Autofs

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What's an automounter?

- Have all filesystems accessible all the time, without keeping them mounted.

- Dynamic maps, to avoid configuring every single mount

- Centralized maps (LDAP)

What's wrong with amd(8)?

- Map format different from Sun

- No LDAP in base, so amd(8) gets built without it

- Calls mount(2) syscall directly

- Userland NFS magic, the evil kind

Autofs project scope

- Cleanroom reimplementation

- Proper autofs(4)

- "Industry standard" map format

- Directory services (LDAP)

- Can mount any filesystem

- Scripts, man pages, handbook

Maps

- auto_master(5) references individual maps

```
# $FreeBSD$
#
# Automounter master map, see auto_master(5) for details.
#
/net            -hosts        -nosuid
/auto/groups  autofs.group
+auto.master
```

- Maps define actual remote filesystems

```
SLES10          -rw,nosuid   elmer:/vol/vol3/sys-li9/&
```

- Direct vs indirect maps

autofs(4)

- Very simple filesystem, less than 1KLOC

- Triggering mechanism

- Simple directory hierarchy for indirect maps

- VOP forwarding to the newly mounted vnode

automount(8)

- Sets up autofs(4) mounts based on auto_master(5) and indirect maps

- Runs during startup, or manually after auto_master(5) modification

- Some utility functions, eg. "automount -u".

automountd(8)

- Daemon handling trigger requests from autofs(4)

- Locates the map, parses it, runs mount command

- One process per request; no need to be asynchronous

- No state; can be restarted at any time

autounmountd(8)

- Watches for filesystem events using kqueue(2), records mount time, unmounts after a while

- Only touches filesystems with "automounted" mount option set

Extensibility

- How special maps are just shell scripts

- Easy to modify to fit existing LDAP infrastructure, eg removing unsupported mount options

- Working around not having OpenLDAP in base

- Trivial debugging - just run the script by hand

Reliability

- Retries, for transient network problems

- Timeouts, to not wedge the system indefinitely

- Cache, to avoid unnceccessary requests

- ^C at any time

Demo!

Problems

- Never block automountd(8) or any of its children, mount(8) in particular

- Interaction with fts(3)

- Lack of hierarchical mounts

- Duplicated mounts

Questions?

(https://github.com/trasz/autofs)