High Performance Computing Solutions

Tom Raisor – HPC Sales Specialist
Scalable, end-to-end approach that enables faster insights and competitive advantage

- **Flexible Architectures**
  - 31 years of computer industry experience
    Dell is a proven HPC partner, offering standard, open solutions from Dell and strategic partners
  - Optimized portfolio of industry leading tools
    to augment and adapt to customers’ operations

- **HPC Domain Expertise**
  - Dell HPC Innovation Lab and HPC engineering team
    Dell does the research so you don’t have to.
  - Best practices, performance characterizations
    Incorporate Dell research into each HPC installation

- **Lifecycle Services**
  - Faster time to discovery
    End to end services for maximizing your HPC investment, from financing to configuration, installation, remote cluster management and recycling.

- **Modular and reference designs**
  - Turnkey platforms
    Tested and benchmarked solutions for faster implementation
  - Plug and play building blocks
    to grow capacity, capability as needed and save customers money their cluster grows
Tools for the Job
Get Exactly the help you need
Select, deploy, manage and scale your cluster with a single source of support

Rack Integration Services
Dell HPC Merge Center
15 of the world’s top 500 reported supercomputers were built at this facility in Austin. Five were interconnected onsite.

Deployment Services
• Expand IT capabilities to scale with your business
• Speed up deployments and improve productivity
• Optimize performance with flexible services customized to fit your organization

Remote Cluster Management Services
Turnkey outsource system management service that provides secure remote system monitoring, administration & support to help increase your system utilization and uptime.

Dell Financial Services
Dell Financial Services provides flexible payment options so you can get more compute power for your money. By providing the financing, we make it easier for you to upgrade and refresh.
Scope & Growth of the commitment to HPC at DellEMC

Dedicated HPC Systems Specialist teams – Expanding world-wide HPC specialist field team to help more customers with HPC

Added HPC strategists, engineers with HPC Innovation Lab, technical marketing people, Subject Matter Experts for vertical markets

Massive Investment:
More SME’s, huge innovation eco-system

Dell HPC Innovation Lab is designed to win
- Benchmarking
- Demonstration
- Testing & engineering
- Design & development
- POC/beta technologies

Technologies & scale
- TOP500-class system
- Whitepapers
- Open HPC R&D contributor

How does this help you?

Expanded Dell HPC Centers of Excellence / Solution Centers in the U.S. and EMEA

Dell is focused on HPC leadership today and tomorrow

Tours of the lab are available
Meeting real-life, workload-specific HPC challenges

Dell HPC Innovation Lab focus areas

- Design, develop and integrate HPC systems
- Act as the focal point for joint R&D activities
- Conduct application performance studies and develop best practices
- Prototype and evaluate advanced technologies

- Flexible reference architectures
- Systems tuned for vertical solutions
- Technology collaboration with partners
- Research coordination with DSC, COEs and customers
- Read published findings on the Dell HPC TechCenter

- HPC + Cloud
- HPC + Big Data
- Processors
- Accelerators
- File systems
- Software
Dell HPC Innovation Lab: World-class infrastructure

Zenith

- **TOP500 class system** based on Intel Scalable Systems Framework (OPA, KNL, Xeon and OpenHPC)
- **256 nodes** with dual 2697v4 processors, non-blocking OPA fabric & 270TFlops sustained performance
- **Continuing expansion** Will grow to 512+ nodes by end of year

Dedicated to HPC research, development and innovation in collaboration with the Dell HPC community

13,000 square foot facility with 1300+ servers and ~10PB storage

Rattler

- **Research/development system** in collaboration with Mellanox, NVIDIA
- **80 node configuration** with InfiniBand EDR and Broadwell 2697v4 processors
- **Continuing expansion** Will grow to 128 nodes by end of year
Dell HPC Systems portfolio speeds time to innovation

Dell HPC for Research
Dell HPC System for Life Sciences
Dell HPC System for Manufacturing
NFS Storage Solution with HA
Dell Storage for HPC with Intel EE Lustre

Built on industry leading Dell and partner products and services

PowerEdge Servers
Dell Storage
Dell Networking
Processors/Accelerators
Management
DataCenter
Services

Scalable System Framework

Intel EE Lustre
H-series / Omni-Path
Intel Xeon & Xeon Phi
OpenHPC

MD Series
Extreme Scale-out
High Performance Ethernet
NVIDIA and AMD GPUs
Bright Cluster Manager

C series
Rack Servers
Blade Servers
Converged
Extreme Scale-out
# HPC field coverage model

<table>
<thead>
<tr>
<th>HPC Sales Specialist</th>
<th>HPC Solution Architect</th>
<th>Customer Engagement</th>
<th>Field team (AE/CSE)</th>
</tr>
</thead>
</table>
| • Works with the customer and Dell account team to better understand customer goals and bring together the power of Dell EMC to best meet customer needs for HPC. | • HPC technical resource for customers and sales teams.  
• Creates the design for a HPC and assists in solution design research and presentations to customers with acct team.  
• Engages internal and partners to assist with design and current and future HPC technologies | HPC Team partners with AE and CSE teams for meeting customer HPC needs. HPC team engagement driven by customer HPC activity and willingness to partner with Dell. | Field team’s (AE/CSE) biggest challenge is technical knowledge on HPC, solution design help, and HPC future trends and technologies and their effect on HPC solutions. |
| • Engages internal resources, vendor partners and coaches the account team through the sales process, escalating where necessary and removing internal and external roadblocks. | | HPC Team will continue to partner with field teams and also focus with account teams on key HPC accounts for proactive HPC updates. | |
| Dell|EMC HPC Specialist team members have an average of over 20 years experience in HPC | | |
HPC Team territories

Canada: Bill Kiatipis (SS for Canada), Scott Thurgood, Solution Architect

G500 Manufacturing: Mike Barry, Sales Specialist, Blake Gonzales, Solution Architect | Jacci Cenci, HPDA, Machine Learning Specialist - West

- Tony Rea (SS)
- Elliott Berger (SA)

Named Accounts for G500 HFT/Fin. Serv. Contact Gary Kriegel for account owner

- Mike Riley (SS)
- Jim Morrone (SA)

- Mickey Henry FED East (Solution Architect)

Fed territories on next slide

- Tom Raisor (SS)
- Guy Adams (SA)
- Art Kenney (SA)
- Scott Thurgood (SA)

- Ed Teran (SS)
- Wynell Jenkins (SA)

- Christine Fronczak, NA HPC Field Marketing Manager
HPC Events Fall 2016

- **Aug. 30 – Sept. 1**: Disney Data & Analytics Conference (Orlando, FL)
- **Sept. 14**: UAB Ribbon Cutting
- **Sept. 20**: HPC on Wall Street (NYC)
- **Sept. 20**: HPC on Wall Street Dell customer dinner
- **Sept. 19-21**: Festival of Genomics (San Diego)
- **Sept. 27-29**: DellXL (SDSC)
- **Sept. 20-21**: Oklahoma HPC Symposium
- **Oct. 5**: HPC/Big Data Research Computing/HCLS day in Boston
- **Oct. 6**: The Trading Event (HFT) NYC
- **Oct 10-14**: CHEP (San Francisco)
- **Oct. 17-20**: Dell World (Austin)
- **Oct. 20**: Ohio Supercompter Center Ribbon cutting
- **Oct. 25-27**: Educause (Anaheim)
- **Oct. 26-27**: NVIDIA GTC (focus on FED) (Washington, DC)
- **Nov. 14-18**: SC16 (Salt Lake City, UT)
Thank You!
Dell’s HPC Optimized & Enabled platform portfolio

C4130
Dense Accelerated Compute

C6320
Dense Compute & Storage

R930
4p Compute, Large Memory + Storage

R730+GPU
Compute w/GPUs

R730
Compute + Storage

R630
Compute

R430
Compute

High Performance Ethernet Dell 100GbE
Mellanox FDR/EDR InfiniBand

Dell Networking H-Series
Based on Intel Omni-Path Architecture

NVIDIA and AMD GPUs
Intel Xeon Phi

HPC Optimized

HPC Enabled

Based on Intel Omni-Path Architecture

Mellanox FDR/EDR InfiniBand
HPC-optimized server portfolio
Products designed for the HPC environment

**PowerEdge C4130**
Versatile, extremely dense 1U rack server

For HPC, data visualization and rendering workloads
Drive the most demanding HPC, data visualization and rendering workloads with a flexible, dense 1U rack server with 5 different configuration options.

- 1U with up to 4 GPU’s or 4 Phi Cards
- Oil and Gas exploration
- Deep Learning
- Financial Services firms
- Heterogeneous (Higher Ed)

**PowerEdge C6320**
Ultimate hyper-converged 2U server

For the most demanding HPC, web and cloud workloads
Maximize hyperscale performance with up to 4 independent server nodes, flexible storage and shared infrastructure in a compact 2U chassis.

- 4 Dual Processor Servers in 2U
- General purpose HPC workhorse for density and value