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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

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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

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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
- **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

Hidden modules

- With move to CentOS7 we are looking to depreciate older installations and their modules

- Use '--show_hidden" after module to show these:
    - module --show_hidden avail

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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

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