

The **Department of Research Computing Services** in the *Division of Research and Innovation* offers access to high performance computing (HPC) resources, big data management, and application of visualization tools for various research applications. This department is also staffed with two research scientists highly experienced in advanced computational methods and ready to support UNT researchers with implementing high performance computing methods in their research projects.

## Department Information

**Name** | Research Computing Services

**Dept ID** | 150510

**Support** | [SciComp-Support@unt.edu](mailto:SciComp-Support@unt.edu)

**Web** | <https://research.unt.edu/research-services/research-computing>

## Service Rates for UNT Denton Campus

Compute CPU Resource	1SU; \$0.30 node/hour
Compute GPU Resource	4SUs; \$1.20 node/hour
Data Storage	
Archive	\$25/TB/yr.
Online	\$50/TB/yr.
Consulting/Programming/Web:	(At cost, hourly rate)
Network Costs:	\$0 unlimited ingress/egress
Price for VM Hosting	\$180/1-vCPU/1-GB RAM/year
Price for PHI (Protected Data)	1.5x normal charge rate (Compute or data storage)

## Texas Advanced Computing Center (TACC)

The University of North Texas (UNT) and the University of Texas at Austin (UT) entered into a contract agreement in 2021 that provides access to the Texas Advanced Computing Center (TACC) enhanced cyberinfrastructure resources for all UNT faculty and research community. UNT faculty and students have access to some of the TACC's high-performance computing systems under the same condition as UT Austin HPC users.

Texas Advanced Computing Center (TACC) designs and operates some of the world's most powerful computing resources. The center's mission is to enable discoveries that advance science and society through the application of advanced computing technologies.

## Lonestar6

Lonestar6 is the newest system in TACC's Lonestar series of high-performance computing systems that are deployed specifically to support Texas researchers. The system provides a balanced set of resources to support parallel computations, data analysis, visualization, and machine learning.

Lonestar6 is funded through the University of Texas Research Cyberinfrastructure, a collaboration between TACC and the University of Texas System, and is supported by partners at Texas A&M University, Texas Tech University, and the University of North Texas, as well as a number of research centers and faculty at UT-Austin, including the Oden Institute for Computational Engineering & Sciences and the Center for Space Research. Lonestar6 is available to researchers at all of these institutions.

### System Architecture

Lonestar6 is composed of 560 compute nodes and 80 GPU nodes. The system employs Dell Servers with AMD's EPYC Milan processor, Mellanox's HDR Infiniband technology, and 8 PB of BeeGFS based scratch storage on Dell storage hardware. Additionally, Lonestar6 supports GPU nodes utilizing NVIDIA's Ampere A100 GPUs to support machine learning workflows and other GPU-enabled applications.

The compute nodes are housed in four dielectric liquid coolant cabinets and 10 air-cooled racks. The air-cooled racks also contain the 16 GPU nodes. Each compute node has two AMD EPYC 7763 64-core processors (Milan) and 256 GB of DDR4 memory and runs Rocky Linux operating system. Each GPU node also contains two AMD EPYC processes and two NVIDIA A100 GPUs each with 40 GB of high bandwidth memory (HBM2).

### Compute Nodes

Lonestar6 hosts 560 compute nodes with 5 TFlops of peak performance per node and 256 GB of DRAM. Node Specifications:

- CPU: 2x AMD EPYC 7763 64-Core Processor ("Milan")
- Total cores per node: 128 cores on two sockets (64 cores / socket)
- Clock rate: 2.45 GHz (Boost up to 3.5 GHz)
- RAM: 256 GB (3200 MT/s) DDR4
- Local storage: 144GB /tmp partition on a 288GB SSD.