, and fabric technologies available today, in an architecture future-proofed to support upcoming technologies
- Drive rack-scale efficiency
- Benefit from rack-level reliability, availability, serviceability, and manageability (RASM) features through an integrated design
- Quickly deploy, service, and manage the compute and storage with cold aisle front accessible nodes

### Lower your TCO

- Lower power and space requirements with an optimized architectural integrated design
- Eliminate stranded switch ports with an optimized design aligned to fabric radix



<sup>2</sup> 32 double precision flops x 28 cores x 2.5 GHz x 144 processors per rack = 323 TFLOPS per rack.

<sup>3</sup> Improvement in peak performance compared to Intel AVX2 (Haswell and Broadwell) processors. Intel internal testing, September 2016.

## HPE APOLLO K6000 CHASSIS FEATURES

- 12U air-cooled chassis
- 24 front-accessible nodes

Highly integrated chassis:

- Hot-plug redundant power supplies with common cooling
- A choice between high-speed InfiniBand Enhanced Data Rate (EDR) or Intel® Omni-Path Architecture (OPA) switches
- 10GbE switch or pass-through module

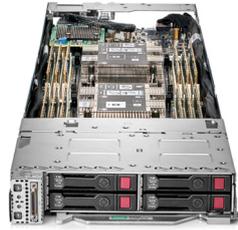
## TECHNICAL SPECIFICATIONS

### HPE Apollo Gen10 system power architecture

Extreme compute configuration N + 0 (15.9 kW)	Typical configuration N + 1 (13.2 kW)
Node with 2 x 165 W SKL	Node with 2 x 145 W SKL
12 DDR4 DIMMs	12 DDR4 DIMMs
2 SATA HDDs	2 SATA HDDs
2 x EDR Mezzanine Adapter + switch	EDR Mezzanine Adapter + switch
2 x 10/40GbE switch	10/40GbE switch
APM module	APM module
4 x front and 12 x rear fans	4 x front and 12 x rear fans



## TECHNICAL SPECIFICATIONS



### HPE ProLiant XL230k Gen10 Server

<b>Form factor</b>	HPE ProLiant XL230k Gen10 Server is a single-slot tray for the HPE Apollo k6000 chassis
<b>Processors</b>	The Intel Xeon Processor Scalable family including Intel Xeon Platinum Processor
<b>Cores</b>	4/6/8/12/14/16/18/20/22/24/26/28
<b>Chipset</b>	Intel C622 series chipset
<b>Max. processor speed</b>	3.6 GHz
<b>Drive description</b>	4 SFF SAS/SATA/NVMe
<b>Supported drives</b>	Hot-plug 2.5-inch SAS/SATA
<b>Memory slots</b>	16 x DDR4-2666 DIMMs 12 x RDIMMs/LRDIMMs 4 x 3D XPoint
<b>Memory max.</b>	1024 GB (16 x 64 GB) per server tray
<b>Memory type, ECC</b>	DDR4; RDIMM/LRDIMM 2666 MHz
<b>Network options</b>	2 x 10GbE integrated ports, InfiniBand EDR or Intel OPA Mezzanine cards
<b>Storage controller</b>	HPE Dynamic Smart Array S100i SATA Controller HPE Smart Array E208i-p Controller HPE Smart Array P408i-p Controller
<b>Expansion slots</b>	2 x InfiniBand EDR or Intel OPA Mezzanine Adapters PCIe slot options: <ul style="list-style-type: none"> <li>• 1 x external x 16 low profile</li> <li>• 1 x internal and 1 x external x 8 low profile PCIe</li> <li>• Supports –F Omni-Path directly off CPU (independent of above I/O options)</li> </ul>
<b>USB ports</b>	1 internal and 2 external via serial, USB, video (SUV) port
<b>System Management</b>	Embedded Management: iLO 5 Cluster Management: HPE Performance Cluster Manager
<b>OS support</b>	Microsoft Windows Server Red Hat® Enterprise Linux® 7 and 8 SUSE Linux Enterprise Server (SLES) 11.4 or later VMware ESX® CentOS



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**HPE Pointnext Services provide:**

**Deep HPC expertise** in key verticals such as Government, Manufacturing, Oil and Gas, Research and Higher Education, and Life Sciences

**Expanded global reach** with technical experts both remote and local

- **Advisory Services** to plan, design, migrate, and modernize your HPC infrastructure to enable innovation, growth, and competitive advantage
- **Professional Services** to provide flawless and on-time implementation, on-budget execution, and creative configurations that get the most out of your software and hardware investment
- **Operational Support Services** to offer you the exact support for your IT and business demands

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## HIGH-PERFORMANCE FABRIC INTERCONNECTS

All HPE Apollo 6000 Gen10 Systems support the latest high-bandwidth, low-latency interconnect technologies. Choose between InfiniBand, which provides the performance and scalability required by HPC clusters and data center applications or Intel OPA, which delivers HPC workloads and scales to tens of thousands of servers.

## SYSTEM MANAGEMENT

Depending on their preference, customers can choose from the following system management software:

### HPE Performance Cluster Manager

Fully integrated system management solution offering all the functionalities you need to manage your HPE Linux-based high performance computing (HPC) clusters, including HPE Apollo 6000, all day everyday including system setup, hardware monitoring and management and cluster health management, image management and software updates as well as power management. The software also integrates with leading HPC ISV and open source software solutions.

Alternatively, to manage heterogeneous clusters or for customers with additional requirements, HPE also offers:

### Bright Cluster Manager

Software from Bright Computing automates the process of building and managing Linux clusters in the data center and in the cloud offering system monitoring and management, provisioning, GPU management, cloud bursting and more.

Besides Bright Cluster Manager, Bright Cluster Manager for Science Data and Bright OpenStack are also available.

### **Additional system management options from HPE (optional)**

#### Apollo Platform Manager (APM)

Is a rack-level power and system management solution for the Apollo systems offering expanded power management features such a static and customizable dynamic power capping.

#### HPE iLO 5 Advanced

All HPE Apollo systems are equipped with iLO-embedded, in-depth server-level monitoring and management technology. HPE Performance Cluster Manager integrates with iLO (aggregating system metrics + remote management). However customers who are interested in additional enhanced security and power management features for their Apollo servers can use iLO 5 Advanced.

#### HPE InfoSight for Servers

AI-driven HPE InfoSight analyses and correlates telemetrics from millions of sensors from all HPE globally deployed systems for predictive and proactive data center management.

#### HPE OneView

Offers integration of HPE Apollo 6000 into overall enterprise infrastructure where servers, storage and networking are managed via single-pane management interface.

## HPE FINANCING FOR HPE APOLLO SYSTEMS

Having access to technology on terms that align to your business needs is critical, and HPE 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.

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