

Lmod: An Environment Module System

Robert McLay

The Texas Advanced Computing Center

November 19, 2013



My Passions

- Make life easier for all w/o getting in the way.
- Automate when possible to eliminate repeat tickets.
- Manage TACC's Software Hierarchy.
 - Match libraries and apps to compiler and MPI stacks.
 - End the bleeding when users swap compiler or MPI modules!!
- Lmod was born in 2009.

Lmod Features (I)

- A modern replacement for a tried and true solution.
- Especially useful w/ software hierarchy \Rightarrow Can't load mismatched modules.
- Automatically swaps in the libraries (e.g. Boost, fftw, PETSc) compatible with the current compiler/MPI stack.

Lmod Features (II)

- Allow only one module of a given “name” at a time.
- Prevents loading more than one compiler or MPI Stack (expert can override!).
- Users can save default set of modules and their owned named collections.
- Active development and user community.
- Robust regression testing allows for easy refactoring.

Lmod for Developers: settarg

- Provide safety, flexibility and repeatability in a dynamic environment.
- Encapsulates the state of the modules loaded and dynamically updates the state when modules change:

```
$ env | grep '^TARG'  
TARG_BUILD_SCENARIO=dbg  
TARG=OBJ/_x86_64_dbg_gcc-4.6_mpich-3.0  
TARG_MPI_FAMILY=mpich  
TARG_MPI=mpich-3.0  
$ module swap mpich openmpi; opt; env | grep '^TARG'  
TARG_BUILD_SCENARIO=opt  
TARG=OBJ/_x86_64_opt_gcc-4.6_openmpi-1.6  
TARG_MPI=openmpi-1.6  
TARG_MPI_FAMILY=openmpi
```

Thanks for your attention!

- Job Level Analytics BoF Wednesday 11/20 @ 5:30 to 7:00pm
- Lmod BoF (TACC Booth: Wednesday 11/20 @ 12:00 to 12:30pm)
- lmod.sf.net, www.tacc.utexas.edu/tacc-projects/lmod
- lmod-users@lists.sourceforge.net