

Biomedical & Physical Sciences Building
567 Wilson Road
Room 1440



ICER
Monday - Friday, 9AM - 5PM
(517) 353 - 9309

Home: icer.msu.edu **New User Request:** contact.icer.msu.edu/account

Contact: contact.icer.msu.edu

Documentation: docs.icer.msu.edu

TO USE HPCC @ MSU

Step 1: Choose an access path

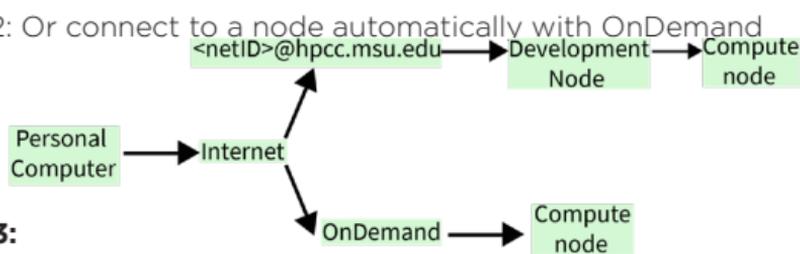
Path 1: Connect to `<netID>@hpcc.msu.edu` using ssh

Path 2: Or access using `ondemand.hpcc.msu.edu`

Step 2:

Path 1: Connect to a listed development node from gateway using ssh

Path 2: Or connect to a node automatically with OnDemand



Step 3:

Path 1 or 2: Submit job or run interactive job

File Transfer

For few/small files:

>> `ondemand.hpcc.msu.edu`

>> Use scp, sftp, rsync, or SAMBA

For larger files and better bandwidth:

>> Use globus at `globus.msu.edu`

>> MSU Globus endpoint: `msu#hpcc`

Job scheduling

For each user, up to a total of 1040 cores and at most 520 jobs running at any one time

The maximum runtime of jobs is 168 hours (7 days)

For priority access to cluster resources, contact us for buy-in information

MODULES

Module spider - Lists all available installed packages/software

Module list - Lists all currently loaded modules in your environment

Module avail **{package}** - Lists all currently installed versions of the specified package. Notice (default), if you want a different version, you will have to module load **{package/version#}**

Module load **{package/version}** - Loads the package

Module unload **{package}** - Removes the package from the environment

Module swap **{A} {B}** - Swaps loaded **{A}** package with **{B}** package

Module show **{package}** - Shows the modified paths of the compiler/software in case you would like to see the libraries of executables

JOB SUBMISSION PART 1

Slurm script that can be submitted to the queue via sbatch:

```
job.sb

#!/bin/bash - - login
#SBATCH --nodes=1

#Number of tasks to run on each node
#SBATCH --ntasks-per-node=4

# Memory per CPU
# Specify "M" or "G" for MB and GB respectively
# SBATCH --mem-per-cpu=200M
```

JOB SUBMISSION PART 2

```
# Wall time
#Format: "minutes", "hours:minutes:seconds",
# "days-hours", or "days-hours:minutes"
# SBATCH --time=01:00:00

# Mail Type
# e.g., which events trigger email notifications
# SBATCH --mail-type=ALL

#Mail address
#SBATCH --mail-user=yournetid@msu.edu

# Standard output and error to file
# %x: job name, %j: job ID
#SBATCH -- output=%x-%j.SLURMout
```

JOB SUBMISSION PART 3

```
cd $SCRATCH
mpirun -np 4 ./a.out
```

```
#Print resource information
scontrol show job $SLURM_JOB_ID
js -j $SLURM_JOB_ID
```

>> walltime (hours : minutes : seconds) is how long the job will run

>> to use multiple threads in OpenMP

```
Export OMP_NUM_THREADS=$
```

>> module commands can be placed in Slurm script

>> to submit: `squeue job.sb`

FILE SYSTEMS

File count limit: 1 million

CLASS	PATH	QUOTA	OFF-SITE REPLICATION	PURGE POLICY
Home directories	/mnt/home/ userid	50 GB - 1 TB	daily	none
Research directories	/mnt/research/ groupid	50 GB - 1 TB	daily	none
Scratch directory	/mnt/scratch	-50 TB	none	after 45 days
Local disk	/mnt/local	as available	none	after 14 days

For quota increase, please fill out the form at: contact.icer.msu.edu/quota

Additional research and home space can be purchased