TEXAS ADVANCED COMPUTING CENTER

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TEXAS
The University of Texas at Austin

Lmod at EB user Meeting

Robert McLay

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Introduction

- Features and History
- Advanced Topics
- Future work?

Features

- Reads for TCL and Lua modulefiles
- One name rule.
- Support Software Hierarchy (but not required!)
- Spider Cache: fast `$ module avail`
- Properties (gpu, mic)
- Semantic Versioning: 5.6 is older than 5.10
- family("compiler") family("mpi") support
- Optional Tracking: What modules are loaded?
- Many other features: ml, collections, hooks, extended default, nag ...

depends_on()

- Modules X and Y depends on Module A
- ml purge; ml X; ml unload X; $\Rightarrow$ unload A
- ml purge; ml X Y; ml unload X; $\Rightarrow$ keep A
- ml purge; ml X Y; ml unload X Y ; $\Rightarrow$ unload A
- ml purge; ml A X Y; ml unload X Y ; $\Rightarrow$ keep A

Dynamic Cache files for Large Module Trees

- Groups that have a large number of specialize modules.
- Want Opt-in for these modules

Dynamic Cache files for Large Module Trees (II)

- bioPkgs.lua

```
prepend_PATH("LMOD_RC", "/path/to/cache_descript/descript.lua")
if ( mode() ~= "spider") then
   prepend_path("MODULEPATH","/path/to/bioPkgs")
end
```

- descript.lua

```
scDescript = {
   {
      dir = "/path/to/bioPkg/cacheDir",
      timestamp = "/path/to/bioPkg/timestamp.txt",
   },
}
```

Lmod 8+ new features

- Extended Default
- The TCL interpreter is now (optionally) embedded with Lmod.
- New Function:
  `extensions("numpy/1.16.4","scipy/1.4")`
- A better way to handle special modules

Extended Default

- Long version number are a pain. (e.g. intel/18.0.4)
- With Extended Default: module load intel/18 will load the "highest" or marked default.
- Useful: Want to load intel/17 but don't remember which is the latest 17.0.* and intel/19.0.5 is the default.

Embedded TCL interpreter

- Lmod now embeds the TCL interpreter.
- Speeds up avail and load when there are many ".version" or ".modulerc" files.
- It is still faster to use ".modulerc.lua" files over TCL version files.

extensions() function

- extensions(): Tells users that a module has extensions
- E.G: python has numpy and scipy
- `extensions("numpy/1.16.4, scipy/1.4")`

extensions() function (II)

- Users can use spider to find extensions.
- Users can use avail to list extensions base name
- See examples

Checking your module tree 8.4.3+

- New command added: `$LMOD_DIR/check_module_tree_syntax`
- Reports syntax errors across the entire $MODULEPATH
- Report which modules have multiple marked defaults sets
- Precedent order: default symlink, .modulerc.lua, .modulerc, .version
- Does not check SYSTEM MODULERCFILE for defaults.

Knowing what kind of default your module is (I)

- A user does "`module load Foo`"
- With Version Foo/foo and Foo/3.12
- Lmod must pick something.
- Suppose version 3.12 is the default.

Knowing what kind of default your module is (II)

- Lmod uses “loose version” idea from python.
- Version 3.12 ⇒ “00003.00012.*zf”
- Version foo ⇒ “*foo.*zf”
- Marked default ⇒ “^0003.00012.*zf”
- System Modulerc ⇒ “s0003.00012.*zf”
- User Modulerc ⇒ “u0003.00012.*zf”
- Ascii order: *, 0,1,2, ..., 9, ^, s, u

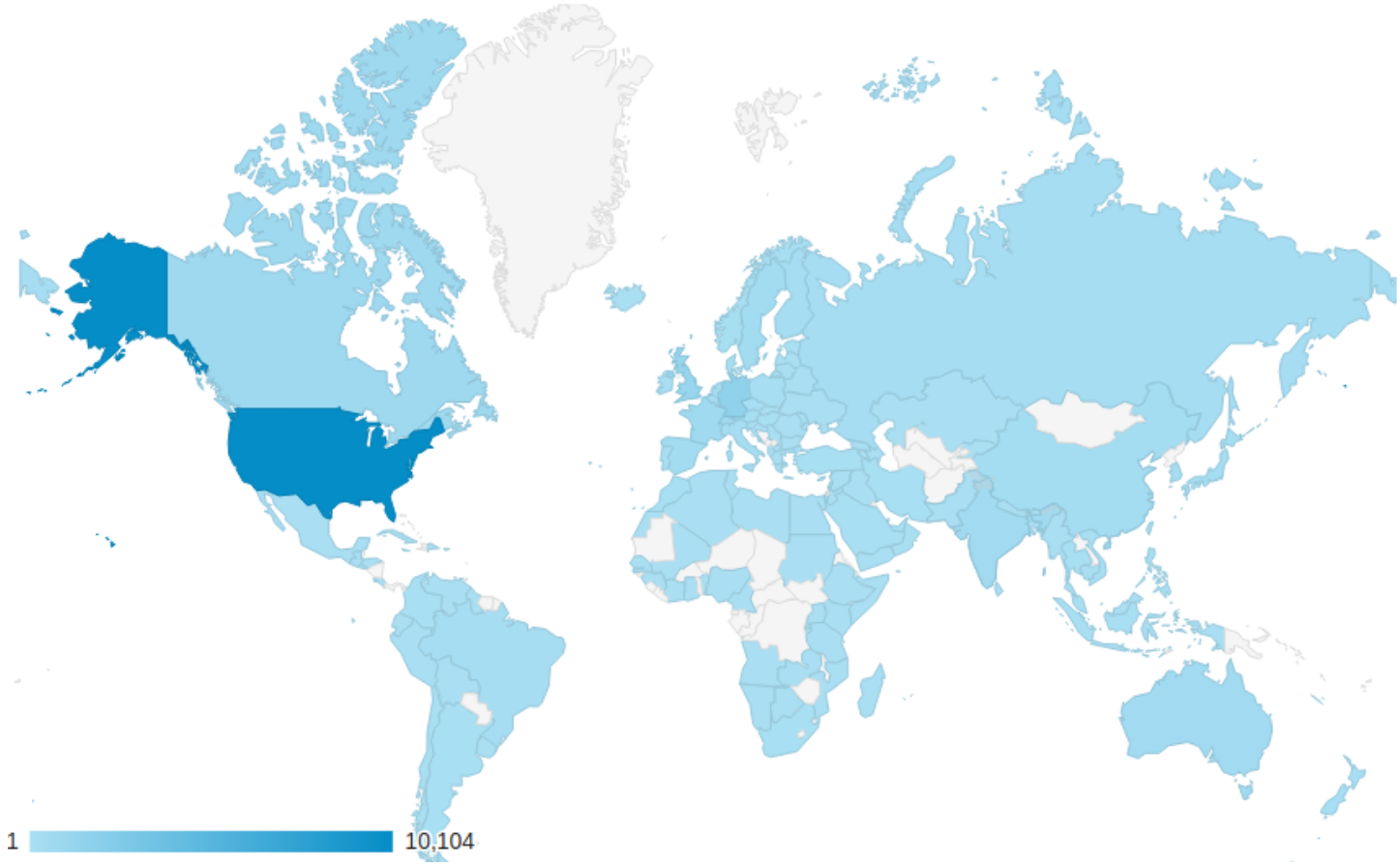
Knowing what kind of default your module is (III)

- Lmod sorts loose version strings to find the highest.
- Lmod now copies the loose version string to module table in the user env.
- Show example of “ml –mt” from Lmod 8.4.20
- New function Mname:defaultKind() available in SitePackage.lua:
- Returns: none, marked, system, user

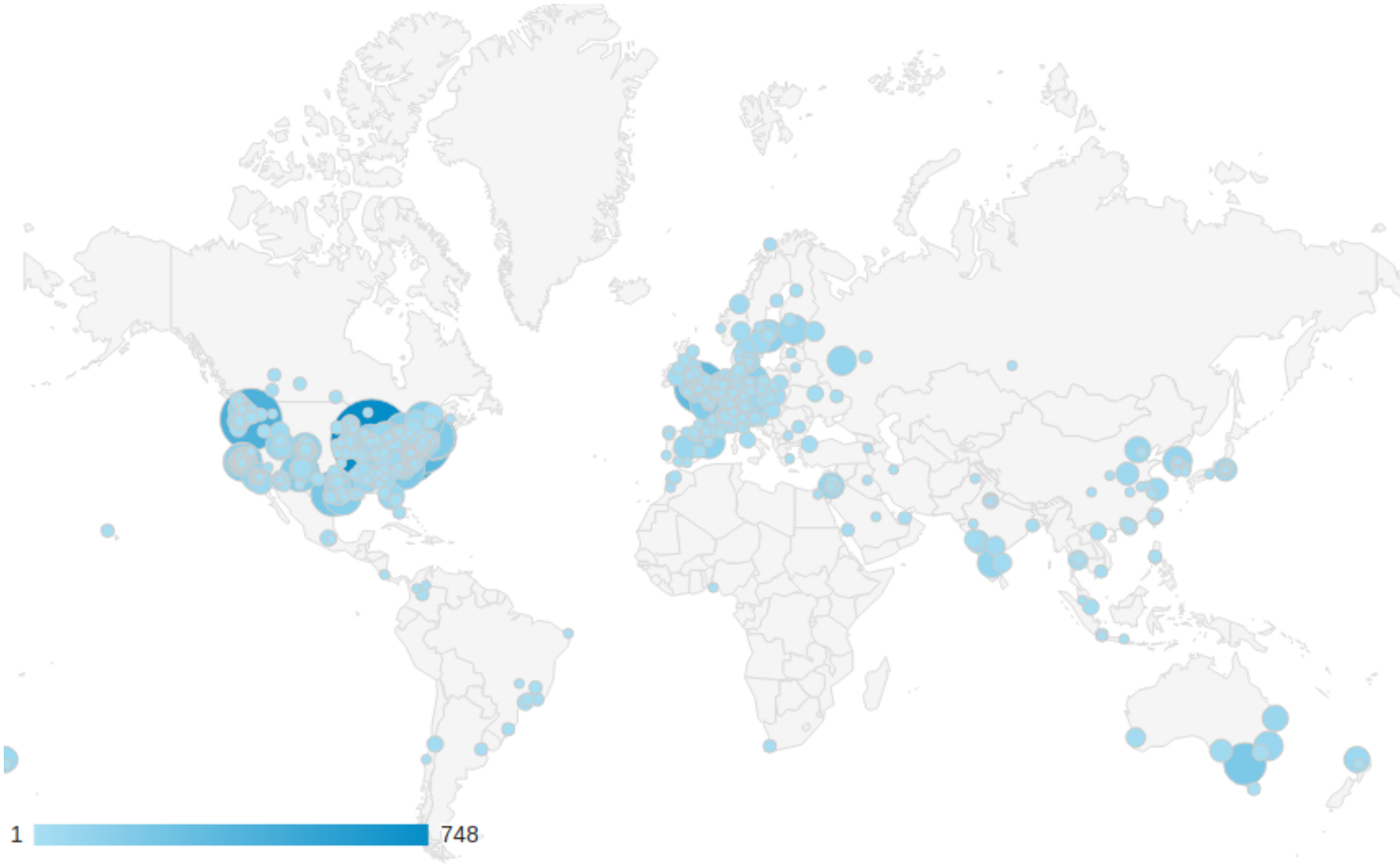
Future Work

- Lmod can optionally track usage.
- Future: Make it easier to not remember loads after 1 year.
- Get Lmod to support the break function.
- Support for Tmod4's advanced version specifiers `module load foo@2.4:2.8`
- A monthly discussion group?

Lmod Doc usage by Country



Lmod Doc usage by City



Conclusions: Lmod 8+

- Latest version: https://github.com:TACC/lmod.git
- Stable version: http://lmod.sf.net
- Documentation: http://lmod.readthedocs.org