

Towards more common build tools - experience with using spack in HEP


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Building Software

Software projects in high energy physics heavily rely on other software being developed inside and outside of the field.

Creating a consistent and working stack out of 100s of packages, on a variety of platforms is a non-trivial task.

This complex problem lead to the creation of multiple build tools within the field and a heavy duplication of efforts.

 **HSF Packaging WG Report**
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Build Tools

Via the HSF we analyzed 9 existing build tools for:

- Supported Platforms and Environments
- Ability to handle multiple environments and version combinatorics
- Ease of Use and Deployability
- Community Support

and identified spack as a potential candidate for a common solution.

Spack

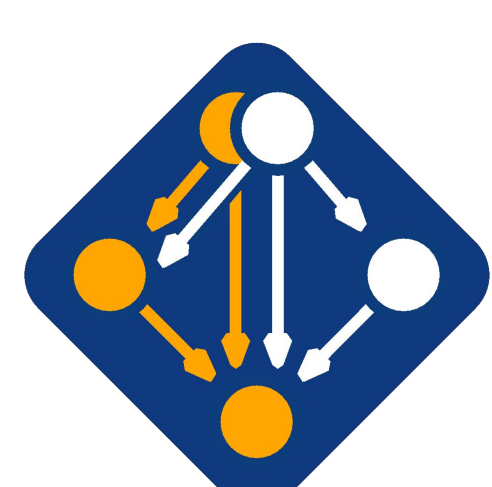
Spack is a package manager developed in the context of HPC:

- More than 300 packages
- Support for deployment and runtime
- Multi-platform + multi-OS support

Its unique feature is the *concretization* machinery allowing to build a consistent and reproducible stack out of constrains such as package versions and compatibilities.

As not relevant in HPC, spack did not support

- Full relocatability
- Binary caching of results
- Software “views”



<http://github.com/LLNL/spack>

Spack in HEP

Contributing the missing functionality to the project, we could easily solve all issues brought up in the HSF build tool comparison.

To complete the evaluation, we created an overlay project adding HEP-specific packages:

<https://github.com/HEP-SF/hep-spack/>

such as

- Geant4
- ROOT
- AIDA, fastjet, HEPMC

and an increasing set of event generators.

Spack now provides all functionality required for a HEP wide build tool.