Apptatus Technical Report

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1 Introduction

1.1 Scope

Scope creep is when a project with poorly-defined scope expands to attempt to do everything. Previous iterations of the idea for Apptatus suffered from scope creep. It was slated as an App store and package manager that could also act as a backup software, version control, and dotfiles configuration management. Since then we have focused just on making a good App store.

1.2 Definitions, Acronyms, and Abbreviations

- App Store - A piece of software used to install and remove other software
- Package Manager - A more basic but extended App Store, usually package managers have no graphical user interface but have features like the ability to schedule updates
  - Apptatus is an app store but takes some inspiration from package managers
- Continuous Integration Service - An online service which compiles source code from developers into build artifacts such as Apps
- Repository - An online service which hosts the resulting Apps in a way where they can be downloaded by clients via App stores

- Rollback - To install a previously installed version of an App instead of the latest version
- Generation - folder which contains symlink to all apps available at a given time
- Symlink - filesystem-level shortcut
- Local store - folder which contains all downloaded (but not necessarily installed) apps at multiple versions
- Bin - Folder which contains currently available apps

1.3 References

Nix (nixos.org) is a package manager thats support generations and rollbacks. However it a package manager not an app store and does not have a graphical user interface.

2 Features

2.1 Generations and Rollbacks

Any app operation, including installation, removal, and updates, will cause Apptatus to create a new generation. Users can optionally rollback to previous generations to undo changes without losing data.

2.2 Repositories

Traditional app stores lock users into a single source of apps to download from, Apptatus allows users to add and remove repositories, for example, to add a developer's respository directly.

2.3 Branches: Stable and Nightly

Apps can be installed from one of two branches: stable and nightly, the branch determines when it gets updates. The stable branch only contains updates which have been tested by repository maintainers. Contrast to stable, the nightly branch gets updates as soon as they are released by developers

3 Internal Logic

- When an app is installed the following occurs:
  - If the app is not in the local store, install it to the local store
  - Create a new generation
  - Copy symlinks from the current generation to the new generation
  - Copy the symlink for the new app to the new generation
  - Symlink the new generation to the Bin
- When an app is removed the following occurs:
  - Create a new generation

  - Copy symlinks from the current generation to the new generation except for the removed app
  - Symlink the new generation to the Bin

- When an app is updated the following occurs:
  - Download the new version to the local store
  - Create a new generation
  - Copy symlinks from the current generation to the new generation except for the updated app
  - Copy the symlink for the updated app's new version to the new generation
  - Symlink the new generation to the Bin

4 Architecture

First, developers develop software, then they submit the source code to build services such as Github Actions. These services produce build artifacts (such as the compiled app) and send them to repositories which host them. Finally users use Apptatus to download and install the resulting app.