What is special about Lmod

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Outline

- What is Lmod?
- What makes Lmod special?

What is Lmod?

- Lmod is a tool that allows users to control their enviroment
- Users do "`module load` *acme*" to access the packages they need.
- The system doesn't chose, the users do!

What make Lmod special?

- Lmod invented here at TACC to solve a number of issues
- One of them was the software hierarchy.
- The problem is that libraries or applications depend on the compiler they where built with.
- Software built with one compiler won't work another compiler
- Software built with two different version of the same compiler won't work either.
- So users need to pick matching libraries or applications
- There are similar issues with the MPI libraries.

The Software Hierarchy: Core

- Many sites follow TACC lead by using the hierarchy
- We have Core applications which do not depend on Compilers
- Applications like git or cmake
- Also compilers are Core applications

Chosing a Compiler

- Load a compiler module prepend to $MODULEPATH
- This adds more packages to be loaded.
- In this case only package that will work are available!

Compiler dependent Libraries are available

- Only libraries like Boost (the C++ libraries) that match are available
- Libraries like Boost built for other compilers won't be available.

What happens when a user changes compilers?

- Lmod keeps track of changes to $MODULEPATH
- If $MODULEPATH changes then Lmod reloads modules that need to be reloaded.
- In other words if a user unloads gcc and loads intel then the appropriate boost module will be reloaded.
- Show example.

Conclusions

- Lmod has many many more features
- See the documentation here: https://lmod.readthedocs.io/en/latest/
- The source code: https://github.com/TACC/Lmod