TSCC Bootcamp: Introduction to Accessing and Running Jobs on the TSCC System

Managing the Environment with Modules

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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/mpi/.pgi
- /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….
```

Suggested Steps to Creating Env:

```
[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
```

DON’T USE

Module Command Examples

- Load a module, and show what it does

```
[$USER@tscc-ln3:~/tscc-examples] env
HOSTNAME=tscc-ln3.sdsc.edu
IPPROOT=/opt/intel/composer_xe_2013_sp1.2.144/ipp
INTEL_LICENSE_FILE=/opt/intel/composer_xe_2013_sp1.2.144/licenses:/opt/intel/licenses:/root/
intel/licenses
TERM=xterm-256color
SHELL=/bin/bash
HISTSIZE=5000
GDBSERVER_MIC=/opt/intel/composer_xe_2013_sp1.2.144/debugger/gdb/target/mic/bin/gdbserver
SSH_CLIENT=169.228.105.171 58704 22
[SNIP]
HOME=/home/user
ROLLSROOT=/opt/rocks/share/devel/src/roll
MPIHOME=/opt/mvapich2/intel/ib
FFTWHOME=/opt/fftw/3.3.4/intel/mvapich2_ib
SDSCHOME=/opt/sdsc
PYTHONPATH=/opt/sdsc/lib
LOGNAME=user
QTLIB=/usr/lib64/qt-3.3/lib
CVS_RSH=ssh
SSH_CONNECTION=169.228.105.171 58704 198.202.113.252 22
MODULESHOME=/usr/share/Modules
MKL_ROOT=/opt/intel/composer_xe_2013_sp1.2.144/mkl
LESSOPEN=||/usr/bin/lesspipe.sh %s
INFOPATH=/opt/intel/composer_xe_2013_sp1.2.144/debugger/gdb/intel64/share/info/:/opt/intel/c
omposer_xe_2013_sp1.2.144/debugger/gdb/intel64_mic/share/info/
DISPLAY=localhost:42.0
INCLUDE=/opt/intel/composer_xe_2013_sp1.2.144/mkl/include
INTELHOME=/opt/intel/composer_xe_2013_sp1.2.144
G_BROKEN_FILENAMES=1
BASH_FUNC_module()=() {  eval `/usr/bin/modulecmd bash $*`
}
_=/bin/env
```