Introduction to S3Proxy and SwiftProxy

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Problem

- Applications written against single cloud provider, e.g., Amazon S3
  - Either using REST API or vendor SDK
- Application → S3 protocol → Amazon
- What happens when you want to move to OpenStack Swift?
  - Rewrite application using another REST API or vendor SDK?
Partial solution

- Portable, multi-cloud toolkits
  - fog, jclouds, libcloud, and pkgcloud
- Allow source code portability between providers
  - Amazon S3, EMC Atmos, Google Cloud Storage, Microsoft Azure, and OpenStack Swift
- Application → jclouds → any provider
- Requires modifying application
S3Proxy and SwiftProxy

- Allow access to other object stores without rewriting your application
  - Instead you change the endpoint
- Provide S3 and Swift REST frontends
  - Separate server processes
- Apache jclouds provides many backends
- Application → S3Proxy → any provider
Features

- Create, delete, and list buckets
- Put, get, remove, and list objects
- Multi-part upload
- Store and retrieve content and user metadata
- Server-side copy
- Multi-object delete
How S3Proxy and SwiftProxy work

- **S3 put object**
  
  ```
  PUT /kitten.jpg HTTP/1.1
  Host: photos.s3.amazonaws.com
  Authorization: AWS {account}:{signature}
  ```

- **Apache jclouds put object**
  
  ```
  blobStore.putBlob("photos", blob);
  ```

- **Swift put object**
  
  ```
  PUT /v1/{account}/photos/kitten.jpg HTTP/1.1
  X-Auth-Token: {token}
  ```
Custom middlewares

- Consider using S3Proxy and SwiftProxy without protocol translation
  - S3 application → S3Proxy → Amazon
- Having a proxy allows implementing custom middlewares
  - Authentication, compression, logging, QoS, quotas, tiering, etc.
- No application or provider support required
Other uses

● Local testing with filesystem backend
  ○ Replace Amazon S3
  ○ Replace Swift All In One
● Use S3-based FUSE file systems
  ○ s3fs, s3ql, s3backer, etc.
● Substitute for swift3 middleware on public providers, e.g., Rackspace CloudFiles
● Yours!
Looking forward

- Object versioning
- Server side encryption
- Expand ACL support
- Partial Amazon Glacier support
- Improve test coverage
  - Ceph s3-tests
  - Swift integration tests
Summary

- S3Proxy and SwiftProxy offer protocol translation and allow custom middlewares
- Apache-licensed, Java implementations
- [https://github.com/bouncestorage/s3proxy](https://github.com/bouncestorage/s3proxy)
- [https://github.com/bouncestorage/swiftproxy](https://github.com/bouncestorage/swiftproxy)