Exa-DI
WP3

Software Integration

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Challenge

Context:

(Post-)Exascale apps are becoming increasingly **difficult to build, deploy and maintain** under the double pressure of the **growing machine complexity** and the applications' needs to combine **multiple compute and data processing paradigms (HPC+HPDA+AI).**

At Stake:

Need for **HPC DevOps (HPCOps) methodologies and tools** to enhance **productivity** and enforce **interoperability**, **portability** as well as **reproducibility**.

Numpex

Empowering users beyond modules with modern **Package Managers**

Pack-Man versus Modules:

For users: more flexibility, better portability and reproducibility

For compute centers: reduced support effort

Pack-Man versus Containers:

A rich environment of user-level tools:

"virtual env", "rollback", "transformation", "tune", "test"

More flexible: can work in a containerized env or not.

Numpex

Progressive transition:

Pack-Man can produce containers:

guix pack -f docker mysoft

Pack-Man can produce modules:

guix module create -o /opt/modules. mysoft

Pack-Man native install at compute center (with build nodes for sharing and enforced security):

guix install mysoft

Numpex supports 2 Pack-Man:

Spack (https://spack.io/)

- Relaxed isolation

Guix (https://hpc.guix.info/)

- Strong isolation (down to libc)

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Looking for early adopters!

Core team:

Lead: Bruno Raffin, INRIA, Benoit Martin, CEA
Part time participants: Ludovic Courtes, INRIA, Pierre Neyron, CNRS, Julien Bigot, CEA
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