TSCC 101:
Managing the Environment with Modules

By: Mary Thomas

Basic Information

- TSCC User Guide:
  - https://www.sdsc.edu/support/user_guides/tscc.html
- You must have a TSCC account in order to access the system. To obtain a trial account:
  - https://www.sdsc.edu/services/hpc/tscc-purchase.html
- Online repo for companion tutorial/webinar information:
  - https://github.com/sdsc-hpc-training/tscc-tutorials/tree/master/tscc-101-Oct19
  - You should be familiar with running basic Unix commands: see the getting started tutorials at:
  - https://github.com/sdsc-hpc-training/tscc-tutorials/tree/master/tscc-101-Oct19/2-tscc-getting-started
- For TSCC consulting, contact TSCC support: tscc-support@ucsd.edu
- More training events listed at SDSC:
  - https://www.sdsc.edu/education_and_training/training.html

Obtaining a TSCC Free Trial Account

- **See:** https://www.sdsc.edu/services/hpc/tscc-purchase.html
- **For a free trial, email tscc-info@ucsd.edu and provide the following information:**
  - Name
  - Contact Information
  - Department
  - Affiliation: UCSD (grad student, post-doc, faculty, etc.), or Other
- **Trial accounts are 250 core-hours valid for 90 days.**
- **Username and password depend on your organization:**
  - UCSD Active Directory password
  - Other: use SSH Key with password

TSCC: System Environment

- **See:** https://www.sdsc.edu/support/user_guides/tscc.html#env-modules

- **Modules are used to manage environment for users.**

- **Default environment:**

  $ **module list**

  Currently Loaded Module files:

    1) intel/2013_sp1.2.144   2) mvapich2_ib/2.1   3) gnutools/2.69

- **Listing available modules:**

  $ **module av**

  ----------------------- /opt/modulefiles/mpi/.intel -----------------------

  intelmpi/2016.3.210(default) mvapich2_ib/2.1(default)

  mvapich2_gdr/2.1(default)   openmpi_ib/1.8.4(default)

  mvapich2_gdr/2.2

  -------------------- /opt/modulefiles/applications/.intel --------------------

  atlas/3.10.2(default)   lapack/3.6.0(default)   scalapack/2.0.2(default)

  boost/1.55.0(default)   mxml/2.9(default)   slepc/3.6.2(default)

  …

  …

Modules: Common Commands

Command	Description
module list	List the modules that are currently loaded
module avail	List the modules that are available
module display <module_name>	Show the environment variables used by and how they are affected
module show <module_name>	Same as display
module unload	Remove from the environment
module load	Load into the environment
module swap or switch	Replace with in the environment

Module locations & contents

- /usr/share/Modules/modulefiles
- /etc/modulefiles
- /opt/modulefiles/mpi/
- /opt/modulefiles/applications
- /opt/modulefiles/applications/.pgi

Module Command Examples

- Default environment: list, li

```
[user] module li
Currently Loaded Module files:   1) intel/2013_sp1.2.144   2) mvapich2_ib/2.1       3) gnutools/2.69
```

- List available modules: available, avail, av

```
[user] module av
[snip]
-------------------------------- /opt/modulefiles/applications --------------------------------
abyss amber bbcp bbftp beast bioroll biotools cpmd
ddt fsa gamess gaussian idl jags matlab nwchem
octave R rapidminer scipy siesta tecplot vasp/4.6 vasp weka

[snip]
-------------------------------- /opt/modulefiles/applications/.pgi ----------------------------
-
fftw/2.1.5 fftw gsl hdf4 hdf5
lapack netcdf/3.6.2 netcdf parmetis
scalapack sprng sundials superlu trilinos

… MORE….
```

Scripts for Loading Modules

```
[user] module purge    #cleanup
[user] module load gnutools
[user] module load intel mvapich2_ib
[user] Module list    #check that you have what you want
```

Create module/env loading scripts

```
[user] cat loadintelenv.sh
# Using the Intel Compilers (Default/Suggested)
module purge    #cleanup
module load gnutools
module load intel mvapich2_ib
Module list    #check that you have what you want
```