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
Autoofs project scope

- Cleanroom reimplementation
- Proper autoofs(4)
- "Industry standard" map format
- Directory services (LDAP)
- Can mount any filesystem
- Scripts, man pages, handbook
Maps

- auto_master(5) references individual maps

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

- Maps define actual remote filesystems

```bash
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 autos(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 unnecessary 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)