

AFS Basics

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Outline

- ACLs
- Groups
- Useful commands
- Differences from Unix
- Basic troubleshooting
- Getting more information

AFS Tools

- **fs**
 - Use to manage ACLs
 - Client cache manager admin interface
- **pts**
 - Use to manage groups
 - Protection Server admin interface

Finding Information

- Built-in short help for each command:
 - `pts help`
 - `fs help`
- Manual pages for full information:
 - `man command_subcommand`
 - `man pts_membership`
 - `man fs_listquota`

ACLs

Unix Permissions

- Set on both files and directories
- 3 permissions – (r)ead, (w)rite, e(x)ecute
- Access controls for user, group, others
- Limitations:
 - single group
 - new groups require admin involvement

AFS Permissions

- Only set on directories not individual files
- Unix permissions are not relied upon (but not completely ignored by pts).
- Greater flexibility:
 - Many groups
 - Can allow and deny rights
 - Users can create their own groups

AFS Permissions – Full List

- 7 permissions:
 - (r)ead
 - (l)ist
 - (i)nsert
 - (d)elete
 - (w)rite
 - loc(k)
 - (a)dminister

Directory Permissions

- (l)ist – list files within the directory
- (i)nsert – add new files to the directory
- (d)elete – remove files from the directory
- (a)dminister – alter ACLs for the directory

File Permissions

- (r)ead – read the contents of files
- (w)rite – alter the contents of files
(and run chmod)
- loc(k) – use syscalls to lock files

AFS Permissions - Shorthand

- Can refer to groups of permissions:
 - read – (r)ead and (l)ist
 - write – (r)ead, (l)ist, (i)nsert, (d)elete, (w)rite, loc(k)
 - all – everything
 - none – used to remove permission from an ACL

Viewing ACLs

Use the **fs listacl** command:

```
% fs listacl /afs/inf.ed.ac.uk/user/j/jbloggs
Access list for /afs/inf.ed.ac.uk/user/j/jbloggs is
Normal rights:
  system:administrators rlidwka
  jbloggs rlidwka
```

Setting ACLs

- Set with user/group – permission pairs
- Use the **fs setacl** command:

```
% fs setacl -dir ~/project -acl \  
inf:sysman read jsmith write
```

Removing an ACL

- Removing an ACL is simply done by setting the permissions to **none**.
- Again use the **fs setacl** command:

```
% fs setacl -dir ~/project \  
           -acl jsmith none
```

Setting ACLs – Negative Rights

- It is possible to allow access to a group and then deny access to individual users.
- Use the **fs setacl** command with the **-negative** option:

```
% fs setacl -dir ~/project2 -acl \  
    inf:sysman write  
% fs setacl -dir ~/project2 -acl \  
    jsmith idwk -negative
```

Copying ACLs

- If the correct ACLs are already set on another directory then just copy them.
- Use the **fs copyacl** command:

```
% fs copyacl -fromdir ~/project \  
             -todir ~/project2
```

```
% fs copyacl -fromdir ~/project \  
             -todir ~/project2 -clear
```

Example: Creating a public directory

```
% mkdir ~/Public
```

```
% fs setacl -dir ~/ -acl system:authuser l
```

```
% fs setacl -dir ~/Public system:authuser read
```

Groups

Special Groups

- 'system' prefix
- Important two are:
 - system:anyuser – can access AFS
 - system:authuser – has authenticated to local AFS

Local Groups

- 'inf:' prefix - equivalent AFS group for every Unix group
- 'afs-' prefix – other locally maintained groups
- Find your own groups:
 - pts membership jbloggs

Viewing Groups

- Membership of a group:
 - pts membership jbloggs:friends
 - pts membership inf:people
- Detailed information for a group:
 - pts examine jbloggs:friends
- List your own groups:
 - pts listowned jbloggs

Creating a Group

- Groups are created using the **pts creategroup** command:

```
% pts creategroup jbloggs:friends
```

Adding Members to a Group

- Once a group has been created members are added using the **pts adduser** command:

```
% pts adduser -user bob carol ted alice \  
              -group jbloggs:friends
```

Removing Members from a Group

- Use the **pts removeuser** command:

```
% pts removeuser -user bob \  
                  -group jbloggs:friends
```

Removing a Group

- Use the **pts delete** command:

```
% pts delete jbloggs:friends
```

- If the group was in any ACLs they must be cleaned:

```
% fs cleanacl ~/project
```

Useful Commands

- Check your quota:
 - `fs listquota ~/`
- Where are files stored?
 - `fs whereis ~/path`
- Are servers responding?
 - `fs checkservers`

Differences from Unix

- `chown/chgrp` – `system:administrators` only
- `chmod` – `setuid`, `setgid` and sticky bits are restricted to `system:administrators`
- Hard links – only within the same directory

No Special Files

- None of the following are supported:
 - Pipes
 - Fifos
 - Devices
 - Unix Sockets
- Use a suitable local filesystem instead.

Basic Troubleshooting

Can't access a file?

1) Check you are still authenticated

- tokens

2) Check your ACLs

- `fs listacl ~/path`

3) Check your quota

- `fs listquota ~/path`

4) Check your server

- `fs whereis ~/path`
- `fs checkservers`

Documentation

- Main page - <http://www.inf.ed.ac.uk/systems/AFS/>
- “Top Tips” -
<http://www.inf.ed.ac.uk/systems/AFS/topten.html>
- OpenAFS User Guide -
<http://docs.openafs.org/UserGuide/>