Overview of the Texas Advanced Computing Center

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TACC

October 22, 2012

TACC Mission & Strategic Approach

To enable discoveries that advance science and society through the application of advanced computing technologies.

- Resources & Services
  - Evaluate, acquire & operate world-class resources
  - Provide expert support via leading technology expertise
- Research & Development
  - Produce new computational technologies and techniques
  - Collaborate with researchers to apply advanced computing technologies in science projects

TACC Technology Focus Areas

- High Performance Computing (HPC)
  - Applications
  - Performance and Architectures
  - Software Tools
- Visualization
  - Scalable Visualization Technologies
  - Visualization Interfaces and Technologies
- Advanced Computing Interfaces
  - Web and Cloud Services
  - Web and Mobile Applications

Current TACC HPC/DATA Systems

System	Ranger	Lonestar	Longhorn
Purpose	HPC	HPC	Data Analysis
Nodes	3,936	1,888	256
CPUS/node x cores/CPUS	4 x 4	2 x 6	2 x 4 + 2GPUs
Total cores	62,976	22,656	2,048
CPUS	AMD Barcelona 2.3GHz	Intel Westmere 3.3GHz	Intel Nehalem +NVIDIA 2.5 GHz +Quadro Plex S4s
Memory	2GB/core	2GB/core	6GB/core (240 nodes) 18GB/core (16 nodes)
Interconnect	SDR IB	QDR IB	QDR IB
Disk	1.7PB Lustre (IB)	1PB Lustre (IB)	0.2PB Lustre (10GigE)

Stampede

- 2+ PF Linux cluster
  - 6400 Dell DCS nodes
  - 2x 8-core Intel Xeon E5 (Sandy Bridge)
  - 56Gb/s FDR InfiniBand
- 7+ PF Intel Xeon Phi co-processors
- 250+ TB aggregate memory
- 14+ PB disk, 150 GB/s
- Additional Resources
  - 16 1TB shared memory nodes
  - 128 Nvidia Kepler 2 GPUs

Storage Systems

High Speed Disk-- Corral

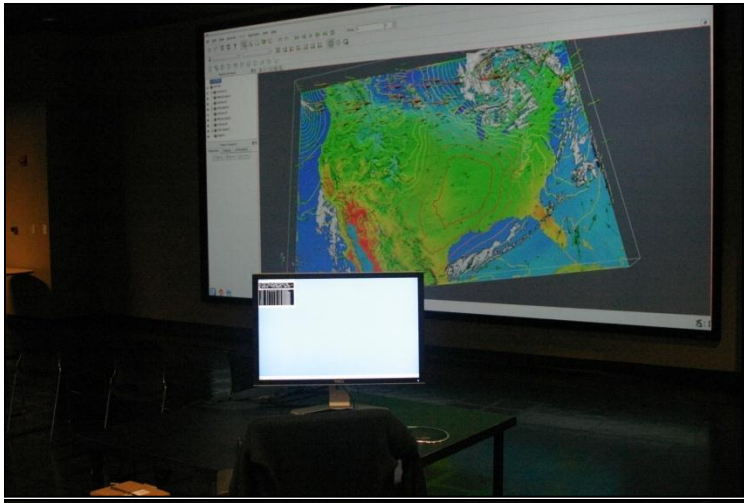
- 6 PB Data Direct Disk
- 5 PB, replicated GPFS
- 800TB Lustre File System
- 200TB Data Collections
- InfiniBand interconnect
- Access: as /corral file system on ranger, lonestar and longhorn; ssh/scp; requires allocation

Tape Storage -- Ranch

- 10PB capacity
- 70 TB cache
- 10Gb Ethernet interconnect
- Access: scp/bbcp to ranch.tacc.utexas.edu; or rsh/ssh

TACC Advanced Visualization Systems

- Upgraded ACES Vislab
  - 16x5 Tiled Display Wall, 328 MPixels, Nvidia GPUs
  - SONY 9MPixel Projector, 20ft x 11ft display
  - High-end Dell Workstations
  - Collaboration/conference room
  - Tiled touch display
- Integrated visualization for remote sessions
  - Ranger: 7 GPU-based systems
  - Lonestar: 16 GPU nodes
  - Stampede: 128 GPU nodes + 16 large shared memory nodes with GPUs
- Longhorn
  - 256-node, 512-GPU system for remote vis and HPC on GPUs



TACC Support Services

- Technical documentation
  - http://www.tacc.utexas.edu/ (user guides!)
- Training
  - http://www.tacc.utexas.edu/services/training/
  - Taught on-site, sign up at TACC User Portal

- Or – Everything through the TACC Portal (consulting)
  - http://portal.tacc.utexas.edu/

XSEDE

- eXtreme Digital Resources for Science and Engineering
  - A national federation of NSF-funded advanced computing resource and service providers
- Portal: http://portal.xsede.org
  - Information
  - Allocations
  - Access
  - Help

Using TACC XSEDE Resources

HPC SYSTEMS | ADVANCED VIS SYSTEMS | STORAGE SYSTEMS | SPECIAL PURPOSE SYSTEMS

NAME	INSTITUTION	SYSTEM	PEAK TFLOPS	MEMORY TBYTES	STATUS	LOAD	RUNNING JOBS	QUEUED JOBS	OTHER JOBS
Kraken	NICS	Cray XT5	1174.00	147.00	Up		187	501	306
Ranger	TACC	Sun Constellation Cluster	579.40	123.00	Up		440	65	100
Lonestar	TACC	Dell Linux Cluster	302.00	45.00	Up		434	84	139
Trestles	SDSC	Appro AMD Magny-Cours Cluster	100.00	20.25	Up		1	14	0
Steele	Purdue	Dell Intel 64 Linux Cluster	60.00	12.40	Up		370	2346	63
Lincoln	NCSA	Dell/Intel PowerEdge 1950	47.50	3.00	Up		27	25	0
Blacklight	PSC	SGI UV	37.20	32.00	Up		60	147	1
Dash	SDSC	Appro Intel Nehalem Cluster	4.90	3.00	Up		1	0	0
		Total:	**2305.0**	**385.65**			**1520**	**3182**	**609**

**Indicates failure of one or more status test.*

Hover mouse pointer over Resource Name, Resource Status, and headings to see additional information.

- 11 Centers
- 1.5 Billion core-hrs/yr
- Startup, Research & Instructional Allocations

XSEDE Allocation Requests
Types of Projects

• Startup	*Development/testing/ porting/benchmarking*	Up to 200,000 core-hrs., for 1yr Submit Abstract, Awarded/2 wks
• Research	*Program (usually funded)*	Unlimited core-hrs, for 1yr 10 page Request, Awarded/quarter
• Education	*Classroom, Training*	Up to 200,000 core-hrs, for 1 yr Submit Abstract, Awarded/2 wks

https://portal.xsede.org/allocations-overview

More About TACC:

Texas Advanced Computing Center

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