

NFSv4 for FreeBSD

NFSv4 Protocol

- **similar in some respects of v2 and 3**
- **uses a Compound RPC made up of Ops**
- **user and group names (instead of uids, gids)**
- **integrated file locking**
 - **stateful server, with state recovery**
- **newer features**
 - **named attributes (subfiles, resource forks)**
 - **open delegations**
 - **windows style ACLs**
 - **referrals (server initiated automounts)**

Where the code currently sits:

- **supports client and server for NFSv4.0**
- **also has NFSv2,3 support in it**
- **missing features (all optional)**
 - **referrals**
 - **named attributes (subfiles, resource forks)**
 - **use of Delegations currently limited**
- **server has run at UofG in production mode**
- **client has run in Mac OS X in near production mode**

Current code structure

- **client consists of a clone of nfsclient plus**
 - **generic routines for RPCs and state**
- ***port* files provide ports for the rest**
- **macros almost completely replaced by functions**
 - **uses Doug's new RPC (which got rid of a LOT of cruft)**
 - **uses fairly novel DRC designed for NFSv4**
- **without old RPC cruft, about 45,000 lines of C**

Big Picture Issues

- **How to deal with delegations for non-NFSv4 activity?**
- **Referrals (for Federated FS)**
 - **server - funky symlinks or extended attr or ???**
 - **client - submounts (mount pts. created under an NFSv4 mount)**
- **NFSv4.1 Features**
 - **Sessions (hopefully fits within Doug's RPC?)**
 - **needed for pNFS etc**
- **Big reads and writes (MAXBSIZE == 1Mbyte)**
- **ZFS**

