**Nix**[^1]: The Purely Functional Package Manager

- **Reliable** and **reproducible**
- **Runs on Linux and MAC OS**
- **Pure**: no deps outside the "Nix store"
- **Users can install/create packages without root access**

Try it! → `curl https://nixos.org/nix/install | sh`

**Nixpkgs repository[^2]:**
- 6,500 packages

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**Experiment: HPC & Nix**

**Administrator’s feedback**

- Multi-user mode, shared and optimized binary cache
- Isolated development environment
- CIMENT’s HPC channel linked to the nixpkgs channel[^4]
- Contributions in Nixpkgs (Gildas, Intel Support, iRODS, cdo, OpenFoam...)

**User’s feedback**

- Users can install the same environment on their workstation
- Power users can develop their own packages
- Upgrades without side effect
- Easy environment switching, rollbacks & updates.

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**Development & Perspectives**

Ex. of scientific Nix package application

```nix
{ stdenv, fetchurl, curl, hdf5, netcdf, enable_cdi_lib ? false
, enable_all_static ? false , enable_cxx ? false |

stdenv.mkDerivation rec {
    version = "1.7.2";
    name = "cdo-" + version;
    # Dependencies
    buildInputs = [ curl netcdf hdf5 ];
    src = fetchurl {
        url = "https://code.zmaw.de/attachments/download/12760/" + name + ".tar.gz";
        sha256 = "4c43eba7a95f77457f74d6b3d0f23824b5b2264101c5d00a0060c7e697";
    };
    # Configure phase
    configurePhase = "--enable-netcdf --enable-hdf5 --enable-cdi-lib  
                    --enable-all-static --enable-cxx --enable-cdi-lib 
                    --enable-all-static --enable-cxx 
                    --enable-cxx";
    meta = {
        description = "Collection of command line Operators to manipulate and 
                      analyse Climate and NWP model Data"
        homepage = "https://code.zmaw.de/projects/cdo/"
        license = stdenv.lib.licenses.gpl2;
        platforms = stdenv.lib.platforms.linux;
    };
}
```

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**Advantages**

- Reproducibility of the experiments
- Sharing HPC packages
- Portability (optimization included)
- International community for development

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**Contacts**

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  - Frédéric Audra, Philippe Bays, Bruno Breznik,
  - Olivier Henriot, Franck Pérignon, Olivier
  - Richard, Françoise Roch, Laure Tavard

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**References**

[^1]: [http://nixos.org/nix/](http://nixos.org/nix/)
[^2]: [https://github.com/NixOS/nixpkgs](https://github.com/NixOS/nixpkgs)
[^3]: [https://gricad.univ-grenoble-alpes.fr/a-propos/pole-calcul](https://gricad.univ-grenoble-alpes.fr/a-propos/pole-calcul)
[^4]: [https://gricad.github.io/calcul/](https://gricad.github.io/calcul/)