

HIGH PERFORMANCE RESEARCH COMPUTING

Introduction to NVIDIA's Clara Parabricks

on the **FASTER** cluster

an NVIDIA + HPRC Training Collaboration

7 March, 2023



High Performance
Research Computing
DIVISION OF RESEARCH



High Performance Research Computing | hprc.tamu.edu | NSF Awards #2112356 #2019129

Logging into FASTER via the HPRC Portal



Accessing the HPRC Portal

- HPRC webpage: hprc.tamu.edu, Portal dropdown menu

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Home User Services Resources Research Policies Events About Portal

Terra Portal
Grace Portal
FASTER Portal
FASTER Portal (ACCESS)

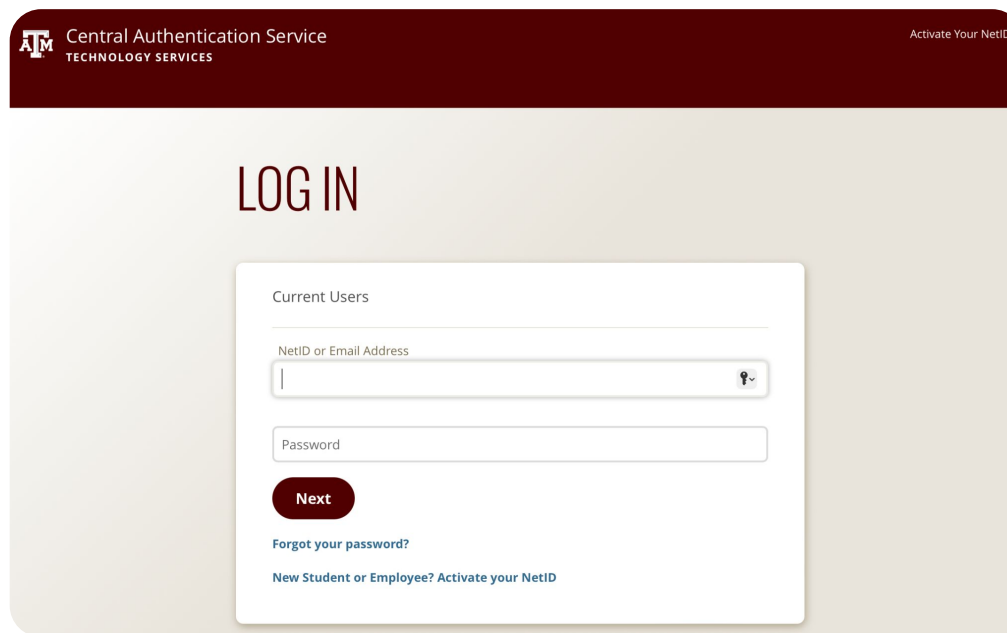
Quick Links

- New User Information
- Accounts
 - Apply for Accounts
 - Manage Accounts
- User Consulting
- Training
- Knowledge Base

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Accessing FASTER via the HPRC Portal (TAMU)

Log-in using your TAMU NetID credentials.



The screenshot shows the login interface for the Central Authentication Service. At the top, there is a dark red header with the TAMU logo, the text "Central Authentication Service TECHNOLOGY SERVICES", and a link "Activate Your NetID". Below the header, the word "LOG IN" is displayed in large, bold, black letters. The main content area is a light beige color. In the center, there is a white login form with a dark red border. The form contains the following elements: a "Current Users" label, a "NetID or Email Address" input field with a search icon, a "Password" input field, a dark red "Next" button, a blue link "Forgot your password?", and a blue link "New Student or Employee? Activate your NetID".

Accessing FASTER via the HPRC Portal (ACCESS)

Log-in using your ACCESS credentials.

The screenshot shows the ACCESS portal interface. At the top left is the ACCESS logo, and at the top right is the 'Powered By CILogon' logo. Below the logo is a 'Consent to Attribute Release' section with a dropdown arrow. The consent text reads: 'TAMU FASTER ACCESS_OOD requests access to the following information. If you do not approve this request, do not proceed.' Below this are three bullet points: 'Your CILogon user identifier', 'Your name', 'Your email address', and 'Your username and affiliation from your identity provider'. Below the consent section is a 'Select an Identity Provider' section with a dropdown menu showing 'ACCESS CI (XSEDE)'. Below the dropdown is a 'Remember this selection' checkbox and a 'Log On' button. At the bottom of the screen, there is a footer with links for 'FAQs' and 'help@cilogon.org'.

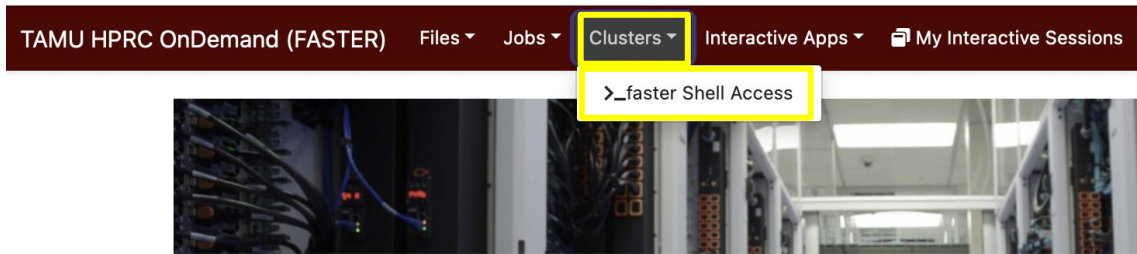
The screenshot shows the ACCESS portal login screen. At the top left is the ACCESS logo, and at the top right is the CILogon logo. Below the logo is the text 'Login to CILogon'. Below this are two input fields: 'ACCESS Username' and 'ACCESS Password'. Below the password field is a 'Don't Remember Login' checkbox and a 'Login' button. To the right of the login fields is the CILogon logo and the text 'CILogon facilitates secure access to CyberInfrastructure (CI)'. Below this are four links: 'If you had an XSEDE account, please enter your XSEDE username and password for ACCESS login', 'Register for an ACCESS Account', 'Forgot your password?', and 'Need Help?'. At the bottom of the screen, there is a 'Click Here for Assistance' link.

This is a close-up of the 'Select an Identity Provider' dropdown menu. The dropdown is open, showing the selected option 'ACCESS CI (XSEDE)' with a question mark icon to its right.

Select the Identity Provider appropriate for your account.

Shell access via the HPRC Portal

Access through (most) web browsers
-Top Banner Menu “Clusters” -> “Shell Access”



OnDemand provides an integrated, single access point for all of your HPC resources.

Message of the Day

IMPORTANT POLICY INFORMATION

- Unauthorized use of HPRC resources is prohibited and subject to criminal prosecution.
- Use of HPRC resources in violation of United States export control laws and regulations is prohibited for non-citizens and legal residents.
- Sharing HPRC account and password information is in violation of State Law. Any shared accounts w
- Authorized users must also adhere to ALL policies at: <https://hprc.tamu.edu/policies>

Getting started with the material

```
# Connect to a node with a GPU
srun --nodes=1 --time=03:00:00 --mem=120G --partition=gpu \
    --gres=gpu:2 --cpus-per-task=24 --reservation=training --pty bash

# Create a directory and scratch and navigate to it
mkdir $SCRATCH/parabricks_training && cd $SCRATCH/parabricks_training
```

Tutorial instructions can be found here:

<http://gregoryzynda.com/tutorials/parabricks/01-introduction.html>

Sample Commands

```
# RNA-seq alignment
pbrun rna_fq2bam \
  --ref /scratch/data/training/parabricks/indexed_genomes/mouse/GCF_000001635.27_GRCm39_genomic.fna \
  --genome-lib-dir /scratch/data/training/parabricks/indexed_genomes/mouse/ \
  --output-dir . --in-fq /scratch/data/training/parabricks/RNA_R1.fastq \
  /scratch/data/training/parabricks/RNA_R2.fastq --out-bam RNA_parabricks.bam \
  --num-gpus 1 --out-prefix RNA

# DNA alignment
pbrun fq2bam --ref /scratch/data/training/parabricks/indexed_genomes/human/Homo_sapiens_assembly38.fasta \
  --in-fq /scratch/data/training/parabricks/DNA_R1.fastq.gz \
  /scratch/data/training/parabricks/DNA_R2.fastq.gz \
  --out-bam fq2bam_DNA.bam --num-gpus 1

# Full germline run
pbrun germline --ref /scratch/data/training/parabricks/indexed_genomes/human/Homo_sapiens_assembly38.fasta \
  --in-fq /scratch/data/training/parabricks/DNA_R1.fastq.gz \
  /scratch/data/training/parabricks/DNA_R2.fastq.gz --knownSites \
  /scratch/data/training/parabricks/indexed_genomes/human/Homo_sapiens_assembly38.known_indels.vcf.gz \
  --out-bam germline.bam --out-variants germline.vcf --out-recal-file germline_report.txt --num-gpus 1
```