Automount NFS

lctseng

Automatic mounting

- Problems of /etc/fstab
  - Maintenance of /etc/fstab in large network
  - Crashed NFS server will make operation blocked
- automount (autofs) daemon
  - Mount filesystems when they are referenced and unmount them when they are no longer needed
  - Supply a list of replicated filesystems to replace important but crashed NFS servers
  - Transparent to users
- Products
  - automount (from SUN Micro), simple and concise (Solaris/Linux)
  - amd (from Jan-Simon Pendry), complicated but more powerful (Obsolete)
  - autofs, starting with FreeBSD 10.1-RELEASE it has a new automounter very similar to the Solaris/Linux one

autofs (1)

- autofs
  - Kernel component: autofs(5)
  - Userspace applications
    - automount(8): Update autofs mounts
    - automountd(8): Daemon handling autofs mount requests
    - autounmountd(8): Daemon unmounting automounted filesystems
- Three kinds of configuration files (map)
  - Direct map
  - Indirect map
  - Master map

  } Provide information about filesystems that are to be automounted

    - List which direct and indirect maps that automount should pay attention to
  - Difference between direct and indirect
    - All mount points in indirect map has common directory defined in master map

- https://www.freebsd.org/doc/handbook/network-nfs.html#network-autofs

autofs (2)

❑ Example of auto_master and map file

master

mountpoint	map_name	[-options]	
/net	/etc/auto.net	-rw, intr	(indirect)
/-	/etc/auto.direct	-ro, intr	(direct)
+autofs.map			(include NIS map)

direct

key	[-options]	location
/data/redis	-rw,soft,nosuid	storage:/redis
/data/mysql		storage:/mysql

indirect

www	-rw,soft,nosuid,vers=2	web0:/home/www
mail	-rw,soft,nosuid,quota	ccserv:/spool/mail
ftp	-ro,soft,nosuid	ftp:/home/ftp
*	-intr,nfsv4	192.168.1.1:/share/&
sys		dragon:/sys/${OSNAME}

* : match any unmatched key
& : replaced by matched key field

- auto_master(5)

autofs (3)

Selector	Description
ARCH	Expands to the output of uname -p
CPU	Same as ARCH
HOST	Expands to the output of uname -n
OSNAME	Expands to the output of uname -s
OSREL	Expands to the output of uname -r
OSVERS	Expands to the output of uname –v
&	Volume name being resolved

autofs (4)

- Master map
  - /etc/auto_master (FreeBSD)
  - /etc/auto.master (Linux)
  - /etc/auto_master (Solaris)
- Restart automounter when you change the maps
  - /etc/rc.d/automount {start|stop}
  - /etc/rc.d/automountd {start|stop} (FreeBSD)
  - /etc/rc.d/autounmountd {start|stop}
  - /etc/init.d/autofs {start|stop} (Solairs)
  - /etc/init.d/autofs {start|stop|reload|status} (Linux)

autofs (5)

- autofs in FreeBSD
  - Edit rc.conf

```
…
autofs_enable="YES"
…
```

- Example after mounting maps

```
$ mount
map -hosts on /net (autofs)
map /etc/auto.mnt on /mnt (autofs)
```

autofs (6)

- Replicated filesystem
  - There are several identical NFS and I would like to mount anyone of them
  - Constrain
    - Read-only
    - These replicated filesystem should be truly identical
  - Automounter will choose a server based on its own idea of which one is the best

```
/usr/man      -ro    bsd1:/usr/man bsd2:/usr/man
/www/data     -ro    web1,web2:/www/data
```

autofs (7)

- Automatic automounts
  - ***automount*** can query the ***mountd*** to find out what filesystems the server exports
  - Using -host as map name in the master map file

```
/net        -host        -nosuid,soft
```

  - -host does not enumerate all possible hosts
    - It waits for individual subdirectory names to be referenced
    - If bsd1 exports **/usr/share/man**
      - Automount at the path **/net/bsd1/usr/share/man**