

Introduction to Modules at CHPC

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Overview of Talk

- Why Modules
- Where to find information
- How to setup to use modules
- Module basics
- Advanced Modules
- Demonstration

What modules do

- Modules are a way of managing the user environment in an interactive session or a batch job

Why Modules

- Modules lets users dynamically change the environment – including easily adding and removing directories needed for a given task from \$PATH etc – without needing to log out and back in
- Easy to switch between version of a package or application – again without having to log out and back in
- Useful when need to regularly use packages that have conflicts in their environment settings

Module Documentation at CHPC

- <https://www.chpc.utah.edu/documentation/software/modules.php>
- <https://www.chpc.utah.edu/documentation/software/modules-advanced.php>

We make use of TACC's LMOD

- <https://www.tacc.utexas.edu/research-development/tacc-projects/lmod>
- LUA based

All accounts automatically use modules –

- This is done via the login scripts CHPC provides all accounts, even if you have older dot files
- CHPC uses modules to set up environments upon login: `chpc/1.0`

Moving to use **ONLY** modules

- MAKE A COPY OF YOUR OLD ~/.bashrc AND ~/.tcshrc FIRST – especially if you have customizations!
- Copy the CHPC bashrc and tcshrc to your home directory

```
cp /uufs/chpc.utah.edu/sys/modulefiles/templates/bashrc ~/.bashrc
cp /uufs/chpc.utah.edu/sys/modulefiles/templates/tcshrc ~/.tcshrc
```
- Also copy

```
cp /uufs/chpc.utah.edu/sys/modulefiles/templates/custom.sh ~/.custom.sh
cp /uufs/chpc.utah.edu/sys/modulefiles/templates/custom.csh ~/.custom.csh
```

These allow you to customize your shell environment so that you do not have to load in modules that you always use every time

Recommendations & Helpful Hints

- Keep both the cshell and bash versions in your home directory
- DO NOT make changes in the .tcshrc and .bashrc
- Use the .custom.csh/.custom.bash to load modules for programs you want access to in ssh sessions
- Use .aliases file to create aliases – but do not set other environment variables in this file; if this file exists it will be sourced during login
- The software database mentions which installations have modules – if there is one you would like us to create, let us know!

Basic Module commands

- **module** - shows the list of module commands
- **module load <name>** - loads a module (shortcut: **ml <name>**)
- **module unload <name>** - unloads a module (or **ml -<name>**)
- **module avail** - shows a list of "available" modules
- **module list** - shows a list of loaded modules (also **ml**)
- **module help <name>** - prints help for a module
- **module show <name>** - prints the module file
- **module purge** - unload all modules
- **module swap <name1> <name2>** - swaps between two modules

Default, aliases, and hidden modules

- For some applications have a default module – one that is installed if you do not provide a specific version
 - **ml intel** will always load the latest version of intel (currently 2017.4.196)
- For some modules, especially those with long version names, there is also an alias defined
 - **ml intel/17** loads the default 2017 intel
 - **ml intel/17.0** loads the 2017.0.098 version
- With move to CentOS7 we are looking to depreciate older installations and their modules so some have been hidden
 - **module --show_hidden avail**

CHPC Module Organization

- Core
 - Contains modules for applications independent of both the compiler and MPI implementation
- Compiler
 - Contains modules for applications dependent on a compiler (& version) but not on a MPI implementation
- MPI
 - Contains modules for applications dependent on both a compiler and a MPI implementation

Modules themselves are named by application name/version

Module spider command

- Some modules are dependent on other modules
 - these modules are not listed when you do “module avail” unless the modules they depend on are loaded
- **"module spider"** shows all modules, including modules that aren't available
- Use **"module spider <name>"** to see a subset of modules, and how to load a specific module

Advanced Modules

- Users can create “save lists” for commonly needed environments
- Users can write and use their own modules, creating modules for their own installations
- Contact CHPC if you need assistance doing this

Getting Help

- CHPC website and wiki
 - www.chpc.utah.edu
 - Getting started guide, cluster usage guides, software manual pages, CHPC policies
- Jira Ticketing System
 - Email: issues@chpc.utah.edu
- Help Desk: 405 INSCC, 581-6440 (9-5 M-F)
- We use chpc-hpc-users@lists.utah.edu for sending messages to users; also have Twitter accounts for announcements -- @CHPCOutages & @CHPCUpdates