Hewlett Packard Enterprise

Accelerate innovation and insights powered by HPC and AI

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Analytics and insights are key for the digital transformation

Infrastructure modernization for new data types and scale

Next generation analytics for real-time business

Data protection and archival to mitigate risk

Insights from modeling, simulation and AI

Digital transformation is creating new opportunities for innovation such as **enhancing customer experiences, improving products and services and optimizing business processes**.

HPE purpose-built, extreme performance HPC portfolio

Industry Solutions

- Financial Services
- Academia, Research, Gov't
- Life Sciences, Health
- EDA / CAE Manufacturing
- Oil and Gas, Energy
- Weather and Climate Research

HPE POINTNEXT — **Advisory, Professional and Operational Services – HPE Flexible Capacity, HPE Datacenter Care for Hyperscale**

Supercomputing / Enterprise / Commercial HPC

HPE SGI 8600

Liquid cooled, delivering industry leading performance, density and efficiency

HPE Apollo 6000 Gen10

Extreme Compute Performance in High Density

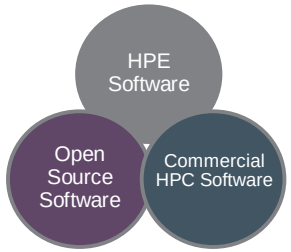
HPE Apollo 6000 Gen9

Rack-scale HPC

HPE Apollo 2000 Gen9

The bridge to enterprise scale-out architecture

HPE HPC Software Suite



HPE Performance Software Suite

- **HPE Insight Cluster Management Utility**
- **HPE SGI Management Suite**
- **HPE Performance Software – Message Passing Interface**

Emerging HPC

HPE Apollo 6500 Gen9

Rack-scale GPU Computing

In-memory HPC

HPE Integrity MC990 X

Scale-up, shared memory HPC, UV Technologies

HPE Integrity Superdome X

HPC Storage

HPE Apollo 4520

Additional Storage Options available

HPC Data Management Framework Software

Large-scale, storage virtualization & tiered data management platform

Choice of Fabrics

Arista Networking

- Intel® Omni-Path Architecture
- Mellanox InfiniBand
- HPE FlexFabric Network

HPE is powering global digital transformation with HPC

"Our users are **solving problems that matter: diseases, economics, earthquakes, security.** They do that on PSC's converged HPC / HPDA systems, which are purpose-built for the applications of today and tomorrow."

Dr. Nick Nystrom,
Senior Director of Research
Pittsburgh Supercomputing Center

"The new supercomputer 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 CTO at BASF

"NCAR requires an increasingly more advanced system. For example, **doubling the resolution of a weather system requires a tenfold increase of compute power."**

Anke Kamrath,
Acting Director of CISL
National Center for Atmospheric Research

HPE sends Supercomputer into space to accelerate mission to Mars

Spaceborne Computer – same compute nodes as NASA's premier supercomputer, Pleiades

From faster problem solving to astronaut survival, the Spaceborne Computer is the first step in developing sophisticated onboard computing resources

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HPC Storage and Data Management

HPE Apollo 4520 System

Pre-Configured and Scalable Lustre Platform

- Latest versions of community Lustre and ZFS
- Optimized design that delivers predictable and scalable growth of capacity and performance

HPE Data Management Framework (DMF)

Tiered data model

- Policy-based data protection for petascale data sets
- Significantly reduces admin burden, streamlines workflows and optimizes costs

HPE Apollo 4510 Gen10 System

Object Storage and Active Archive

- Scale to petabytes and beyond with linear performance in less data center space than traditional storage solutions
- Fully integrated with DMF

HPE LTO-8 Tape Technology

Nearline Archive

- Low-cost, long-term reliable storage for backup and archive
- highest levels of data transfer performance and per-cartridge capacity in the LTO product family

HPE has a comprehensive, purpose-built portfolio for deep learning

Deep Learning solutions

Financial services | Government and academia | Life Sciences, Health | Autonomous vehicles/mfg.

HPE POINTNEXT **Advisory, professional and operational services | HPE Flexible Capacity, HPE Datacenter Care for Hyperscale**

Compute for Core data center Training model

HPE SGI 8600

Petaflop scale for Deep Learning and HPC

Liquid cooled, delivering industry leading performance, density and efficiency

HPE Apollo 6500

Scalable, automated real-time intelligence

Rack-scale GPU computing with up to 8 GPUs per compute node

Compute for Core data center Inference engine

HPE Apollo 2000

The bridge to enterprise scale-out architecture

High compute density, ease of use and simplicity

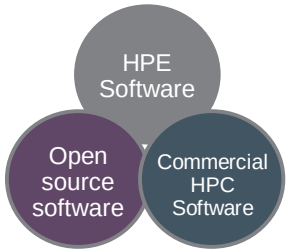
Edge analytics and Inference engine

HPE Edgeline EL4000 Converged Edge System

Unprecedented deep edge compute and high capacity storage, based on open standards

Right–sized and more portable servers on the "Intelligent Edge"

HPE Performance Software Suite



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Solving complex AI challenges with Hybrid Cluster

New Tokyo Institute of Technology Supercomputer

東京工業大学
Tokyo Institute of Technology

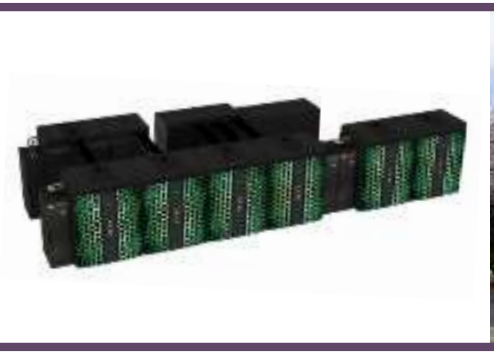
TSUBAME 3.0 Supercomputer

- **Available for outside researchers in private sector** through JHPCN[1] and HPCI[2]
- **Ranked #1 on Green500 List** – most energy efficient supercomputer in the world, running on HPE infrastructure.
- **Supports significant AI and scientific HPC workloads**, providing unprecedented ability to analyze large data sets.
- **Largest Tesla P100 SXM2 deployment to date** with 2,160 NVLink-enabled GPUs

Key features

THE GREEN 500

- 540 Compute Nodes
- Two (2) Intel® Xeon® E5-2680 v4 processors
- Four (4) NVIDIA TESLA P100 NVLink GPUs
- NVMe-compatible, high-speed 1.08 PB SSDs
- Four (4) Intel Omni-Path connectors/node
- Rich Fat Tree configuration
- 400 Gb/s bandwidth /node



"Through our partnership with SGI, and now HPE, the Tokyo Institute of Technology has worked successfully to deliver a **converged world-leading HPC and Deep Learning platform**…."

- **Satoshi Matsuoka,** Professor and TSUBAME Leader, Tokyo Institute of Technology..

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[1, 2] Reference Information provided in speaker notes

HPE is demystifying deep learning for all organizations

Simple “get-started” deep learning solutions

- **New integrated** infrastructure for all deep learning use cases
- **Enhanced education and training** from HPE and NVIDIA
- **Guidance for technology selection** with New “Deep Learning Cookbook”
- **Fraud detection solution**

Rapid app development

Blueprint “to scale and integrate” deployments

- **New reference solution for image classification**
- Innovation with **HPE AI Innovation Labs**
- **On-demand consumption** with HPE Flexible Capacity
- **Integrate Apps and data** with HPE Point Next Services

Value Realization

“Optimize” performance with latest technologies

- **New NVIDIA Tesla V100 Technology Integration**
- **Enhanced Global AI COEs** to accelerate production environments
  - Code modernization, benchmarking, proof of concepts

Competitive Advantage

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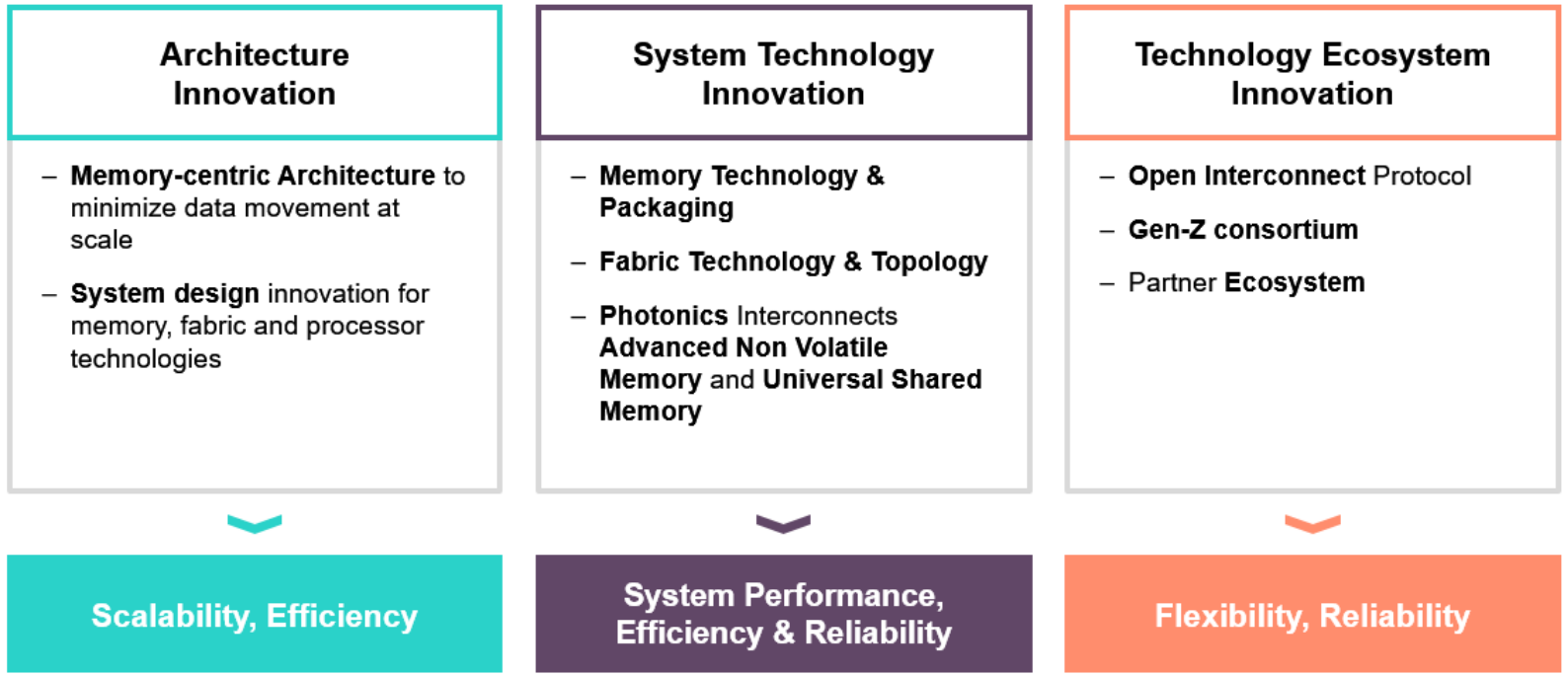
HPE leads the charge into Exascale computing

PathForward DoE win extends HPE's leadership in HPC

Win highlights

- HPE wins U.S. Department of Energy (DoE) research grant to **develop Exascale supercomputer prototype**
- **Ecosystem innovation** with partners and Gen-Z consortium
- **World-class open architectures** based on open industry standards

HPE Exascale Design Innovation Overview



Continued investments and momentum in HPC and AI

Industry's most secure industry standard HPC server[1]

HPE POINTNEXT

Flexible consumption models including Flexible Capacity

World's first Memory-Driven Computing architecture[4]

Industry's fastest parallel processing performance[2]

TOP 500 The List.

Continued Market leadership in HPC[3]

THE GREEN 500

Most energy efficient supercomputer[5]

- **Purpose-built, secure platforms**
- **Integrated solutions**
- **Software-defined architectures**
- **Flexible consumption models**
- **Expertise**
- **Technology partner ecosystem**

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Thank you