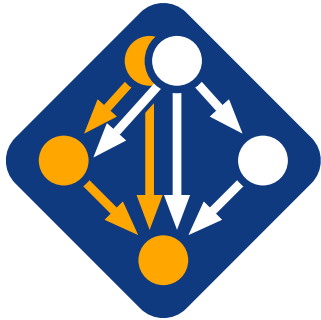




Spack

A Package Manager For Supercomputers

Many installations of the **same** software but with different:

- ▶ Hardware
- ▶ Versions
- ▶ Compilers
- ▶ Flags
- ▶ Dependencies

Example MPI:

18 providers x 30 versions x 6 compilers x 22 flags x 31 dependencies =
= **2 Million variants** on VSC-5 alone!

Three Spack Trees



VSC-4
Intel
CPU
skylake



VSC-5
AMD
CPU
zen



VSC-5
AMD
GPU
cuda-zen

The current spack tree is shown on the left of the command line **prompt**:

```
1 zen trainee00@l55:~$  
2 cuda-zen trainee00@l55:~$  
3 skylake trainee00@l44:~$
```

On login the **spack tree** for the current architecture is set.

Packages from one tree do not work on other architecture!

All spack commands work on the **current tree**.

Type **skylake**, **zen** or **cuda-zen** to **switch** to a spack tree:

```
1 zen trainee00@l55:~$ cuda-zen
2 cuda-zen trainee00@l55:~$ skylake
3 skylake trainee00@l55:~$ zen
4 zen trainee00@l55:~$
```

You are on the **same node** 155 the whole time.

Find your package, like **openmpi**:

```
1 zen trainee00@l55:~$ spack find openmpi
```

Use "@" to show specific **version** only:

```
2 zen trainee00@l55:~$ spack find openmpi@3
```

```
3 zen trainee00@l55:~$ spack find openmpi@4.1.4
```

All **python** packages have a leading "*py-*" like in **py-numpy**.

All **R** packages start with "*r-*" like in **r-brew**.

Add `-l` to show the unique package **hash** too:

```
1 zen trainee00@l55:~$ spack find -l openmpi@4.1.4
2 -- linux-almalinux8-zen / gcc@8.5.0 -----
3 3yligjt openmpi@4.1.4
4 ...
```

Use **any** spack command with this hash, and a "/" in front:

```
2 zen trainee00@l55:~$ spack find -l /3yligjt
3 -- linux-almalinux8-zen / gcc@8.5.0 -----
4 3yligjt openmpi@4.1.4
5 ==> 1 installed package
```

Use **spack search** to search for a **hash** of an old VSC installation:

```
1 zen trainee00@l55:~$ spack search /asdc2mk
2
3 ==> The hash asdc2mkqlgtelulq5nu6ctd4b5stefag refers to python from vsc4 w
4     python +bz2+ctypes+dbm~debug+libxml2+lzma~nis~optimizations+pic+pyexpa
5
6 ==> Similar python packages in installation zen:
7 -- linux-almalinux8-zen / gcc@8.5.0 -----
8 ...
```