

Spack Updates
HSF Packaging Meeting
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CMSSW with Spack on SL7

- Goal: Build all CMSSW libraries and executables on SL7 with Spack.
- All CMSSW external link dependencies added as spack packages with generation of scram xml files.
 - <https://github.com/gartung/cmssw-spack>
- Many runtime dependencies missing, especially python packages with the generation of scram xml files.

FWLite with Spack on MacOS

- Updated FWLite build to latest version of CMSSW.
- Noticed that relocation took a long time. Running `install_name_tool` for each library and each dependency. Many internal and external libraries linked just to be safe.
- Submitted a pull request to run `install_name_tool` once per MachO file.
 - <https://github.com/spack/spack/pull/6740>
- Fixed CMSSW top level `gmake` file to set library ID to `@rpath/libraryname` instead of some path in `tmp` where library was linked.

MacOS build distribution

- How do you distribute a spack build on MacOS without changing rpaths?
- I previously installed spack in /Application/spack and made tarball to download and extract in same location.
- What if user is not in admin group and can't install clang or an application. (Think student in a computer lab.)
- Any user can mount a disk image
- Created sparse disk image with hdiutil. This is a read/write image format that grows as needed and can be compacted. The disk image is automatically mounted under /Volumes/VolumeName
- After compacting and compressing sparse disk image is about the same size as the tarball of /Applications/spack

Making a disk image

- `hdiutil create -size 100G -volname Fireworks -fs HFS+ fireworks-10.12.sparseimage`
- `hdiutil attach fireworks-10.12.sparseimage`
- `cd /Volumes/Fireworks && git clone https://github.com/spack/spack.git`
- `spack build ...`
- `hdiutil detach /Volumes/Fireworks`
- `hdiutil compact fireworks-10.12.sparseimage`
- `bzip2 -c fireworks-10.12.sparseimage > fireworks-10.12.sparseimage.bz2`

Disk images built

- Created one for FWLite/Fireworks
 - Used Homebrew to install clang 5.0, gfortran 7.0 and build utils like cmake in /Volumes/Fireworks
 - Used spack to build FWLite and its dependencies in /Volumes/Fireworks
 - Added script and symbolic links to /Volumes/Fireworks/bin/ to setup runtime environment and start cmsShow.exe
- Created one with just Homebrew packages
- Created one with Gentoo Prefix installation
 - Had to install gnutls to get the bootstrap script to work
 - The bootstrap builds clang 5.0 as the primary compiler
 - Build of gcc/gfortran with clang 5.0 has so far failed.

Spack resources

- Documentation central
 - <https://spack.io>
- Tutorial
 - <https://spack.readthedocs.io/en/latest/tutorial.html>