High Performance Computing Solutions

Tom Raisor – HPC Sales Specialist

Scalable, end-to-end approach that enables faster insights and competitive advantage

Flexible Architectures

HPC Domain Expertise

Lifecycle Services

Modular and reference designs

- **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

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

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

- **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

DELL EMC Portfolio 2016

Power Edge SERVER Family
- M=Modular
- C=Cloud
- T=Tower
- VRTX
- R=Rack
- FX=Flex

vmware PARTNER — TECHNOLOGY ALLIANCE

Business Laptops / Desktops / TC
- Latitude
- Inspiron
- Precision
- XPS
- OptiPlex
- Precision
- Inspiron
- XPS
- Thin Clients

Dell EMC Networking
- X-Series
- N-Series
- C-Series
- S & Z-Series
- Mobility
- M-Series

ViPR-C
vUnity
ALL FLASH
DSSD D5
ViPR SRM
HYBRID
VMAX AFA
xtremIO
VNXe
VMAX3 100k/200k/400k
VNX
Isilon SD Edge

RSA
eGRC
VIA
ECAT
Secure ID
Security Analytics
DCA

Pivotal
Pivotal Big Data Suite
Pivotal Cloud Foundry

Dell Storage Series
- Scale IO Ready Node
- MD Series
- SC Series
- XC Series
- SCALEIO
- DD VE

VxRAIL
Cloud Array
VBLOCK
VxRACK
Isilon
VPLEX
RecoverPoint
RP4VM

SERVICE ASSURANCE SUITE

virtustream
Data Protection Solutions
- ECS
- Centera
- Avamar
- Atmos
- DLM
- Data Domain
- DATA PROTECTION SUITE
- PROTECTPOINT

{code} by Dell EMC
- mesos module dvdi
- Polly
- REX-Ray
- Rack HD
- LibStorage

Cloud Tiering Appliance
Connectrix SAN Connectivity
CTA

mozy BY DELL
SPANNING by Dell EMC
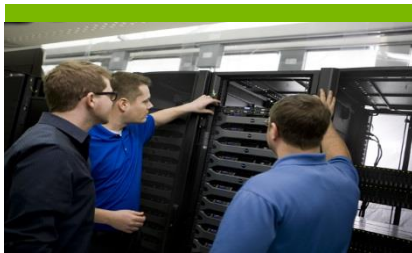SecureWorks

4

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Get Exactly the help you need

Select, deploy, manage and scale your cluster with a single source of support
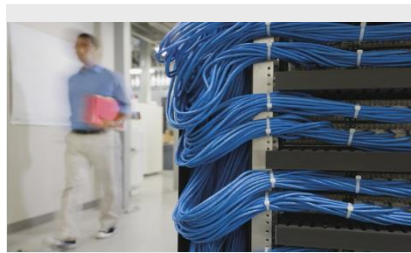
Rack Integration Services

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

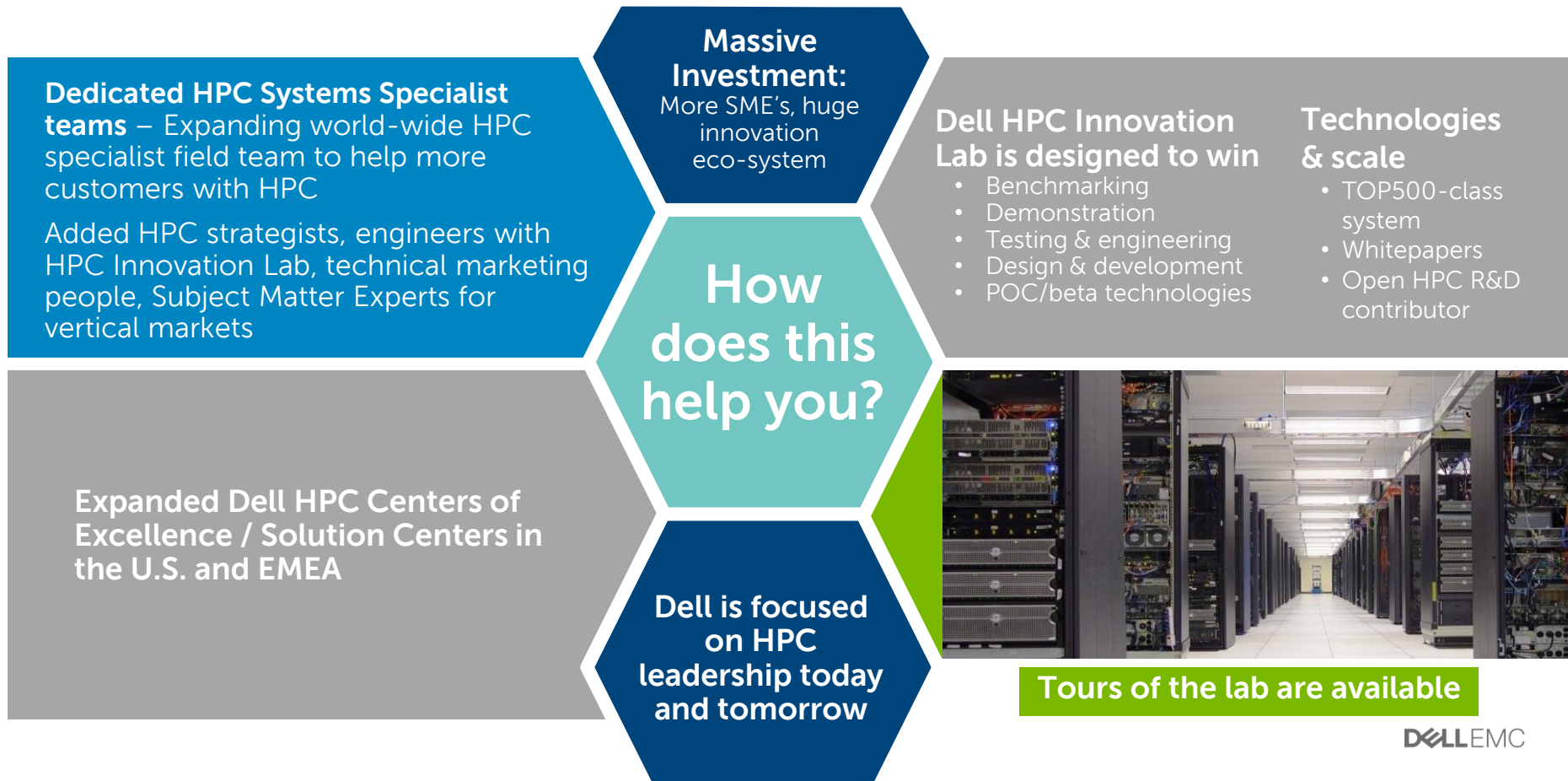## Remote Cluster Management Services

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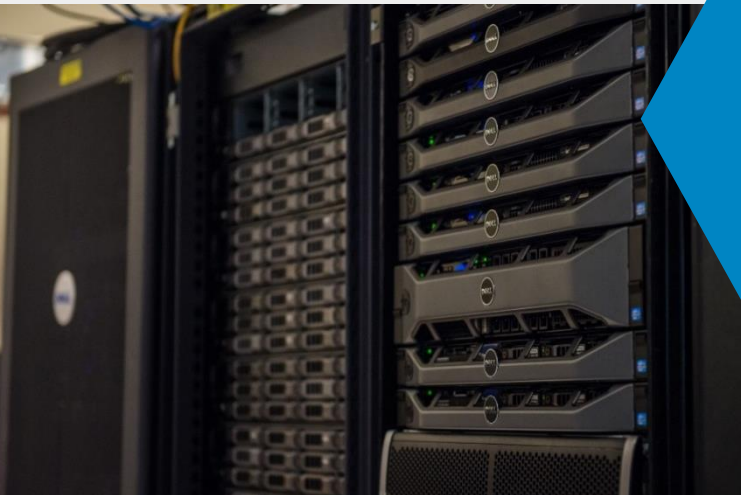
Dell Financial Services

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.

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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

How does this help you?

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

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

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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

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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
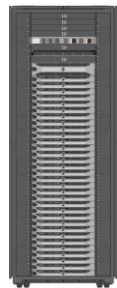
Continuing expansion Will grow to 512+ nodes by end of year

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

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

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Dell HPC Systems portfolio speeds time to innovation

Dell HPC System 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

Plus Dell Engineered Solutions for Big Data, Cloud, VDI, ...

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

C series
Rack Servers
Blade Servers
Converged
Extreme Scale-out

MD Series
Extreme Scale-out

High Performance Ethernet

Mellanox InfiniBand

NVIDIA and AMD GPUs

Bright Cluster Manager

Modular Data Center

Deployment
Remote Mngt
Support
Cloud
Financial

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HPC field coverage model

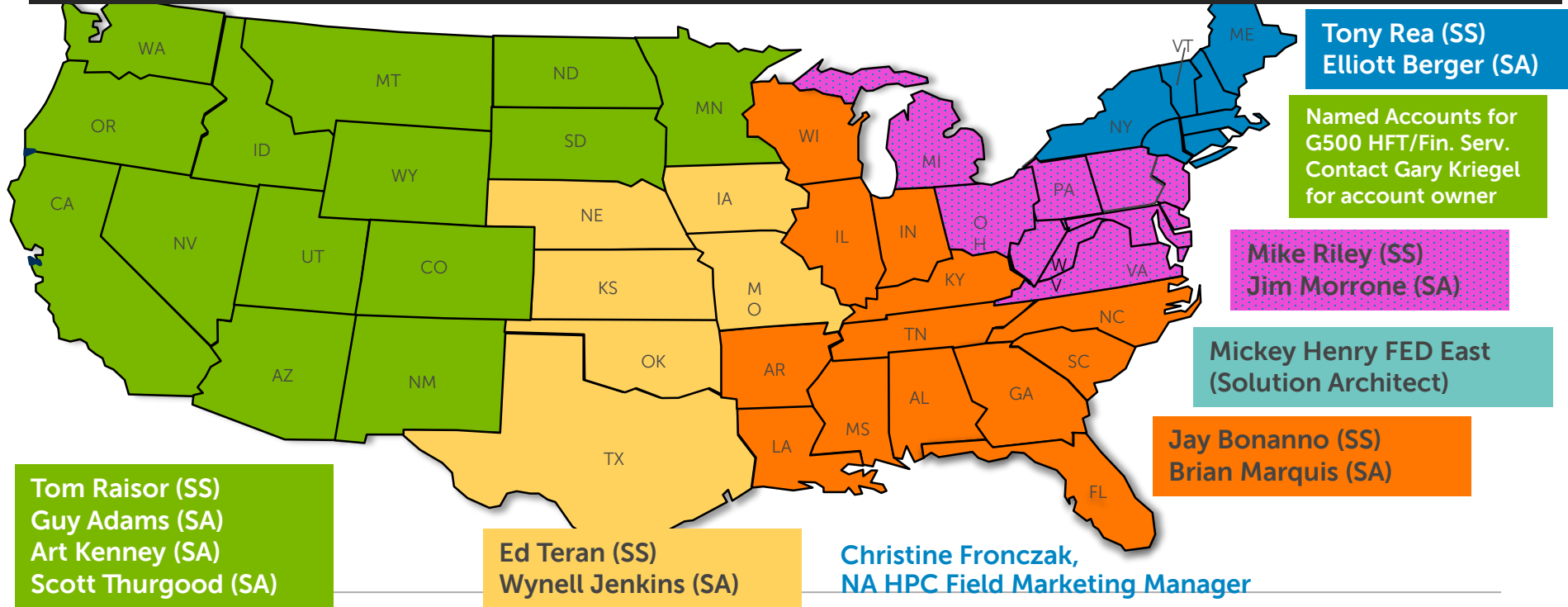| HPC Sales Specialist	HPC Solution Architect	Customer Engagement	Field team (AE/CSE)
• Works with the customer and Dell account team to better understand customer goals and bring together the power of Dell EMC to best meet customer needs for HPC • Engages internal resources, vendor partners and coaches the account team through the sales process, escalating where necessary and removing internal and external roadblocks.	• 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. HPC Team will continue to partner with field teams and also focus with account teams on key HPC accounts for proactive HPC updates.	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. HPC Team provides technical HPC knowledge, customer and partner relationships and provides a better customer experience to help account team.

Dell|EMC HPC Specialist team members have an average of over 20 years experience in HPC

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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)

Jay Bonanno (SS)
Brian Marquis (SA)

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

Fed territories on next slide

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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)

Dell's HPC Optimized & Enabled platform portfolio

C4130
Dense Accelerated
Compute

C6320
Dense Compute
& Storage

**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

R430
Compute

R630
Compute

R730
Compute + Storage

R730+GPU
Compute w/GPUs

R930
4p Compute,
Large Memory + Storage

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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

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