Hyalite Cheatsheet

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Mountains & Minds

CONNECTING TO HYALITE AND MOVING DATA

Action	Command/Tool	Notes
Connect to Hyalite	**Windows**: MobaXterm (http://mobaxterm.mobatek.net) **Mac & Linux**: Terminal (ssh command) - `ssh <netid>@hyalite.rci.montana.edu`	**Connection Settings:** - **host**: hyalite.rci.montana.ed - **user**: your NetID - **password**: your NetID Password
Copy data to Hyalite Head node (<2GB, slow)	**Windows**: MobaXterm (http://mobaxterm.mobatek.net) **Mac/Linux** GUI: Cyberduck (https://cyberduck.io) Terminal: `scp` or `rsync`	**Connection Settings:** same as SSH above Other Notes - MobaXterm and Cyberduck provide drag/drop interfaces for copying files. - MobaXterm and Cyberduck also have built-in editors for editing sbatch scripts and viewing output logs
Copy data to Hyalite via the Data Transfer Nodes (DTNs) (Any Size, slow)	Same as above, just using different connection settings. - Note: this transfer method is slow.	**Connection Settings:** - **host**: dtn.rci.montana.edu - **user**: your NetID - **password**: SSH Key Only Access Append your ssh public key to: `hyalite:$STORE/.ssh/authorized_keys`
Copy data to Hyalite via Globus (Any Size, Fastest!)	1. Log into Globus with your NetID https://www.globus.org 2. Install Globus Connect Personal on your local computer. 3. Go to Manage Data > Transfer Files 4. Select files and click the blue arrow to start a transfer	- Fastest transfer method possible. - Choose "Montana State University – Bozeman" from the existing login screen. Authenticate with your NetID. - If you don't see the "Get Globus Connect Personal" link, you can install it from here: https://www.globus.org/app/endpoints/create-gcp

SLURM WORKLOAD MANAGER

Slurm Terminology	Help Documentation
Node: A physical computer to run computation jobs **Partition**: A group of nodes with associated settings (also referred to as a queue) **Job**: An allocation of resources assigned to a user for a limited time within a partition.	- Many useful options for each command - `<command> --help`: for brief information - `man <command>`: for detailed information - Technical documentation online here: http://slurm.schedmd.com

Action	Command	Notes
Run a Job Script	`sbatch <script>`	Submits the script to the scheduler. You will see it in squeue after it is submitted. - Put job options in the script - May include srun job steps to run in parallel
Run a Job Step	`srun [options] <command>`	Run a parallel job step (`-n` option specifies the number of simultaneous tasks) - Can be run inside an sbatch script or by itself
Run an Interactive XWindows Job	`srun.x11`	- You must load the "srun.x11" module first. - Run without a command, then run your task in the subsequent shell. - SSH X11 forwarding required (MobaXTerm does this automatically).
List Current Jobs	`squeue`	- By default, only shows your partitions - Run with '-a' option to see all jobs/partitions - Run with '-u <netid>' option to see jobs for just one user.
Check Cluster Status	`sinfo`	- By default, only shows your partitions - Run with '-a' option to see all partitions
Cancel a Job	`scancel <JobID>`	- Cancel a pending or running job.
Graphical Status UI	`sview`	SSH X11 forwarding required (MobaXTerm does this automatically)

Linux Shell

If you don't know the Linux Shell, the recommended online training is (free): http://cli.learncodethehardway.org/

A note about period and tilde	Storage Environment Variables
Period and tilde are special aliases in Linux - `.` (period): The directory you are currently in. - `..` (double period): The parent directory of your current directory. - `~` (tilde): Your home directory - These can be used anywhere that a directory can.	- `$HOME`: Your home directory (/home/first.last) - `$SCRATCH`, `$WORK`, `$STORE`: large storage directories - These can be used anywhere that expects a directory name or path (similarly to `.`, `..`, and `~`). - Run the `storage-help` script on Hyalite for more info.

READ-ONLY COMMANDS (NOT DANGEROUS TO RUN)

List files and directories and their metadata (permissions, size, creation date, etc)	`ls [options] [path]`	Useful Options: - `-l`: list extra file information - `-h`: print human readable file sizes - `-a`: show all (show hidden files and directories) If run without options: Lists current directory
	ls Example	

	List all home files, show size in kilobytes, megabytes, etc.
	`ls -lah $HOME`
	List all files in parent directory, show size in bytes
	`ls -la ..`
	List details for a file in my home directory
	`ls -l ~/myfile.data`	

Change your current directory	`cd [path]`	- Change current directory to the one specified - If run without options: change directory to your $HOME.
	cd Example	

	change directory to your home directory
	`cd $HOME` or `cd ~` or just `cd`
	change directory to system ramdisk (extremely fast storage)
	`cd /dev/shm`	

Page through the contents of a file	`less <file>`	- Use arrow keys and pgup/pgdn to navigate - Use '/' to search - Press 'q' to quit
View the beginning of a file	`head <file>` `head -5 <file>`	- Use a `-#` option to specify the number of lines. For example: `head -30 foo.out` would output the **first** 30 lines of foo.out.

View the end of a file	`tail <file>`
	`tail -10 <file>`
	`tail -f <file>`
		- Use a `-#` option to specify the number of lines. For example: `tail -30 foo.out` would output the **last** 30 lines of foo.out.
		- Use the `-f` option to "follow" the output. It will continually update your terminal with any new output to the file.

MODULE COMMANDS

List available modules	`module av`	Any command can be shortened so long as it is unambiguous.
Add a module	`module load <module>`	The option "add" is synonymous with "load"
Remove a module	`module unload <module>`	The option "rm" is synonymous with "unload"
List loaded modules	`module list`	All modules loaded in your environment will be listed.
Always load a module	`module initadd <module>`	This will load the module every time you log in.