



Management of External Dependencies

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Reminder: Why externals Management

- CORSIKA 8 depends on external packages
- From system
 - Shareable
 - Version system and/or installation dependent
- Installed in user space
 - Fix versions
 - Fix options (if needed)
 - Need tool to manage
 - Cannot request user to pre-install manually
 - Need disk space
 - Disk space cheaper than developer time
 - ☞ Look for easy, controlled (by CORSIKA team) installation
 - ☞ Accept duplication

Package managers for C++

🕒 https://hackingcpp.com/cpp/tools/package_managers.html

Conan



🏠 Website

📄 Docs

🔄 GitHub

- decentralized
- works with many build systems: CMake, MSBuild, ...
- binary packages

⬇️ Download

🪟 Installer

```
$ pip install conan
```

```
$ brew install conan
```

```
$ yay -S conan
```

vcpkg



🏠 Website

📄 Docs

🔄 GitHub

- Visual Studio integration
- CMake support
- only builds from source



```
$ git clone https://github.com/Microsoft/vcpkg.git
```

```
$ ./vcpkg/bootstrap-vcpkg.sh
```

Spack



🏠 Website

📄 Docs

🔄 GitHub

- programming-language agnostic (C, C++, Python, R, ...)
- originated in HPC / scientific computing community
- can install many coexisting variants of library package versions and build configurations

... and a few more

Conan

- Upgrade to conan ≥ 2 pending
 - Install of packages works (Jean-Marco)
 - cmake needs fixing
- `pip install conan` is very simple
 - better in venv...
- Problems with new compilers etc
 - Sometimes no binary for package/compiler combination
 - clang more problematic than gcc
 - can / have to build from source
- Non-standard cmake integration
 - changed in version 2
 - cannot switch to system or local installation of package

spack

- HPC standard
 - generate `module` tool interface
- Installation slightly more involved
- Freezes dependency resolution: automatically (stability!)
- Less than 1 day of work to get all of CORSIKA8
 - including new recipes for PROPOSAL and cubic interpolation
- Provides file-system view of installed packages
- Standard cmake tools for finding packages
 - `findpackge`, `pkgconfig`, ...

spack testing

- Need to update CORSIKA 8 cmake
- Looks promising
- In the future: spack install corsika8
- Wrapper and documentation for CORSIKA 8...

ninja support

- Faster than make
 - Better dependency tracking
 - Reliable parallel build
 - Thread or load limits to determine threads
- Problems with pythia
- FORTRAN support fixed ...