NFSRODS v0.8.0 - Authorization Model

- Mapped traditional Unix permissions
- No group support
- Used world permissions
NFSRODS - What's changed since v0.8.0?

- Permissions are now managed via NFSv4 ACLs
- Groups are fully supported
- Added SSL support
- Added support for LDAP and AD via sssd
- Made it possible to retrieve the Git SHA of your deployment
- NFSRODS properly closes iRODS connections
- NFSRODS correctly handles listing of large collections
- Testing via BATS
NFSRODS v1.0.0 - Authorization Model

- Maps iRODS permissions to/from NFSv4.1 ACLs.
- Traditional UNIX permissions are only set for the owner.
- Permissions managed via nfs4_getfacl and nfs4_setfacl.
- Collections are always executable, while data objects are never executable.

![Diagram showing NFSv4 commands and permissions relationships]
NFSRODS - Enabling SSL/TLS

1. NFSRODS Configuration *(shaved down for conciseness)*:

   ```bash
   $ cat /home/ubuntu/nfsrods_config/server.json
   {
     "irods_client": {
       "ssl_negotiation_policy": "CS_NEG_REQUIRE"
     }
   }
   
   Could also be set to **CS_NEG_DONT_CARE**.

2. Launch the NFSRODS Docker container with your SSL certificate:

   ```bash
   $ docker run -d --name nfsrods \
   -p 3000:2049 \
   -v /home/ubuntu/nfsrods_config:/nfsrods_config:ro \
   -v /etc/passwd:/etc/passwd:ro \
   -v /<full/path/to/certificate.crt>:/nfsrods_ssl.crt:ro \
   irods/nfsrods:latest
   ```
NFSRODS - Enabling sssd

Thanks to **Jonathon Anderson (CU Boulder)**, NFSRODS can use sssd to resolve users and groups as an alternative to /etc/passwd.

Launch the NFSRODS Docker container with the sssd socket:

```
$ docker run -d --name nfsrods \
  -p 3000:2049 \
  -v /home/ubuntu/nfsrods_config:/nfsrods_config:ro \
  -v /var/lib/sss:/var/lib/sss \
  irods/nfsrods:latest
```

Enables support for LDAP and Active Directory.
NFSRODS - Future Work

- Hard Links
- Parallel Transfer
- Performance (e.g. "ls")
- Unit Testing

**NFStest** - POSIX Filesystem Level Access Testing

- SMBRODS - Possible sister project to make iRODS accessible to Microsoft Windows machines
Questions?

- Thank you!

- This version (NFSv4.1) of NFSRODS was built by:
  - Kory Draughn, iRODS Consortium
  - Alek Mieczkowski, iRODS Consortium
  - Mike Conway, NIH/NIEHS
  - Jason Coposky, iRODS Consortium
  - Terrell Russell, iRODS Consortium

- Inspired by work (NFSv3) presented at UGM2016 (slides, paper):
  - Danilo Oliveira, Center for Informatics UFPE, Brazil
  - I. Fé, Center for Informatics UFPE, Brazil
  - A. Lobo Jr., Center for Informatics UFPE, Brazil
  - F. Silva, Center for Informatics UFPE, Brazil
  - G. Callou, Center for Informatics UFPE, Brazil
  - V. Alves, Center for Informatics UFPE, Brazil
  - P. Maciel, Center for Informatics UFPE, Brazil
  - Stephen Worth, EMC Corporation

- Preliminary testing provided by:
  - Bristol Myers Squibb
  - University of Colorado Boulder Research Computing