

Nix

Gestion de paquets fonctionnelle



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Gestion de paquets

- gestion de dépendances standard (apt-get, pacman, yum, npm, maven...)
 - par exemple semver (v1.4.3)
- problèmes
 - pas de garantie de reproductibilité
 - conflit de versions possible
- solution : SHA1

SHA1

~ echo 'Hello Scala' | sha256sum

674bd43df3115f656fb5bcd81a4c27be29f33064f6a4ee93
bc5b175bdef177e

~ echo 'Hello Scala' | sha256sum

674bd43df3115f656fb5bcd81a4c27be29f33064f6a4ee93
bc5b175bdef177e

~ echo 'Hello Scala!' | sha256sum

545790799099cfd85af4b40dc17b646421344e91cb4096b2
24cc9016bcd87cb3

Dérivation - exemple

```
{stdenv, fetchurl, ncurses}:
```

```
stdenv.mkDerivation {  
  name = "rogue-5.4.4";
```

```
  src = fetchurl {  
    url = http://rogue.rogueforge.net/files/rogue5.4/rogue5.4.4-src.tar.gz;  
    sha256 = "18g81274d0f7sr04p7h7irz0d53j6kd9jly3zbka1gcqq0gscdvx";  
  };
```

```
  buildInputs = [ ncurses ];
```

```
  meta = {  
    homepage = http://rogue.rogueforge.net/rogue-5-4/;  
    description = "The original Rogue game developed for the UNIX";  
    platforms = stdenv.lib.platforms.all;  
    maintainers = [ stdenv.lib.maintainers.eelco ];  
  };  
}
```

Dérivation - résultat

```
Derive([("out", "/nix/store/czl70pq2scxkh1ir0hvdiidn3f5qld9ac-rogue-5.4.4", "", ""),  
[("/nix/store/8d6x879gaxkna6ncaw2c2qvk5v45shz6-bash-4.3-p46.drv", ["out"]),  
("/nix/store/kw66jx51a599lh3lyd3f15irwhfrie7a-ncurses-6.0.drv", ["dev"]),  
("/nix/store/v9p2l5hy3pjsy7rmznw0afc7jjxjw17r-rogue5.4.4-src.tar.gz.drv", ["out"]),  
("/nix/store/w6fda02i9h4iq2c54gz4xvb2xmydfli3i-stdenv.drv", ["out"])],  
[("/nix/store/9krlzvny65gdc8s7kpb6lkx8cd02c25b-default-builder.sh", "x86_64-  
linux", "/nix/store/mgdm9y2lhmyb74wwa42qhcl633vbwn26-bash-4.3-p46/bin/bash", ["-  
e", "/nix/store/9krlzvny65gdc8s7kpb6lkx8cd02c25b-default-builder.sh"], ("buildInputs", "")),  
("builder", "/nix/store/mgdm9y2lhmyb74wwa42qhcl633vbwn26-bash-4.3-p46/bin/bash"),  
("name", "rogue-5.4.4"),  
("nativeBuildInputs", "/nix/store/8kdy4ildy3j0afww1k23wbk6vf5i5fph-ncurses-6.0-  
dev"), ("out", "/nix/store/czl70pq2scxkh1ir0hvdiidn3f5qld9ac-rogue-5.4.4"),  
("propagatedBuildInputs", ""), ("propagatedNativeBuildInputs", ""),  
("src", "/nix/store/jh59lhg3savgbd2cp8jjgm2zjbzy63m-rogue5.4.4-src.tar.gz"),  
("stdenv", "/nix/store/w6bhq766d1839igmnz6926hyyaimgwsp-stdenv"),  
("system", "x86_64-linux")])])
```

Utilisation - exemple

```
with import <nixpkgs> {}; {  
  env = stdenv.mkDerivation {  
    name = "dev";  
    buildInputs = with pkgs; [  
      sbt  
      elasticsearch  
      mysql  
  
      php70  
  
      nodejs-6_x  
      nodePackages.bower  
      nodePackages.gulp  
    ];  
  };  
}
```

Nix

- Langage fonctionnel (fonctions pures, déclaratif, ...)
- Pas d'état global (/usr/bin ...)
- Mis-à-jours et rollbacks atomiques
- Versions multiples en parallèle
- Optimisation d'espace (hardlinks)
- Garbage collection
- Build transparent à partir des sources, système de cache pour les binaires
- Linux et OS X

NixOS

- Kernel + Nix = NixOS
- Configuration déclarative
- Mis-à-jours et rollbacks atomiques (hardlinks)
- Multi-user
- Environnements de builds (système, user, shell)

configuration.nix

```
{ config, pkgs, ... }:  
{  
  // .....  
  services = {  
    mysql = {  
      enable = true;  
      package = pkgs.mysql;  
      extraOptions = "sync_binlog = 0";  
    };  
  };  
  users.extraUsers.karol = {  
    isNormalUser = true;  
    home = "/home/karol";  
    extraGroups = ["docker"];  
    uid = 1001;  
    shell = "/run/current-system/sw/bin/zsh";  
  };  
};
```

Rollbacks

NixOS (Generation 113)

NixOS (Generation 114)

EFI Default Loader

Reboot Into Firmware Interface

Autres

- NixOps – déploiement en cloud
- Nixpkgs – 6,500 applications
- Hydra – intégration continue basée pour Nix

Questions ?



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