

Office of Innovative Technology  
High Performance & Scientific Computing  
<https://oit.utk.edu/hpsc>  
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THE UNIVERSITY OF  
TENNESSEE  
KNOXVILLE

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## OIT HPSC Overview

- HPC Resources
  - ISAAC HPC clusters – SLURM based
  - Secure Enclave – VMs and an HPC cluster
  - Petabytes of Lustre parallel file systems
- Software and Services
  - 3rd party and open-source SW via modules
  - Proposal budget and facilities doc support
  - Support faculty equipment purchases
  - Open OnDemand with Rstudio and Jupyter
- Workshops and Trainings

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## HPC Resources ISAAC

- Current Hardware: ISAAC clusters
  - **ISAAC Legacy (formerly ACF)** for open research
    - 6,480 cores (234 nodes), 2.7 PB petabytes lustre storage
    - 1 large memory nodes (1 x 1TB)
  - **ISAAC Next Generation (NG)** for open research
    - 12,384 cores (210 nodes), 3.6 petabytes lustre storage
    - 15 GPU nodes with NVIDIA V100s (14) or A40 (1)
    - 7 GPU nodes for **AI Tennessee Initiative\*** each with 4x NVIDIA H100
    - 7 large memory nodes (1.5 and 2 terabytes)
  - **ISAAC Secure Enclave for processing sensitive information**
    - 2,848 cores (62 nodes), 1.3 PB Storage
    - 1 GPU nodes; 2 x V100S
    - VMWare environment to provide virtual machines (Windows or Linux)
    - Access via Citrix Workspace remote client
- Software
  - See output of "module avail" on the login nodes
  - [Open OnDemand](#) with Jupyter Notebook and Rstudio


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New Racks for ISAAC NG cluster at KPB data center







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AI Tennessee Initiative  
Dell XE8640 Servers  
  
Bottom two 4U servers  
In photo to the left



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## Note about Sensitive Info

- We have webpage  
Guide to Sensitive Information in Research  
at  
  
<https://oit.utk.edu/research/sensitive-info/>
- This is in the menu of every HPSC page on  
the OIT HPSC websites

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## Software

- Large collection of software installed on the clusters is available by doing "module avail" on the clusters
- Licensed Software
  - Abaqus commercial (2 GUI, 48 core + GPU)
  - Matlab commercial (2 licenses)
- Open OnDemand (similar to Google Colaboratory)
  - With Rstudio
  - With Jupyter notebooks
  - With virtual desktop

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## Services

- Help with issues via the OIT ticket system  
See this link in the HPSC webpage menu

- Proposal support  
<https://oit.utk.edu/news/hpsc-research-proposal-support/>



- HPSC maintains the University's Globus subscription

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## Coming Soon

- UT-StorR UT Storage resource for Research
  - Archival Storage Subsystem with LTO-9 tape robot library for up to 6 petabytes long term archival storage
  - Available late 1Q2023
  - Capacity to expand
- Lustre Storage capacity of 800 terabytes as landing pad for the archival storage system

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## UT-StorR equipment has arrived late 2023



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## Web Pages with More Info

- All things HPSC: <https://oit.utk.edu/hpsc>
- AI Tennessee Initiative: <https://oit.utk.edu/hpsc/ai-tennessee-initiative-resources-and-access/>
- AI products/services from OIT <https://oit.utk.edu/ai>
- Use of ISAAC clusters for academics <https://oit.utk.edu/hpsc/academic-resources/>

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## Web Pages with More Info

- Proposal Development: <https://oit.utk.edu/news/hpsc-research-proposal-support/>
- Investments <https://oit.utk.edu/hpsc/overview/node-and-storage-investments/>
- UT-StorR – UT Storage resource for Research <https://oit.utk.edu/hpsc/ut-storr>

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