I use NixOS btw...
Learnings from 2 years daily driving NixOS

Nix Trinity

NIXOS

A declarative operating system building on top of the Nix package manager.

> Turn your OS into an executable program.

NIX PACKAGE MANAGER

A declarative package manager building on the Nix language.

NIX LANGUAGE

A functional programming language.

> A DSL for producing reproducible builds.

Nix Language

Expressions

```
 1 let
 2   x = 1;
 3 in
 4   {
 5     a = {
 6       b = true;
 7     };
 8     d.e.f = "hello";
 9     y = x;
10     config = builtins.readFile ./config.ini;
11   }
```

Nix Language

Derivations

Context

- Definition of a package
- Fully reproducible

Content

- A single closure
- Source code
- Build dependencies
- Runtime dependencies

Support

- Using library functions for better abstractions
- Most standard builders are supported

```nix
rustPlatform.buildRustPackage rec {
  pname = "presenterm";
  version = "0.10.1";

  src = fetchFromGitHub {
    owner = "mfontanini";
    repo = "presenterm";
    tag = "v${version}";
    hash = "sha256- ... 06HsX28mLvTrWh5yIbo/a54M=";
  };

  buildInputs = [
    libsixel
  ];

  # ...
}
```

Nix Package Manager

Nix Store

```
/nix/store/sm724q6cyqwwghbadxssw9v2xyns56yn-python3-3.11.9
/nix/store/zr51xbkmmkflpp1nm433vfgpkndhp64d-python3-3.11.9
```

Package Registry

nixpkgs Public

Sponsor   Edit Pins   Watch 274   Fork 15.1k   Star 19.6k

nixos-unstable   209 Branches   126 Tags

Go to file   Add file   Code

This branch is 1093 commits behind master .   #388006

wegank libcupsfilters: 2.1.0 -> 2.1.1 (#383227)   e3e32b6 · 2 days ago   764,837 Commits

📁 .devcontainer	.devcontainer: tweaks	2 months ago
📁 .github	build(deps): bump actions/create-github-app-token from 1.1...	last week
📁 ci	OWNERS: Add @hsjobeki to lib files	last week
📁 doc	testers.shellcheck: refactor, update docs, and simplify tests ...	3 days ago
📁 lib	lib/strings: allow CA paths in isStorePath	last week

About

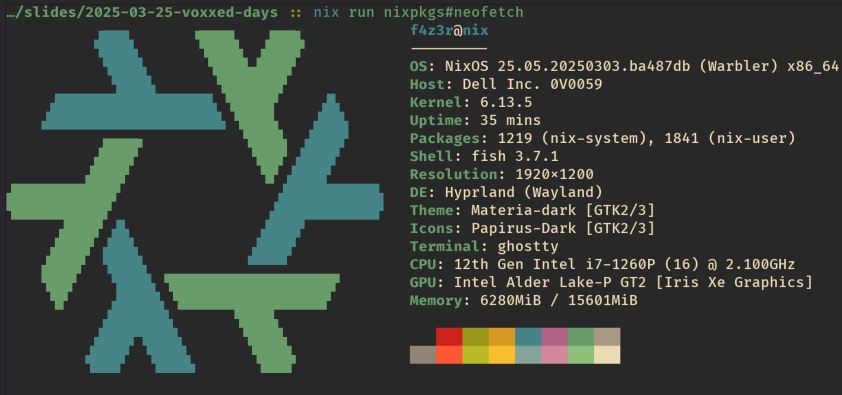Nix Packages collection & NixOS

linux nix nixos nixpkgs

hacktoberfest

□ Readme
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□ Code of conduct
□ Security policy
∿ Activity
□ Custom properties
☆ 19.6k stars
👁 274 watching

NixOS

- Entire OS managed by Nix
- Fully reproducible
- Only data not replicated

https://github.com/f4z3r/nix

Use Cases

Dev Environments

- Pin tooling
- Ensure consistency
- Use abstractions: **DevBox** (https://www.jetify.com/devbox)

CI/CD

- Define pipelines as code
- Run locally

Fleet Management

- Server management
- Replacement for pre-built ISOs / Packer

Use Case: DevBox

```json
{
  "packages": [
    "python312Packages.presenterm-export@0.2.7",
    "presenterm@0.10.1",
    "d2@0.6.9"
  ],
  "shell": {
    "scripts": {
      "build": [
        "d2 assets/*.d2",
        "presenterm -e slides.md"
      ],
      "present": [
        "presenterm --publish-speaker-notes slides.md"
      ]
    }
  }
}
```

Demo

- Nix REPL
- Loading Package Registry
- Exploration
- Building Packages
- Python with Various Dependencies
- Running Stuff