Google Summer of Code

GSoC'21 with CERN-HSF (CernBox)
By: Jimil Desai

Project Description

- **Project Title:** Runtime plugin ecosystem for ownCloud Infinite Scale.
- **Mentors**: Ishank Arora, Hugo Labrador, Alex Unger, Michael Usher
- **Organization**: CERNBOX
- **Project Background and Goal:**
  - Worked on **Reva** which is a distributed interoperability platform that connects storage and application endpoints.
  - Tasks/Goals:
    - Adding mechanism to load plugins at runtime.
    - Create a plugin framework for plugin developers.
    - Migrate existing build-time drivers to runtime paradigm

Tasks: Phase 1

- Benchmarking and Evaluating various open source go-plugin systems.
- Plugin systems benchmarked:
  - Hashicorp go-plugin over RPC/gRPC
  - Pie plugin over RPC
  - Native Go Plugin
  - Yaegi: Interpreter in Go
  - Goloader
- Used the existing JSON plugin from Reva for the purpose of benchmarking.
- Selected and finalized the plugin system suited for our use-case: Hashicorp go-plugin system over RPC.
- Find source code and benchmarks at https://github.com/jimil749/reva-plugin-benchmark

Tasks: Phase II

- Writing the plugin framework in Reva using the hashicorp go-plugin system
  - Created the plugin package, which enables loading the plugins at runtime using Remote Procedure Calls.
  - Migrated the existing buildtime in-memory JSON plugin to runtime paradigm.
  - Supports 3 modes of loading plugins:
    - Loading already compiled go-binary
    - Compiling and then loading the plugin source code
    - Downloading, compiling and loading plugin hosted remotely, can be a github repo, bitbucket repo, gitlab url etc.
  - Enable fetching plugin from a version controlled repository.
- Documented the changes and created a developer manual i.e a guide for plugin developers.
- Maintained a ‘weekly’ blog post documenting my journey! Visit: https://gsoc-blog.netlify.app/

Thank You!

- Huge thanks to my mentors: Ishank, Hugo, Alex and Michael for helping and guiding me throughout the journey!
- Checkout: https://github.com/jimil749/GSoC-Report for detailed report and work on the project.