

# HP-CAST

**High Performance - Consortium for Advanced Scientific and Technical Computing**  
**World-Wide HPC, AI and Apollo Server User Group Conference**  
**Hewlett Packard Enterprise - Datacenter Infrastructure Group (DCIG)**  
**Grand Hyatt Denver, 1750 Welton Street, Denver, Colorado, USA**

## HP-CAST 29

Draft Agenda V2.0

Please note: All session details are subject to change without further notice

### Thursday, November 9<sup>th</sup> – Registration & Get-Together

18:00 - 22:00	Registration & Welcome Reception
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### Friday, November 10<sup>th</sup> – Conference Section

08:00 - 18:00	Registration	
HP-CAST Board and Executive Updates		
08:00 - 08:15	HPE-Liaison and Board Representative HP-CAST President	Frank Baetke, HPE Rudolf Lohner, KIT/SCC
08:15 - 09:30	HPE Executive Updates: Business Trends, Strategy and Portfolio  Executive Guest Speakers	Bill Mannel, Stephen Wheat, HPE  N. N.
Invited Keynote Lectures		
09:30 - 10:00	<i>Process and Experience with a Petascale HPC System for Material and Life-Science at BASF</i>	Stephan Schenk, BASF
10:00 - 10:30	<i>Results from Tsubame 3.0 - A 47 AI-PFLOPS System for HPC and AI Convergence</i>	Satoshi Matsuoka, Tokyo Institute of Technology
10:30 - 11:00	The US Exascale Program – Status and Progress	N. N.

11:00 - 11:30	Break
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HPE Product Updates and Roadmaps – <b>Attention: Restricted Attendance</b>		
11:15 - 12:15	Roadmap Updates and Positioning of HPE's HPC and AI/Big Data-relevant Product Lines	Craig Yamasaki et al., HPE
12:15 - 12:30	Update on an Emerging New Portfolio of HPC Systems	Craig Yamasaki et al., HPE
12:30 - 12:45	HPC Cloud and HPC as a Service (HPCaaS) – Concepts and Implementations	N. N., HPE

<b>12:45 - 14:00</b>	<b>Lunch</b>
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<b>Invited Customer Lectures - Case Studies</b>		
<b>14:00 - 14:20</b>	<b>Automotive Customer Update</b>	<b>N. N.</b>
<b>14:20 - 14:40</b>	<b>Energy Customer Update</b>	<b>N. N.</b>

<b>Key Partner Technology Updates</b>		
<b>14:40 - 15:00</b>	<b>Intel's Processors, Accelerator, Storage, Interconnect Strategy and Roadmap</b>	<b>N.N., Intel</b>
<b>15:00 - 15:20</b>	<b>NVIDIA Technology and Roadmap Assessment – Special Focus on AI and Deep Learning</b>	<b>N.N., NVIDIA</b>
<b>15:20 - 15:30</b>	<b>T.b.d.</b>	<b>N. N.</b>

<b>Cyber Attack Protection for HPC Systems – Special Update</b>		
<b>15:30 - 15:45</b>	<b>Preventing and Monitoring Attacks Even at Firmware Level</b>	<b>N. N., HPE</b>

<b>15:45- 16:15</b>	<b>Break</b>
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<b>Keynotes – HPA-AI-Machine Learning, The Machine, Gen-Z &amp; Exascale</b>		
<b>16:15 – 16:45</b>	<b>HPA, HPA and AI - Relationships and Potential (Note: HPA = High Performance Analytics)</b>	<b>Eng Lim Goh, HPE, tbc</b>
<b>16:45 - 17:45</b>	<b>“The Machine” – Progress and Access HPE’s Road Towards Exascale Computing Gen-Z and the HPE’s Contribution to the PathForward Program</b>	<b>N. N. Mike Vildibill, HPE Paolo Faraboschi, HPE Labs Nic Dubé, HPE</b>
<b>17:45 - 18:00</b>	<b>HP-CAST Elections Plenary Closing Session</b>	<b>Frank Baetke, HPE</b>

<b>19:00- 23:00</b>	<b>Gala Dinner for HP-CAST 29 Participants</b>
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## Saturday, November 11<sup>th</sup> – Tutorial Section

This section will be run as four parallel break-out sessions

TRACK “A”: Accelerators, Processors, Software Environments (4h)		Room: tbd
08:00 - 08:45	Participation restrictions imposed by Intel may apply <b>Tutorial A1: Intel® Processor and Technology Update</b> <i>NDA Overview of Upcoming Roadmap of Key Compute and Related Fabric Products: Xeon, Phi, OPA and AI</i>	<b>Chair: N.N., Intel</b> N.N., Intel
08:45 - 09:30	Participation restrictions imposed by NVIDIA may apply <b>Tutorial A2: NVIDIA GPU an Technology Update</b> <i>Strategy, Roadmap and Product Overview</i>	<b>Chair: N.N., NVIDIA</b> N.N., NVIDIA
09:30 - 10:00	Participation restrictions imposed by AMD may apply <b>Tutorial A3: AMD Processor and GPU Technology Update</b> <i>AMD's Open Approach to Heterogeneous Compute for HPC and Deep Learning with Radeon Instinct</i>	<b>Chair: N.N., AMD</b> N.N., AMD
10:00 - 10:30	<b>Break</b>	
10:30 - 11:00	Participation restrictions imposed by ARM/Cavium may apply <b>Tutorial A4: ARM Processor Technology Update and Roadmap</b> <i>ARM, an Architecture for HPC</i> <i>Implementation of an ARM Processor for HPC</i>	<b>Chair: N.N., Cavium</b>  N.N., ARM N.N., Cavium
11:00 - 11:15 11:15 - 11:30	<b>Tutorial A5: Application-Specific Accelerators</b> <i>FPGA Breakthroughs for Data Center Acceleration</i> <i>FPGA Alternative Solutions</i>	<b>Chair: N.N., HPE</b> Mike Strickland, Intel N.N., Nallatech
11:30 - 11:50 11:50 - 12:10 12:10 - 12:30	<b>Tutorial A6: S/W Environments, Development and Optimization Tools</b> <i>ARM Software Tools for HPC</i> <i>Extending Debugging Capabilities:</i> <i>How to Debug AI Mixed Python/C++ Code</i> <i>FPGA Acceleration using OpenCL</i> <i>General Q&amp;A Session – S/W for Accelerators</i>	<b>Chair: N.N., HPE</b>  Chris Goodyer, ARM N.N., RogueWave Software  N.N., Nallatech
TRACK “B”: Parallel File Systems and Object Storage for HPC (3h,50’)		Room: tbd
08:00 - 08:40	<b>Tutorial B1: LUSTRE® for HPC</b> <i>HPE Scalable Data Management and Storage for HPC: Capabilities and Roadmap</i>	<b>Chair: N.N., HPE</b> N.N., HPE
08:40 - 09:00 09:00 - 09:20	<i>The Evolving Lustre* Landscape</i> <i>The Open File System Community – EDFS and OpenSFS: Successes and Challenges</i>	N.N., Intel N.N., DDN
09:20 - 09:40 09:40 - 10:00	<b>Tutorial B2: Big Data &amp; Parallel File Systems</b> <i>The Role of Parallel File Systems in the Era of Burst Buffer and Exascale</i> <i>BeeGFS and BeeOND – Progress and Experience</i>	<b>Chair: N.N., HPE</b> N.N., Intel  Franz-Josef Pfreundt, FhG/ITWM (Fraunhofer Society)
10:00 - 10:30	<b>Break</b>	
10:30 - 10:50 10:50 - 11:10 11:10 - 11:30 11:30 - 11:50	<b>Tutorial B3: Object Storage and Data Management</b> <i>The Seven Tenets of Good Archiving</i>  <i>Real World Experiences with Flash Acceleration Across Multiple Tiers of Storage</i> <i>Workloads Hot, Warm, Cold, File, Object, Public, Private, Hybrid: Too much Data, too many Choices</i> <i>Storage Provider – tbd</i>	<b>Chair: N.N., HPE</b> Matthew T. Starr, SpectraLogic  N. N., DDN  N.N., Scality  N.N.
TRACK “V”: Visualization for HPC (40’)		Room: tbd
11:50 - 12:10 12:10 - 12:30	<b>Tutorial V: Visualization in HPC Environments</b> <i>Overview over Intel's Software Defined Visualization Technologies</i> <i>Ease-of-Use through Portal-Integrated Remote Visualization</i>	<b>Chair: N.N., HPE</b> N.N., Intel  N.N., Adaptive Computing

## Saturday, November 11<sup>th</sup> – Tutorial Section cont.

This section will be run as four parallel break-out sessions

TRACK “P”: Portfolio (1h)		Room: tbd
08:00 - 09:00	<p><b>Tutorial P1: Portfolio Assessment - HPC Servers</b></p> <p><i>Architectural Details and Options of HPC Servers (SuperDome X, Proliant)</i></p>	<p><b>Chair: N.N., HPE</b></p> <p>N.N., HPE</p>
TRACK “P”: Portfolio (1h)		Room: tbd
09:00 - 10:00	<p><b>Tutorial P2: Portfolio Assessment - HPC Servers</b></p> <p><i>Architectural Details and Options of HPC Servers Apollo – for Liquid Cooled Apollo SGI 8600 see Tutorial “H”</i></p>	<p><b>Chair: N.N., HPE</b></p> <p>N.N., HPE</p>
10:00 - 10:30	Break	
TRACK “I”: Interconnect Technologies – Current and Future Products and Standards (2h)		Room: tbd
10:30 - 10:50	<p><b>Tutorial I1: Interconnect Technologies</b></p> <p><i>Next Generation of Co-processors Emerges – In-Network Computing</i></p>	<p><b>Chair: N.N., HPE</b></p> <p>N.N., Mellanox</p>
10:50 - 11:10	<p><i>HPC Fabric Update: Intel Omni-Path Architecture</i></p>	N.N., Intel
11:10 - 11:30	<p><i>The Future Data Center</i></p>	N.N., ScaleMP
11:30 - 11:50	<p><i>InfiniCortex: A Wide-Area Infiniband Fabric for Production</i></p>	N.N.
11:50 - 12:30	<p><b>Tutorial I2: The Future Standard Gen-Z</b></p> <p><i>Unifying System Communication with a New High Performance, Memory-Semantic Fabric Standard</i></p>	<p><b>Chair: N.N., HPE</b></p> <p>N.N., HPE</p>

TRACK “C”: Clouds for HPC (2h)		Room: tbd
08:00 - 08:20	<p><b>Tutorial C1: Clouds for HPC</b></p> <p><i>HPC as a Service (HPCaaS)</i></p>	<p><b>Chair: N.N., HPE</b></p> <p>N.N., HPE</p>
08:20 - 08:40	<p><i>Implementation of Cloud Resources in two HPE Centers of Excellence at Advania in Iceland and Bangalore</i></p>	N.N., The UberCloud
08:40 - 09:00	<p><i>Cloud Lifestyle Challenges – Dead is not an Option</i></p>	N.N., Sardina Systems
09:00 - 09:20	<p><b>Tutorial C2: Clouds for HPC</b></p> <p><i>Cloud Bursting for Major HPC</i></p>	<p><b>Chair: N.N., HPE</b></p> <p>N.N., HPE</p>
09:20 - 09:40	<p><i>PBSCloud.io – Put your HPC Cloud under Control</i></p>	N.N., Altair
09:40 - 10:00	<p><i>Docker Containers and Singularity for HPC</i></p>	N.N. UberCloud and N.N., RStor
10:00 - 10:30	Break	
TRACK “S”: HPE Software Environments - HPC Middleware and Solutions (2h)		Room: tbd
10:30 - 11:10	<p><b>Tutorial S1: HPE Software for HPC</b></p> <p><i>HPE Performance Software Portfolio: System Management (Insight CMU, SGI Management Suite), and More</i></p> <p><i>MPI – Message Passing Interface</i></p>	<p><b>Chair: N.N., HPE</b></p> <p>N.N., HPE</p> <p>Michael Raymond, HPE</p>
11:30 - 11:50	<p><b>Tutorial S2: Complementing Software for HPC</b></p> <p><i>Full Integration of The UberCloud Application Containers with HPE’s Cloud SW Stack</i></p>	<p><b>Chair: N.N., HPE</b></p> <p>N.N., The UberCloud</p>
11:50 - 12:10	<p><i>Intel Parallel Studios Update – Compilers and Tools for HPC</i></p>	N.N., Intel
12:10 - 12:30	tbd	N. N.

## Saturday, November 11<sup>th</sup> – Tutorial Section cont.

This section will be run as four parallel break-out sessions

12:30 - 13:30	Lunch
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TRACK “D”: Data Analytics and Machine Learning (2h)		Room : tbd
13:30 - 13:50 13:50 - 14:10 14:10 - 14:30	<b>Tutorial D1: Data Analytics and Machine Learning - I</b> Using Apollo 6500 in Data Analytics Intel Solutions for Artificial Intelligence Enabling the Future of Machine Learning Applications	<b>Chair: N.N., HPE</b> N.N., HPE N.N., Intel N.N., Mellanox
14:30 - 14:50 14:50 - 15:10 15:10 - 15:30	<b>Tutorial D2: Data Analytics and Machine Learning - II</b> Using Software-Defined Compute to Create a Single Infrastructure for HPC, Big Data and Machine Learning Applications Business Transformation Utilizing AI/DL FlyElephant for Data Science and Hybrid Infrastructure	<b>Chair: N.N., HPE</b> Rick Hill, Bright Computing  N.N., NVIDIA N.N., FlyElephant
15:30 - 16:00	Break	

TRACK “H”: High End HPC Liquid-cooled Product Update (1h)		Room : tbd
13:30 - 14:30	<b>Tutorial H1: Apollo SGI 8600 High End Product Family Update and HPC Experiences</b> Liquid-Cooled Systems: Technology Details and Roadmap	<b>Chair: N.N., HPE</b>  N.N., HPE
TRACK “M”: Architecture, Cartridges, Software and Applications for Moonshot (1h)		Room: tbd
14:30 - 15:30	<b>Tutorial M: Moonshot Technology Update</b> Moonshot Update: New Solutions, Performance Measurements and Roadmap	<b>Chair: N.N., HPE</b> N.N., HPE
15:30 - 16:00	Break	

TRACK “W”: Workflow Solutions for HPC (2h)		Room : tbd
13:30 - 13:50 13:50 - 14:10 14:10 - 14:30	<b>Tutorial W1: Workflow and Data Center Automation for HPC</b> Access, Control, and Optimize HPC – Stronger, Faster, Better with PBS Pro! Time Series Challenge for Data Center Automation: Shove a Whole Load of Data in, Get stuff Out Sensibly Singularity: Containers for Science and HPC	<b>Chair: N.N., HPE</b>  N.N., Altair N.N., Sardina Systems N.N., FlyElephant
14:30 - 14:50 14:50 - 15:10 15:10 - 15:30	<b>Tutorial W2: Workflow and Design for HPC</b> Robust virtual product design made easier and more affordable via a simplified HPC appliance Workflow Solutions for HPC Extending Available Big Compute Resources by Ultimate Compute Mobility and New Deployment Methods	<b>Chair: N.N., HPE</b> N.N., Altair  N. N., Adaptive N.N., RStor
15:30 - 16:00	Break	

## **Saturday, November 11<sup>th</sup> – Tutorial Section cont.**

**This section will be run as four parallel break-out sessions**

<b>TRACK “T”: The Machine - Workshop – Background (2h)</b>		<b>Room : tbd</b>
<b>13:30 - 15:30</b>	<b>Tutorial T1: A Detailed Assessment of HPE “The Machine”</b> <b>A Deep Dive Architectural Analysis and First Hands-on Experiences</b>	<b>Chair: N. N., HPE</b> <b>N. N., HPE</b>
<b>15:30 - 16:00</b>	<b>Break</b>	
<b>TRACK “T”: The Machine - Workshop - Hands-on (2h)</b>		<b>Room : tbd</b>
<b>16:00 - 18:00</b>	<b>Tutorial T2: A Detailed Assessment of HPE “The Machine”</b> <b>HPE “The Machine Training Session”</b>	<b>Chair: N. N., HPE</b>

<b>Customer Forum / Large System SIG (LS-SIG)</b>		<b>Room : tbd</b>
<b>16:00 - 18:00</b>	<b>Customer Forum / Large System SIG (LS-SIG)</b> <b>Attention: Participation restrictions apply!</b> <b>Open Discussion of Progress, Suggestions, Issues and Problems</b>	<b>Chairs: Stephen Wheat, HPE,</b> <b>Nigel Barry, Airbus</b> <b>HPE HPC Customers and Representatives</b>
<b>18:00</b>	<b>HP-CAST 29 Adjourn</b>	