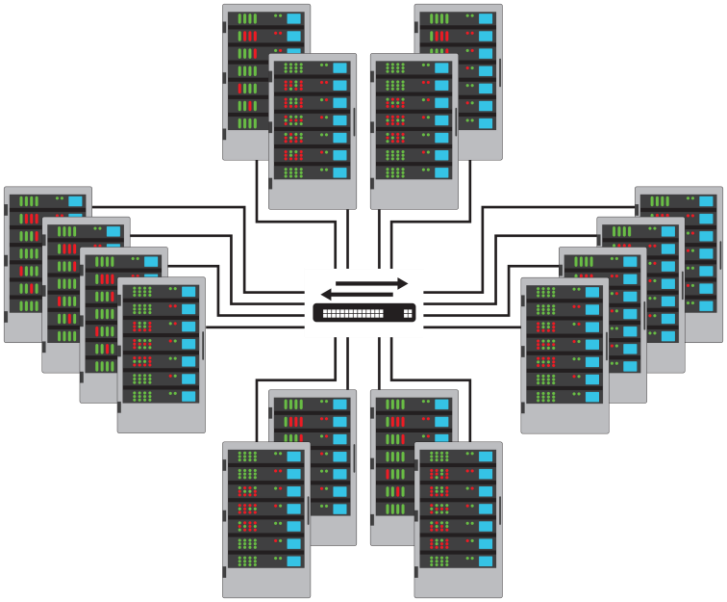
NSF Campus Cyberinfrastructure PI and
Cybersecurity Innovation for Cyberinfrastructure PI Workshop

Quad Chart for: CC* Compute: A Cost-Effective, 2,048 Core InfiniBand Cluster at UTC for Campus Research and Education

September 23-24, 2019 | Minneapolis, MN



Challenges:

- Work with brand-new AMD architecture
- Get appropriate new, PCI Gen-4 Motherboards, with sufficient power to CPUs at full core count and speed
- Exploit high core counts for MPI+OpenMP
- Port applications from earlier clusters
- Support OSG
- Teach PEST/farm users to work with OSG

Deliverables:

- Working 2K-core AMD EPYC2 Cluster with EDR and 8TB RAM
- Support for 14 science drivers
- Novel demonstration of latest cost-effective x86-64 architecture
- Lots of cool science from the 14 major projects and ancillary projects and OSG utilization

Broader Impact:

- Enables broad access to 14 projects
- Enables access to a number of ancillary projects
- Supports 2 teaching-related projects at UTC
- Projects from Ole Miss, UTK, UTC, UAB, Ole Miss, Tennessee Tech
- This is a great-performance cluster at a price point that will change how others build HPC+HTC clusters
- Supports UTC Computational Science PhD students' R&D
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Metadata tag:

- *2K modern cores for under $400K*
- *Strong scaling on node*
- *Weak scaling between nodes*
- *High-bandwidth x86-64*
- *Looking for more MPI+X users*
- *SmartNICs opportunities-cloud & HPC*