

Lmod BoF at SC'12

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Introduction

- What is Lmod?
- Recent Features
- Topics For Discussion
- For more information.

What is Lmod?

- Lmod is yet another Environment Module System.
- Similar to Cmod, TCL/C Modules, Softenv, DOTKIT
- Lmod Features:
 - Supports Multiple Compiler/MPI Stacks.
 - Automatically swaps dependent modules: petsc, fftw3.
 - Reads TCL module files or Lua module files.
 - Implemented in Lua.

Recent Features

- Case-insensitive searching with “module spider”
- spider, keyword, avail and help now use \$PAGER
- A standard way to support site packages.
- getdefault/setdefault becoming save/restore
- Module files can have properties: MIC, Apps/Lib, ...
- module wrapper command for the typing challenged: “ml”
- Version Parsing: 5.6 is now older than 5.10
- Mailing list: Imod-users@lists.sourceforge.net

Save / Restore

- `getdefault/setdefault` becoming `save/restore`
- `module restore` load user's default or system default when user's default doesn't exist
- `reset` and `getdefault/setdefault` will be deprecated.

Module Properties

- TACC is deploying Stampede with MIC accelerators
- Some modules will be “MIC” aware: mkl, fftw3, phdf5, ...
- Lmod will decorate these modules:

1) unix/unix	3) ddt/ddt	5) mpich2/1.5	7) phdf5/1.8.9 (m)
2) intel/13.0	4) mkl/mkl (*)	6) petsc/3.2	8) PrgEnv

Where:

(m): module is build natively for MIC

(*): module is build natively for MIC and offload to the MIC

add_property("arch","mic") -- > phdf5

add_property("arch","mic:offload") -- > mkl

- What properties would you like to support?

For those who can't type: “ml”

- ml is a wrapper:
 - With no argument: ml means module list
 - With a module name: ml foo means module load foo.
 - With a module command: ml spider means module spider.
- See ml --help for more documentation.
- With ml, you never need to spell “moduel, moudule, module” correctly again.

Module version sorting

- Old way lexicographically sort: 5.6 is newer than 5.10
- New way 5.10 is newer than 5.6
- Old to new: 2.4dev1, 2.4a1, 2.4rc2, 2.4, 2.4-1, 2.4.1
- Same: 2.4-1, 2.4p1, 2.4-p1
- Old to new: 3.2-shared, 3.2

Questions for users of Lmod

- How big are your system?
- Any of you use a lustre based home file system?
- Biggest headaches with Module Systems or Lmod:
 - Trouble dealing with staff?
 - Trouble converting users?
- Software Hierarchy vs Prereq/Conflict?
- Best story/Worst Story in dealing with Modules/Lmod?

Topics to Discuss

- Getting Bash to work right.
- Leveraging Lmod to know what software your users are using.
- Using modulefiles and a package manager (e.g. rpm)
- Using SitePackage.
- Feature requests.

Projects

- Fast directory tree walker for lustre. (similar functionality to luafilesystem) (Anyone interested?)
- Allow users with personal modules use system caches (R. McLay)
- Produce Json output of entire module system to populate system software web-pages (R. McLay - just completed)
- Support for options after commands: `module keyword --prop mic`
- Other support for properties: searching?,
- What happens when a site wants two or more sets of properties?

For more information

- Download source from: lmod.sourceforge.net (lmod.sf.net)
- Documentation:
www.tacc.utexas.edu/tacc-projects/mclay/lmod
- Introduction to Lmod talk at lmod.sf.net.
- Best Practices Paper from SC'11

.lmodrc.lua

```
propT = {  
  arch = {  
    validT = { mic = 1, offload = 1, gpu = 1, },  
    displayT = {  
      ["mic:offload"] = { short = "(*)", color = "red", doc = "...", },  
      ["mic"] = { short = "(m)", color = "blue", doc = "...", },  
      ["offload"] = { short = "(o)", color = "blue", doc = "...", },  
      ["gpu"] = { short = "(g)", color = "magenta", doc = "...", },  
      ["gpu:mic"] = { short = "(gm)", color = "magenta", doc = "...", },  
      ["gpu:mic:offload"] = { short = "(@)", color = "magenta", doc = "...", },  
    },  
  },  
}
```

Getting Bash to work right

- At TACC we rebuild bash so that it reads `/etc/bashrc` on interactive shells.
- It also reads `/etc/bash_logout` on logout.
- We patch `config-top.h` to change bash behavior.
- Ubuntu does the same, Red Hat does not.

SitePackage

- Lmod now has a standard way to include site-specific functions
- See Contrib/SitePackage for details

Track software usage

- Track software usage via syslog or logout data.
- Lmod can build a reverse map: directories to modules