Custom NIX_PATH and Flake Registry

Introduction to NIX_PATH

The Nix search path is controlled by the environment variable `NIX_PATH` , which follows the same format as the Linux `PATH` environment variable, consisting of multiple paths separated by colons.

Paths in Nix expressions that look like `<name>` are resolved using the path named `name` from the `NIX_PATH` .

This usage pattern is no longer recommended under the Flakes feature because it results in Flake builds depending on a mutable environment variable `NIX_PATH` , compromising reproducibility.

However, in certain scenarios, we still need to use `NIX_PATH` , such as when we frequently use the command `nix repl '<nixpkgs>'` , which utilizes the Nixpkgs found through `NIX_PATH` search.

Introduction to Flakes Registry

The Flakes Registry is a center for Flake registration that assists us in using shorter IDs instead of lengthy flake repository addresses when using commands like `nix run` , `nix shell` , and more.

By default, Nix looks up the corresponding GitHub repository address for this ID from https://github.com/NixOS/flake-registry/blob/master/flake-registry.json.

For instance, if we execute `nix run nixpkgs#ponysay hello` , Nix will automatically retrieve the GitHub repository address for `nixpkgs` from the aforementioned JSON file. It then downloads the repository, locates the `flake.nix` within, and runs the corresponding `ponysay` package.

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> **NOTE: Newcomers should skip this section! Disabling `nix-channel` incorrectly may lead to some headaches.**

The roles of `NIX_PATH` and the Flake Registry have been explained earlier. In daily use, we typically want the `nixpkgs` used in commands like `nix repl '<nixpkgs>'` , `nix run nixpkgs#ponysay hello` to match the system's `nixpkgs` . This requires us to customize the `NIX_PATH` and Flake Registry. On the other hand, although `nix-channel` can coexist with the Flakes feature, in practice, Flakes can completely replace it, so we can also disable it.

In your NixOS configuration, adding the following module will achieve the mentioned requirements:

```nix
{lib, nixpkgs, ...}: {
  # make `nix run nixpkgs#nixpkgs` use the same nixpkgs as the one used by this
  nix.registry.nixpkgs.flake = nixpkgs;
  nix.channel.enable = false; # remove nix-channel related tools & configs, we u

  # but NIX_PATH is still used by many useful tools, so we set it to the same va
  # Make `nix repl '<nixpkgs>'` use the same nixpkgs as the one used by this fla
  environment.etc."nix/inputs/nixpkgs".source = "${nixpkgs}";
  # https://github.com/NixOS/nix/issues/9574
  nix.settings.nix-path = lib.mkForce "nixpkgs=/etc/nix/inputs/nixpkgs";
}
```

References

- Chapter 15. Nix Search Paths - Nix Pills

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